

Form

Effective Date: 01/10/2020

WHS – Rosenbauer HEROS Titan AS Structural Firefighting Helmet, including the Savox HC 200 Communications Kit, Risk Assessment

Purpose

The purpose of this risk assessment is to identify hazards and assess risks associated with the introduction of the Rosenbauer HEROS Titan AS Structural Firefighting Helmet into QFES FRS operational firefighting activities. The helmet is to be used in conjunction with the Savox HC 200 Communications Kit. 80 helmets and communications units have been purchased and are expected to arrive in Brisbane late January 2022.

Each region will have an allocation of these helmets for operational trial. As part of the trial, a face-to-face information and training session on the helmet and communications accessory will be led by Station Officer Andrew Berrill. This risk assessment is conducted with the view to determine whether the proposed transition to the Rosenbauer HEROS Titan AS Structural Firefighting Helmet will result in any additional risk to operators during the trial period.

Definition of plant

Plant includes any machinery, equipment, appliance, container, implement or tool; and includes any component or anything fitted or connected to any of those things. Plant includes items as diverse as lifts, cranes, computers, machinery, conveyors, forklifts, vehicles, power tools and amusement devices. Plant that relies exclusively on manual power for its operation and is designed to be primarily supported by hand (e.g. a screw driver) is not covered by the [Work Health and Safety Regulation 2011](#); the general duty of care under the [Work Health and Safety Act 2011](#) applies to this type of plant.

Legislative requirements

QFES has the primary duty under the WHS Act 2011 to ensure, so far as is reasonably practicable, that workers and other persons are not exposed to health and safety risks arising from the business or undertaking. This duty includes ensuring, so far as is reasonably practicable:

- the provision and maintenance of safe plant
- the safe use, handling, storage and transport of plant.

Persons who conduct a business or undertaking involving the management or control of fixtures, fittings or plant at a workplace also have a duty to ensure, so far as is reasonably practicable, that the fixtures, fittings and plant are without risks to the health and safety of any person.

QFES has the primary duty under the *WHS Act 2011* to ensure, so far as is reasonably practicable, that workers and other persons are not exposed to health and safety risks arising from the business or undertaking. Officers, for example the Commissioner, Deputy Commissioners and Assistant Commissioners, have a duty to exercise due diligence to ensure that QFES complies with the *WHS Act* and *WHS Regulation 2011*.

Workers have a duty to take reasonable care for their own health and safety and must not adversely affect the health and safety of other persons. Workers must comply with any reasonable instruction and cooperate with any reasonable policy or procedure relating to health and safety at the workplace. Construction work is defined in [section 289 of WHS Regulation 2011](#) and high risk construction work is defined in [section 291 of WHS Regulation 2011](#).

Refer to Queensland Fire and Emergency Services (QFES) Procedure [PR3101 - WHS Risk Management](#) for guidance on undertaking a risk assessment.

Plant risk assessment

Plant risk assessments must be undertaken before an item of plant is used for the first time, when any alterations are made to the item of plant, when a near miss or incident occurs with the item of plant, or when requested by the Safety and Wellbeing Officer, a Health and Safety Representative or a worker.

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This policy/procedure limits a human right, however that limitation is reasonable and demonstrably justifiable having regard to section 13 of the Human Rights Act 2019 (Qld), and is therefore compatible with human rights. Further detail is available via the QFES Human Rights Register.

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Assessment details			
Risk assessment number:	WHS-RA-027		
Risk assessment name:	Rosenbauer HEROS Titan AS Structural Firefighting Helmet, including the Savox HC 200 Communications Kit.		
Lead risk assessor name:	Teegan Modderman, Executive Manager Health and Wellbeing		
Risk assessment team names:	Roxanne Thomas, Paul Appleby, Nicholas Rowland		
Assessment date:	22/12/2021	Review date:	11/03/2022
Workers that have been consulted with:	Steven Bates, Lance Duncan, Sarah Cass, Daniel Hooley, Andrew Berrill, Bradley Moore, Jessie Smith		
Plant details			
Description of plant:	New helmet for trialling for structural firefighting for FRS Firefighters		
Purpose of plant:	To protect FRS Firefighters head during a structural fire incident and support enhanced communication using a bone conducting and microphone communication system		
Manufacturer:	Rosenbauer	Model: QFES Asset Number:	HEROS Titan AS Structural Firefighting Helmet Savox HC 200 Communications Kit
Worksite and location at site:	Various locations and buildings	Date installed:	To undergo trial before purchase and implementation to FRS Firefighters
Worker/s responsible for plant:	Lance Duncan, Chief Superintendent and Director FRS	Maintenance/calibration provider:	N/A
Plant safety features:	The Rosenbauer HEROS Titan AS Structural Firefighting Helmet complies with the following standards and certifications: - AS 4607:2012 – Protective helmets for structural firefighting - EN 443:2008 – Helmets for firefighting in building and other structures - EN 16473:2014 – Helmets for technical rescue - EN 16471:2014 – Helmets for wildland fire fighting - Additional testing of electrical isolation - Additional testing of chemical resistance - ISO 16073:2011 - Wildland firefighting personal protective equipment — Requirements and test methods - Large and small visor protect the face and comply with EN 14458:2004 – Personal eye-equipment Temperature resistant from -40 to 300°C. The neck protector is made of heat-resistant and flame-retarding materials. Helmet - Ergonomically shaped helmet shell - Total weight 1.3kg – 1.775g (with communications headset) - Edge protection – protects the helmet from impact and damage		

	- Fitted with a heat insulating damping insert, protecting the head from heat - Optimised centre of gravity allowing the wearer to adjust the centre of gravity using gloves - Headband, front section, helmet band and chin strap can be adjusted. Full face visor - Optical class 1, giving the wearer comfort for long wear - Suitable for people wearing eyeglasses - Adjustable visor distance. Chin strap - Ergonomic 3-point chin strap - Made from flame retardant, highly heat resistant material. Neck protector - Made of heat resistant and flame-retarding materials. Rotary knob - External knob to adjust the size of the inner harness - Easily adjustable while wearing firefighting gloves. Integrated LED flashlight - Can be used in intrinsically safe environments EX (on battery pack) - Mounted to the front of the helmet - Brightness can be adjusted in 3 stages (120 / 90 / 15 lumens) - Flashing indicator signal when battery needs charging - Operated by 3 AAA batteries. Savox HC 200 Communications Kit Operational temperature range -40 to 80°C - Communications assembly - Universal adapter - Short boom microphone - Bone conduction microphone can be easily activated by rotating back the boom microphone
Legislation, codes and standards	
Work Health and Safety Act 2011 Work Health and Safety Regulation 2011 Electrical Safety Act 2002 Electrical Safety Regulation 2013 How to manage work health and safety risks code of practice 2021 Hazardous manual tasks code of practice 2021 Managing risks of plant in the workplace code of practice 2021 Managing the risk of falls at workplaces code of practice 2021 Managing risks of hazardous chemicals in the workplace code of practice 2021 Managing the Work Environment and Facilities code of practice 2021	
Reference documents	
- DUCOT TRIAL 1 Helmet – HEROS Titan AS Structural Firefighting Helmet with Savox HC 200 Communications Kit Rosenbauer Firefighting Helmets QFES Work Health and Safety Management System - Implementation Plan - Evaluation Plan	
Plant registration	
Does the item of plant require registration with Workplace Health and Safety Queensland (WHSQ)? Refer to WHSQ webpage for details.	☐ Yes ☒ No

WHSQ Certificate/Registration Number:	
Are the registration details of the plant recorded in asset register?	☐ Yes ☒ No
Licencing	
Are there licencing requirements associated with ownership or operation of the item of plant? Refer to WHSQ for high risk work licence requirements .	☐ Yes ☒ No
Are licence requirements recorded in the training needs analysis for workers using or operating the plant?	☐ Yes ☒ No

Step 2 - Identify the hazards

- Review available information (manufacturer manual, past incidents, WHS inspections, etc.)
- Refer to the [Managing Risks of Plant in the Workplace Code of Practice 2013](#) for guidance.
- Record the hazards below associated with the plant/equipment.



Figure 1 - Rosenbauer HEROS Titan AS Structural Firefighting Helmet



Figure 1 – Savox HC 200 Communications Kit

Tick all applicable hazards		
Plant location		
Fall hazard ☒	Confined space hazard ☐	Isolated worker hazards ☐
Mechanical hazards		
Moving parts ☐	Crushing hazards ☐	Shearing hazards ☐
Cutting or severing hazard ☐	Trapping hazard ☐	High pressure gas or fluid ☐
Impact hazard ☐	Stabbing/puncture hazard ☐	Stored energy ☐
Electrical hazards		
Exposed live parts ☒	High voltage electricity ☒	Multiple electrical sources ☒
Inadequate isolation points ☐	Thermal radiation ☐	Electrostatic hazards ☒
Thermal hazards		
Hot/cold objects or materials ☒	Hot/cold work environment ☒	Fire and/or explosion ☒
Noise hazards		
Hearing loss ☐	Physiological disorders ☐	Interference with speech or acoustic signals (acoustic in communications headset) ☒
Radiation hazards		
Low-frequency, radio frequency radiation, microwaves (communications headset) ☒	Infrared, visible and UV radiation ☒	X-rays and gamma rays (structural fires in hospitals / medical imaging / radiology facilities) ☒
Lasers ☐		
Ergonomics		
Sustained or awkward posture ☐	Repetitive or sustained forces ☐	Inadequate lighting ☐
Inadequate design, location or identification of manual controls ☐	Inadequate design or location of visual display units ☐	Human error, human behaviour ☒
Materials and substances		
Exposure to hazardous fluids, gases, mists, fumes and dusts ☒	Fire and/or explosion ☒	Biological and microbial hazards ☒
Unexpected operational conditions		
Failure of plant control system ☒	Errors in software (communication headset) ☒	Operator error (inadequate interface) ☒

Tick all applicable hazards		
Inadequate isolation points ☐		
Vibration		
Hand held plant ☐	Whole body vibration ☐	Impact on adjacent workers ☐
Plant movement (mobile plant)		
Movement without driver at controls ☐	Movement without all parts in a safe position ☐	Plant/pedestrian interactions ☐
Lack of stability ☐	Inadequate ability to slow, stop or immobilise plant ☐	Excessive speed ☐
Hazardous events		
Falling loads ☒	Collisions (hitting/contact with objects) ☒	Plant tipping ☐
Overloading ☐	Unexpected/unintended movement of loads ☐	Confined spaces ☒
Intrinsically safe areas ☒	Fire and explosion ☒	Lack of situational awareness at incidents ☒
FF prescription glasses ☒	BA operations ☒	
Other plant specific risks (describe):		
Certification of helmet accessories (communications unit) has not been provided at the time of signing the risk assessment.		
Workers at risk (list):		
FRS Firefighters undertaking the trial.		

Step 3 - Perform risk assessment and identify risk controls

- Undertake the following and record in the risk assessment table below:
 - the hazards identified
 - assess the risks for each hazard
 - rate the inherent risk score by assessing the likelihood and consequences using the risk matrix in [Appendix A](#)
 - identify the current controls that are in place for these hazards and risks
 - rate the residual risk score (refer to [Appendix A](#))
 - identify future controls (additional controls to manage the risks) by referring to the hierarchy of controls in Appendix B.
- Record the future controls in the risk assessment table and risk control action plan.
- Rate the target risk score (future controls are in place and deemed effective) using the risk matrix in [Appendix A](#) and record in the risk assessment table.
- Categorise the highest level of control from the current and future controls using the hierarchy of control in [Appendix B](#) and record in the risk assessment table.

Risk assessment table

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Hazards	Risk description	Inherent risk			Current controls	Residual risk			Future controls	Highest HOC	Target risk		
		C	L	Score		C	L	Score			C	L	Score

Helmet (performance and fit for purpose) Hazards that may be associated with the helmet itself: - Ergonomics / anthropometrics associated with helmet design - Helmet materials when exposed to fire, heat and falling objects - Workers alterations to helmet (compromising integrity) - Helmet use with missing or broken components - Inadequate fit for head size / shape Attachments Attachments may contribute to risk if broken or not used as per manufacturers guidance: - Torch - Internal goggles - Face shield	Risk of injury or death to workers as a result of a helmet performance or fit for purpose including: - Burns from material / substance failure under heat - Head injuries as a result of the helmet breaking under strain - Neck injuries due to weight of the helmet - Bruising / abrasions due to rubbing of neck strap - Heat stress due to poor ventilation - Eye injury as a result of the goggles or face shield missing, breaking or not being used under certain circumstances	Major	Likely	High	- Meets AS and EN standards: - AS 4607:2012 – Protective helmets for structural firefighting - EN 443:2008 – Helmets for firefighting in building and other structures - EN 16473 – Technical rescue - EN 16471 – Helmets for wildland fire fighting - Additional testing of electrical isolation - Additional testing of chemical resistance - ISO 16073:2011 - Wildland firefighting personal protective equipment — Requirements and test methods - Manufacture manual for fitting - Flashhoods worn underneath helmet - Helmets fitted with a heat insulating damping insert, protecting the head from heat - Temperature resistant from - 40 to 300°C - The neck protector is made of heat-resistant and flame-retarding materials - Torch is intrinsically safe for EX (on battery pack) - Explosion protection for helmet torch - Ex II 2 G Ex ib IIC T4 Gb (temperature class T4) - Ex II 2 D Ex ib IIIC T 135°C Db - Can be adjusted using rotary knob to suit various anthropometrics - Weight 1.3 – 1.775 kg (with communication set) - Ergonomically shaped helmet shell - Adjusts to fit a range of head sizes	Major	Unlikely	Medium	Training and instruction related to inspection and maintenance requirements, correct fitting and use of helmet to be provided to Firefighters involved in the evaluation before use.	Engineering	Moderate	Rare	Low
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Hazards	Risk description	Inherent risk			Current controls	Residual risk			Future controls	Highest HOC	Target risk		
		C	L	Score		C	L	Score			C	L	Score
					15. The helmet can be optimally aligned to the body's centre of gravity by pressing the helmet shell away from or closer to the interior fittings. 16. Face shield certified to EN 14458:2018 - Personal eye-equipment - High performance visors intended only for use with protective helmets – Optical class 1 17. External rotary knob can be easily adjusted whilst wearing firefighting gloves 18. Manufacture manual for correct fitting 19. The helmets are irradiated with a 450 W rated xenon lamp for at least 400 hours. 20. DUCOT TRIAL Helmet – Heros Titan AS Structural Firefighting Helmet 21. Helmet Evaluation Trial Document								

Hazards	Risk description	Inherent risk			Current controls	Residual risk			Future controls	Highest HOC	Target risk		
		C	L	Score		C	L	Score			C	L	Score
Helmet used in hazardous environments (e.g. structural fires) Hazards that may be experienced in these environments include: - Gravity (hitting / contacting / falling objects) - Confined spaces - Heat - Fire / explosion - Water / foam - Exposure to fallen wires (live and isolated) - Other PPE impeding on helmet design and fit	Risk of injury or death to workers as a result of a poorly worn helmet, helmet deficiencies, or exposure to hazards listed. Type of injuries may include: - Sprains/strains - Burns - Head injuries - Abrasions / bruises	Catastrophic	Possible	High	1. TacD-21-01-00 Selection for Incidents 2. TacD-21-02-00 Decontamination of Clothing and Equipment 3. TacD-11-03-00 Fire Decontamination 4. TacD-18-06-00 General Infection Control Procedures 5. SO_Q_OM_3_50 Issuing of PPC to FRS Personnel 6. TacG-0703-00 Violence and Civil Disturbances Support to QPS 7. SO_Q_OM_3_29 PPC Cover Bags 8. FOG-03-FRS-Technical Rescue Field Operations Guide 9. TacG-04-09-00 Fire in Secure Premises 10. S3002.1.0 Dress Uniform and PPE 11. TacD-25-07003 Fallen Electrical Powerlines	Catastrophic	Unlikely	High	1. Trial to assess level of interference with BA required. If interfere creates an unacceptable risk, trial to be stopped as soon as reasonably practicable.	Administration	Catastrophic	Rare	High
Communication headset to be incorporated into trial helmet Hazards associated with the communication headset include: - Acoustic shock - Audio loss - Headset catching fire - Cord leading from headset catching fire or getting caught on an object - Interrupted signals / blackspots - Inadequate user training and understanding of how to use communication headset	Risk of injury or death from loss of communications or human error related to communication using the headset. Injuries that may result include: - Hearing loss or deafness - Burns	Catastrophic	Possible	High	1. CT-FlexCom is flame resistant in accordance with EN 443:2008 – Helmets for firefighting in building and other 2. Protection class IP66/67 3. ATEX certified 4. Noise cancelling microphone 5. Waterproof microphone 6. If Savox Communications Kit fails to operate correctly, disconnect the connector from the RSM and continue to use RSM as a handheld speaker/microphone.	Catastrophic	Unlikely	High	1. Training and instruction related to the communication headset, how to wear it, hazards associated with its use and control measures to overcome these, strategies to use should the communication device fail.	Choose an item.	Catastrophic	Rare	High

Hazards	Risk description	Inherent risk			Current controls	Residual risk			Future controls	Highest HOC	Target risk		
		C	L	Score		C	L	Score			C	L	Score
Contamination of helmet Exposure to high-risk materials during and after fire incidents due to helmet design	Risk of injury or death to workers as a result of exposure to carcinogenic substances: - Absorption via integumentary system (skin) due to helmet design - Ingestion of combustion products due to inadequate decontamination processes associated with the helmet	Catastrophic	Possible	High	1. Refer to TacD 11.03.00 – Fire Incidents – Fire Decontamination 2. Refer to Operational Guide 18 – Fire Decontamination 3. All settings can be adjusted without removing the interior fittings 4. Helmet has undergone successful additional testing of chemical resistance 5. Complete helmet is washable	Major	Unlikely	Medium	1. Training and instruction related to the decontamination processes for this particular helmet and how to report and issues / damage / faults with the helmet.	Administration	Major	Rare	Medium

Risk control action plan

Action	Action owner	Due date	Date completed
1. Training and instruction related to inspection and maintenance requirements, correct fitting and use of helmet. Correct use of the communication headset, how to wear it, hazards associated with its use and control measures to overcome these, strategies to use should the communication device fail, decontamination processes for this particular helmet and how to report and issues / damage / faults with the helmet.	Lance Duncan	1/02/2022	18/02/2022

Step 4 - Review and approval

Once the risk control action plan has been completed you will need to escalate the risk assessment to your manager/supervisor for the appropriate notifications and actions based on the residual risk rating. Refer to the Figure 1 - Negative Risk Communication, Escalation and Action table.

Lead risk assessor sign-off			
All risks associated with the plant have been identified including the control measures to address the risks.			
Lead risk assessor name:	Teegan Modderman	Date:	1/02/2022
Position:	A/Director Operations Support	Signature:	
Manager/supervisor review			
A review has been conducted, the risks associated with the helmet and communications unit have been identified with the appropriate risk controls in place.			
Name:	Lance Duncan	Date:	1/02/2022
Position:	A/Director and Chief Superintendent State FRS	Signature:	Contrary to the public interest
Notifications to:	Assistant Commissioner	Actions taken:	

RESIDUAL RISK RATING	NEWLY IDENTIFIED RISK OR EXISTING RISK RATING CHANGES		REPORTING ON ESTABLISHED RISKS
	NOTIFICATION	ACTION	
Very High (negative)	Reported immediately to a deputy Commissioner who will then notify the Commissioner and Board within 24 hours (as appropriate).	Immediate and urgent Deputy Commissioner action required. Cease activity until risk can be reduced to an acceptable level. Activity shall not be undertaken without the express approval from the Commissioner. Monitor daily.	Reported to BOM on a monthly basis. Enterprise risks with an inherent rating of Very High are to be reviewed and reported to the ARCC on a quarterly basis.
High (negative)	Reported to relevant Deputy Commissioner within 48 hours who will notify the Commissioner (as appropriate).	Deputy Commissioner attention required immediately. Action by Assistant Commissioner or Executive Director. Weekly monitoring. The activity shall not be undertaken without the express approval of the Deputy Commissioner.	Reported to the BOM on a monthly basis. Enterprise risks with an inherent rating of High and a residual rating of High are to be reviewed and reported to the ARCC on a quarterly basis.
Medium (negative)	Reported to the Assistant Commissioner or Executive Director.	Assistant Commissioner or Executive Director attention required. Action by Director or Chief Superintendent. Action plans developed and implemented, and accountability specified. The activity shall not be undertaken without the approval of the responsible member of ELT.	Reported to the ELT manager on a monthly basis.
Low (negative)	Reported to the responsible manager.	Manage by routine procedures and business-as-usual processes. Unlikely to need specific application of resources. Monitor as appropriate.	Reported to the Director or Inspector on a quarterly basis.

Figure 1. Negative risk communication, escalation and action table

Appendix A - QFES WHS Risk Matrix

Determine the:

- Consequences - refer to the top line (blue shaded areas) in risk matrix (Figure 2) below.
- Likelihood - refer to grey shaded areas in the matrix below and consider:
 - How often is the task done?
 - How often are people near the hazard?
 - How close do people get to the hazard and for how long?
 - Has the event happened before? Look for information about near misses /incidents in other workplaces.
 - Are there any changes in the workplace that may have an impact?
 - What legislative requirements is required to manage the hazard?
 - What does the Code of practice state in managing the hazard?

Where the consequence and likelihood meet on the matrix, this will give you the risk score (e.g. C= Minor and L= Possible, the risk score is Medium M3 6).

Likelihood	Consequences				
	Insignificant Minor injury requiring first aid only. Able to continue working.	Minor Medical attention required(e.g. doctor visit). Recovery time less than 1 week. Unresolved minor health issues.	Moderate Hospital admission or recovery time is greater than 1 week. Acute short term health issue.	Major Permanent loss of function or disability. Severe mental trauma resulting in inability to work. Progressive chronic condition, serious health issues.	Catastrophic One or more fatalities. Multiple persons suffer permanent loss of function or disability or severe mental trauma resulting in inability to work. Significant prolonged or terminal health issues.
Almost certain Event is expected to occur in most circumstances >90% chance of occurring	Medium M2 5	Medium M6 10	High H4 15	Very High VH1 20	Very High VH2 25
Likely Event is expected to occur often >65% chance of occurring	Medium M1 4	Medium M4 8	High H3 12	High H5 16	Very High VH1 20
Possible Event is expected to occur at least once >20% chance of occurring	Low L3 3	Medium M3 6	Medium M5 9	High H3 12	High H4 15
Unlikely Event is expected to occur at some time <20% chance of occurring	Low L2 2	Low L4 4	Medium M3 6	Medium M4 8	High H2 10
Rare Event would only be expected to occur only in exceptional circumstances <5% chance of occurring	Low L1 1	Low L2 2	Low L3 3	Medium M1 4	High H1 5

Figure 2. WHS risk matrix

Appendix B - Hierarchy of control

You must always aim to eliminate a hazard, which is the most effective control. If this is not reasonably practicable, you must minimise the risk by working through the other alternatives in the hierarchy of control. If you cannot eliminate the hazard, then eliminate as many of the risks associated with the hazard as possible, refer to Figure 3 below.

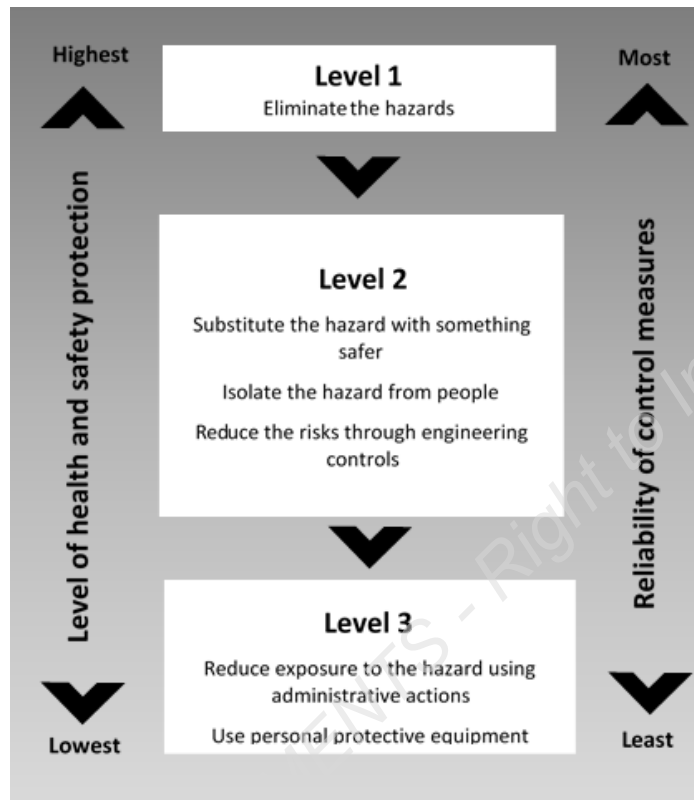


Figure 3. Hierarchy of control

All records are to be retained, archived and disposed of in accordance with the [Public Records Act 2002](#), [Queensland State Archives General Retention and Disposal Schedule for Administrative Records](#) and [QFES Policy 4.5 Records Management](#). Additional guidance is provided in [QFES Procedure PR3107 - WHS Document and Data Control](#).

A copy of this assessment is to be scanned and emailed to [QFES WHS State Unit](#) with the email subject line stating RISK ASSESSMENT.

Document Control (*Safety and Wellbeing Unit internal use only*).

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28/10/2019	Dv0.1	Roxanne Thomas	First draft
11/06/2020	Dv0.2	Teegan Modderman	Review and feedback
03/08/2020	V1.0	Roxanne Thomas	Final
Approvals			
Name		Position	Date
Lyn Richards		Director People Operations Support	29/09/2020