Critical Control Handbook

A quick reference guide to controlling Seqwater's Critical Risks.

Confined Space

Excavation

Cranes & Lifting

Electricity

Hazardous Substances

Fire Fighting

Driving

Working at Heights

Mobile Plant

Hazardous Energy

Violence

Working Outdoors

Working On, In or Near Water

Safe for Life!
Everyday, Always!

seqwater
WATER FOR LIFE

Using this Handbook

What are critical controls?

At Seqwater we have identified 13 'Critical Risks' that have the potential to cause a fatality. A Critical Control is a control that is crucial to preventing this fatality occurring.

How to use this handbook?

This handbook is designed to be a communication tool which outlines the minimum set of safety controls for Seqwater's Critical Risks.

When reviewing the Critical Controls in this handbook note that some critical controls will inform business decisions, such as the procurement of fit for purpose vehicles with 5*ANCAP safety rating, whereas others will need to factored into planning for completing tasks on our worksite.

The critical controls identified in this handbook are applicable to everyone performing work for Seqwater, including our employees and contractors.

This handbook can be used to:

- Develop task specific risk assessments e.g. SWMS and Standard Operating Procedures.
- Review contractor's documentation to ensure minimum standards are included in their risk management documents.
- Support decision making and consistent application of our critical controls.

Further information

Critical Risk		Procedure	Safe Work Method Statements	
	Confined Space	PRO-00443*	RSK-00471	Combined SWMS in excel can be found here RSK-00481 Combined Generic SWMS
	Cranes and Lifting	PRO-00861*	RSK-00472	
	Driving	PRO-01864*	-	
	Electricity – HV Electricity - LV	PRO-00006*	RSK-00473 RSK-00474 RSK-00479	
	Excavation	PRO-00302*	RSK-00475	
	Fire Fighting	PRO-01936*	-	
	Hazardous Energy	PRO-00014*	RSK-00476	
	Hazardous Substance	PRO-00008* PRO-01752*	-	
	Mobile Plant	PRO-00867* PRO-01864*	RSK-00477	
	Violence	-	-	
	Working at heights	PRO-00015*	RSK-00478	
	Working Outdoors	PRO-00018*	-	
	Working on in or near water	PRO-00714* PRO-00865*	RSK-00480	

*Note: hyperlinks in the above table are for internal use only. External users to access procedures via www.seqwater.com.au

If you have any questions about Seqwater's Critical Controls please contact your HSW Partner, HSEQ Advisor, Engaging Officer or email safety@seqwater.com.au.

Safe for Life Commitments

Seqwater's Safe for Life Commitments are a set of behaviours and practices designed to protect our people from common causes of fatalities in the workplace.

The intent of these commitments is to create awareness, focus and a general understanding of what our critical controls are and provide guidance, through examples, of the minimum expectations Seqwater has for all of us.

The Safe for Life Commitments must always be followed by anyone performing work for Seqwater. Our commitments are:

1. I will ensure I am **trained and authorised** before entering a **confined space.**
2. I will always **isolate identified energy sources** and verify zero energy with a **test for dead.**
3. I will always use **fall prevention** if working near **an open edge** or before **working at height.**
4. I will ensure my **equipment is safe for operation**, I am **licenced**, and will operate the equipment **responsibly** and to the **conditions.**
5. I will **never position myself or others** under a **suspended load.**
6. I will **always be authorised** prior to **commencing any excavation works.**
7. I will always be **authorised prior** to **driving on a submerged road.**
8. I will **never tamper** with or disable a **safety device.**

Confined Space

Critical Control – Confined Space	Objective	What could we expect to see?
A safe atmosphere is verified prior to Confined Space entry and continuously monitored with calibrated equipment	To maintain a safe atmosphere in confined spaces where workers are present	• Verified gas monitor by; visual inspection, fresh air test and bump testing • Calibration test tag in date • Testing results included on confined space entry permit • Monitor positioned effectively to detect most probable gas or; • Monitor attached to workers (breathing zone) • Adequate Natural and/or forced ventilation
Isolation of all gases, liquids and solids with potential to enter the Confined Space	To prevent introduction of gases, liquids or solids into confined spaces where workers are present	• Approved Isolation instruction • Isolation hardware / lock board / locks & tags in place • All energy sources de-energised and tested for dead (e.g. pipes usually filled with a substance that could flow into the space are drained down and confirmed empty, flow out of the scour valve ceases) • Workers in the confined space match the confined space permit and isolation instruction • Number of persons in Confined space matches locks and signatures • Inspection to verify adequate condition of any valves preventing ingress of substances into the space - prior to Confined space entry • Valve Caps (position, arrow and/or colour) indicating valve position
Confined Spaces locked and/or secured against inadvertent or unauthorised entry	To prevent inadvertent / unauthorised entry to confined space	• Chains, locks/padlocks on confined space entry points including gates on tanks/basins • No damage to locks/chains/grating/ access points • Locks and padlocks are locked • Bolted blanks on access openings • Access requires a unique tool • Signage
Emergency Response	To safely and efficiently remove workers from the confined space in the event of an emergency	• Rescue plan identifies; suitable retrieval equipment, first aid equipment, • Rehearsed rescue plan • Effective communication available (e.g. mobile phone reception) • Engineered fixed and portable rescue equipment is in place, fit for purpose and maintained

Cranes and Lifting

Critical Control – Cranes & Lifting	Objective	What could we expect to see?
Ground conditions and/or outrigger pads supply suitable footing for mobile cranes	To prevent operation of a crane on unstable ground and resulting loss of control of load or crane	• Even ground / Stable ground • Ground conditions have been assessed prior to any mobile crane lift to ensure there is no potential for the ground undermining, striking of services or underground pits e.g. excavations nearby, water on the ground, pipelines, signs of work/fill, sustained lifts • Test lifts • Where the ground condition is identified to have a risk of collapse or displacement, an engineer has been engaged to assess and confirm that the ground conditions are suitable for the crane.
Cranes are not operated when wind speed exceeds 10m /second (36km/hr)	To prevent operation of a crane in high wind and resulting loss of control of load or crane	• The lifting operation is occurring with the wind indicator showing less than approx. 36km/hr or 10m/sec
No persons positioned under a suspended load	To prevent a person being struck by a falling or suspended load	• No one is under a suspended load • Barricades • Demarcation of exclusion zones • Signage • Spotter
The maximum rated Working Load Limit (WLL) of Cranes & Lifting equipment is not exceeded	To prevent a mechanical failure and resulting loss of control of load or crane/lifting equipment	• The load being lifted is within WLL and radius capacity • WLL displayed / verifiable • Known capacity of crane at operating radius • Known weight of load and lifting equipment • For Critical Lift, lift is executed as per the lift plan • Safety devices and movement limiting devices are never tampered with or overridden
Loads must be rigged, lifted, suspended and moved in a way that ensures that the load remains under control at all times	To prevent the suspended load from falling or shifting	• Tag line being used • Wind speed checked • Test lift • No slings around sharp corners • Reeve angle less than 120 degrees • Rated equipment in test date • Double wrapped chain on metal load • No frayed slings, ropes. • No stretched chains • Hooks around the right way • Clear / planned Lift path for pick and carry operations • Slinging methods used manage any expected dynamic load forces (e.g. wind or sudden crane halt).
All loads must be landed onto an adequate load bearing surface and fundamentally stable before unslinging	To prevent a landed load from movement post lift.	• Hold down straps on items that could roll • Chocks, side bracing in place to hold load • Equipment in place, load destination planned • Even, stable landing pad • Scaffold not overloaded • Consideration of capacity of load bearing surface • Where secondary containment is used internal objects have been secured against movement in transit to prevent uncontrolled movement when the containment is opened.
Cranes that use a workbox to elevate people are fitted with a secondary independent brake to all winches.	To prevent rapid, uncontrolled descent to ground of a workbox elevating people.	• Anti-free fall device / secondary independent brake installed • De-rated capacity considered
Emergency Response	To minimise the impact to human life from an overturned crane or loss of load control.	• Ability to contact emergency services • Ability to confirm location / who is involved • First Aid resources on site

Driving

Critical Control - Driving	Objective	What could we expect to see?
Fit for purpose vehicles for task	To prevent the use of vehicles and mobile plant in unsuitable conditions	• Procurement specifications in place on vehicle • No unauthorised modifications • No overloaded vehicles / plant • No using a 2WD instead of 4WD • No bypass of safety devices • No loose objects in vehicle cabin
Drivers to drive to conditions dictated by load, road, weather, time of day and speed limits.	To ensure drivers comply with road rules and consider dynamic conditions that may affect operation of vehicles	• Licenced driver • Driver not using hand held mobile phone • Compliance with road rules / speed limits • Driver / custodian can describe their obligations e.g. driving to conditions, not driving over 0.05 BAC or drug affected, slowing down for hazards, avoiding or changing travel plans, effect of loads and trailers on vehicle performance, Seqwater policies and procedures
Loads are restrained, positioned and within mass limits in accordance with the Department of Traffic and Main Roads (DTMR) restraining laws	To prevent the loss of control of a load	• Load capacities displayed and observed • Rated tie down equipment • Correct loading and restraint techniques used e.g. Loads over the axle • Loads covered • No bungee / octopus straps • No loose objects in driving cabin • Objects stored behind cargo barriers or in Ute trays / toolboxes / boots
Emergency response	To minimise the impact of interaction with vehicles and mobile plant on human life	• Ability to contact emergency services • Ability to confirm location / who is involved • First Aid kit in vehicles • Logged journey management aligns with IVMS data • Call outs logged
In Vehicle Management System (IVMS) is fully functional for Seqwater vehicles only e.g. roll over alert, head on / major collision alert	To prevent delayed emergency response	• All IVMS functionality is reportable • IVMS in place and operational
Seat Belts must be worn when operating a vehicle	To restrain drivers and passengers in the event of sudden uncontrolled movement	• People wearing seat belts • No seat belts tampered with / damaged • No safety devices overridden • IVMS indicates seat belt worn when vehicle in motion
Functional protections fitted to identified vehicles e.g. , ABS, ROPS, Bull bars	To ensure industry best safety design standards for Seqwater vehicles	• Items fitted to identified vehicles as per procurement specifications • All Seqwater vehicles have 5-star ANCAP rating • ABS, ROPS, FOPS, Bull bars

Electricity – High Voltage

Critical Control – Electricity HV	Objective	What could we expect to see?
Seqwater personnel are not permitted to perform live high voltage work	To prevent Seqwater workers working on Seqwater's live HV equipment / assets e.g. Energex live line work	• No Seqwater workers performing live high voltage work
Emergency Response	To minimise the impact of exposure to electrical energy on human life	• High risk rescue plan in place • 'Danger isolate' here sign in place • First aid resources • Spotter / 2nd person for rescue • Communication for raising the alarm
Isolation of all electrical sources of energy	To ensure all sources of electrical energy have been de-energised, and positively isolated	• De-energise and confirm • Isolate, lock and tag all energy sources • Confirm that stored (capacitors / batteries / back feeds) or secondary power sources are de-energised by testing • HV parts are earthed • Faulty electrical equipment locked/tagged Out of Service
Effective earthing / equipotential bonding	To ensure protective devices operate correctly	• Residual Current Device (RCD) Testing • Checking continuity test results • Preventative maintenance for existing assets • RPEQ sign off
Remote switching	To prevent a worker being in close proximity to a HV arc flash or blast during switching activities	• Remote switching where practicable
Rated electrical PPE is donned and in good condition	To mitigate the effects of exposure to LV/HV electricity and arc flash/blast	• PPE is in date, tested and inspected to verify good condition • CAT 4 bomb suit in test date and in good condition • Rated arc flash gloves in test date and in good condition • Electrically rated safety boots • Rated Gloves insulated to the highest potential voltage expected for the work to be undertaken in test date and in good condition • (if test for dead not occurring check gloves are stored in a manner to prevent damage)
No unauthorised person, plant or equipment is permitted to enter an overhead power exclusion zone	To prevent person, plant or equipment arcing or contacting with live overhead powerlines	• Overhead power is investigated/identified • Consideration of equipment that is unable to enter the exclusion zone at maximum height • Flagging (height delineation/bars, catenary lines) • Danger signage • No person/plant in exclusion zone
Locked switchboard where live parts or public location	Prevent unauthorised persons from accessing live parts	• A lock in place and locked • No open switchboards • Barricades / signage if switchboard being worked on in public • Worker staying with open switchboard in public place
Locked area (room / yard / enclosure) where HV equipment is contained	Prevent unauthorised persons from accessing live parts	• HV room/enclosure locked with SHV lock • Signage and yard fencing • Pad mounted transformer / RMU locked but not mandatorily fenced

Electricity – Low Voltage

Critical Control – Electricity LV	Objective	What could we expect to see?
Emergency Response	To minimise the impact of exposure to electrical energy on human life	• High risk rescue plan in place • 'Danger isolate' here sign in place • LV rescue kit and mat in place • First Aid resources • Rescue plan rehearsed / discussed • Spotter / 2nd person for LV rescue • Comms for raising the alarm
Rated electrical PPE is donned and in good condition	To mitigate the effects of exposure to LV electricity and arc flash/blast	• PPE is in date, tested and inspected to verify good condition Rated Gloves insulated to the highest potential voltage expected for the work to be undertaken, flame retardant clothing, face shield with chin strap, non-conductive footwear • PPE for LV arc flash / blast • Hearing protection, non-conductive footwear. • Other potential PPE e.g. flame retardant clothing, face shield with chin strap, non-conductive footwear.
Isolation of all electrical sources of energy	To ensure all sources of electrical energy have been de-energised, and positively isolated	• De-energise and confirm • Isolate, lock and tag all energy sources • Confirm that stored (capacitors / batteries / back feeds) or secondary power sources are de-energised by testing • Faulty electrical equipment locked/tagged Out of Service
No unauthorised person, plant or equipment is permitted to enter an overhead power exclusion zone	To prevent person, plant or equipment arcing or contacting with live overhead powerlines	• Over/head power is investigated/identified • Consideration of equipment that is unable to enter the exclusion zone at maximum height • Flagging (height delineation/bars, catenary lines) • Danger signage • No person/plant in exclusion zone
Effective earthing / equipotential bonding	To ensure protective devices operate correctly	• Residual Current Device (RCD) Testing • Checking continuity test results • Preventative maintenance for existing assets • RPEQ sign off
Portable electrical equipment and leads must be in good condition (tested and tagged), fit for purpose and protected from exposure to water unless specifically rated for that purpose	To prevent the use of damaged / faulty or non-protected portable electrical equipment	• Extension lead and equipment tested, tagged and in good condition • Hanging poles / stands for leads off ground • No leads / equipment (unless designed) in water • RCD power pack (tested / tagged)
Residual Current Device (RCD)	To mitigate the effects of exposure to LV electricity	• Test / maintenance records / test sticker
Locked switchboard where live parts or public location	Prevent unauthorised persons from accessing live parts	• A lock in place and locked • No open switchboards • Barricades / signage if switchboard being worked on in public • Worker staying with open switchboard in public place

Excavation

Critical Control - Excavation	Objective	What could we expect to see?
Emergency Response	To mitigate the impact on human life of exposure to unsafe conditions during excavation and trenching works	• High risk rescue plan in place for workers entering an excavation deeper than 1.5m • Spotter in place as per the rescue plan • If the mobile plant spotter is the dedicated person, they should have visibility of all persons in the excavation • Rescue equipment in place (as per the rescue plan) e.g. davit arms on shoring box, ladders every 9m, • First aid resources and first aid trained workers in place • Ability to evacuate trench / excavation in case of fast ingress of water
Positively identify all services within planned excavation area.	To prevent mechanical disturbance of known and unknown underground services	• Proof of dial before you dig within the 28 days prior of the commencement of the excavation • Physical inspection of the planned excavation site and surrounding area has been conducted to identify any visual indicators of buried services • GPR/EMF (cable locator) used to verify location of known services within 5m of the planned excavation (Report and drawings available) • Spray paint on ground (colour coded) indicating where service is; depth, direction and Mechanical No Dig Zone • Pot hole markers every five metres (depth and direction) • Excavation permit in place **Further precautions for 'high risk sites'** • Pot hole markers every three metres (depth and direction) • GPR of entire planned excavation **and** • Slit trenches have been dug around the perimeter to the depth of the excavation. • Extra precautions assessed and documented during planning phase if digging deeper than initial slit trench (e.g. further slit trench or GPR/EMF (cable locator)))
Isolate all identified HV electrical, Hazardous substances and High pressure services with potential to encroach within 5m of the planned excavation	To de-energise identified HV, hazardous substance and high pressure services within the planned excavation	• Completed Isolation instruction for HV, Hazardous substances and high-pressure services • Energy Tag and Lockout hardware in place • Approved exemption for non-isolated HV, Haz subs or high pressure • HV (Voltages in excess of 1000 volts AC or 1500 volts ripple-free DC) • Hazardous Chemicals - Liquid/solids and gases labelled as per Hazardous Substance Procedure including Asbestos and Silica Dust • **High pressure underground service - 6 Bar / 600kpa / 87 psi**
Minimum separation distances are maintained from all underground services	To prevent contact with known services within the planned excavation	• A dedicated spotter must be used when performing mechanical excavation on a brownfield site. • 500mm separation from known live high-risk services (**if operating under an exemption from ET-CC-03 - Isolation**) • 300mm separation from known isolated high-risk services and live LV electricity. • 300/500mm delineation marking lines both sides centre of service (demarcation of no dig zone)
Excavations >1.5m are benched, battered, shored or verified stable	To prevent excavation collapse	• If excavation creates a fall risk of more than 1.5 metres, benching (1:1 ratio & not exceeding 1.5 metres), battering (not exceeding a slope of less than 45 degrees) or shoring in place • If not in place or to the requirements above, need to see the Registered Professional Engineer Queensland (RPEQ) certificate that says we do not need to apply the critical control • If conditions have changes the RPEQ report must have been recertified
Heavy loads and machinery are stable and positioned outside the 'zone of influence' of the excavation	To prevent loads or machines falling into an excavation	• 'Zone of influence' where the minimum set back distance is at least equal to the depth of the excavation. • Set back distances in place • No loads on zone of influence unless a shoring box is in place • Battered sides of trenches and excavations

Excavation

Critical Control - Excavation	Objective	What could we expect to see?
		• Excavations are clear of persons when there is risk of plant or loads falling into the excavation (no persons in the line of fire)
No persons "In the firing line" of mobile plant	To prevent mobile plant from striking a person	• Spotter in place using positive communication with the machine operator • Bucket grounded and control de-activated before person enters the slew radius exclusion zone • No person in the slew radius exclusion zone during operation • Exemption for workers protected by the sides/wall of a trench or excavation • Persons positioned in an excavation/trench must adopt a position of safety clear of operating machines
Barricading of excavations that create a fall risk.	To prevent a person from falling into an open excavation	• If excavation creates a fall risk of more than 1.5 metres, either hard barricading on the edge of excavation OR soft barricading at least 2 metres from the edge of the excavation • sign(s) that say "DANGER DEEP" Excavation that warn people approaching the excavation • No person putting themselves at risk of falling more than 1.5 metres (including spotters)

Fire Fighting

Critical Control – Fire Fighting	Objective	What could we expect to see?
Retreat from / do not enter the areas of excessive heat and smoke	To prevent exposure to fire/heat beyond PPE capabilities	• Safety zone / smoke refuge in place • Noxious / thick smoke and low visibility triggers retreat • Effective comms in place • Incident controllers and sector leaders giving clear instructions • RPE breakthrough (smell) may trigger retreat • No frontal attack - flank only • Radiant heat triggers retreat • IC SL issuing clear instructions • Identified Safety Zones E.g. Fire breaks, fuel reduced area, previously burned, vehicle refuge • Updated maps of the area • Pre-activity briefing • Blacked out areas (pre-burnt areas) • People are using safety zones (e.g. working off the fire break) • Maintenance of fire breaks • Clear / effective refuge area identified for re group / evacuation • Fire breaks prepped and checked for hazardous trees
Communication e.g. pre-activity briefing, 2way radios, phones	To update workers on conditions and provide emergency instructions	• Pre-activity briefing (SMEAC) to all workers involved (post briefing arrivals report to IC prior to work) • Communications check / test • Every vehicle is equipped with mounted internal GWN radio • Minimum of GWN radio per Crew (of 2) with leader • Radio technique - clear, concise
Firefighting PPE / RPE is fit for purpose, donned and in good condition	To create a protective barrier between the worker and excessive fire, heat and smoke	• Workers have PPE, RPE in good condition, pre-inspected for no tears or major wear and tear • RPE and PPE donned correctly (fit tested) • RPE/PPE clean and in serviceable condition and within defined expiration date • Rated clothing, fire rated helmet with face shield, fire rated boots / gloves • Under garments for radiant heat protection • RPE/PPE stored to prevent damage and prolong effectiveness • Critical spares available • Rated high visibility clothing, helmet with face shield, fire rated boots / gloves • Australian Standard type 3 bush firefighting helmet (wildland Australian Standard for firefighting) and visor and in good condition • Fully serviceable (parts replaced if required) • Chin straps secured • Spare helmets available
Access controls - Closed trails / rec areas - signage on entry points - locked gates	To prevent unauthorised access to a fire ground	**Planned burn**; • signage (in place prior), locked gates, comms in place prior - min 72hr (e.g. website advisories), blanket mailout, letter box drop • Pre-burn inspection of trails (reccy) • Closed trails. Locked gates. • Cease operations if persons observed in restricted area **Bushfire / unplanned burn**; • Staffed gates / traffic control • Bushfire messaging/comms • Closed rec areas /lakes for water filling activities • IC / SL instructions

Fire Fighting

Critical Control – Fire Fighting	Objective	What could we expect to see?
Prior to planned burns - Identify and remove or control Unexploded Ordinance (UXO) and other objects that may explode.	To prevent explosion of built objects on a planned burn	• Identification activities for UXO • Do not enter known areas of UXO (unless clearance activity has occurred) • Investigate clearance viability of known areas of UXO • Pre-burn briefing includes UXO • Burn methodology impacted by potential of UXO • Bushfire comms to include UXO
Manage' high risk trees prior to or during planned burns or bushfire response. E.g. Reduce fuel load at tree base, clearing, felling	To prevent known high risk trees from falling during a planned burn	• Prepped base of high-risk trees / habitat trees • Removal of high-risk trees where identified • Burn away from high risk / habitat trees • Stop personnel from entering high risk tree fall zones • Delineation, Flagging • Flagging tape on identified hazardous / habitat trees • No one in the drop zone of high-risk trees • No lingering in proximity of flagged trees • Flagging colour protocols
No persons in the firing line of mobile plant	To prevent interactions between people and plant	• Engaged contractor for mobile plant to include allocated spotter and escort vehicle (for refuge) • Mobile plant and escort vehicle to be equipped with fire blanket • Spotter and mobile plant operator to don minimum PPE; fire rated hi-vis clothing and type 3 helmet. • Mobile plant operator and spotter to have minimum 1 GWN radio • Undistracted spotter - no mobile phone use during operation • Audible reverse alarms on all mobile plant i.e. bull dozers
Fit for purpose fire vehicle	To ensure vehicles have all identified capabilities	• Designated fire vehicles • Removable fuel containers on designated fire vehicles • Vehicle mounted overhead lights flashing on the fire ground • Hazard lights and headlights on • Standardised configuration - front indicators and front and rear bombers (as per fire vehicle fleet specs) • Falling Object Protection (FOPS) on all fire vehicles and mobile plant
Emergency response	To mitigate the effects of exposure to excessive heat, smoke or falling / moving objects	• First aid kits and trained workers are on site

Hazardous Energy

Critical Control – Hazardous Energy	Objective	What could we expect to see?
Guarding and screens e.g. permanently fixed, an interlocked guard, self-closing	To prevent a worker contacting moving parts of operating fixed plant / equipment	• Guarding or screen in place that prevents body to plant interaction e.g. pump coupling (guarded) • Guarding that when it is not in place, prevents operation of plant (e.g. interlock)
Isolation	To prevent de-energised fixed plant / equipment from becoming energised or inadvertently operated	• Isolation Instruction / P&ID • Physical Locks / cables / blanking plate in place with isolation tags in place • Lock board with personal or out of service lock(s) • Plant or equipment de-energisation • Lines depressurised • Test for Dead documented and verified as effective • Valve Caps (position, arrow and/or colour) indicating valve position
Exclusion zone	To prevent a worker entering an area where moving parts of operating plant or ejected parts of failed plant may strike them.	• Persons are not inside the exclusion zone • Physical barrier / Painted or line marking / Cones or bollards to identify exclusion zone • Signage • Spotter / safety observer in place to prevent access (controlled access) where a physical barrier is not in place (exclusion zone not applicable if the moving parts of the machine are encapsulated as part of the operating design)
Physical barrier e.g. screens, curtains, cages or walls	To prevent a worker being struck by operating fixed plant or moving object	• Signage • Mesh / Perspex screening • Cage • Noise dampening system • Dedicated rooms to isolate plant • double encapsulate e.g. dosing lines • Implemented based on the failure modes of the asset
Emergency Response	To minimise the impact of interaction with hazardous energy on human life	• **E-stops** - fully operational, signed, easy to access, clearly visible e.g. Red button / Pull Cables • Emergency scenarios / Evacuation Drill • First aid kit • Communication e.g. GWN radio, mobile phone • Documented / tested emergency / rescue planning e.g. emergency contacts, physical site address, GPS location
Critical controls below duplicated from Electricity Critical Risk		
Portable electrical equipment and leads must be in good condition (tested and tagged), fit for purpose and protected from exposure to water unless specifically rated for that purpose	To prevent the use of damaged / faulty or non-protected portable electrical equipment	• Extension lead and equipment tested, tagged and in good condition • Hanging poles / stands for leads off ground • No leads / equipment (unless designed) in water • RCD power pack (tested / tagged)
Residual Current Device (RCD)	To mitigate the effects of exposure to LV electricity	• Test / maintenance records / test sticker

Hazardous Substance

Critical Control – Hazardous Substances	Objective	What could we expect to see?
Storage facilities are constructed to store and handle hazardous substances effectively.	To ensure plant and equipment used for the storage and handling, effectively contains hazardous substances	• Storage vessel complies with Australian Standard • Plinth • Bunding capacity 110% of vessel capacity • Racking is locked • Container material compliant • Location on site e.g. proximity to boundary • Location for delivery • Complies with Safety Data Sheet (SDS) • Trafficable areas of bulk delivery have highlighted bollards that protect storage facility • Fences to keep out public • Level sensors in situ and working • Overfill alarm working • Auto power shut off / interlock • Supervisory control and data acquisition (SCADA) event log • Doors opened for determined time before entry (e.g. Chlorine) • High Efficiency Particulate Air (HEPA) / water filters in Fluoride extraction systems
Segregation of incompatible chemicals	To prevent the interaction of incompatible chemicals and the inadvertent exposure of workers to hazardous substances	• Cabinets in place for flammable / corrosive • Chemalert report for incompatibility • Physical separation e.g. walls, gaps • Signage 'hazardous chemical' • Segregation complies with SDS • Pipework labelled correctly (Globally Harmonized System (GHS) / Australian Standard (AS)) colour, direction of flow, name of chemical • All storage tanks correctly labelled (GHS) (with substance within) • Storage building / area signed/placard displayed (GHS) • Pipework can be followed from storage to handling area • All lab containers labelled (hazardous or not) • Fill point labelled and verified as correct by site representative before unloading • Valves in correct position to receive chemical • Locked out fill points when not in use (SCADA or hard lock) • Site access controls to manage chemical deliveries
Transport of hazardous substance in accordance with Australian Dangerous Goods (ADG) and hazardous substances requirements	To prevent loss of control of a load containing hazardous substances	• labelling on containers • delivery vehicle compliant (ADG placarding) • ADG licence • Chemical receipt / checklists • Seqwater internal transport maximum 500L/kg • SDS attached / accessible for each chemical
Hazardous substances are disposed of according to the requirements of the Safety Data Sheet and legislation	To ensure hazardous substances are rendered nonhazardous and/or disposed of according to legislation / SDS	• Specialist disposal contractors accredited / licenced as required e.g. Asbestos, regulated waste • Comply with Seqwater disposal procedure • Records kept of disposal • Cyanide waste collected, decomposed and disposed of as per procedure

Hazardous Substance

Critical Control – Hazardous Substances	Objective	What could we expect to see?
Emergency Response	To mitigate the impact of loss of containment of hazardous substances on human life	• Bund alarms • Alarms, evacuation - EWIS, muster point, wardens, first aiders, first aid kits, • Communications - emergency services • Refer to SDS / Incident an Emergency Response Plan (IERP) • Wind sock • Safety showers / eyewash station functional and readily accessible • Access to Diphoterine as required • Fixed atmospheric monitoring and alarms in place and effective for Chlorine and Ammonia installations • Fire suppression gas verified as non-lethal (survivable) • Ventilation sufficient to prevent the atmosphere of a workplace from exceeding the Workplace Exposure Standard (WES) • Fire protection, firefighting equipment in situ
Established explosive 'hazardous areas'	To identify potentially explosive atmospheres and prevent ignition sources therein	• Dossier in place • Signage 'hazardous area' • Site security • Identified into site WHS hazard register
Physical barriers e.g. Chemical screens, double encapsulation	To mitigate the impact of loss of containment of hazardous substances on human life	• Fume cupboard sash barrier • Dosing skid Perspex screens • Labelled pipe in pipe • Chemical curtain containing potential spray leaks
Encapsulate friable Asbestos Containing Materials (ACM) to minimise inhalation exposure	To mitigate the impact of loss of containment of ACM on human life	• Wet or painted ACM surfaces • Labelling on ACM • Asbestos registers on all sites where ACM exists
Silica dust controls in place and effective	To prevent exposure to Silica Dust	• Fit tested Respiratory Protective Equipment (RPE) worn • Wet down methods used • Dust extraction of cutting tools
Personal protective equipment (PPE) - Respiratory Protective Equipment (RPE) - Chemical overalls / apron - Gloves - Eye goggles (Chemically rated) - Face Shield - Safety glasses - Chemical Resistant footwear	To mitigate the impact of loss of containment of hazardous substances on human life	• Self-Contained Breathing Apparatus (SCBA) • Respiratory Protective Equipment (RPE) • Use of; overalls, goggles, gloves, face shields, aprons, rubber boots, safety glasses • Complies with SDS • Signage

Mobile Plant

Critical Control – Mobile Plant	Objective	What could we expect to see?
Fit for purpose mobile plant	To prevent the use of mobile plant; in unsuitable conditions or outside its operational limits	• Procurement specifications in place • No unauthorised modifications • No overloaded plant • No bypass of safety devices • Guarding in place • No loose objects in vehicle cabin
All roadside work has controls implemented as per requirements in the 'Manual of uniform traffic control devices' (MUTCD-Part 3) e.g. Physical barriers, buffer zones, traffic control	To prevent interaction between mobile plant and pedestrians	• Warning signage • Flashing lights on stopped roadside vehicles • Traffic Management Plan (TMP) • Physical barriers in place (of adequate strength / structure) e.g. fencing/gates (photos of examples) • No persons behind barriers
Emergency response	To minimise the impact of interaction with vehicles and mobile plant on human life	• Ability to contact emergency services • Ability to confirm location / who is involved • First Aid kit in vehicles
No persons "In the firing line" of mobile plant	To prevent interaction between mobile plant and pedestrians	• No persons in 'the line of fire' • Well maintained clear areas where plant is used • Well defined marking / delineation of permanent exclusion zones • Spotter when identified • No persons within 3m of operating mobile plant • Delineated walkways and pedestrian crossings • People using the walkways and crossing (no shortcutting • No worn short cut paths
Mobile Plant operated to conditions, manufacturer's instructions and within specified limits	To ensure mobile plant is operated to conditions and manufacturer's instructions / limits	• Operators have considered dynamic conditions that may affect operation of mobile plant • Mobile plant operated within manufacturers specifications and limits • Mobile plant custodians and operators must comply with all Seqwater policies and procedures • No public complaints • No damage visible
Critical controls below duplicated from Working on, in or near water Risk		
Mobile plant in proximity to water is operated to conditions and manufacturers specifications	To prevent mobile plant interaction with water	• Mobile plant operated in accordance with speed limits and conditions • Slope, proximity to water and ground conditions assessed • Mobile plant is fit for purpose and operated within manufacturers specifications • Spotter when risk of mobile plant interacting with water • Undistracted spotter (no mobile phone)

Violence

Critical Control – Violence	Objective	What could we expect to see?
Security gates / alarms, restricted access e.g. locked doors/gates, swipe card	To prevent unauthorised access to Seqwater work sites	• Working gates, not chocked open, no dummy locks, no tail gating (vehicle or person) • No damaged fences • No chocking swipe card access (over riding / tampering with switches) • Signed in guests, visitor tags/lanyards • Exit interview retrieves keys, swipe cards from workers
De-escalate the confrontation	To prevent a verbal confrontation from becoming physical	• Explanation from identified and trained workers of how they would attempt to de-escalate a confrontation
Do not attend properties of known aggressive members of the public or land holders without police escort	To prevent uncontrolled interactions with known aggressive members of the public or land holders	• List of individuals and properties known to Seqwater • No persons attending based on list • Workers know how to access list and organise police escort • Use of letter, phone, email or remote engagement instead of face to face interaction
Minimum of 2 workers when working with the public at identified high risk sites e.g. compliance activities, visiting private property, community events	To prevent uncontrolled interactions with known aggressive members of the public or land holders	Minimum of 2 workers for; • Compliance activities • Visiting private property • Community event • Register of High-risk areas/sites
Emergency response	To minimise human harm caused by exposure to human violence	• Mobile phones / communication device with service • Knowledge of numbers to call to raise alarm • First aid kits, trained workers in place and available • Teams of 2 or more workers for identified work with a risk of violence • Assessment of identified work • Journey monitoring / welfare check after 2 hrs

Working at heights

Critical Control – Working at Heights	Objective	What could we expect to see?
Emergency Response	To minimise the impact of a fall from height or falling object on human life	• Rescue plan completed; • Diagram / explanation of rescue responsibilities • GPS co-ordinators • Rehearsal of rescue plan • Rescue equipment (tripod, winches, harness, first aid kit, communication device) in place
Stable ground conditions for portable working platforms and ladders	To prevent uncontrolled movement of a portable platform or ladder	• Stable, even and clean surface • Ground conditions suitable • Use of boards/stabilising equipment • Check for pits / holes in the ground
Grid Mesh and flooring is securely fastened	To prevent uncontrolled movement of grid mesh and flooring	• Support clamps / welded / in place
Exclusion zone (Drop Zone)	To prevent workers being exposed to falling objects	• Clear barrier system in place • Signage, expanding barriers, tape, barrier mesh, • Spotter in place to control exclusion zone • No persons in exclusion zone • Only take essential tools to height • Use of tool bag • Tidy work area, clean as you go • Tools are tethered where practicable • Helmets (in expiry date) worn • Helmets are worn in Elevated Work Platforms • Chin straps used when person or helmet could fall
Secured work site	To prevent 3rd party exposure to falling objects	• Clear delineation of work site • Fencing (temporary/permanent), locked gates, signage • Spotter for high risk sites
Edge protection; including guardrails and fixed or portable barriers, are of sufficient height and strength	To prevent exposure to an unprotected edge at height	• No workers closer than 2m to an unprotected edge • Secure edge protection of sufficient height and strength to prevent a fall • Fit for purpose edge protection that meets requirements • Gates self-closing and inward opening • Other than arms, a worker's body mass is behind edge protection • No workers leaning outside work platform / workbox • No workers standing on Elevated Work Platform / workbox / Scaffold rungs • 100% connection / tie off to transfer from Elevated Work Platform to roof or other structure at height • Secure toe boards in place, well maintained and effective • Scaffold tag in date / handover certificate for all scaffold
All fall restraint and arrest systems must be designed, installed, operated and maintained in accordance with the manufacturer's instructions and appropriately selected for the task	To prevent equipment failure and incorrect use of fall restraint and arrest systems	• Current test tag • Fit for purpose equipment, in good condition, inspected before use (no damage, no fall indicator exposed) • Worker wearing harness correctly adjusted to fit • Full body harnesses that incorporates shock absorbing lanyards or inertia reels. • Anti-trauma leg strap pouches (X2) attached to harness • Worker connected to the certified anchor point • Worker continuously connected to fall restraint • Use of secondary connection when transferring from one system to another (e.g. double lanyards)
Spotter in place for mobile plant used as a working platform	To prevent uncontrolled movement or impact of mobile plant used as a working platform	• Dedicated spotter in place • No use of mobile phones or electronic devices that may distract • Operators of mobile plant are focused on the primary task

Working at heights

Critical Control – Working at heights	Objective	What could we expect to see?
Secondary protection Device on Elevated Work Platforms (EWP's)	To prevent accidental activation of EWP control levers and/or to supply a safe zone to prevent crush injuries	• Protective structures: a device attached or fixed to the existing guardrails that provides a protective barrier around the operator • Sensing devices: a device activated by force or pressure that stops the movement of the EWP to minimise harm. *Seqwater Exemptions managed by 'FRM-00795 HSWMS deviation approval form' (Endorsed by HSW Manager and relevant GM approval)
Do not access fragile roof areas	To prevent worker access to fragile roof areas	• Access points (cage/gate) locked out / danger tagged • Delineated walkways on fragile roof

Working Outdoors

Critical Control – Working Outdoors	Objective	What could we expect to see?
Wear and maintain appropriate personal protective equipment	To create a protective barrier between the worker and hazardous flora/fauna	• Take 5 to determine PPE • Broad brim hat to protect against sun • Long pants and safety boots in long grass (consideration of gaiters) • Gloves to protect against spiders, snakes
Removal of identified high risk tree/s in rec areas and high use areas	To eliminate the identified hazard of a falling tree	• Removal of high-risk trees as per plan • Tree risk surveys scheduled and conducted • List of identified high risk trees • Temporary exclusion zones around identified high risk trees in rec areas and high use areas • Fencing, barrier mesh, delineation of area • Closure of rec area (where identified)
Do not work outdoors in extreme heat without planned access to hydration, breaks and shade	To prevent heat stress/illness	• No persons working outdoors in extreme heat without planned access to hydration, breaks and shade • Water available • Long sleeves, pants, broad brim hats • Shade (fixed or temporary available including boat canopies) • Roster of task rotation / breaks and persons complying • If possible cancel work outdoors in extreme heat
Emergency response	To minimise human harm caused by exposure to hazardous flora / fauna and/or environmental conditions	• Mobile phones / communication device with service • Knowledge of numbers to call to raise alarm • First aid kits, trained workers in place and available • Ability to contact and request specialist rescuers • Specialist emergency assistance rather than attempt rescue themselves e.g. technical ropes rescue, swift water rescue, SES • Teams of 2 or more for identified work activities • Assessment of identified work

Working on, in, or near water

Critical Control – Working, on, in or near water	Objective	What could we expect to see?
Fit for purpose vessels / kayaks	To ensure selection and procurement of fit for purpose and compliant vessels including kayaks	• Maintenance records • Pre-start inspection records No damage visible • Tag and Lock out of service of unfit vessels • Vessel log books • Vessel survey compliance as per schedule • MSQ audit records
Emergency response	To minimise human harm caused by unplanned partial or full submersion of a worker in water	• Mobile phones / communication device with service • Knowledge of numbers to call to raise alarm • First aid kits, trained workers in place and available • Teams of 2 or more workers for identified work assessed as having a risk of exposure to water e.g. working near an unprotected edge (Workers should remain within sight and sound of each other at all times) • A safe means of egress or retrieval from water must be readily available at work areas where there is a risk a person could fall into water • Floatation device / life ring clearly visible and maintained • Rescue coit • Ladder / rope / netting • Identification of areas of egress from natural water body • A Life Jacket / Swift Water Jacket must be worn at all times when onboard a water craft or when working within 2m of an unprotected edge where a worker could reasonably drown. • 150kn lift for life jackets **Swift Water Rescue;** • 'Swift water first responder' training for any workers who may be required to work near Swift water, this will include the worker being able to self-rescue • Equipment (swift water jacket, throw ropes, suitable footwear, helmets of required) • Trained workers in place (TNA in place for identified workers) • Demonstrated knowledge / explanation of swift water rescue technique
Edge protection is in place on built structures where required e.g. handrails and/or guardrails, fixed grid mesh	To prevent a fall to water from a built structure	• Edge protection in place and complying with relevant standards • No damaged edge protection (e.g. flood damage, rust • Break away edge protection has been replaced • Grid mesh / flooring secured in place
No person positioned closer than 2m to an unprotected edge where there is a risk of drowning; - over / near swift water - over / near a body of water unless wearing a Life / Swift Water Jacket or fall arrest/restraint device	To prevent a fall to water Risk of drowning focus; - Falling into water and drowning (including aerated water / liquid) - Being swept away by fast moving water and being injured or drowning. - Being trapped under water by equipment or objects and drowning.	• No persons closer than 2m to unprotected edge without; • Life / Swift water jacket donned • Fall arrest / restraint system • Signage warning of 'Aerated water/liquid' • Handrail / edge protection in place • No persons working within 2m of any aerated tank without a barrier or fall restraint • No persons in water where it is or is likely to be deeper than 1m and where the water speed is more than 0.5m/s
Vessels are operated to conditions and manufacturers specifications	To prevent unsafe use of vessels	• Vessels operated in accordance with speed limits and conditions e.g. fog, wind • daytime operation of vessels only • Operating within manufacturer's instructions and specified limits
No persons or vessels in an exclusion zone around a spillway when dam is spilling	To prevent a vessel being swept over a spillway	• Clearly identified exclusion zones (buoy line and signage visible) • No vessels downstream of buoy line when dam is spilling
Mobile plant in proximity to water is operated to conditions and manufacturers specifications	To prevent mobile plant interaction with water	• Mobile plant operated in accordance with speed limits and conditions • Slope, proximity to water and ground conditions assessed • Mobile plant is fit for purpose and operated within manufacturers specifications • Spotter when risk of mobile plant interacting with water

Critical Control – Working, on, in or near water	Objective	What could we expect to see?
		• Undistracted spotter (no mobile phone)
No vehicles to drive on a submerged road (unless authorised and exempt)	To prevent vehicles being inundated and swept away by moving water	**No persons driving over submerged roads unless;** • the depth of water is less than 150 mm (around the height of the tyre of the vehicle) and • the water is still, or the flow is less than 0.5 m/s and • the end of the crossing is visible and there are no signs of erosion or instability of the road base and • there is no potential for a sudden increase in the depth or velocity of water Assessment conducted / exemption form • Drivers not crossing submerged roads • Selection and use of fit for purpose vehicles • High clearance, 4WD vehicles in use to cross water bodies • No small 2WD's crossing water
Seqwater personnel are not permitted to perform diving work	To ensure diving work at Seqwater is only performed by specialist contractors	• No Seqwater workers conducting diving work • Diving work at Seqwater is only performed by specialist contractors • Diving work must be performed in accordance with all legal requirements and applicable standards and codes.