



Mud Safety and Rescue

Learning outcomes and key teaching points



About Rescue 3 Europe

Rescue 3 Europe develops state of the art technical rescue courses, providing internationally recognised accreditation for organisations and individuals operating in high risk environments.

As an international accrediting body, Rescue 3 provide up to date best practice guidance that is constantly evolving in line with new research and testing. All changes and developments of Rescue 3 courses go through a process of peer review and oversight by a steering committee made up of industry experts from all over the world.

Rescue 3 training providers deliver courses worldwide, in multiple disciplines, including: rope, water, boat, ice and confined space rescue. Our large suite of courses have been adopted by mountain rescue teams, wind turbine operators, fire and rescue services, ambulance teams, utilities providers, and military personnel.

Within each discipline, Rescue 3 accredited courses cover every level of operations, whether this is at an awareness level, avoiding risks and applying simple safe systems of work; or at more advanced levels where practitioners must acquire high levels of personal skills and understanding to access and navigate difficult environments.

For over four decades Rescue 3 has provided the standard for technical rescue training, offering guidance and support for maintaining best practice.





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Mud Safety (MS)

Course overview and target audience

The Mud Safety and Rescue course is for people who operate on/near mud, and for small teams with minimal equipment.

Contact hours 6 hours (1 days)	Prerequisites Minimum age: 18
Qualification valid for 3 years	Accredited by Rescue 3 Europe

Taught by

- Mud Safety and Rescue Instructor (MSRI)
- Swiftwater and Flood Rescue Technician Instructor (SRTI), who has also completed the Mud Safety and Rescue (MSR) course.

Assessment

The assessed elements of this course are:

- Foundation knowledge
- Co-worker conditional rescues from mud (reach tools)



Mud Safety (MS) skill sheet contents

Theory	
1. Rescue 3 philosophy	
2. Training standards	
3. Pre-planning for emergencies	
4. Mud hazards	
5. Personal protective equipment for working on/near mud	
6. Work team mud equipment	
7. Incident size-up	
8. Communications	
9. Medical and decontamination considerations for mud	
10. Tidal considerations	
Practical	
11. Use of expandable mud boots	
12. Use of wading poles or walking poles on mud	
13. Self-rescue techniques from mud	
14. Co-worker conditional rescues from mud (reach tools)	
15. Co-worker conditional rescues from mud (throwbags)	

MS



Mud Safety (MS)

learning outcomes and key teaching points

	Skill sheet element		Learning outcome	Key teaching points
1	Rescue 3 philosophy	1.1	Recall the steps required in order to develop competence.	Training, practice, experience, judgement.
		1.2	Explain the order of priorities at the scene of an ice rescue.	Self > team > victim.
2	Training standards	2.1	Recognise the different training courses within the Rescue 3 scheme.	Industry level courses, water rescue courses, boat rescue courses, rope rescue courses, confined space rescue courses, ice rescue courses.
		2.2	Recall the remit and role of an individual trained to this level.	Mud Safety remit and role. The Mud Safety course is people who operate on/near mud, and for small teams with minimal equipment.
		2.3	Recall other national and international standards.	Rescue 3 courses which do and don't coincide with other standards such as Defra, NFPA, applicable local standards.
		2.4	State how the Rescue 3 scheme fits within agency policy and agency standard operating guidelines.	Agency policy and agency standard operating guidelines.
3	Pre-planning for emergencies	3.1	Recall what information a worker will need to know when pre-planning for emergencies when working near/on mud.	What will happen if a worker gets stuck? Who's going to rescue them/me? Alerting emergency services. Co-worker rescue capability, including training, pre-positioning and access to rescue tools. Immersion considerations - packaging eg survival bag, change of clothes. Decontamination. Time-critical? Eg, incoming tide.



	Skill sheet element		Learning outcome	Key teaching points
4	Mud hazards	4.1	Recall hazards when operating in/near mud.	Entrapment, drowning, infection, tides, terrain and environmental factors, fatigue/physical demands of moving through mud.
		4.2	Recall suitable control measures for operating in/near mud.	Zoning, PPE, access to mud equipment, training, decontamination, information sources including tide tables. Scene size-up and keeping an incident commander/other people out of or off the mud for a backup plan.
		4.3	Recall additional hazards and control measures for operating in/near mud during night/poor visibility operations.	Distance/perception, route finding, route marking etc. Suitable scene, task and personal lighting.
		4.4	Recall additional hazards and control measures of lone or remote working near mud.	Lone working on or near mud is not considered best practice. Potential for incident/accident to occur without anyone else being aware, or able to access in time. Risk assessment highlighting areas where there is a potential for getting stuck, and thus should not be entered. Phone/radio signal. Use of satellite communicators? Regular contact, including checking in at designated times. Confirm when work is finished and they have left the work/risk area. Training level of lone/remote workers, to identify hazards and keep themselves safe. PPE, work equipment, first aid equipment and emergency equipment available. Monitoring and communicating changing conditions, eg weather, water levels.



	Skill sheet element		Learning outcome	Key teaching points
5	Personal protective equipment for working on/near mud	5.1	Identify PPE used for working on/near mud.	Comparison of PPE for intentional vs unintentional entry into mud. Consideration of working areas (including access/egress), and possible changing conditions (eg tidal conditions). Consideration for full water-based PPE, such as drysuits, boots, buoyancy aid, helmets, throwbag, gloves, reach pole, expandable mud boots (aka mudders), visor, glasses. Consideration for other PPE that may be worn when working near mud, eg wellies, waders, and other outdoor clothing. Necessity for drysuits, boots, buoyancy aid, during training due to intentional entry, plus other PPE that may be dictated by the venue.
6	Work team mud equipment	6.1	Select the correct application for work equipment used when working on/near mud.	Karabiners, construction and loading. Pros and cons of locking and non locking karabiners in mud rescue, eg screwgates becoming clogged. How to use two wiregates to create a solid attachment (gates opposite and opposed) Rescue pulleys. Webbing. Types of rope. Rescue slings. Reach poles.
		6.2	Recall post-use care and inspection for work equipment used on/near mud.	How to maintain and inspect equipment. Equipment life-cycles in mud compared to water.



	Skill sheet element		Learning outcome	Key teaching points
7	Incident size-up	7.1	Demonstrate use of size-up models.	CHALET or METHANE.
		7.2	Explain the phases of a successful rescue.	Locate. Access. Stabilise. Transport.
		7.3	Perform an on-site safety brief based on risk assessments.	Highlight relevant hazards that will affect the rescue.
		7.4	List rescue options.	Conditional such as; talk, reach or throw. True such as; contact rescue.
		7.5	Explain the difference between true and conditional rescues.	Ability of casualty to participate: can = conditional, cannot = true.
		7.6	Select an appropriate plan of action for a given incident.	Decision-making models.
8	Communications	8.1	Recognise hand signals that can be used in a mud environment.	OK, help, stop, direction, medical assistance. Considerations for communicating over long distance. Considerations for upstream and downstream signals (eg coastal estuary or inland river mud).
		8.2	Recognise whistle signals that can be used in a mud environment.	Stop/attention, distress. Considerations for communicating over long distance. Considerations for upstream and downstream signals (eg coastal estuary or inland river mud).
		8.3	Identify other methods of communication and their limitations.	Radios, mobile telephones, battery life, water resistance, signal strength.
9	Medical and decontamination considerations for mud	9.1	Identify signs/symptoms and treatment for common medical issues found in a mud environment.	Hypothermia, hyperthermia, drowning, infection/contamination, hydrostatic squeeze.
		9.2	Recall the importance of minimising exposure to mud and decontamination procedures post-exposure.	Decontamination, including brush and hose to clean initially, before use of decontamination spray. Hand wipes, face wipes. Consideration for how viscous/sticky the mud is, and how much harder than decontamination in water rescue.



	Skill sheet element		Learning outcome	Key teaching points
10	Tidal considerations	10.1	Recall hazards of working in tidal areas (eg estuary mud flats).	Changes in water level, changes in mud viscosity, loss of access/egress, change of flow direction.
		10.2	Recall key information about tides, and sources of information.	Tide tables to identify changing times of high water and low water, spring and neap tides. Use of rule of twelfths and rule of thirds to predict height and speed of incoming/outgoing tide.
		10.3	Relate tide times to work plans.	Work on tidal mud is typically done on a falling tide. Tidal changes create an added time pressure to working on mud, given the fixed timescale.
11	Use of expandable mud boots	11.1	Demonstrate safe walking techniques using expandable mud boots (aka mudders).	Putting on mudders(including difficulties if mudders are already covered in mud). Walking technique necessary due to expandable nature. Importance of balance and potential for each step to display a different level of support. Limitations.
12	Use of wading poles or walking poles on mud	12.1	Demonstrate use of walking or wading/reach pole for support.	Probability of it sinking. Ability for it to still provide support and prevent a fall. Possible attachment of basket (similar to ski pole) or float to prevent sinking of pole.
13	Self-rescue techniques from mud	13.1	Demonstrate self-rescue techniques and moving over mud without the use of expanding boots or other equipment.	When sinking, sit down and spread weight, rather than continuing to move feet. Remove any backpack (eg work equipment) to reduce weight. Avoid putting too much weight on any one limb. Go back out the way you came where possible. Comparison of techniques - shuffling backwards on bum, or 'commando crawl' action that spreads weight over a large surface area. Do not try to stand before you are on solid ground.



	Skill sheet element		Learning outcome	Key teaching points
14	Co-worker conditional rescues from mud (reach tools)	14.1	Identify conditional co-worker rescue options from mud and the limitations of conditional rescues.	Talk. Reach. Throw. Casualty participation required.
		14.2	Identify appropriate sites when conditional rescues can be performed from mud.	Physical obstructions in mud. Bank hazards. Distance to casualty, in relation to tool used and position of rescuer.
		14.3	Identify, check and prepare suitable equipment for performing a conditional co-worker rescue from mud using a reach tool.	Reach poles, walking poles, branches etc.
		14.4	Perform a conditional co-worker rescue from mud using a reach tool.	Practical rescue of co-worker from mud using reach tool, eg reach pole.
15	Co-worker conditional rescues from mud (throwbags)	15.1	Identify, check and prepare suitable equipment for performing a conditional rescue from mud using a throwbag.	Throwbag. Considerations for using buoyant object, eg life ring or float attached to rescue line.
		15.2	Recall the correct method for receiving and holding on to a throwbag when trapped in mud.	Listen to rescuer and keep line of sight where possible. Once you have line, hold rope close to body. It is acceptable to take a few wraps around the arm if you cannot hold on to the line (unlike in water rescue). Be prepared to let go of rope, or signal to rescuer, if experiencing undue pain due to being pulled out of mud, eg trapped leg being bent unnaturally.
		15.3	Perform a conditional co-worker rescue using a throwbag.	Practical rescue of co-worker from mud using throwbag, eg reach pole.



Mud Safety and Rescue (MSR)

Course overview and target audience

The Mud Safety and Rescue course is for rescue responders who are tasked to perform rescues on mud, and with access to rescue equipment suitable for a mud environment.

Contact hours 12 hours (2 days) or 6 hours (1 day) if holding an in-date Rescue 3 SRT qualification.	Prerequisites Minimum age: 18
Qualification valid for 3 years	Accredited by Rescue 3 Europe

MSR

Taught by

- Mud Safety and Rescue Instructor (MSRI)
- Swiftwater and Flood Rescue Technician Instructor (SRTI), who has also completed the Mud Safety and Rescue (MSR) course.

Assessment

The assessed elements of this course are:

- Foundation knowledge
- Mud access/egress using platforms, sleds and boards
- True rescues from mud



Mud Safety and Rescue (MSR) skill sheet contents

Theory	
1. Rescue 3 philosophy	
2. Training standards	
3. Mud hazards	
4. Personal protective equipment for working on/near mud	
5. Technical and team mud equipment	
6. Digging considerations	
7. Management and pre-planning	
8. Incident size-up	
9. Incident command and site control	
10. Communications	
11. Medical and decontamination considerations for mud	
12. Tidal considerations	
Practical	
13. Walking on mud (use of expandable mud boots and walking poles)	
14. Conditional rescues from mud (reach tools and throwbags)	
15. True rescues - tethered	
16. Access and recovery using platforms, sleds and boards	
17. Knots and anchors for mud rescues	
18. Mechanical advantage for mud rescues	
19. Self-rescue techniques from mud	
20. Creating working areas on mud	
21. Rope-assisted rescue techniques	
22. Air and water injection	
If used by agency	
23. Inflated fire hose (if used by agency)	

MSR



Mud Safety and Rescue (MSR)

learning outcomes and key teaching points

	Skill sheet element		Learning outcome	Key teaching points
1	Rescue 3 philosophy	1.1	Recall the steps required in order to develop competence.	Training, practice, experience, judgement.
		1.2	Explain the order of priorities at the scene of a mud rescue.	Self > team > victim.
2	Training standards	2.1	Recognise the different training courses within the Rescue 3 scheme.	Industry level courses, water rescue courses, boat rescue courses, rope rescue courses, confined space rescue courses, ice rescue courses.
		2.2	Recall the remit and role of an individual trained to this level.	Mud Safety and Rescue remit and role. The Mud Safety and Rescue course is for rescue responders who are tasked to perform rescues on mud, and with access to rescue equipment suitable for a mud environment.
		2.3	Recall other national and international standards.	Rescue 3 courses which do and don't coincide with other standards such as Defra, NFPA, applicable local standards.
		2.4	State how the Rescue 3 scheme fits within agency policy and agency standard operating guidelines.	Agency policy and agency standard operating guidelines.
3	Mud hazards	3.1	Recall hazards when operating and performing rescues in/near mud.	Entrapment, drowning, infection, hyperthermia, hypothermia, tides, terrain and environmental factors.
		3.2	Recall suitable control measures for operating and performing rescues in/near mud.	Zoning, PPE, access to mud rescue equipment, training, decontamination, information sources including tide tables. Scene size-up and keeping an incident commander/other people out of or off the mud for a backup plan.
		3.3	Recall additional hazards and control measures for operating and performing rescues in/near mud during night/poor visibility operations.	Distance/perception, route finding, route marking etc. Suitable scene, task and personal lighting. Consideration for tethering personnel.



	Skill sheet element		Learning outcome	Key teaching points
4	Personal protective equipment for working on/near mud	4.1	Identify PPE used for performing rescues from mud.	Water-based PPE, such as drysuit, boots, buoyancy aid or lifejacket, helmet, throwbag, gloves, reach pole, expandable mud boots (aka mudders), visor/glasses. Risk assessment may identify that there is no possibility of water inundation (now or in future) and therefore no PFD might be deemed appropriate, to reduce risk of overheating.
5	Technical and team mud equipment	5.1	Select the correct application for technical equipment used in mud rescue.	Pathway/sled variations. Mud lance variations, use of floating ropes and pre-rigged external MA systems. Bespoke ply sheets for working areas. Karabiners, construction and loading. Pros and cons of locking and non locking karabiners in mud rescue, eg screwgates becoming clogged. How to use two wiregates to create a solid attachment (gates opposite and opposed) Rescue pulleys. Consider use of toothed rope grabs rather than cams/Prusiks to ensure grip on muddy ropes. Webbing. Types of rope. Rescue slings. Reach poles. Sleds and pathways when appropriate. Air/water injection lance.
		5.2	Recall post-use care and inspection for technical and team equipment used in mud rescue.	How to maintain and inspect equipment. Equipment life-cycles in mud compared to water. Post-use cleaning and decontamination. Consideration for isolation and identification of equipment for specific mud use (instead of also using for water/rope rescue). Consideration for the effect of exposure of equipment to salt, mud etc. Stainless steel vs alloy, steel.



	Skill sheet element		Learning outcome	Key teaching points
6	Digging considerations	6.1	Identify hazards and control measures associated with digging in a mud rescue.	Impact injury/cutting injury to victim. Limbs may be in unusual positions due to struggling to get out. Numbness may mean victim can't identify where their limbs are. Consideration for size and type of spade - eg plastic vs metal, use of small hand shovels. Use of air/water lance as probe to identify where to dig. Difficulties for rescuers to successfully dig without becoming entrapped themselves. Risk to rescuers if using hands to dig - eg cuts and abrasions. Use of inflatable platforms/boards as a platform to dig from. Depth needed to free victim. Use of shuttering to prevent hole from filling in or collapsing. May have less chance of success than other rescue methods.
7	Management and pre-planning	7.1	List the four components for a generic pre-plan.	Management, personnel, training, equipment.
		7.2	Identify sources of information useful for generic and task location specific pre-planning.	Location? Tidal-affected estuary, inland waterway. Use of tide tables or weather forecast to predict possible changes that would affect rescuers and victim/workers. Previous mud incidents and locations. Mapping. Emergency services, and other agency availability/capability. Location of rescue and first aid equipment. Post-rescue documentation.
		7.3	Describe key information that should be included in a pre-plan.	Site-specific risk assessment, general risk assessment, access and egress to site, topography, response plan.



	Skill sheet element		Learning outcome	Key teaching points
8	Incident size-up	8.1	Observe use of size-up models.	CHALET or METHANE.
		8.2	Explain the phases of a successful mud rescue.	Locate. Access. Stabilise. Extricate. Transport.
		8.3	Recall the content of an on-site safety brief based on risk assessments.	On-site safety brief highlights relevant hazards that will affect the rescue.
		8.4	Identify rescue options from mud.	Conditional such as talk, reach or throw. True such as contact rescue (eg tethered rescuer, contact rescue from rescue platform).
		8.5	Explain the difference between true and conditional rescues.	Ability of casualty to participate: can = conditional, cannot = true.
		8.6	Select an appropriate plan of action for a given incident.	Consider using familiar decision-making models, such as TEMPOE, adapted from water rescue to mud rescue.
9	Incident management and site control	9.1	Based on hazard recognition, apply appropriate control measures, including site zoning.	Site zoning applicable to mud environment, and also water environment if linked (eg estuary, river level etc). Be aware that water site zoning (hot, warm, cold zones) may have much larger zones if travelling over mud to access a casualty, or may not be directly applicable. Chain of command. Team roles. Level of training.
		9.2	Identify issues and hazards of bystanders beyond the cold zone.	Crowd control, moral pressure, bystander safety.
10	Communications	10.1	Recognise hand signals that can be used in a mud environment.	OK, help, stop, direction, medical assistance. Considerations for communicating over long distance. Considerations for upstream and downstream signals (eg coastal estuary or inland river mud).
		10.2	Recognise whistle signals that can be used in a mud environment.	Stop/attention, distress. Considerations for communicating over long distance. Considerations for upstream and downstream signals (eg coastal estuary or inland river mud).
		10.3	Identify other methods of communication and their limitations.	Radios, mobile telephones, battery life, water resistance, signal strength.



	Skill sheet element		Learning outcome	Key teaching points
11	Medical and decontamination considerations for mud	11.1	Identify signs/symptoms and treatment for common medical issues found in a mud environment.	Hypothermia, hyperthermia, drowning, infection/contamination, hydrostatic squeeze.
		11.2	Recall the importance of minimising exposure to mud and decontamination procedures post-exposure.	Decontamination, including brush and hose to clean initially, before use of decontamination spray. Hand wipes, face wipes. Consideration for how viscous/sticky the mud is, and how much harder than decontamination in water rescue. Consideration for on-scene initial decontamination of casualty before onward transport. Consideration for how to transport equipment after on-scene decontamination back to base for further cleaning and drying.
12	Tidal considerations	12.1	Recall hazards of working in tidal areas (eg estuary mud flats).	Changes in water level, changes in mud viscosity, loss of access/egress, change of flow direction.
		12.2	Recall key information about tides, and sources of information.	Tide tables to identify changing times of high water and low water, spring and neap tides. Use of rule of twelfths and rule of thirds to predict height and speed of incoming/outgoing tide.
		12.3	Relate tide times to rescue plans.	Whilst work on tidal mud is typically done on a falling tide, rescue could be on either a falling or rising tide. Tidal changes create an added time pressure to rescue operations, given the fixed timescale.
13	Walking on mud (use of expandable mud boots and walking poles)	13.1	Demonstrate safe walking techniques using expandable mud boots (aka mudders).	Putting on mudders (including difficulties if mudders are already covered in mud). Walking technique necessary due to expandable nature. Importance of balance and potential for each step to display a different level of support. Limitations.
		13.2	Demonstrate use of walking or reach pole for support.	Probability of it sinking. Ability for it to still provide support and prevent a fall. Possible attachment of basket (similar to ski pole) or float to prevent sinking of pole.



	Skill sheet element		Learning outcome	Key teaching points
14	Conditional rescues from mud (reach tools and throwbags)	14.1	Identify conditional rescue options from mud and the limitations of conditional rescues.	Talk. Reach. Throw. Casualty participation required. If the incident requires a rescue team, then a true rescue rather than conditional rescue may be more likely.
		14.2	Identify appropriate sites when conditional rescues can be performed from mud.	Physical obstructions in mud. Bank hazards. Distance to casualty, in relation to tool used and position of rescuer.
		14.3	Identify, check and prepare suitable equipment for performing a conditional rescue from mud using a reach tool.	Reach poles, walking poles, branches etc.
		14.4	Perform a conditional rescue from mud using a reach tool.	Practical rescue from mud using reach tool, eg reach pole.
		14.5	Identify, check and prepare suitable equipment for performing a conditional rescue from mud using a throwbag.	Throwbag. Considerations for using buoyant object, eg life ring or float attached to rescue line.
		14.6	Recall the correct method for receiving and holding on to a throwbag when trapped in mud.	Listen to rescuer and keep line of sight where possible. Once you have line, hold rope close to body. It is acceptable to take a few wraps around the arm if you cannot hold on to the line (unlike in water rescue). Be prepared to let go of rope, or signal to rescuer, if experiencing undue pain due to being pulled out of mud, eg trapped leg being bent unnaturally.
		14.7	Perform a conditional rescue using a throwbag.	Practical rescue from mud using throwbag.
15	True rescues - tethered	15.1	Identify where tethers may be useful in mud rescue	Tethers on sled/inflatable pathway – planned means of recovery; use of chest harness and tether to haul sled/pathway/stretchers across the mud. Tethers on rescuer, eg someone using mudders to access an area. Difficulty of pulling rescuers plus casualty over mud.
		15.2	Use the quick-release harness on buoyancy aid to demonstrate a release on dry land.	Attach a floating rope to quick release harness. Demonstrate release, and discuss difficulties of equipment caked with mud.



	Skill sheet element		Learning outcome	Key teaching points
16	Access and recovery using inflatable pathways and sleds	16.1	Recall the range of methods to access a casualty using an inflatable pathway(s) or sled(s) or other piece of equipment that allows rescuers to spread their weight over a larger surface area.	Single tethered pathway/sled. Rescuers wearing mudders or supporting their weight on the pathway as they drag pathway into position. Multiple pathways/sleds. Leapfrogging from pathway to pathway, moving rear pathway in front of the other, and repeating until position is reached. Pathways may or may not be tethered.
		16.2	Recall recovery methods with inflatable pathways/sleds	Single pathway/sled – use of tether on sled to recover casualty and rescuer back to solid ground. Multiple pathways/sled – use of tethers as above to recover both pathways, or leapfrog their way back as above.
		16.3	Use single or multiple pathways/sleds to access and recover a casualty	Practical session, recovering a casualty from mud, using inflatable pathway(s), sled(s)/RDC(s). Considerations for whether multi-point tether for inflatable equipment will be needed, anchors and MA if needed on bank, to recover rescuer and casualty. Rescuers use craft to spread their weight while accessing the casualty, and use it as a stable platform to allow them to extricate casualty out of mud (use mud lance or hand digging etc to help free them), before hauling or leapfrogging back to bank. Maintain straight line haul to ensure sled/pathway doesn't flip when being hauled.
17	Knots and anchors for mud rescues	17.1	Be able to identify, tie and check appropriate knots for mud rescue.	Overhand. Figure of 8. Rethreaded figure of 8. Prusik.
		17.2	Recall factors affecting knot choice for mud rescue applications.	Ability to connect to rescuer, rescue sled or board. Connect/extend throwbags.
		17.3	Be able to select an appropriate anchor point and create an attachment point.	Single point sling around a solid, unquestionably sound, anchor.



	Skill sheet element		Learning outcome	Key teaching points
18	Mechanical advantage for mud rescues	18.1	Identify the need for mechanical advantage within mud rescue.	Recovery of sleds/pathways. Rope assisted self-rescue. Careful use of MA on casualty in combination with other release techniques.
		18.2	Build and check appropriate mechanical advantage systems for use within mud rescue.	Simple internal 2:1, simple internal 3:1. Use of pre-rigged external MA systems to work off extended rope from anchor. Can be reset and have progress capture where needed. Correct and safe use by personnel. Line failure considerations whilst under tension. Be prepared to stop if casualty experiencing undue pain. Importance of not using too much MA, as could cause injury to stuck casualty. Difficulties of using pulleys in mud which can get clogged, and consideration for efficiency of alternatives.
19	Creating working areas on mud	19.1	Recall the importance of a stable working area on mud.	Prevents rescuers becoming casualties themselves. Support for victim. Easier to perform task from a stable platform.
		19.2	Recall methods of creating stable working areas on mud.	Eg inflatable pathways, sleds, plyboard. Board could be in multiple pieces and/or with sections cut out to enable close access to casualty.
		19.3	Create a stable working area on mud.	Use of sleds, plyboard or similar, to create a stable working area to perform a task.
20	Self-rescue techniques from mud	20.1	Demonstrate self-rescue techniques and moving over mud without the use of expanding boots or other equipment.	When sinking, sit down and spread weight, rather than continuing to move feet. Remove any backpack (eg work equipment) to reduce weight. Avoid putting too much weight on any one limb. Go back out the way you came where possible. Comparison of techniques – shuffling backwards on bum, or ‘commando crawl’ action that spreads weight over a larger surface area. Do not try to stand before you are on solid ground.



	Skill sheet element		Learning outcome	Key teaching points
21	Rope assisted rescue techniques	21.1	Set up a rope system which allows rescue from a mud area.	Create an anchor on solid ground and attach one end of the rope to this. Set up a simple 2:1 or 3:1 system, or external MA system attached to rope extended from anchor, and attach to harness or a sling around chest/under arms of victim, with knot in to prevent cinching. Consideration for chest strops or rescue (nappy) harness. The running end can be used by a co-worker to assist in extrication with the help of the mechanical advantage system if they get into difficulties. Be prepared to let go if experiencing undue pain (eg trapped leg being bent unnaturally). The purpose of the training exercise is to understand the principle of the system, not to immerse a casualty into deep mud.



	Skill sheet element		Learning outcome	Key teaching points
22	Air and water injection	22.1	Recall appropriate use of mud lance (air/water lance) in a mud rescue.	Consideration for injection of air, water, or a combination of both, depending on composition of mud. Refer to manufacturer's instructions for use of air/water lance. When to use water, when to use air, when to use a combination. Consideration for air cylinder or water pipe/feed - portable or extendable? Eg fire service might use fire hose over short distance. Options include: Hose reel from shore-based pump and water supply; hose reel from portable pump on mud using water source on/near mud; refillable fire extinguishers; BA cylinders. Slide lance along side casualty to loosen/liquify the mud around part of body that is trapped. Care to be taken when inserting lance to avoid injury to casualty. Use of lance (even without air/water) as probe to check for limb position.
		22.2	Extract a casualty from mud, using an air/water lance.	Injection of air or water near submerged feet of casualty, to liquify or loosen the mud, enabling easier recovery of the casualty.



	Skill sheet element		Learning outcome	Key teaching points
23	Inflatable fire hose (if used by agency)	23.1	Identify agency use of inflated fire hose.	Agency policy. Agency standard operating guidelines. Access to appropriate inflation equipment.
		23.2	Identify the hazards and control measures of working with compressed air.	Safety valves, pressure indication, thermal protection, explosion protection, air inlet/outlet monitoring, transport and storage considerations.
		23.3	Inflate and deflate a section of hose.	Knowledge of inflation equipment used, safe use of compressed air system.
		23.4	Recall uses of inflatable fire hose within mud rescue.	Stabilising casualty. Something for casualty to push against. Conditional rescues.
		23.5	Using inflatable fire hose, create stabilisation for a casualty or perform a conditional rescue from mud.	Use of fire hose for conditional rescue or as stabilisation for casualty to push against.





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