WATER SAFETY AND RESCUE TRAINING COURSES

CANYON WATER RESCUE

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.

Rescue3 EUROPE

The course learning outcomes are provided as pre- and post-course reference for people involved in the delivery of Rescue 3 courses (eg Rescue 3 training providers, instructors and students). They are not to be used for any other purpose without the express written permission of Rescue 3 Europe.

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CANYON WATER RESCUE COURSES

Whitewater Canyon Technician - Recreational (WCT-REC)

Course overview and target audience

The Whitewater Canyon Technician – Recreational is designed to people who want to go canyoning recreationally, and gives students the basic whitewater and rescue skills to safely navigate easy whitewater canyons with their colleagues.

Contact hours	**Prerequisites**
12 hours (2 days)	Confident swimmer, with experience of water-based activities (canyoning, sea level traversing etc). Minimum age: 18.
Qualification valid for	**Accredited by**
3 years	Rescue 3 Europe

Taught by

- Whitewater Canyon Technician Instructor (WCTI)

Assessment

The assessed elements of this course are:

- Whitewater swimming techniques
- Shallow water techniques
- Throwbags

Whitewater Canyon Technician - Recreational (WCT-REC) skill sheet contents

Theory
1. Rescue 3 philosophy
2. Training standards
3. Best practice guidelines
4. Canyon/river hydrology and hazards
5. Personal equipment
6. Technical and group equipment
7. Assessing risk
8. Medical considerations
9. Flash flood awareness
10. Communications
Practical
11. Whitewater swimming techniques
12. Conditional rescues – throwbags
13. Shallow water techniques
14. Strainer swim
15. Foot/body entrapments
16. Introduction to knots and anchors
17. Handheld diagonals/zip lines
18. Belay systems
19. Subsurface equipment recovery

Whitewater Canyon Technician - Recreational (WCT-REC) 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 judgement	Training. Practice. Experience. Judgement
		1.2	Explain the order of priorities at a water rescue scene	Self > team > victim
2	Training standards	2.1	Recognise the different training courses within the Rescue 3 scheme	Different Rescue 3 courses, eg SRT, WRT-REC, WRT-PRO, WCT-PRO, WCT-REC
		2.2	Recall the remit and role of an individual trained to this level	Whitewater Canyon Technician - Recreational (WCT-REC) remit and role: Recreational canyoneers who require knowledge of and a rescue capability in moving water/ whitewater canyons. Training to take place in appropriate canyons and rivers minimum grade 2
		2.3	Recall the benefits of an externally accredited training course, such as this one	Inform students about widely trusted and independent organisation producing courses based on best practice, with input from international experts in their fields. Externally accredited courses are backed up with course standards and learning outcomes, that ensure students and organisations receive appropriate training for the environments in which they'll be working, and are able to evidence that training for the protection of all concerned
3	Best practice guidelines	3.1	Apply the Rescue 3 Best Practice Guidelines in a canyon environment	Best practice guidelines (formerly known as the 15 Absolutes)

	Skill sheet element		Learning outcome	Key teaching points
4	Canyon/river hydrology and hazards	4.1	Identify the effect that volume, gradient and obstacles have on water	Volume - increase in energy. Gradient - increase in speed. Obstacles - creation of retentive water features, impact risk, siphon/strainer risk
		4.2	Identify river and canyon features	Laminar flow, helical flow, current vector, eddies, holes/ stoppers, waves, undercuts, strainers, siphons, standing waves, hydraulics, weirs/low head dams. Waterfall hydrology
		4.3	Describe the impact that water features would have on individuals in the river/canyon	Force of water, river grading system, entrapments
		4.4	Identify water hazards in a river and canyon environment, and suitable control measures	Depth, temperature, weather, volume, gradient, undercuts, strainers, siphons, hydraulics, weirs/low head dams, bridge pillars, entrapments
		4.5	Identify river bank hazards and their control measures.	Slippery ground, steep ground. Appropriate PPE and footwear. Use of lines as hand rails
5	Personal equipment	5.1	Identify personal protective equipment (PPE) for operating and performing rescues in a canyon environment	Helmet, buoyancy aid with quick release chest harness, canyoning harness, drysuit, wetsuit, footwear, insulation, knives, throwbags, gloves, waist belts, cowstails, lighting, whistle, eye protection/sunglasses. Considerations for use or non-use of buoyancy aid
		5.2	Select appropriate equipment for operating in and performing rescues in a canyon environment, perform pre-use checks, and donning	CE standards, PPE inspection
		5.3	Select appropriate clothing for use in a whitewater canyon environment, based on weather conditions and geographical location.	Pros and cons of drysuits vs wetsuits. Suitable footwear. Thermal underlayer
		5.4	Recall post-use care and inspection procedures for personal equipment	PPE inspection, drying, storage and care
6	Technical and group equipment	6.1	Identify technical and group equipment for operating in a water canyon.	Karabiners, slings (closed loop), tapes (3-5m open), canyon lines, pulleys, mechanical belay devices, Prusiks and mechanical rope grabs and ascenders, natural rock pro/ camming devices, pruning saws. Group shelter, first aid kits, spare PPE. Communication equipment – phones, satellite phones, radios etc
		6.2	Recall post-use care and inspection procedures for technical and group equipment	Equipment inspection, drying, storage, transportation

	Skill sheet element		Learning outcome	Key teaching points
7	Assessing risk	7.1	Perform a dynamic risk assessment of a canyon site	Identify the hazards, decide who might be harmed and how, evaluate the risks and decide on precautions, record your findings and implement them, review your assessment and update if necessary. Dynamic risk assessment is an ongoing process - it is important to continually reassess as the situation develops, eg changing water levels
8	Medical considerations	8.1	Identify signs/symptoms and treatment for common medical issues found in a water environment	Hypothermia, hyperthermia, drowning, infection eg Leptospirosis and hepatitis, trauma, cold water shock. Considerations of effects of stress and adrenaline whilst performing a medical assessment of a casualty
		8.2	Recall the importance of decontamination procedures	Decontamination including hand wipes, face wipes, decontamination spray
		8.3	Identify bank hazards, and suitable control measures to prevent slips, trips and falls	Site risk assessment, appropriate footwear, site zoning, safety briefing
9	Flash flood awareness	9.1	Identify hazards associated with flash flooding in canyons	Rising water levels. Increase in volume and speed of flow. Debris. Inability to use normal egress points
		9.2	Identify factors that can lead to flash flooding in canyons	Catchment area - shape and size. Vegetation. Weather - current and past. Water levels. Snow melt/avalanches. Water control systems - dams, diversions
10	Communications	10.1	Recognise hand signals that can be used on a canyon trip	Ok, help, stop, direction, medical assistance, eddy in, eddy out, other locally used signals
		10.2	Recognise whistle signals that can be used in a water environment	Stop, upstream, downstream, emergency
		10.3	Identify other methods of communication in a water environment, and their limitations	Radios, mobile telephones, battery life, water resistance, signal strength

	Skill sheet element		Learning outcome	Key teaching points
11	Whitewater swimming techniques	11.1	Identify hazards and suitable control measures when entering and exiting a whitewater environment	Steep banks, slippery surface, difficulty of access and egress, slips, trips and falls. Appropriate PPE/footwear, site assessment, site zoning, safety briefing
		11.2	Demonstrate correct water entry to and exit from a whitewater environment	Appropriate entry and exit point, depth, in-water physical hazards, flat (non-sub-surface) entry
		11.3	Demonstrate the defensive swimming position	When and why, body positioning, lateral movement, breaking out of the flow. Push off obstacles
		11.4	Demonstrate the aggressive swimming position	When and why, body positioning, lateral movement, breaking out of the flow
		11.5	Transition between the defensive and aggressive swimming position	Rolling techniques, entrapment issues, increased risk of impact on in-water features
		11.6	Adjust body angle relative to the current vector	Ferry angles, methods of adjusting body angle
		11.7	Apply swimming techniques, angle control and momentum to perform a variety of tasks	Defensive swimming, aggressive swimming, transition from defensive to aggressive, ferry gliding, eddy line techniques, slalom course, breathing techniques, river-reading skills. Increasing and decreasing momentum
12	Conditional rescues – throwbags	12.1	Identify conditional rescue options and the limitations of conditional rescues	Talk. Reach. Throw. Victim/ casualty participation required. Static and mobile rescues. Hazards of rope in the water. Use of clean rope principle
		12.2	Identify, check and prepare suitable equipment for performing a conditional rescue	Talk. Reach - pole/stick, paddle, throwbag. Throw - buoyant object, eg life ring
		12.3	Identify appropriate sites where conditional rescues can be performed	River features, appropriate eddies, downstream backup, upstream spotter, in-water physical hazards
		12.4	Demonstrate the correct method for receiving a throwbag	Stay on back, make target/body as large as possible, keep line of sight with rescuer, listen to instructions. When being pulled in, don't wrap rope around body, rope over correct shoulder, stay on back when being recovered. Don't let go of rope until safely on bank
		12.5	Perform a variety of conditional rescues	Talk rescues. Reach rescue - reach pole, throwbag
		12.6	Identify methods of managing force directed on rescuer and victim/casualty during a reach rescue as water speed increases	Rescuer/belayer moving downstream, paying out of line, appropriate site choice, appropriate eddies for recovery

	Skill sheet element		Learning outcome	Key teaching points
13	Shallow water techniques	13.1	Identify the variables and hazards that will directly affect shallow water techniques	Water speed, depth, channel bed morphology, personnel, equipment
		13.2	Perform single and team-based shallow water techniques	Individual, line astern, line abreast, wedge, use of wading pole/paddle
		13.3	Explain how the addition of a casualty would affect shallow water techniques	Appropriate team-based techniques, appropriate stretcher/transport method, protection of casualty from flow, downstream hazards
14	Strainer swim	14.1	Identify strainers and the hazards they pose to group members in a canyon	Entrapment, injury
		14.2	Understand that strainers should be avoided	Strainers should be avoided
		14.3	Understand the consequences of going underneath a strainer	Subsurface hazards are unknown: blockages and entrapments are highly likely
		14.4	Identify rescue options for a casualty in a strainer	Considerations based on training of rescuers. Eg team wade, tethered boat, V-lower
		14.5	Using a strainer simulator, demonstrate and compare aggressive and defensive approaches to the simulator.	Defensive: can fend off with feet and work along to the end. More potential to be swept underneath the strainer, but greater protection from impacts. Protection of face on impact with the strainer. Aggressive: speed of approach and timing. More likely to get up and over the strainer, but also more open to injury
15	Foot/body entrapments	15.1	Identify the hazards and consequences of foot and body entrapments, and control measures to reduce likelihood	River bed morphology, snag hazards, submersion, trauma. Defensive swimming position. Training
		15.2	Identify extrication methods of an entrapped casualty	Hands-on methods, wading, single bank access, twin bank access
		15.3	Identify risks to the rescuers of an entrapped casualty	Access difficulties, river bed morphology, snag hazards, river depth, upstream vs. downstream access, access to both banks, hands-on techniques, wading vs access from bank, timescales involved in performing a rescue
		15.4	On dry land, demonstrate use of stabilisation line and extrication methods from one and two banks	Single and twin bank entrapment techniques, line crossing methods

	Skill sheet element		Learning outcome	Key teaching points
16	Introduction to knots and anchors	16.1	Be able to identify, tie and check appropriate knots for a canyon trip	Eg Overhand, fig 8 on a bight, no knot Italian/Münter hitch, Prusiks. Appropriate dressing of knots
		16.2	Be able to identify, tie and check appropriate anchors	Single point, multi point, load sharing and load distributing
		16.3	Be able to select an appropriate single anchor point, and create an attachment point	Use of open and closed slings. Basket hitch. Wrap three pull two. Unquestionably sound (bombproof) anchor
17	Handheld diagonals/ zip lines	17.1	Explain why it is important for a handheld diagonal/zip line to be hand-tight and at the correct angle to the current vector	Correct angle/handheld tension to ensure object or person on line isn't held mid-stream
		17.2	Identify why the downstream end of a diagonal/zip line must be releasable	If person or object becomes held mid-stream, releasing downstream side allows pendulum into bank
		17.3	Demonstrate appropriate use of a diagonal/zip line	Anchors, knots. Use of body belay. Correct angle. Releasable, sling recovery system if applicable. Distance limitations. Advantages of keeping rope out of water
		17.4	Demonstrate appropriate methods for joining ropes for use in a diagonal/zip line	Use of overhand knot and HMS karabiner
18	Belay systems	18.1	Demonstrate appropriate use and application of friction-based belay	Italian hitch/Münter hitch. Personnel belay on steep banks. Reeve, pay out, take in, tie off
		18.2	Identify considerations for choosing a belay	Water speed, load, ability to release
19	Subsurface equipment recovery	19.1	Identify hazards and control measures associated with subsurface equipment recovery	Depth, underwater hazards, personnel backup. Goggles, swim masks, fins. Evaluation of risk vs benefit. No diving from height
		19.2	Demonstrate correct technique for subsurface equipment recovery	Locate equipment. Duck dive - body flat on surface, bend at the waist, upper body vertical, strong pulled arms, stay vertical. No diving from height. Consideration for flotation of PPE, ie neoprene vs drysuit
		19.3	Identify recovery options	Retrieving by hand vs attaching recovery line

Whitewater Canyon Technician - Professional (WCT-PRO)

Course overview and target audience

The Whitewater Canyon Technician - Professional course is designed for canyon guides with existing experience who wish to further their knowledge and experience on the whitewater element of canyons. This course concentrates on whitewater hydrology and hazards of canyons and introduces techniques to provide you with the necessary skills to perform rescues and keep clients safe in whitewater canyons.

Contact hours	**Prerequisites**
18 hours (3 days)	Confident swimmer, with experience of water-based activities (canyoning, sea level traversing etc). Minimum age: 18.
Qualification valid for	**Accredited by**
3 years	Rescue 3 Europe

Taught by

- Whitewater Canyon Technician Instructor (WCTI)

Assessment

The assessed elements of this course are:

- Whitewater swimming techniques
- Conditional rescues
- Knots and anchor systems
- Tensioning systems and mechanical advantage

Whitewater Canyon Technician - Professional (WCT-PRO) skill sheet contents

Theory
1. Rescue 3 philosophy
2. Training standards
3. Best practice guidelines
4. Canyon/river hydrology and hazards
5. Personal equipment
6. Technical and group equipment
7. Assessing risk
8. Managing an incident
9. Medical considerations
10. Flash flood awareness
11. Communications
Practical
12. Whitewater swimming techniques
13. Conditional rescues – throwbags
14. Shallow water techniques
15. Strainer swim
16. Foot/body entrapments
17. Knots and anchor systems
18. Tensioning systems and mechanical advantage
19. Line crossing methods
20. Tensioned diagonals/zip lines
21. Belay systems
22. Subsurface equipment recovery
23. True rescues - tethered and untethered
24. Victim/casualty management
25. Scenarios

Whitewater Canyon Technician - Professional (WCT-PRO) 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 judgement	Training. Practice. Experience. Judgement
		1.2	Explain the order of priorities at a water rescue scene	Self > team > victim
		1.3	Explain the benefits of applying a simple rescue solution	Quick set-up, ability level of team members
		1.4	Explain considerations for self-limitations	Everyone has strengths and weaknesses; know what you can do well and what others can do well
2	Training standards	2.1	Recognise the different training courses within the Rescue 3 scheme	Different Rescue 3 courses, eg SRT, WRT-REC, WRT-PRO, WCT-REC, WCT-PRO
		2.2	Recall the remit and role of an individual trained to this level	Whitewater Canyon Technician - Professional (WCT-PRO) remit and role: Professional canyon guides who require knowledge of and a rescue capability in moving water/ whitewater canyons. Training to take place in appropriate canyons and rivers of grade 3+
		2.3	Recall the benefits of an externally accredited training course, such as this one	Inform students about widely trusted and independent organisation producing courses based on best practice, with input from international experts in their fields. Externally accredited courses are backed up with course standards and learning outcomes, that ensure students and organisations receive appropriate training for the environments in which they'll be working, and are able to evidence that training for the protection of all concerned
3	Best practice guidelines	3.1	Apply the Rescue 3 Best Practice Guidelines in a canyon environment	Best practice guidelines (formerly known as the 15 Absolutes)

	Skill sheet element		Learning outcome	Key teaching points
4	Canyon/river hydrology and hazards	4.1	Identify the effect that volume, gradient and obstacles have on water	Volume - increase in energy. Gradient - increase in speed. Obstacles - creation of retentive water features, impact risk, siphon/strainer risk
		4.2	Identify river and canyon features	Laminar flow, helical flow, current vector, eddies, holes/ stoppers, waves, undercuts, strainers, siphons, standing waves, hydraulics, weirs/ low head dams. Waterfall hydrology
		4.3	Describe the impact that water features would have on individuals in the river/canyon	Force of water, river grading system, entrapments
		4.4	Identify water hazards in a river and canyon environment, and suitable control measures	Depth, temperature, weather, volume, gradient, undercuts, strainers, siphons, hydraulics, weirs/low head dams, bridge pillars, entrapments
		4.5	Identify river bank hazards and their control measures.	Slippery ground, steep ground. Appropriate PPE and footwear. Use of lines as hand rails
5	Personal equipment	5.1	Identify personal protective equipment (PPE) for operating and performing rescues in a canyon environment	Helmet, buoyancy aid with quick release chest harness, canyoning harness, drysuit, wetsuit, footwear, insulation, knives, throwbags, gloves, waist belts, cowstails, lighting, whistle, eye protection/ sunglasses. Considerations for use or non-use of buoyancy aid
		5.2	Select appropriate equipment for operating in and performing rescues in a canyon environment, perform pre-use checks, and donning	CE standards, PPE inspection
		5.3	Select appropriate clothing for use in a whitewater canyon environment, based on weather conditions and geographical location.	Pros and cons of drysuits vs wetsuits. Suitable footwear. Thermal underlayer
		5.4	Recall post-use care and inspection procedures for personal equipment	PPE inspection, drying, storage and care

	Skill sheet element		Learning outcome	Key teaching points
6	Technical and group equipment	6.1	Identify technical and group equipment for operating in and performing rescues in water canyons.	Contents and transportation of rescue kits. Karabiners, slings (closed loop), tapes (3-5m open), canyon lines, pulleys, mechanical belay devices, Prusiks and mechanical rope grabs and ascenders, natural rock pro/ camming devices, pruning saws. Group shelter, first aid kits, spare PPE. Communication equipment – phones, satellite phones, radios etc
		6.2	Recall post-use care and inspection procedures for technical and group equipment	Equipment inspection, drying, storage, transportation
7	Assessing risk	7.1	Perform a dynamic risk assessment of a canyon site	Identify the hazards, decide who might be harmed and how, evaluate the risks and decide on precautions, record your findings and implement them, review your assessment and update if necessary. Dynamic risk assessment is an ongoing process - it is important to continually reassess as the situation develops, eg changing water levels

	Skill sheet element		Learning outcome	Key teaching points
8	Managing an incident	8.1	Explain the phases of a successful rescue	LAST (Locate. Access. Stabilise. Transport)
		8.2	List rescue options	Talk, reach, row, throw, go, tow, helo. Not a hierarchy of risk
		8.3	Explain the importance of undertaking a simple rescue option.	Quick to set-up and effect a rescue. Ability of group. Consideration of simplest rescue option appropriate to the complexity of the rescue scenario
		8.4	Explain the difference between true and conditional rescues	Ability of victim/casualty to participate
		8.5	Select an appropriate plan of action for a given incident	Is it time critical? What is the water energy and consequence?
		8.6	Based on hazard recognition, apply appropriate control measures to protect your team, clients and other river users at a rescue scene	Site zoning, chain of command, team roles
		8.7	Apply different roles that may be allocated at a water incident	Team leader, rescuer(s), evacuation, resources, medic, communication. Downstream backup. Upstream spotters. The importance of clear leadership. Consider that roles may need to be reassigned in an evolving rescue
		8.8	Apply a simple structure and centralised command, in order to brief and manage a team	Designating roles. Ensuring two-way communication
		8.9	Identify how and when to contact the emergency services in the event of an incident	Emergency service contact details, 112 Europe-wide emergency number, rescue capability of relevant bodies, phone access, mobile signal, radios

	Skill sheet element		Learning outcome	Key teaching points
9	Medical considerations	9.1	Identify signs/symptoms and treatment for common medical issues found in a water environment	Hypothermia, hyperthermia, drowning, infection eg Leptospirosis and hepatitis, trauma, cold water shock. Considerations of effects of stress and adrenaline whilst performing a medical assessment of a casualty
		9.2	Identify individuals at risk for common medical issues found in a water environment, and control measures to minimize this	Clients, river professionals/ guides. Control measures - PPE, training, decontamination, group welfare
		9.3	Recall the importance of decontamination procedures	On-river washing/ decontamination facilities
		9.4	Recall procedures for protecting the spine when trauma is suspected	History of incident, past medical history, spinal management
		9.5	Identify bank hazards, and suitable control measures to prevent slips, trips and falls	Rescue site risk assessment, appropriate footwear, site zoning, safety briefing
10	Flash flood awareness	10.1	Identify hazards associated with flash flooding in canyons	Rising water levels. Increase in volume and speed of flow. Debris. Inability to use normal egress points
		10.2	Identify factors that can lead to flash flooding in canyons	Catchment area - shape and size. Vegetation. Weather - current and past. Water levels. Snow melt/avalanches. Water control systems - dams, diversions
11	Communications	11.1	Recognise hand signals that can be used on a canyon trip	Ok, help, stop, direction, medical assistance, eddy in, eddy out, other locally used signals
		11.2	Recognise whistle signals that can be used in a water environment	Stop, upstream, downstream, emergency
		11.3	Identify other methods of communication in a water environment, and their limitations	Radios, mobile telephones, satellite phones, satellite text machines, battery life, water resistance, signal strength. Communication considerations for multiple canyon teams

	Skill sheet element		Learning outcome	Key teaching points
12	Whitewater swimming techniques	12.1	Identify hazards and suitable control measures when entering and exiting a whitewater environment	Steep banks, slippery surface, difficulty of access and egress, slips, trips and falls. Appropriate PPE/footwear, site assessment, site zoning, safety briefing
		12.2	Demonstrate correct water entry to and exit from a whitewater environment	Appropriate entry and exit point, depth, in-water physical hazards, flat (non-sub-surface) entry
		12.3	Demonstrate the defensive swimming position in a whitewater environment	When and why, body positioning, lateral movement, breaking out of the flow. Push off obstacles
		12.4	Demonstrate the aggressive swimming position in a whitewater environment	When and why, body positioning, lateral movement, breaking out of the flow
		12.5	Transition between the defensive and aggressive swimming positions in a whitewater environment	Rolling techniques, entrapment issues, increased risk of impact on in-water features
		12.6	Adjust body angle relative to the current vector in a whitewater environment	Ferry angles, methods of adjusting body angle
		12.7	Apply swimming techniques, angle control and momentum to perform a variety of tasks	Defensive swimming, aggressive swimming, transition from defensive to aggressive, ferry gliding, eddy line techniques, slalom course, breathing techniques, river-reading skills. Increasing and decreasing momentum. Choose appropriate techniques for water conditions without direction

	Skill sheet element		Learning outcome	Key teaching points
13	Conditional rescues – throwbags	13.1	Identify conditional rescue options and the limitations of conditional rescues	Talk. Reach. Throw. Victim/ casualty participation required. Static and mobile rescues. Hazards of rope in the water. Use of clean rope principle
		13.2	Identify, check and prepare suitable equipment for performing a conditional rescue in an advanced/higher grade river environment	Talk. Reach - pole/stick, paddle, throwbag. Throw - buoyant object
		13.3	Identify appropriate sites where conditional rescues can be performed in an advanced/ higher grade river environment	River features, appropriate eddies, downstream backup, upstream spotter, in-water physical hazards
		13.4	Demonstrate the correct method for receiving a throwbag in a river environment	Stay on back, make target/ body as large as possible, keep line of sight with rescuer, listen to instructions. When being pulled in, don't wrap rope around body, rope over correct shoulder, stay on back when being recovered. Don't let go of rope until safely on bank
		13.5	Perform a variety of conditional rescues in a river/ canyon environment	Talk rescues. Reach rescue - reach tool, throwbag/ canyon rope. Throwbag/ canyon rope techniques including underhand, overhand and rethrows using split coils. Pendulum rescue considerations
		13.6	Identify methods of managing force directed on rescuer and victim/casualty during a reach rescue as water speed increases	Rescuer/belayer moving downstream, paying out of line, appropriate site choice, appropriate eddies for recovery
14	Shallow water techniques	14.1	Identify the variables and hazards that will directly affect shallow water techniques	Water speed, depth, channel bed morphology, personnel, equipment
		14.2	Perform single and team-based shallow water techniques	Individual, line astern, wedge, use of wading pole/paddle, tethered wade
		14.3	Explain how the addition of a casualty would affect shallow water techniques	Appropriate team-based techniques, appropriate improvised stretcher/ transport method, protection of victim/casualty from flow, downstream hazards

	Skill sheet element		Learning outcome	Key teaching points
15	Strainer swim	15.1	Identify strainers and the hazards they pose to group members in a canyon	Entrapment, injury
		15.2	Understand that strainers should be avoided	Strainers should be avoided
		15.3	Understand the consequences of going underneath a strainer	Subsurface hazards are unknown: blockages and entrapments are highly likely
		15.4	Identify rescue options for a casualty in a strainer	Considerations based on training of rescuers. Eg team wade, tethered boat, V-lower
		15.5	Using a strainer simulator, demonstrate and compare aggressive and defensive approaches to the simulator.	Defensive: can fend off with feet and work along to the end. More potential to be swept underneath the strainer, but greater protection from impacts. Protection of face on impact with the strainer. Aggressive: speed of approach and timing. More likely to get up and over the strainer, but also more open to injury
16	Foot/body entrapments	16.1	Identify the hazards and consequences of foot and body entrapments, and control measures to reduce likelihood	River bed morphology, snag hazards, submersion, trauma. Defensive swimming position. Training
		16.2	Identify extrication methods of an entrapped casualty	Hands-on methods, wading, single bank access, twin bank access
		16.3	Identify risks to the rescuers of an entrapped casualty	Access difficulties, river bed morphology, snag hazards, river depth, upstream vs. downstream access, access to both banks, hands-on techniques, wading vs access from bank, timescales involved in performing a rescue
		16.4	Demonstrate use of stabilisation line and extrication methods from one and two banks	Dry land and river-based single and twin bank entrapment techniques. Methods to sink rope underneath victim/ casualty
		16.5	Compare the merits and hazards of using hands-on techniques, when approaching from upstream and downstream	Speed of access, lack of need for rope management, ability to create an eddy. Hazards - entrapment risk, number of rescuers needed in hot zone

	Skill sheet element		Learning outcome	Key teaching points
17	Knots and anchor systems	17.1	Be able to identify, tie and check appropriate knots for canyon rescue	Eg Overhand. Figure of 8. Figure of 8 on a bight. No knot (tensionless hitch). Tape/water knot. Double fisherman's. Italian hitch/ Münter hitch. Clove hitch. Alpine butterfly. Prusiks – 3-wrap, klemheist and French. Appropriate dressing of knot
		17.2	Recall factors affecting knot choice for whitewater/canyon rescue applications	Ability to release under load. Ease of tying. Appropriate for task
		17.3	Identify use of anchor systems in whitewater/canyon rescue	Tensioned diagonals. Unquestionably sound (bombproof) anchor. Load-sharing. Load-distributing. Vertical elements aren't covered in WCT-PRO
		17.4	Be able to select an appropriate single anchor point, and create an attachment point	Use of open and closed slings. Basket hitch. Wrap three pull two. Unquestionably sound (bombproof) anchor
		17.5	Tie load-sharing and load-distributing anchor systems	Use of slings and ropes to create multi-point load-sharing and load-distributing anchors. Boatman's anchor. Differences between load-sharing and load-distributing anchors
18	Tensioning systems and mechanical advantage	18.1	Identify the need for mechanical advantage systems within a whitewater canyon environment	Tensioned diagonals. Vertical elements aren't covered in WCT-PRO
		18.2	Identify why external mechanical advantage systems are applied	Ability to use and move external mechanical advantage system to other areas of the rescue scene, equipment shortage
		18.3	Build and check appropriate internal and external mechanical advantage systems for use within whitewater/ canyon rescue	Simple internal 3:1 and 5:1 and compound internal 9:1 systems that can be reset and have progress capture. External system, eg 3:1 or 4:1. Correct and safe use by personnel. Line failure considerations whilst under tension. Differences between simple, compound and complex mechanical advantage systems

	Skill sheet element		Learning outcome	Key teaching points
19	Line crossing methods	19.1	Identify the variables that would influence methods for crossing a line over a channel	Span, weather conditions, overhead obstructions, availability of bridge, water conditions, equipment, personnel, in-channel hazards
		19.2	Identify appropriate methods of crossing a line over a channel	Walk (eg bridge). Throw/ launch. Shallow water techniques. Tethered swim. Kayak/other craft
		19.3	Demonstrate a variety of methods of crossing a line over a channel	Some/all of walk, throw/ launch, shallow water techniques, tethered swim, kayak/other craft
20	Tensioned diagonals/ zip lines	20.1	Explain why it is important for a tensioned diagonal/zip line to be tensioned and at the correct angle to the current vector	Correct tension to ensure angle is maintained. Correct angle to ensure object or person on line isn't held mid-stream
		20.2	Identify advantages of a releasable tensioned diagonal/ zip line	If person or object becomes held mid-stream, releasing downstream side allows pendulum into bank
		20.3	Demonstrate appropriate use of a tensioned diagonal/zip line	Anchors, knots. Use of body belay. Use of mechanical advantage system. Correct angle dependent on technique used to tension (body belay vs mechanical advantage). Releasable, sling recovery system if applicable
		20.4	Demonstrate appropriate methods for joining ropes for use in a diagonal/zip line	Use of overhand knot and HMS karabiner
21	Belay systems	21.1	Demonstrate appropriate use and application of friction-based belay	Italian hitch/Münter hitch. Personnel belay on steep banks. Reeve, pay out, take in, tie off
		21.2	Identify considerations for choosing a belay	Water speed, load, ability to release
22	Subsurface equipment recovery	22.1	Identify hazards and control measures associated with subsurface equipment recovery	Depth, underwater hazards, personnel backup. Goggles, swim masks, fins. Evaluation of risk vs benefit. No diving from height
		22.2	Demonstrate correct technique for subsurface equipment recovery	Locate equipment. Duck dive - body flat on surface, bend at the waist, upper body vertical, strong pulled arms, stay vertical. No diving from height. Consideration for flotation of PPE, ie neoprene vs drysuit
		22.3	Identify recovery options	Retrieving by hand vs attaching recovery line

	Skill sheet element		Learning outcome	Key teaching points
23	True rescues - tethered and untethered	23.1	Identify the hazards and control measures associated with a tethered swim in a whitewater environment	In-water debris, bank access, rope management, victim/ casualty behaviour, use of buoyant aids, team backup
		23.2	Set-up and demonstrate an in-water emergency release using the quick release harness on a buoyancy aid	Attach a floating line to quick release harness with V- or Y-lower. Demonstrate in-water release
		23.3	Identify how water speed and distance will affect timing of a tethered swim	Site choice, timing of water entry, forces acting on the belayer, water speed
		23.4	Demonstrate a true rescue using a tethered swim	In-water victim/casualty. Demonstrate long swim to victim/casualty in low grade water. Wade then swim. Demonstrate different water entry - flat water entry, short swim, with close recovery eddy. Clean line principle
		23.5	Demonstrate correct rope management when performing a tethered rescue	Rope management for rescuer. Rope management for belayer - allow for rescuer's dynamic water entry, prevent drag whilst swimming, prevent entanglement with rescuer, recovery into designated eddy. Clean line principle
		23.6	Identify other uses of quick release harnesses, their hazards and control measures.	Entrapments and pins. V- and Y-lowers
		23.7	Identify the hazards and control measures associated with an untethered swim in a whitewater environment	In-water debris, bank access, casualty behaviour, use of buoyant aids, team backup. Aggressive/panicking victim. Difficulty of recovering to bank. Use of throwbag from bank to recover both rescuer and victim. Untethered true rescues are a high risk option, and should only be used in an appropriate/benign environment, ie consideration of downstream hazards

	Skill sheet element		Learning outcome	Key teaching points
24	Victim/casualty management	24.1	Identify hazards and control measures associated with victim/casualty management in a whitewater environment	Weather, water temperature, water speed, river access, bank conditions, in-water features, panicking casualty
		24.2	State the effects that panic and counter-panic can have on victims/casualties	Panic: Eg stressed flailing of arms making rescue difficult. Counter-panic: Casualty/victim may give up hope and not participate in own rescue
		24.3	Identify priorities for managing casualties' common medical issues	Airway, breathing, circulation (ABC), spinal management, trauma injuries
		24.4	Demonstrate techniques for managing casualties' common medical issues, including airway	Airway, breathing, circulation (ABC)
		24.5	Demonstrate use of improvised stretchers.	Eg. paddles, rope, group shelter/tarp. Considerations for steep, slippery banks. Access to casualty and egress for team and casualty
25	Scenarios	25.1	Complete canyon rescue scenario(s)	Examples include: Entrapment, river crossing

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