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NFCC
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National
Operational
Guidance

National Operational Guidance topic	
National Operational Guidance: Water rescue (First edition, volume one)	
Change originator	
NFCC Fire Central Programme Office – National Operational Guidance content team	
Change requested	
<p>Pre review consultation:</p> <ul style="list-style-type: none"> • 17 responses for Water rescue and flooding • 14 responders graded the content as positive and high quality • Various points from the survey have been addressed by this review <p>Each piece of National Operational Guidance should be reviewed on a three-year cycle; this review is part of that agreed process, in conjunction with a separate review of flooding, which is being amalgamated into a new piece of context guidance for Geophysical hazards.</p> <p>It was initially proposed that Water rescue would be combined with Search, rescue and casualty care, after the separation from flooding. However, it became apparent through feedback from stakeholders that it may lose some impact though being combined.</p> <p>The proposal was updated, with Water rescue becoming a standalone piece of guidance, with references to the more generic content in Search, rescue and casualty care where appropriate</p> <p>Trends identified through National Operational Learning have indicated an increase in the number of water rescues, and particularly rescues of submerged casualties. There has also been an increase in incidents involving emerging technologies, such as electric and hybrid road vehicles interacting with water.</p>	
Consultation process	
The draft guidance will undergo a six-week open consultation.	
Changes proposed	Rationale for change
Content added to the introduction to cover the risk management planning considerations for submerged casualties, covering competence, training and risk information	To address the National Operational Learning User Group (NOLUG) recommendations on the fire and rescue approach to submerged casualty rescue
Inserted text in risk management planning for water rescue to consider the impact of climate change	To provide the ongoing consideration of a tangible, global issue that directly affects this subject area

Combined three control measures (<i>Appropriate techniques: Water management systems, Isolate water movement and holding systems, and Specialist advice: Water movement and holding systems</i>) into one control measure, <i>Safe system of work: Water management systems</i>	A more comprehensive way of presenting the content
Removed strategic actions that referred to training of personnel	Covered by training specification
Provided the expectation of JESIP to be applied at all multi-agency incidents in the introduction and removed tactical actions associated with JESIP	JESIP regarded as business as usual for all users of National Operational Guidance
New strategic action: <i>Identify appropriate sources of information and resources to define a water search plan and area</i>	To assist responding personnel access the required information when searching water
Added in further content to assist in identifying a search area	Information is a useful addition to aid search area identification
Added a dedicated hazard of <i>Submerged casualty</i>	To address the issues raised in the National Operational Learning User Group (NOLUG) case
Removal of the generic control measure <i>Arrangements to deal with firefighter emergencies</i> , as contained in the Incident command guidance. Replaced with tailored control measure <i>Initiate firefighter emergency: Water rescue</i> .	To reduce duplication of all-incident content and provide tailored guidance
Added information about the requirement for fire and rescue services to identify the limitations of their training to their personnel, clearly identifying what actions are outside of the expectations of their training. This includes a strategic action.	To support the tactical decisions made by an incident commander and to help in providing clarity at incidents involving a submerged casualty
New strategic action: <i>Establish memoranda of understanding with agencies that may request assistance with body recovery</i>	To help develop procedures and awareness on the responsibilities of body recovery
Change in when the clock can be started in the survivability model, to include when control rooms gain accurate situational awareness	To assist in reducing uncontrolled and unwanted risks being performed at incidents involving water

Added strategic action: <i>Consider providing appropriate equipment to facilitate safe entry and egress into water</i>	Added to facilitate the control measure
Archived strategic action: <i>Ensure staff are aware of the effects of cold water shock</i>	Removed as will be covered in training specifications
Linked vehicle in water hazards to transport	To maintain and improve clarity in guidance to the context where necessary
Revised strategic action and used against two control measures: <i>Provide appropriate communication equipment for water rescue incidents</i>	To assist with rescue from water
New strategic action: <i>Provide appropriate equipment to safely rescue casualties from a road vehicle in water</i>	To assist with rescue from road vehicles in water
Changed the hazard title from <i>Vehicle in water</i> to <i>Casualty in a vehicle in water: Rescue</i>	A vehicle in water is not a hazard as such within this guidance
Changed control measure title from <i>Evacuating road vehicles in water</i> to <i>Rescue from road vehicles in water</i>	This control measure was centred around stranded road vehicles in floodwater. This will be covered in Geophysical hazards. This control measure now covers elements of a rescue of people from a vehicle in water.
Added strategic action: <i>Consider providing the necessary equipment for a suitable assessment and treatment of a casualty in water</i>	Expanded control measure knowledge and a lack of an appropriate strategic action
Added into control measure knowledge, a consideration for emergency water rescue teams when other teams are deployed in a risk area	This was at the request of the Fire Brigades Union and as an acceptable request when dealing with rescues in the water environment
Moved National Resilience Flood Rescue control measures under the hazard <i>Insufficient resources: Water rescue</i>	To highlight the National Resilience control measures against the correct hazard.
Amended content around search levels	Refers to the content in the Department for Environment, Food & Rural Affairs (Defra) Flood rescue concept of operations (FRCO) and improves alignment with the police
Added strategic action: <i>Provide personnel with access to up-to-date information regarding</i>	Include one of the Transport guidance strategic actions for fire and rescue services to provide

<i>vehicle design, including vehicle safety systems</i>	personnel with access to data on electric road vehicles and safety systems for road vehicles in water
Control measure title change from <i>Communication strategy</i> to <i>Effective communications: Water rescue</i>	Tailored guidance for communications at a water rescue incident
Added in content regarding electric road vehicles and how to deal with them when submerged	To improve firefighter safety when dealing with submerged electric road vehicles
Reinstatement of the casualty care hazards and control measures relating to water rescue	When carrying out the review, it was discovered that the generic hazards and control measures for casualty care had been published in this section of guidance in error
Removal of hazards and control measures that are published in other sections of guidance	Removal of duplicated content – the affected elements have been moved to the end of the draft document
Impacts on other guidance and NOG products	
<p>Some minor impacts to other pieces of guidance have been identified:</p> <ul style="list-style-type: none"> • Flooding, including evacuation due to flooding, relocated to the new Geophysical hazards guidance • Amend all hyperlinks in the guidance where they currently point to the <i>Water rescue and flooding guidance</i> • Additional detail to be added to the <i>Corporate guidance for operational activity: Site specific risk information control measure</i>: <ul style="list-style-type: none"> ○ Sites where people are likely to require being rescued from water ○ Control mechanisms that may be able to assist in reducing the flow and volume of water in waterways • Relocate the hazard <i>Biosecurity</i> and the control measures <i>Clean equipment, vehicles and personal protective equipment</i> and <i>Specialist advice: Biosecurity</i> to the <i>Environmental protection guidance</i>; these topics already exist in the <i>Environmental protection handbook</i> and should be pointed to from this hazard and control measure <p>Relevant training specifications and scenarios will be redrafted to reflect approved changes.</p>	



National
Operational
Guidance

Water rescue

DRAFT

Water rescue review for consultation

March 2021

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1 Introduction

2 This section of National Operational Guidance sets out the hazard knowledge and control measures
3 that should be considered for the rescue and care of casualties in water. The aim is to integrate the
4 knowledge, understanding and actions required to support the appropriate, safe and efficient
5 resolution of any incident involving rescues from water. Personnel should be made aware of the
6 hazards that exist when responding to a rescue from water. They should also understand how their
7 actions may impact on the environment and other emergency responders. This guidance should be
8 read in conjunction with:

- 9 • Search, rescue and casualty care
- 10 • Geophysical hazards
- 11 • [Operations – Infectious diseases](#)
- 12 • [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of](#)
13 [operations \(FRCO\)](#)

14 Terminology

15 To clarify the position of a casualty or object in relation to the water, the following terminology is
16 used:

- 17 • **Underwater or submerged** (also referred to as subsurface by other agencies)
18 A state where a person's airway is compromised due to their physical position in the water,
19 usually due to their head being under the surface of the water
- 20 • **In the water**
21 A situation where a person is partially submerged, with their head above the surface of the
22 water
- 23 • **On the water**
24 Where the person is in or on a vessel, such as a kayak or inflatable dinghy

25 Risk management plan

26 Each fire and rescue authority must develop their strategic direction through their risk management
27 plan. To determine the extent of their services, strategic managers will consider their statutory
28 duties and the foreseeable risk within their area.

29 Work to identify risk and prepare operational plans should consider all stakeholders, including local
30 emergency planning groups and the fire and rescue service risk management plan.

31 Risk management planning for water rescue

32 Risk management plans should consider the foreseeable water-related hazards and events that may

33 result in the need for a water rescue. The community risk profile, along with knowledge of local
34 infrastructure that includes bodies of water should inform risk management planning for water
35 rescue. This should include the identification of sites where people are likely to require being
36 rescued from water.

37 Water risks should be considered as part of overall risk management planning and consider the
38 foreseeable hazards associated with water rescue. The community risk profile, along with knowledge
39 of local infrastructure that includes bodies of water, should inform risk management planning for
40 water rescue. ly to negatively interact with each other. Community risk profiles provided by
41 responsible bodies will further help to develop risk management plans.

42 Climate change is having profound effects on the environment, including an increase in rainfall. This
43 may result in unexpected or unpredictable bodies of water that present hazards to people. The
44 impacts of climate change should be considered in risk management planning for water rescue.

45 Water may present a hazard to people through them:

- 46 • Using bodies of water for recreation or transport, such as:
 - 47 ○ Lakes
 - 48 ○ Rivers and streams
 - 49 ○ Reservoirs
 - 50 ○ Canals
 - 51 ○ Ponds
 - 52 ○ Swimming pools
 - 53 ○ Tidal pools
 - 54 ○ Those created by heavy rainfall, for example, water in disused quarries
- 55 • Accidentally entering a body of water, such as those:
 - 56 ○ In unlit areas
 - 57 ○ Near to uneven ground, footpaths or cycle paths
 - 58 ○ In parks or playgrounds
 - 59 ○ Near to public houses or nightclubs
- 60 • Accidentally entering a body of water while in a road vehicle

61 ~~Assessments of water hazards should include the identification of existing bodies of water,~~
62 ~~particularly those used by the public for recreation and those that are likely to negatively interact~~
63 ~~with the public, such as disused quarries, tidal pools and canal systems or areas that may be affected~~
64 ~~in times of heavy rainfall or tidal surges.~~

65 ~~It may be necessary to identify areas where bodies of water are of increased risk due to their~~
66 ~~proximity to areas where environmental and human factors may exist, such as darkness, uneven~~
67 ~~ground, cycle paths, playgrounds, pubs and nightclubs.~~

68 For more information about flood planning refer to Geophysical hazards – Flooding.

69

70 **Submerged casualties**

71 Fire and rescue services need to consider their approach to attending incidents where casualties
72 have been identified as being submerged for a prolonged period, in situations that are not conducive
73 to support life.

74 Personnel must not be deployed to perform a rescue at an incident where a casualty is submerged
75 that knowingly requires personnel to remove personal protective equipment (PPE). Personnel must
76 not attempt a rescue that is not performed from the surface of the water, in the water, from land, or
77 within agreed protocols and parameters.

78 If a rescue is deemed outside of the parameters identified in service policies, procedures or tailored
79 guidance, it is still appropriate for personnel to be mobilised to perform functions such as:

- 80 • Implementing cordon controls
- 81 • Establishing the necessary safety measures
- 82 • Gathering risk and resource information and requirements

83 Pre-planning can reduce the likelihood of personnel being exposed to perform an unnecessary
84 underwater rescue. It should be used to ensure the mobilisation of the most effective resource, to
85 allow rescues to be performed that are within the firefighter's identified capabilities, and the
86 expectations of the role they are undertaking.

87 **Water awareness**

88 All personnel who are likely to be exposed to bodies of water, regardless of their level of
89 competence, need to be aware of the hazards and risks that may be present. They also need to be
90 aware of the hazards and risks associated with a water rescue.

91 **Fire control room role**

92 To ensure that water rescue incidents are dealt with safely, effectively and efficiently, fire and rescue
93 services should train fire control personnel so that they can appropriately screen calls. Fire control
94 personnel should understand how to interrogate callers to gather situational awareness, which
95 would include:

- 96 • Information about the risks and hazards
- 97 • Access to the incident
- 98 • If anyone is currently attempting to rescue the casualty
- 99 • If any other emergency responders are in attendance or en route to the incident
- 100 • Whether the casualty is on, in or under the water
- 101 • If the casualty is submerged, how long ago were they last seen

102 **Responsibility of fire and rescue services**

103 Fire and rescue services are responsible, under legislation and regulations, for developing policies
104 and procedures and to provide information, instruction, training and supervision to their personnel
105 about foreseeable hazards and the control measures used to reduce the risks arising from those
106 hazards.

107 This guidance sets out to provide fire and rescue services with sufficient knowledge about the
108 potential hazards their personnel could encounter when attending incidents. Fire and rescue
109 services should ensure their policies, procedures and training cover all of the hazards and control
110 measures contained within this guidance.

111 **Roles and responsibilities**

112 Although there is no specific legislative duty for fire and rescue services in England to respond to
113 flooding or water rescues, the [Fire and Rescue Services Act](#) does make provision for rescuing and
114 protecting people in the event of emergencies, other than fires and road traffic accidents.

115 [The Fire and Rescue Services \(Emergencies\) \(Wales\) \(Amendment\) Order](#) contains an amendment to
116 include a duty to prepare for and respond to flooding and rescues from inland waters.

117 [The Fire \(Additional Function\) \(Scotland\) Order](#) and [The Fire and Rescue Services \(Emergencies\)
118 Order \(Northern Ireland\)](#), sets out a duty for the Scottish Fire and Rescue Service and the Northern
119 Ireland Fire and Rescue Service to prepare for and respond to serious flooding. This includes any
120 flooding that causes or is likely to cause a person to die, be seriously injured or become seriously ill.

121

122 **Hazard – Hydrological hazards**

123 *HAZARD KNOWLEDGE*

124 Hydrology is the science concerned with the properties of water, and especially its movement in
125 relation to land. The study of water movement and its behaviour relating to the topography, allows
126 personnel to assess the hydrological hazards that can exist in moving or static water. This [website](#)
127 provides some descriptions and diagrams of hydrological hazards.

128 The hazards of water will vary greatly, depending on whether the water is static or flowing, rising or
129 receding, its temperature, speed and depth. To properly assess an appropriate course of action,
130 personnel should understand water hazards and hydrology.

131 The force of water is directly related to the speed and volume of the flow; doubling the water speed
132 will quadruple the force. Small volumes of water at sufficient velocity may be enough to cause
133 personnel to lose their footing. Standing water will exert an upward pressure against an object,
134 which may cause it to lift, and a lateral pressure that can cause movement of structures, vehicles and
135 people. For more information relating to vehicles in water refer to Casualties in a road vehicle in
136 water.

137 Micro geography in a water environment can create radically different water movement and
138 hydrological features over very short distances, even less than 1m. The risks to personnel will need
139 to continuously reviewed by the teams, with team leaders being responsible for decision-making,
140 based on their level of competence.

141 **Moving water in a channel**

142 It can be useful to consider a moving body of water as a series of connected layers rather than a
143 single body. In flowing water, the layer in the middle of the channel generally moves fastest, with
144 the speed decreasing closer to the edge or bottom of the channel.

145 Casualties or personnel caught in the flow may be subject to impact, as the water collides with
146 structures or objects in its path. The noise of moving water can affect communication between
147 people, whether in the water or on land.

148 **Recirculations**

149 When water passes over a vertical drop it accelerates and then recirculates downstream of the drop.
150 This can cause a casualty or object to be held by the recirculating water. The strength of the
151 recirculation will vary depending on water levels, angle of descent and speed of flow.

152 Recirculations may create 'tow back', an area of water that moves back against the direction of the
153 flow, pulling an object or casualty back towards the hazard. They can aerate the water, which may
154 affect the buoyancy provided by personal protective equipment (PPE) and buoyancy aids. Because
155 the aeration of water reduces the density and makes swimming less effective, coupled with the
156 strength of the water, it may not be possible to swim out of a recirculation hydrological feature .

157 **Undercut riverbanks**

158 Moving water will erode underwater materials such as mud and stone. This erosion can be unseen,
159 particularly where the substrate beneath the surface is softer than that above it. Areas that are
160 subjected to continuously greater forces generated from the flow, such as a waterfall or bend in a
161 river, are also more prone to erosion.

162 Erosion or undercutting can make riverbanks unstable, collapsing when a load is applied.
163 Underwater areas that have been subject to undercutting can also generate eddies that pull objects,
164 casualties and personnel into holes and gaps beneath the surface.

165 **Eddies**

166 Where flowing water passes static or slower moving water, it causes the area of static water to
167 rotate in the opposite direction to the main flow. This recirculated water, or eddy, is slower than the
168 main flow. The reduction in speed causes debris to be deposited, reducing water depth around
169 eddies. Areas of slower flow and shallower water, such as those around eddies, can be an area of
170 relative safety in the water.

171 Eddies form more frequently as water speed increases and may form behind obstacles in flowing
172 water, where channels increase in width suddenly and where a narrow channel of flowing water
173 enters a wider, static body of water.

174 **Inland waterways**

175 A casualty who has fallen into an inland waterway may become involved with the features present,
176 such as sluice gates, locks, and debris strainers. These features can produce the same hydrological
177 hazards experienced in a natural river environment and the operation of such mechanisms may
178 result in injury or death. For more information refer to [On-site machinery: Water management
179 systems](#).

180 **Flood water**

181 Flood water should be considered in a similar way to moving water when considering a water
182 rescue. The principles of operating in moving water apply, even when the conditions appear to be
183 still. As with tidal conditions, water levels can rise rapidly. For more information refer to Geophysical
184 hazards - Flood.

185 Flooded built environments will create entrapment hazards that may not be expected, such as
186 displaced drain covers or submerged street furniture. These items can create hydrological hazards,
187 like those found in the natural environment.

188 **Tidal water**

189 Tidal conditions are usually predictable, which can be anticipated and prepared for. However, tidal
190 water can rise quickly, isolating people and resources, and the depth of water can change rapidly as
191 the tide turns. This represents a significant hazard to those who are unprepared for tidal changes.

192 Incidents involving tidal water have additional hazards from currents and waves. Some rivers, inlets
193 and estuaries are influenced by tides.

194 Care should be taken to avoid being cut off or isolated from egress routes. This may occur over a
195 very short space of time, at least twice a day. Where ingress and egress of tidal water is restricted,
196 for example around a tunnel, water levels can change dramatically and unexpected hazards may
197 form quickly, including recirculations. If teams may be made available for mutual aid deployments
198 out of their area, they should be trained and equipped to operate in all foreseeable water
199 environments, including tidal waters.

200 **Sea foam**

201 Sea foam is a common natural occurrence, along the coastline in small quantities, which may result
202 in a fire and rescue service responding to a coastal rescue.

203 On rare occasions it can accumulate in very large quantities, often due to wind, water currents and
204 waves pushing the foam towards land features that trap it, for example, coves, gullies, and harbour
205 walls. It has been recorded that foam can reach up to 3m in depth.

206 There are specific circumstances where it can present significant risks. It is often difficult to assess
207 the level of risk, as the composition of the foam is unknown in the early stages of the incident. This
208 could include health hazards, such as infectious diseases. For more information refer to [Operations –
209 Infectious diseases](#).

210 The foam may present risks including:

- 211 • Low buoyancy compared to water
- 212 • Casualties and rescuers will sink through it
- 213 • Powered rescue craft will have issues with buoyancy and oxygen starvation to engines
- 214 • Restricted visibility in the foam, making it difficult to estimate its depth or see submerged
215 obstacles or hazards
- 216 • A lack of visual reference, which increases the risk of slips, trips and falls

217 Any dynamic wave action or currents below the surface of the foam will be 'dampened'; the surface
218 of the foam may be static while there is water movement below it.

219 **Obstructions in the water**

220 In a moving body of water, hazardous debris and materials including large objects can affect
221 personnel or compromise safe systems of work. Debris may be on the surface, suspended in the
222 water or rolling along the bottom.

223 Rocks or other debris, such as branches or rubbish, underwater or partially submerged, may present
224 entrapment or entanglement hazards. This is particularly hazardous in flowing water, where the
225 force of water may also cause a loss of balance. Poor water clarity will make it difficult to identify
226 obstructions in the water.

227 **Biosecurity**

228 Fire and rescue services can affect biosecurity if facilitating the transfer of material from one open
229 water source to another. This could be as a result of equipment, vehicles or PPE being contaminated

230 while carrying out a water rescue.

231 Unless otherwise confirmed by a responsible person, bodies of water should be treated as if they are
232 contaminated, as they may contain biological hazards. This could include harmful substances, such
233 as sewage or industrial chemicals. Bodies of water may also contain invasive species.

234 For more information refer to Environmental protection – Biodiversity.

235 **Control measure – Check water and tidal conditions**

236 *CONTROL MEASURE KNOWLEDGE*

237 Where available, fire and rescue services should receive notification of strong stream advice, tide
238 predictions and river level warnings. This information can be used to predict likely changes in river
239 levels that may affect tactical plans.

240 Information regarding river conditions in a fire and rescue service’s area may be provided by
241 environmental agencies, the Met Office, the Rivers Agency or local water management groups, such
242 as the Canal Trust or local drainage boards.

243 Physical observations on the state of the water may provide an accurate assessment of the hazards
244 present and the hydrology of the river, and where best to operate in the water. It may be
245 appropriate for a safety officer to be appointed to carry out this assessment. For more information
246 refer to Safety officers: Water rescue.

247 Tidal changes occur predictably in coastal waters and rivers, but the timings of high and low tides
248 fluctuate throughout the year. Planning for water rescue incidents should take into account tidal
249 conditions if relevant, by using tide charts or timetables.

250 Beach tide times are available from the [Met Office](#) and tide tables are available from the [BBC](#). Other
251 sources of information may be required for specific locations.

252 Local authorities, water management bodies, environmental agencies and the Met Office may be
253 available to provide water temperature charts. Available charts will provide either average, expected
254 or current water temperature information for seas, rivers and other bodies of water. If available,
255 temperature data should be considered when planning for or carrying out a water rescue.

256 *STRATEGIC ACTIONS*

257 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21361	<ul style="list-style-type: none">Establish mechanisms to receive and share notifications of changes in river conditions	No change

21370	<ul style="list-style-type: none"> • Provide relevant personnel with access to information on tide patterns if appropriate 	Revised
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258 *TACTICAL ACTIONS*

259 Incident commanders should:

- 260 • Access all available information sources on river levels and conditions
- 261 • Consider contacting environmental agencies or other responsible bodies for information on
262 changes in river conditions and levels
- 263 • Use visual assessment of the water to identify hazards and hydrological features
- 264 • Consider appointing safety officers to assess river conditions
- 265 • Consider using tide times and temperature charts when planning for or carrying out a water
266 rescue

267 **Control measure – Cordon controls: Water rescue**

268 **This control measure should be read in conjunction with Incident command – Cordon controls**

269 *CONTROL MEASURE KNOWLEDGE*

270 When working near, on or in water, it may be appropriate to establish hazard areas to restrict the
271 movement of personnel, depending on levels of training and available equipment. Where possible,
272 areas should be indicated using physical barriers and access should be controlled. However, if a large
273 geographical area is involved, this may not be feasible.

274 If cordons for hazard areas are required, access should be controlled by using comprehensive
275 briefings and physical barriers. Personnel should be directed to operate in safe areas, such as
276 guarded edges where possible.

277 Cordons may also be required to prevent members of the public from entering the hazard area.

278 Hazard areas can be separated into hot, warm and cold zones. It may not always be appropriate to
279 establish zones, or access to the hot zone may be prevented depending on the risk assessment.

280 Known bodies of water, with limited risk, may not require any hazard zones to be established.

281 The hot zone is usually defined as the area of water or unstable surface. This area may be expanded
282 based on risk assessments. The hot zone is the area of greatest risk, where rescues will be carried
283 out; it should only be entered by personnel with the appropriate training and personal protective
284 equipment (PPE).

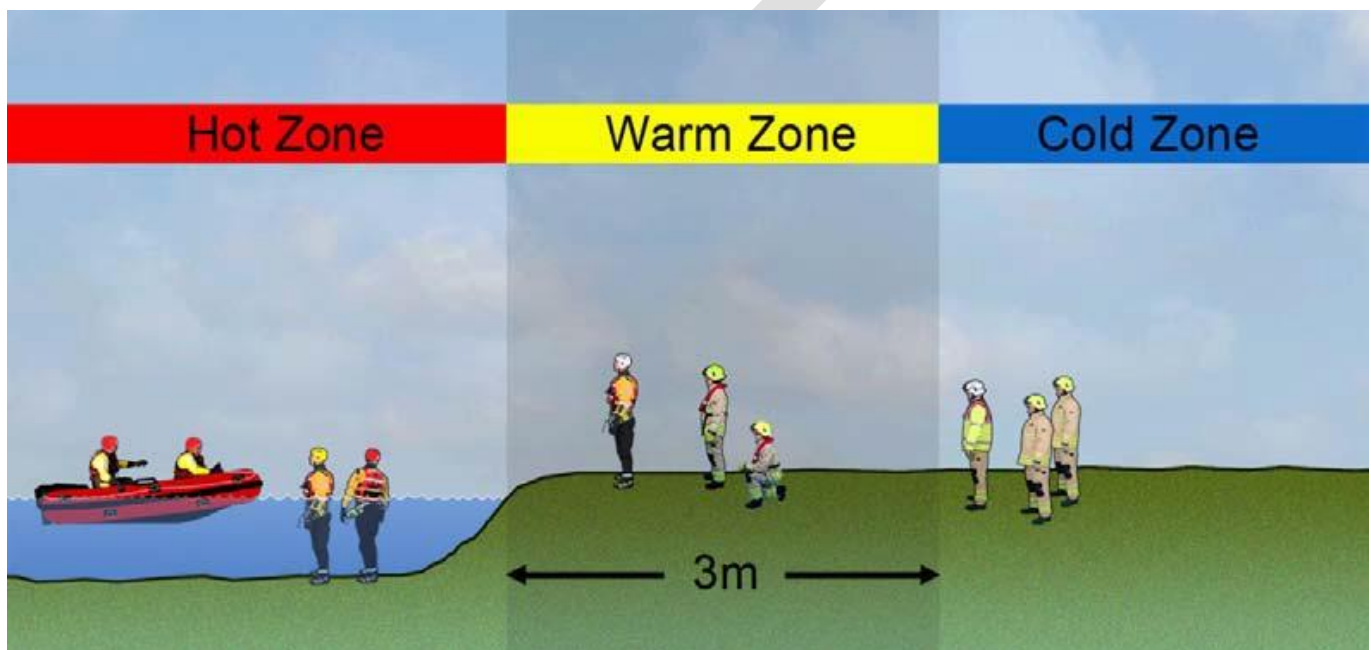
285 The warm zone is the working area adjacent to the hazard, usually within 3m; this distance may be
286 extended or reduced following a risk assessment. There may be a significant risk of uncontrolled
287 entry into the water in this area. A warm zone may not be required when accidental entry into water
288 can be prevented, or if the hazard from entry is minimal, such as still bodies of water with known
289 depths. Personnel working in the warm zone should be suitably trained, equipped and briefed to

290 carry out specific tasks.

291 The cold zone is a safe area located outside the hot and warm zones. Equipment dumps, holding
292 areas, casualty reception centres and marshalling areas can be located in this zone.

293 The cold zone is usually established beyond 3m from the water's edge. However, this distance will
294 depend on the ground conditions, slope and presence of barriers around the edge of the water. It
295 may be extended or reduced following a risk assessment.

296 It is important that these zones are established, effectively implemented and communicated to all
297 emergency responders as early as possible, to maintain safe working areas and to assist in defining
298 roles, responsibilities and objectives.



299
300 Figure: Diagram showing an example of hot, warm and cold zones for a water-related incident

301 The geographic scale of a water rescue incident can make the management of personnel difficult. To
302 establish greater levels of command and control, incident commanders should consider cordon
303 control gateways that perform the activity of logging and permitting the number of personnel
304 committed to the hazard area. This should include the times of entry of personnel, assigned tasks
305 and equipment.

306 It may be necessary to place appropriate limits on durations committed to the hazard area. The
307 duration of commitment will depend on the required tasks and environmental conditions. Regular
308 radio contact with personnel in the hazard area should be maintained.

309 Appointing a safety officer can assist in controlling a cordon and the zones within it. For more
310 information refer to Safety officers: Water rescue.

311 STRATEGIC ACTIONS

312 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21663	<ul style="list-style-type: none"> • Provide appropriate means of implementing and controlling cordons at incidents involving water 	No change

313 *TACTICAL ACTIONS*

314 Incident commanders should:

- 315 • Ensure that personnel operate on the safe side of existing guarding near water or unstable
- 316 surfaces
- 317 • Establish and maintain the hazard area and hot, warm and cold zones and communicate to
- 318 all emergency responders, including any changes
- 319 • Ensure that entry to the hazard area is controlled, including the need for appropriate PPE
- 320 • Consider using cordon control gateways for water rescue incidents
- 321 • Consider appointing a safety officer to control cordons and the zones within it for water
- 322 rescue incidents

323 **Control measure – Effective communications: Water rescue**

324 *CONTROL MEASURE KNOWLEDGE*

325 Using common terminology when conducting briefings, debriefings and operating near water is vital,

326 to ensure messages are understood.

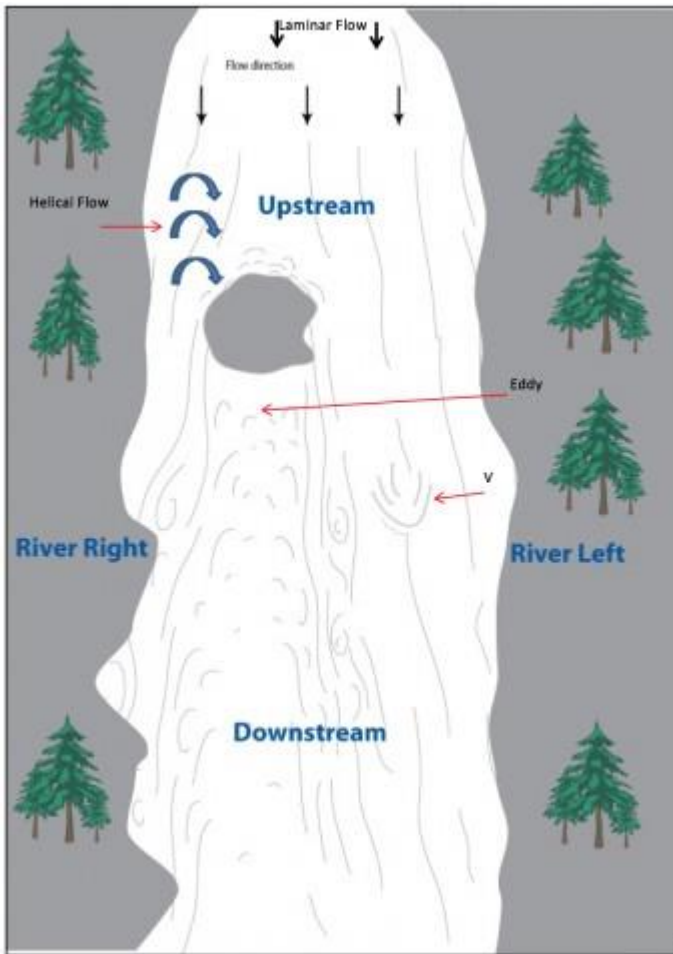
327 When working near, on or in flowing water, personnel are often facing the opposite direction to

328 spotters and may be working on different riverbanks. Upstream is the area closer to the source of

329 the flow and downstream is the direction of flow of the water. To avoid confusion, downstream is

330 always considered to be forward, river right is the right-hand side when facing downstream and river

331 left the left-hand side.



332

333 Communication with personnel committed to the water can be difficult. The noise of moving water
 334 and the distance between personnel may make verbal communication between personnel difficult.
 335 Although waterproof communication equipment is available, it is often not appropriate for
 336 swimmers, due to the effects of the water, personal protective equipment (PPE) and levels of
 337 exertion.

338 **Hand and whistle signals**

339 To ensure interoperability and joint understanding between teams regardless of their agency, it is
 340 essential that all teams use a standard set of signals for communication. The [Department for](#)
 341 [Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of operations \(FRCO\)](#) (page 39)
 342 provides a list of standard hand signals and whistle blasts that will assist with communication for
 343 emergency responders when working near, on or in water.

344 If the standard hand or whistle signals are inappropriate for a specific tasks or incident, variations
 345 should be established and confirmed with all emergency responders.

346 **Radios**

347 A consideration for communicating with other agencies that may be involved in water rescue may
 348 assist in improved interoperability. For example, Her Majesty's Coastguard (HMCG) uses very high
 349 frequency (VHF) radios.

350 *STRATEGIC ACTIONS*

351 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21381	<ul style="list-style-type: none"> • Provide appropriate communication equipment for water rescue incidents 	Revised

352 *TACTICAL ACTIONS*

353 Incident commanders should:

- 354 • Consider using appropriate equipment or other methods of communication for water
355 rescues
- 356 • Ensure all emergency responders involved in the water rescue have a joint understanding of
357 the communication signals being used

358 **Control measure – Safety officers: Water rescue**

359 *CONTROL MEASURE KNOWLEDGE*

360 Safety officers should be appointed, briefed and positioned as soon as practicable. They should have
361 an understanding of the nature of the incident and the environment that personnel are working in.
362 The hazard area and activities being carried out should influence the number and location of safety
363 officers required at water incidents.

364 The effective use of personnel and equipment, particularly when waiting for additional resources to
365 arrive, will need to be prioritised. It may be necessary to implement either downstream safety teams
366 or upstream spotters according to a risk assessment.

367 The following safety officer roles are suitable for water incidents:

368 **Upstream spotters**

369 Upstream spotters should be appointed to identify hazards, such as debris that may present a risk to
370 personnel and the casualty in the water. This information should be communicated to personnel,
371 including the incident commander, at the earliest opportunity. Upstream spotters should also
372 communicate any changes in conditions, or sudden releases of water.

373 **Downstream safety officers**

374 Downstream safety officers are positioned to retrieve personnel and provide assistance to
375 casualties.

376 Situational awareness and a risk assessment should be promptly used to determine if downstream

377 safety teams will be required. This should take into account the urgency of the rescue and the
378 available resources.

379 Personnel should be positioned at a suitable point downstream to perform rescues. When using
380 safety systems, such as downstream safety lines, the time required to establish and deploy them is a
381 factor to be considered. It may be necessary to adopt alternative downstream safety until systems
382 have been established.

383 Safety systems should be appropriate for the environment; for example, when working near large
384 static bodies of water, watercraft may be used to recover personnel who accidentally enter the
385 water. A fixed downstream safety line, or teams positioned on the bankside, may be appropriate to
386 perform in water or bank-based rescues.

387 Downstream safety officers should be positioned with safe entry and egress points in mind. Entry
388 and egress may not necessarily be the same point; water and bank conditions may make a point
389 further downstream more suitable for egress.

390 Downstream safety teams should be comprised of a suitable number of personnel and appropriate
391 equipment, with the ability to rescue all people committed to the water, including personnel in
392 watercraft and casualties.

393 If downstream safety officers are not deployed, another means of recovering casualties or personnel
394 should be considered.

395 **Safety officers for the management of tethers or lines**

396 If watercraft or personnel are tethered, trained personnel should manage any lines or tethers in use.
397 They should be positioned at a point of relative safety, considering the requirements of the rescue.

398 Appointed safety officers should perform checks of equipment and personal protective equipment
399 (PPE), confirm communication signals, hazards, control measures and any expected tasks. Safety
400 officers should ensure that the clean line principle is maintained throughout the rescue. For more
401 information refer to Clean line principle.

402 Any member of personnel managing a line should always have a clear line of sight to the tethered
403 member of personnel or personnel in the watercraft and maintain verbal or visual communication
404 with them.

405 **Controlling hazards entering the area of operations**

406 Members of the public, including swimmers, divers and those using vessels, may be unaware of
407 operational activity. They may affect search and rescue activities or endanger personnel, casualties
408 and themselves. Moving vessels can also cause water movement, making searching and rescues
409 more difficult.

410 To provide a safe working environment, spotters should be positioned a suitable distance from the
411 area of operations so that they can inform personnel of potential hazards entering the area. They
412 may also need to stop members of the public from entering the area while a water search or rescue
413 is in progress. When positioning spotters, consider the speed of flow and physical restrictions of the

414 location, to allow the best opportunity for early identification and communication of hazards.

415 **Control of cordons**

416 It may be necessary to appoint a safety officer to ensure that the cordons are maintained and that
417 the personnel operating within the cordons are wearing the necessary PPE in line with the identified
418 risks, such as unstable riverbanks and unguarded hazards.

419 The cordons may need to be extended or reduced, following a risk assessment. The safety officer
420 should monitor the situation and make recommendations for changes to the incident commander.
421 The safety office should also ensure personnel are kept advised about any changes to the cordons.
422 For more information refer to [Cordon controls: Water rescue](#).

423 *STRATEGIC ACTIONS*

424 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21376	<ul style="list-style-type: none">• Provide equipment suitable for establishing safety systems at water incidents	No change

425 *TACTICAL ACTIONS*

426 Incident commanders should:

- 427 • Consider appropriately deploying safety officers at water rescue incidents
- 428 • Consider using safety systems when carrying out water rescues
- 429 • Appropriately restrict members of the public from entering the area of operations while a
430 water search or rescue is in progress
- 431 •

432 **Hazard – On-site machinery: Water management systems**

433 *HAZARD KNOWLEDGE*

434 Water management systems are the various types of on-site machinery used to stabilise channels
435 and manage water levels. The systems are used to:

- 436 • Manage flooding
- 437 • Maintain water supplies for irrigation
- 438 • Impound water for navigation
- 439 • Control levels up or downstream of the system for ecological or other purposes

440 Water management systems include:

- 441 • Sluices
- 442 • Weirs
- 443 • Pumping stations
- 444 • Locks

445 Individual features may appear in isolation, especially static weirs, but usually form part of a system
446 of water management features. Where structures prevent navigation of the channel, locks or man-
447 made channels that bypass the system are usually present.

448 When these systems are activated or in use, they may create movement of water that can produce a
449 range of hydrological hazards. For more information refer to [Hydrological hazards](#).

450 Locks are structures that allow vessels to navigate a channel. Although lock gates are operated either
451 manually or automatically by someone on site, it is possible for them to move as water pressure
452 changes. This occurs if the gates have not been secured properly, have been poorly maintained or
453 due to a failure in the system. Guillotine gates are used to reduce pressure to allow lock gates to
454 open; these can release water, which can form strong currents.

455 [The Canal & River Trust website](#) provides more information about lock gates and canals.

456 Pumping stations manage water levels between two separated bodies of water, for example a drain
457 or dyke and a river. The size and design of pumping stations vary greatly, but most operate using an
458 impeller system protected by a weed screen, with secure hatches to prevent entry. Impellers may
459 operate with little or no warning and will almost immediately achieve a hazardous velocity. The
460 volume of water moved can be substantial, creating hazards upstream and downstream of the
461 system. An upstream pull towards a filter designed to safeguard operating equipment can generate
462 enough pressure to pin or trap a casualty or rescuer, similar to a strainer in fast flowing water.

463 Sluices and weirs may be fixed in position but can often be lowered or raised, changing level
464 depending on local requirements or weather conditions. Weirs are man-made features designed to
465 regulate the flow of water downstream. The regulation of water can create increases in speed and
466 dangerous currents. Changing levels can cause the formation of undertows, hydraulics or

467 recirculations downstream of a weir.

468 A person or object in the water may be drawn towards the face of the weir and forced under the
469 surface. Depending on the design and the presence of undercutting, a person caught in a
470 recirculation may be flushed out further downstream or held below the surface. The recirculating
471 water may also hold a person within it.

472 Sluices operate in a similar manner to weirs but allow water to run underneath rather than over the
473 top of the gate. Changes in position and conditions created are harder to identify and are likely to be
474 submerged. Sluice gates restrict flow by allowing the release of water below the surface, which can
475 create dangerous eddies, unseen recirculation, siphons and undertows.

476 **Activation of water management systems**

477 Water management systems may be fixed, or operated manually, automatically or remotely.
478 Activation of automated systems can be based on water level triggers, timed or seasonal
479 programmes. Any decrease or increase in water levels will affect the flow and hydrology of a body of
480 water. Decreasing or increasing flow rates can be hazardous, as unexpected hydrological features
481 may form. When water levels decrease, submerged objects may come closer to the surface and the
482 risk of entrapment may increase. Any risk assessment of a water management system is time-
483 limited. Changes in water levels and operation of the system will change the hazards associated with
484 the system.

485 Although systems may have visual or audible warnings when activated, it is common for no
486 activation warning to be given. Changes in conditions may not be evident, for example a sluice gate
487 raised incrementally may not be obvious, but conditions may change significantly enough to prohibit
488 entry into an area that was previously assessed to be safe.

489 **Control measure – Safe system of work: Water management systems**

490 *CONTROL MEASURE KNOWLEDGE*

491 When attending incidents on canals, all lock gates and paddles should be completely closed before
492 any rescue attempt. Personnel should not attempt to open the lock gates or paddles to empty the
493 lock as releasing the water can result in strong currents and turbulence downstream.

494 Personnel should not work in the water near a lock gate without first taking control of the gates.
495 Where possible, an exclusion zone should be established on the high-pressure side of the lock gates
496 and paddles. Access to the lock should be via the fixed raking ladder. Mud and silt will be present on
497 the canal bottom and lock walls.

498 Any attempt to drain the lock should consider the potential of trapping the casualty. A 50mm gap
499 will create sufficient pressure to pin a person. If the incident involves a casualty below the surface of
500 the water and it is not possible to assist without underwater equipment, a specialist underwater
501 rescue and recovery team should be requested.

502 Personnel should not enter the operating areas of the pumping station unless confirmation that
503 isolation has been achieved is received from a responsible person. Any related machinery including

504 weed screen cleaners should be isolated prior to a rescue attempt.
 505 Weirs and sluice gates vary greatly in their potential for harm. Personnel should avoid entering these
 506 features unless a well-informed risk assessment identifies that it is safe to do so.

507 Fire and rescue services should identify appropriate means of rescue, control measures and
 508 exclusion zones for water management systems in their area. It may be beneficial to participate in
 509 joint on-site training and exercises to provide personnel with a better understanding of water
 510 management systems.

511 **Isolate water movement and holding systems**

512 Automated water management systems may have on-site isolation switches or control panels. To
 513 prevent public access, they are usually in a secure location. Activating these systems may affect
 514 hydrology in unexpected ways and the effects will vary with levels and speed of flow. Activation will
 515 also affect areas remote from the system, including the potential to cause flooding or damage to
 516 vessels located up or downstream. Activation should only ever be considered with the permission
 517 and advice of the managing agency.

518 Personnel should not enter an area where there is a water management system until confirmation
 519 has been received of its isolation.

520 For more information refer to [Utilities and fuel: Lock out power supplies to on-site machinery.](#)

521 **Specialist advice**

522 Water management systems are usually operated by either an environmental agency, canal trust or
 523 an internal drainage board. Contact details for engineers and responsible persons for water
 524 management systems should be displayed nearby. Fire and rescue services should maintain a record
 525 of managers of known water management risks and their contact details as appropriate.

526 GOV.UK provide information about [river level and strong stream warnings](#) for certain areas and
 527 rivers. This includes warnings of increased activation of water management systems.

528

529 *STRATEGIC ACTIONS*

530 Fire and rescue services should:

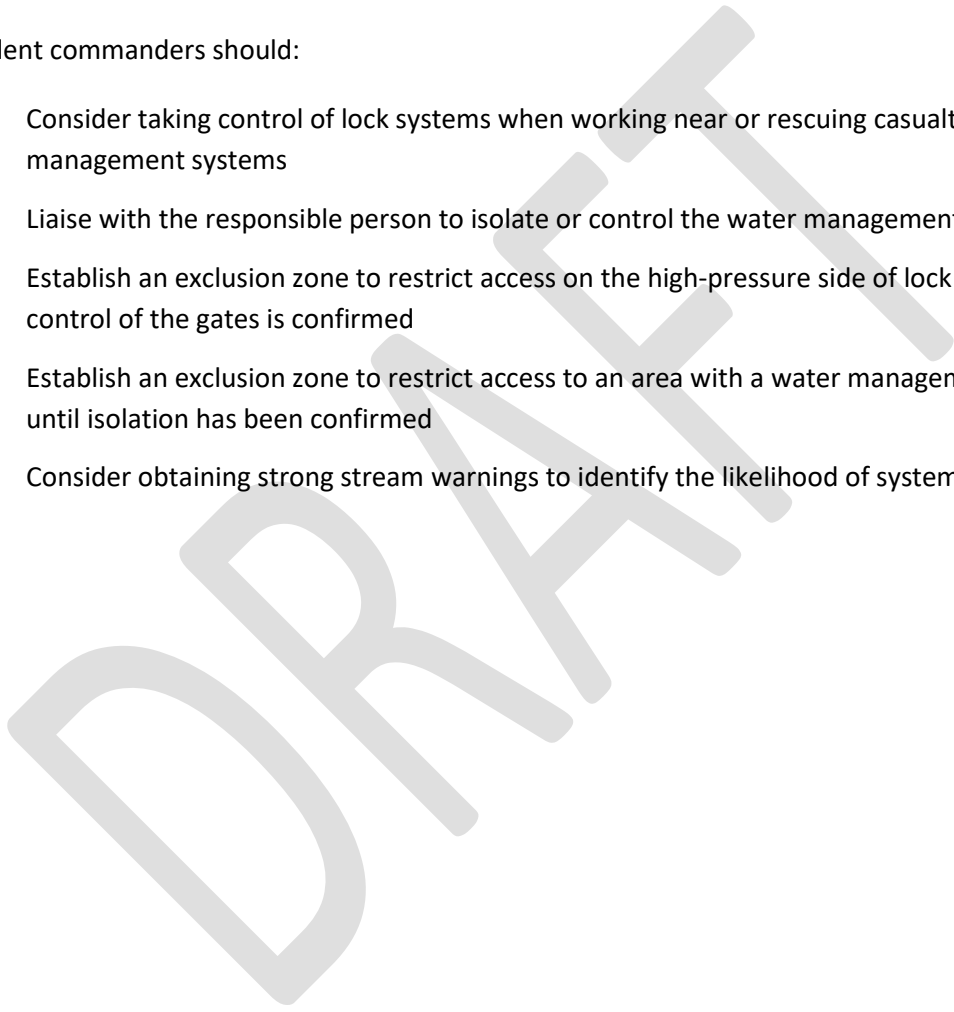
Reference No. if applicable	Strategic action	Revised, new, archive or no change
21420	<ul style="list-style-type: none"> Identify high-risk water management and holding facilities and systems and put in place arrangements and safe systems of work where appropriate 	Revised

21413	<ul style="list-style-type: none"> Establish methods of identifying and sharing information on water management systems 	No change
21417	<ul style="list-style-type: none"> Establish protocols with responsible bodies for the isolation and control of water management systems 	Revised
	<ul style="list-style-type: none"> Consider participating in joint on-site training and exercises to provide personnel with an understanding of water management systems 	New

531 *TACTICAL ACTIONS*

532 Incident commanders should:

- 533 • Consider taking control of lock systems when working near or rescuing casualties from water
534 management systems
- 535 • Liaise with the responsible person to isolate or control the water management system
- 536 • Establish an exclusion zone to restrict access on the high-pressure side of lock gates until
537 control of the gates is confirmed
- 538 • Establish an exclusion zone to restrict access to an area with a water management system
539 until isolation has been confirmed
- 540 • Consider obtaining strong stream warnings to identify the likelihood of system activation



541 **Hazard – Entering the water**

542 *HAZARD KNOWLEDGE*

543 **This hazard should be read in conjunction with Hydrological hazards**

544 Water environments can have appreciable variations over short distances and can change rapidly as
545 weather conditions and conditions upstream alter. This presents significant challenges when
546 gathering information to establish accurate situational awareness when considering entry into the
547 water. It may not be possible to identify underwater hazards or variations in depth before
548 committing personnel to the water, but every effort should be made to identify the relevant
549 information.

550 Entering moving water to perform a rescue is a high-risk activity and should only be carried out by
551 trained and equipped personnel.

552 The first attendance may not be equipped with specialist water personal protective equipment
553 (PPE). Attempting to rescue someone in dangerous circumstances can place the rescuer, the casualty
554 and others in further danger. The first attending incident commander should decide if it is safer to
555 act or to contain the incident and wait for support.

556 Personnel are not prohibited from taking reasonable action to save life before specialist resources
557 arrive for example, where the casualty is in shallow, still water in a known location and entry into the
558 water may present minimal hazards.

559 A considered approach needs to be adopted on the immediate need for rescue, the potential for
560 securing casualties and to provide time to implement appropriate control measures.

561 A water search and rescue environment can be a dynamic and high-risk situation, often led by the
562 willingness to act along with the pressures from the public. These factors may contribute towards
563 the events that could lead to an event where personnel may be uncontrollably exposed to the risks
564 leading to an emergency. However, unlike other incidents; controlling the public may be made more
565 difficult due to the public being spread out over a wider area and not being able to be controlled by
566 cordons or personnel. For more information refer to [Operations: Seek assistance for dealing with
567 people.](#)

568 Sudden immersion in water may result in cold water shock, which causes the drawing in of a deep
569 breath that can result in water being inhaled or swallowed and the pooling of blood in the torso and
570 brain; this may cause even strong swimmers to lose motor function and strength.

571 Casualties who require rescue from water may panic, increasing the risk to rescuers. Casualties may
572 pull rescuers under the water as they try to maintain their own airway, pull rescuers into the water
573 as they attempt to pull themselves out, or act aggressively towards rescuers. This should be
574 considered when selecting rescue techniques and control measures.

575 **Control measure – Hierarchy of risk (Rescue formula)**

576 *CONTROL MEASURE KNOWLEDGE*

577 Rescues from water are often high-risk activities and where possible entering the water should be
578 avoided. Incident commanders should consider the hierarchy of rescue options available to them
579 and select the most appropriate tactic for any rescue attempt, the options available throughout the
580 hierarchy of risk (Rescue formula) should be supplemented by the most appropriate resource. For
581 more information refer to [Deploy adequate resources: Water rescue](#).

- 582 • **Talk/Shout:** Casualties are sometimes able to self-extricate or reach a position of relative
583 safety to allow the rescue to be completed. Early contact should always be made with any
584 casualty this may calm the casualty and allow incident commanders to gather information
585 including whether the casualty is trapped, conscious or able to self-extricate.
- 586 • **Reach:** Using an object to make physical contact with the casualty. This may be a tool
587 designed specifically for the purpose or a found object. When selecting a reach tool,
588 personnel should consider that a casualty’s motor skills and grip strength may be affected by
589 their immersion in water. Where possible buoyant objects should be used; this will aid a
590 casualty if they cannot be recovered immediately. Personnel should avoid making direct
591 physical contact with a casualty where possible, to prevent their own safety being
592 compromised.
- 593 • **Throw:** Using specially designed rescue tools or buoyant objects to help retrieve or stabilise
594 a casualty.
- 595 • **Row:** Committing trained personnel on to the water in rescue boats, sleds or similar craft.
- 596 • **Go:** Committing trained personnel into the water to perform a rescue by wading, swimming
597 or other techniques. The need to retrieve committed personnel should be considered and
598 appropriate safety systems implemented.
- 599 • **Don’t go:** A dynamic risk assessment may identify that it is not possible to perform a rescue
600 until additional control measures are identified.
- 601 • **Helicopter:** Use air support to assist search and rescue activities Refer to Search, rescue and
602 casualty care – Aerial resources: Helicopters for search and rescue.

603 *STRATEGIC ACTIONS*

604 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21727	Identify an appropriate response to incidents involving people in the water	Revised

605 *TACTICAL ACTIONS*

606 Incident commanders should:

- 607 • Adopt a Talk – Reach – Throw – Row – Go – Don't go – Helicopter hierarchy approach in the
608 rescue plan
- 609 • Safely approach the casualty and maintain a safe environment for casualties, personnel and
610 the public
- 611 • Establish and maintain contact with the casualty
- 612 • Consider the need for immediate rescue or a means of securing the casualty

613 **Control measure – Personal protective equipment: Water rescue**

614 **This control measure should be read in conjunction with Operations – Personal protective**
615 **equipment**

616 *CONTROL MEASURE KNOWLEDGE*

617 Protecting rescuers when dealing with flooding and water rescue requires different clothing and
618 accessories than protecting them during land-based rescues. When working near, on or in water
619 personal protective equipment (PPE) suitable for the task and environment should be used.

620 Personnel committing to water must have PPE specifically designed for expected activities. For
621 example, immersion in offshore waters may require greater thermal protection and the effects of
622 saltwater on equipment seals may need to be considered.

623 Any personal flotation device (PFD) should be appropriate to the personnel's height, weight and size
624 to ensure the appropriate level of buoyancy. It should also be suitable for the activities expected to
625 be performed and provide a releasable tether where required.

626 **Personal flotation devices (PFD)**

627 A personal flotation device (PFD) must be compatible with any other PPE in use. There are two main
628 categories of PFD; buoyancy aids and life jackets.

629 **Buoyancy aids**

630 Buoyancy aids are designed to allow wearers to swim and make other movements; they are suitable
631 for use by trained responders during rescue but are not compatible for use with fire kit.

632 They should include a quick release securing system, designed for personnel to release themselves
633 from a system if they experience difficulty while deployed in the water. A buoyancy aid should assist
634 with retrieval and provide suitable buoyancy for the conditions it will be used in. Information on
635 buoyancy aid requirements are provided in the Health and Safety Executive (HSE) publication,
636 [Personal buoyancy equipment on inland and inshore waters](#).

637 Once saturated, the additional weight of fire kit will negate any buoyancy offered by buoyancy aids;
638 they will also not assist in maintaining a clear airway. Life jackets, which offer a greater level of

639 buoyancy and hold the wearer face up when immersed, regardless of levels of consciousness, are
640 more appropriate for working near water. Any life jackets used should provide enough buoyancy to
641 keep an adult wearing structural fire kit afloat, considering the weight when saturated.

642 **Thermal injury**

643 The risk of thermal injury during a water rescue, including heat illness and hypothermia, should be
644 considered when selecting appropriate PPE for personnel. The choice of PPE and thermal layer
645 should reflect the expected activities and environmental conditions. For more information refer to:

- 646 • Operations – [Physiological stress](#)
- 647 • Operations – [Heat illness in personnel](#)
- 648 • Operations – [Hypothermia in personnel](#)

649 **Helmets**

650 Firefighting helmets are not designed for submersion and may pose a risk of neck injury if accidental
651 entry into water occurs. When working near water responders should consider the need to wear a
652 helmet that is suitable for use near water, consider relaxing helmets or wearing them without
653 fastening the chin strap. Any decision to change the standards of PPE in use should reflect the levels
654 of risk presented by other hazards personnel may be exposed to.

655 **Footwear**

656 PPE selection for use in water should include footwear suitable for use on slippery surfaces.

657 **Drysuits**

658 Drysuits should provide the necessary protection from water temperature and ingress into the suit.
659 This is achieved by ensuring that the suit fits the user, and all orifice seals provide an adequate seal
660 against the skin. The size of the suit is very important as some neck seals can be very tight and could
661 restrict blood flow.

662 **Snag hazards**

663 Snag hazards should be removed from all PPE used in moving water. It is necessary to provide
664 equipment to personnel to be able to release themselves if they become snagged or tangled in the
665 water.

666 **Working at night or with poor visibility**

667 If accidental entry into water occurs, it may be difficult to see or track personnel that are partially
668 submerged. Fire and rescue services should consider some means of illuminating individuals who are
669 working near, on or in water.

670 Waterproof beacons, lights or other personal illumination devices should be attached to personnel
671 so that they can be identified if accidental entry into water occurs. Lights attached to PFDs should be
672 activated. The [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of
673 operations \(FRCO\)](#) (page 38) provides more information, including the accepted form for colour-

674 coded lighting.

675 **Decontamination**

676 Equipment, vehicles and PPE used during a water rescue should be thoroughly decontaminated, with
677 any debris such as mud, plant or animal matter removed and left at the site. Attention should be
678 paid to the seams and seals of boots and waders, with any pockets of pooled water emptied.

679 Dry suit neck seals should be constructed of a latex type material, to allow appropriate
680 decontamination before the suit is removed. Neck seals made from neoprene or other absorbent
681 materials can hold and absorb contaminants even after wiping. A suitable decontamination
682 procedure may be necessary to prevent contaminating the wearer when the dry suit is removed.

683 For more information refer to Environmental protection – Clean equipment, vehicles and personal
684 protective equipment.

685 *STRATEGIC ACTIONS*

686 Fire and rescue services must:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21670	<ul style="list-style-type: none">• Ensure PPE provided is fit for purpose and complies with current legislation	No change
21671	<ul style="list-style-type: none">• Provide appropriate maintenance and care of water PPE	No change

687 Fire and rescue services should:

		Archived
	Ensure that water rescue PPE does not physically impact users and can be adequately decontaminated	New
	Consider providing illumination devices for use in water	New

688 *TACTICAL ACTIONS*

689 Incident commanders should:

- 690 • Ensure all personnel wear appropriate PPE according to service risk assessment and
691 procedures for water rescues
- 692 • Monitor personnel for heat illness or hypothermia when performing water rescues
- 693 • Ensure that adequate decontamination of equipment, vehicles and PPE is carried out if used

694 for a water rescue

- 695 • Consider the use of illumination devices, including coloured lights, to identify personnel and
- 696 equipment in water

697 **Control measure – Safe entry into the water**

698 *CONTROL MEASURE KNOWLEDGE*

699 When following the [hierarchy of risk \(Rescue formula\)](#) there may be a requirement for operational
700 personnel to enter the water and subsequently exit with a casualty.

701 An entry site that allows rescuers to walk into or lower themselves into the water should be used
702 where possible. To reduce the risk of cold-water shock or physical injury, personnel should attempt
703 to identify a safe access point and where possible, walk into or lowering themselves into the water
704 and if possible using hydrological features that aid safe entry.

705 This may require the use of inflatable platforms to assist entry or require additional control
706 measures to be implemented to gain access to a bankside. Diving or jumping into the water should
707 be avoided and only trained personnel should consider this option following an appropriate risk
708 assessment.

709 A safe point of egress should also be identified; this will not necessarily be the same point as the
710 entry point. Any egress point should consider the effect of hydrology and the condition of the
711 casualty.

712 Accurately identifying hazards, water conditions and weather conditions are important factors when
713 planning to enter the water. The information that should be considered includes:

- 714 • Water:
 - 715 ○ Speed of flow
 - 716 ○ Depth
 - 717 ○ Temperature
 - 718 ○ Tidal patterns
- 719 • Hydrological hazards, including debris
- 720 • Upstream conditions
- 721 • Unstable or unsafe structures
- 722 • Current and forecast weather conditions

723 Any assessment of conditions can vary significantly over short distances or time periods and should
724 be updated regularly.

725 **Sea foam**

726 Committing personnel into sea foam of unknown depths and without an appreciation of the location
727 of the water may present risks that far outweigh the benefits. Before committing personnel, it may

728 be necessary to request the attendance of a helicopter to disperse foam that is above waist height.
 729 For more information refer to Search, rescue and casualty care – Aerial resources: Helicopters for
 730 search and rescue.

731 Personnel should not attempt a swim rescue and wade only at a maximum of waist depth to protect
 732 their airway and cater for depth change due to water action.

733 It may be necessary to shuffle to check for trip hazards or depth changes. If operating in the water, it
 734 may be appropriate to use equipment or other personnel to provide mutual support and stability
 735 against wave action, or to protect a casualty.

736 When working in sea foam, the use of tethers should be considered to allow personnel to track back
 737 to a safe point.

738 *STRATEGIC ACTIONS*

739 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
		Archive
	Consider providing equipment to facilitate safe entry to and egress from water	New
	Have arrangements in place for requesting air support assistance to disperse sea foam during a water rescue	New

740 *TACTICAL ACTIONS*

741 Incident commanders should:

- 742 • Ensure personnel enter the water slowly to minimise the effects of cold-water shock
- 743 • Consider the use of inflatable platforms to assist entry
- 744 • Identify an appropriate and safe point to enter the water
- 745 • Consider the most appropriate egress point for the casualty
- 746 • Identify hazards, water conditions and weather conditions when planning to enter the water
 747 and monitor for changes
- 748 • Consider the need for tethers when operating in sea foam
- 749 • Consider requesting the attendance of a helicopter to disperse foam that is above waist
 750 height

751 **Control measure – Initiate firefighter emergency: Water rescue**

752 **This control measure should be read in conjunction with [Incident command – Arrangements to](#)**
753 **[deal with firefighter emergencies](#)**

754 *CONTROL MEASURE KNOWLEDGE*

755 A water rescue environment can be a dynamic and high-risk situation, often led by the willingness to
756 act along with the pressures from the public. These factors may contribute towards personnel
757 becoming uncontrollably exposed to hazards, resulting in an emergency. If a member of personnel is
758 in distress in a water environment, a firefighter emergency should be promptly initiated.

759 In the event of a firefighter emergency in a water environment developing, a prompt reaction to
760 initiate a suitable response should be undertaken. Action may be required to prevent an untethered
761 rescuer from breaching any downstream safety mechanisms, as this could result in a rescuer not
762 being contained.

763 If a fire and rescue service provides a water rescue response, it will be necessary to provide
764 information on the actions to take in the event of a firefighter emergency in water. This may require
765 support from other agencies. For more information refer to Specialist resources – Water search and
766 rescue.

767 An assessment of the firefighter emergency may determine that using existing control measures,
768 such as downstream safety officers or emergency water rescue teams, is the most appropriate
769 action to take. For more information refer to: [Safety officers: Water rescue](#)

770 A firefighter emergency may require the attendance of a search and rescue helicopter. For more
771 information refer to Search, rescue and casualty care – Aerial resources: Helicopters for search and
772 rescue.

773 **Emergency teams**

774 When operating in environments involving water, it may be necessary to provide emergency teams
775 that are equipped with the ability to provide an effective and prompt rescue resource dedicated to
776 personnel committed to the water.

777 The likelihood of a firefighter requiring medical assistance while in the water environment should be
778 considered. For more information refer to:

- 779 • Specialist resources: Medical resources for water rescue
- 780 • [Carry out a structured assessment and treatment: Water rescue.](#)

781 *STRATEGIC ACTIONS*

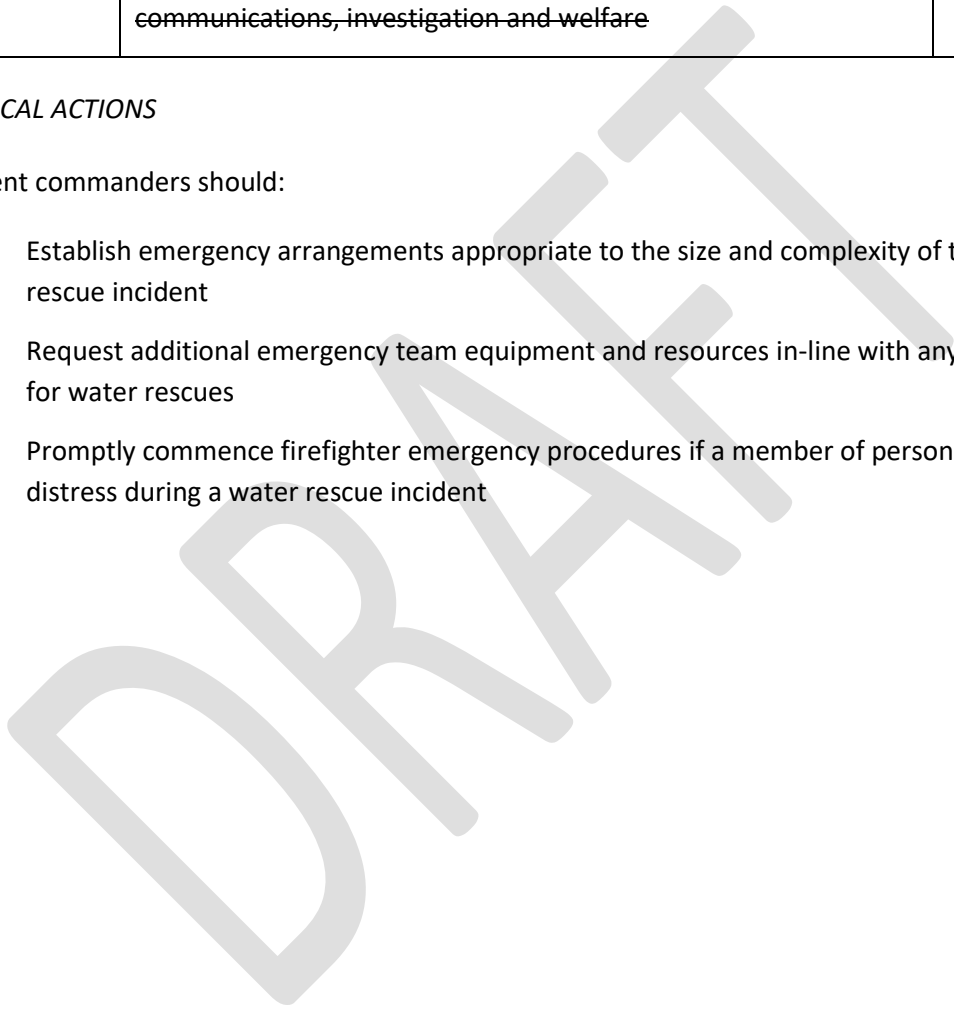
782 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	Determine the actions necessary for dealing with a firefighter emergency if they occur when responding to a water rescue	New
	Consider developing procedures for critical incident welfare of affected personnel	Archive
	Have policies for firefighter emergencies which incorporate communications, investigation and welfare	Archive

783 *TACTICAL ACTIONS*

784 Incident commanders should:

- 785 • Establish emergency arrangements appropriate to the size and complexity of the water
786 rescue incident
- 787 • Request additional emergency team equipment and resources in-line with any rescue plan
788 for water rescues
- 789 • Promptly commence firefighter emergency procedures if a member of personnel is in
790 distress during a water rescue incident



791 **Hazard - Lack of co-ordinated search and rescue plan: Water rescue**

792 **This hazard should be read in conjunction with Search, rescue and casualty care – Lack of co-**
793 **ordinated search plan: All searches**

794 *HAZARD KNOWLEDGE*

795 A lack of or inaccurate information may result in a delay in effective searching for a missing casualty.
796 Any delays in locating the casualty can impact on the outcome of a water rescue.

797 Personnel may attend incidents where people are missing and known to, or may have, entered a
798 body of water. Whether a person is believed missing or lost will also influence the response.

799 The [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of operations](#)
800 [\(FRCO\)](#) (page 26) provides more information, including the definition of a missing person and the
801 categories of a missing person.

803 Different control measures apply for a search where a casualty is known to or believed to be
804 submerged. For more information refer to Submerged casualty.

805 **Control measure – Situational awareness: Water rescue**

806 **This control measure should be read in conjunction with Incident command – Situational**
807 **awareness**

808 *CONTROL MEASURE KNOWLEDGE*

809 Personnel will need to gather information from credible sources to ensure that the correct resources
810 are requested at the earliest opportunity. This information should also be used to identify the
811 potential for the casualty's survivability, by taking into account the impact of environmental factors.
812 En route to or on arrival at an incident, it may be appropriate to gather information such as:

- 813 • Which agencies are already in attendance
- 814 • An early brief from the police search adviser (PoISA)
- 815 • Incident history and any background information; this could be from:
 - 816 ○ Witnesses
 - 817 ○ The initial caller
 - 818 ○ CCTV footage
- 819 • Whether there are any unstable or unsafe structures involved
- 820 • Presence of physical evidence, such as clothing or possessions at the potential water entry
821 point (WEP)
- 822 • Whether a vehicle is involved
- 823 • Whether the casualty can be accessed from the surface of the water or land using
824 equipment

825 Information about the casualty or casualties that will inform an effective search includes:

- 826 • Number of casualties
- 827 • Last known position (LKP) of the casualty
- 828 • Whether the casualty is in sight or submerged
- 829 • How long since the casualty was last seen
- 830 • Whether they can swim
- 831 • Details of any injuries to the casualty
- 832 • Whether the casualty has a flotation aid, such as:
 - 833 ○ A life jacket
 - 834 ○ A lifebelt
 - 835 ○ A piece of water sports equipment
- 836 • Age of casualty

837 Information about the environment that will inform an effective search includes:

- 838 • Water temperature and depth
- 839 • Speed of water if relevant
- 840 • Status of tide if relevant
- 841 • Time of day and visibility
- 842 • Weather conditions

843 *STRATEGIC ACTIONS*

844 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
New	Provide incident commanders with the means to access relevant information at water rescue incidents	Revised
		Moved

845 *TACTICAL ACTIONS*

846 Incident commanders should:

- 847 • Question first responders and witnesses to gain situational awareness, incident history and
- 848 background information

- 849 • Establish casualty details, including name, age, gender, size, state of mind, can they swim
- 850 • Establish the last known position (LKP), or water entry point (WEP) of casualties, including
- 851 times
- 852 • Establish where the casualty was in the water, for example swimming, floating or submerged
- 853 • Establish what the casualty was wearing and whether they had a flotation aid
- 854 • Collate relevant information that will support and inform a water rescue
- 855 • Establish communications with police search advisors (PoISA) and other responder agencies
- 856 when carrying out a water rescue
- 857 • Anticipate casualty condition and potential survivability given the environmental situation

858 **Control measure – Apply the survivability model: Water rescue**

859 *CONTROL MEASURE KNOWLEDGE*

860 One of the most important decisions to be taken at water incidents is whether actions are being
 861 taken to rescue or recover casualties. A rescue is for when people display signs of life or are
 862 considered able to survive. Recovery is made when people are known to be deceased.

863 The distinction between rescue and recovery is important because it is a strong factor for decision-
 864 making. The level of acceptable risk for a rescue is considerably higher than that for body recovery in
 865 almost all circumstances.

866 **Survivability model**

867 A model has been developed to help incident commanders decide if a casualty is survivable. Joint
 868 decision-making may be required, with other emergency services or rescue organisations that are in
 869 attendance.

870 The model is designed to give casualties every reasonable chance of rescue and resuscitation and is
 871 balanced against the risk of harm to personnel when carrying out rescues.

872 The main factors to be considered are the length of time the casualty has been submerged and the
 873 water temperature. Water temperature in the UK averages about 10°C but can range from 0°C to
 874 25°C, depending on the location and type of water. Available medical evidence suggests that water
 875 temperatures in the region of 6°C to 7°C or less are required for prolonged survival times in
 876 submerged casualties, sometimes described as ‘icy cold’.

877 It is not possible to know for certain when a casualty became submerged, so the clock should start
 878 when the first emergency responder arrives on-scene. It should not be assumed that the casualty
 879 has been submerged for longer than this. However, if control room operators can gather the
 880 appropriate information to identify an accurate time for when the casualty became submerged, the
 881 clock may be started at this point. Credible information sources that may be able to confirm this can
 882 be:

- 883 • Situational awareness systems, such as 999eye

- 884 • CCTV
 - 885 • Credible witnesses, such as other emergency service responders
- 886 This can provide the incident commander and other decision-makers with improved information and
887 reduce the level of exposure to risk in response to the level of activity required.
- 888 It may be beneficial to align local control rooms in the use of information gathering and call scripting
889 to improve the accuracy of information gathered. Joint decision-making will be supported if there is
890 credibility in the information about the time the casualty became submerged.
- 891 The incident commander should carry out an appropriate risk assessment, balancing the likelihood
892 of casualty survival against the likelihood and severity of harm to personnel.
- 893 It is anticipated that after 30 minutes all three emergency services will probably be on-scene. This
894 may include specialist teams from the ambulance service and other rescue organisations. The
895 incident commander should liaise with officers from the other services to decide how to proceed.
- 896 The first element to consider is the likelihood of survival. This clinical decision will be taken by the
897 ambulance service based on the criteria above, or in their absence, by the incident commander. If
898 the water is icy cold the casualty should be considered survivable, although the likelihood of survival
899 reduces as time passes. The risk assessment should be revisited to decide if a rescue should continue
900 or if the incident should switch to body recovery.
- 901 If a decision is taken to continue the rescue then, at 60 minutes, the incident commander should
902 liaise again with the senior officers from the other services. If the water is cold and the casualty is
903 known to be young or small they should be considered survivable, although again their chances
904 further reduce as time passes. The risk assessment should be revisited to decide if a rescue should
905 continue or if the incident should switch to body recovery.
- 906 After 90 minutes, the incident commander should liaise again with the senior representatives from
907 the other services. A joint decision should be made to switch to body recovery, as the circumstances
908 are regarded as no longer survivable.
- 909 **Body recovery**
- 910 Once the joint decision is made to commence body recovery, the police become responsible and
911 should be requested, if not already in attendance., Fire and rescue services may become involved,
912 depending on local arrangements, but personnel should not be put at undue risk to perform a body
913 recovery.
- 914 Any incident where a body is discovered should be treated as a potential crime scene, and
915 disturbance kept to a minimum. However, it may be necessary for personnel to secure the body to
916 prevent it from being swept away.
- 917 For more information refer to:
- 918 • Search, rescue and casualty care – Deploy adequate personnel and resources: Rescues
 - 919 • [Operations – Preserve evidence for investigation](#)

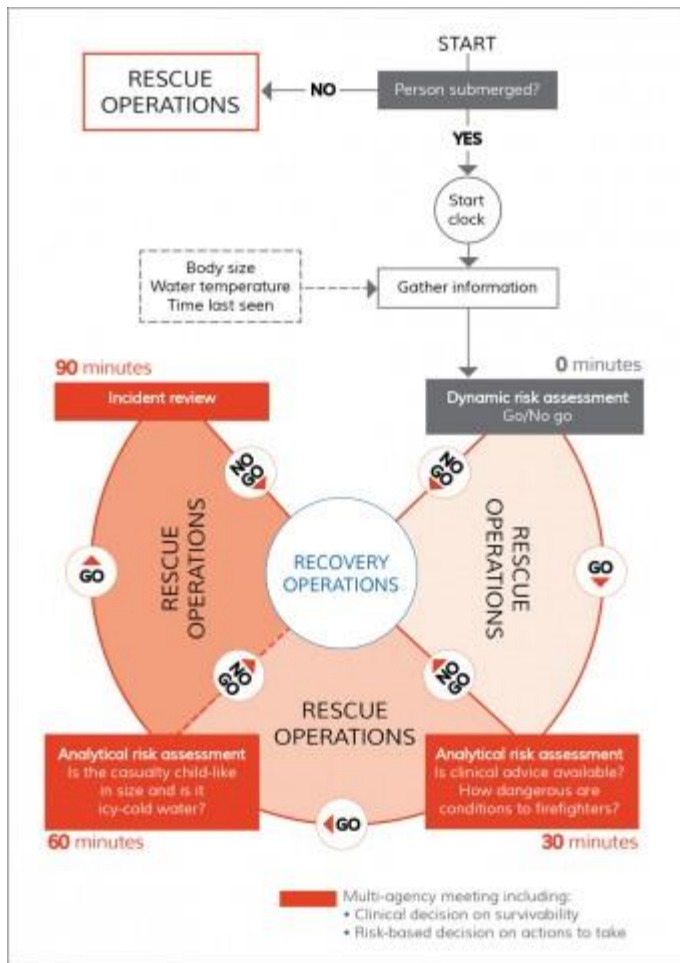


Figure: Survivability in water model

920

921 STRATEGIC ACTIONS

922 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21424	Ensure that operational and fire control personnel are aware of the guidance for the rescue or recovery of a casualty from water and the survivability model	Revised
	Establish memoranda of understanding with agencies that may request assistance with body recovery	New
	Work with other agencies to align the information obtained through call handling for water rescues	New
	Have a body recovery policy	Archive

923 *TACTICAL ACTIONS*

924 Incident commanders should:

- 925 • Use the survivability model to determine actions at incidents involving submerged casualties
- 926 • Use credible information to determine and apply the remainder of the survivability model
- 927 • Triage casualties and prioritise rescue activities
- 928 • Jointly agree a search and rescue or recovery response with other agencies, based on
- 929 survivability model
- 930 • Consult with other agencies to agree on a stage to defer to body recovery
- 931 • Request the attendance of police when body recovery is required
- 932 • Consider the possibility that evidence may be present at incidents requiring body recovery

933 **Control measure – Clearly defined area of operations: Water rescue**

934 **This control measure should be read in conjunction with Search, rescue and casualty care –**
935 **Effective search management**

936 *CONTROL MEASURE KNOWLEDGE*

937 Personnel should be aware that casualties in a water environment may not remain static. It is
938 important to quickly limit the scope of the search by identifying and placing controls around the
939 places where a casualty may be identified. The water entry point (WEP) and point last seen (PLS),
940 can be used as the initial planning point (IPP), if they are the same. However, more recent sightings
941 will update the PLS and can be used to update a tactical plan. The time of these sightings will help to
942 establish the starting point of a search; this information should be established and recorded.

943 Once the WEP or the PLS and time are known, a judgement should be made on the movement of
944 water and the time between PLS and the start of the search to ascertain where a casualty may have
945 travelled to.

946 Improved situational awareness will help to clearly define the operating area. This can include:

- 947 • Information on the physical environment, such as:
 - 948 ○ Water flow
 - 949 ○ Tide times
- 950 • Visual information, such as footage from drones (classified as a type of unmanned vehicle by
951 the CAA)

952 Requesting resources that may assist in defining the area of search should be considered at the
953 initial stages. For more information refer to [Specialist resources: Water search and rescue](#).

954 In channels with a directional flow, resources should be sent to a point beyond this to secure a
955 downstream containment. To establish the area to be searched and prevent any casualties from

956 travelling beyond this point, the speed of flow should be estimated.

957 When calculating the size of the search, it should be assumed that the casualty is travelling where
958 the water is at its fastest, usually the centre of the channel. It is then possible to calculate the
959 possible distance travelled, by multiplying this estimate by the time that has passed since entry.

960 This calculation should include any time required to reach the point downstream in order to close off
961 the search box.

962 **Example**

963 • A river that is flowing at 1m per second will potentially move the casualty in 30 minutes -
964 1800m from the water entry point (WEP)

965 • If the travel time for personnel to the WEP is 10 minutes, the casualty will have travelled a
966 further 600m

967 • Therefore, the total distance to close off the search box is 2400m

968 Physical barriers should be considered as a useful tool in identifying a search box; in the water
969 environment, these may be features such as:

970 • A strainer feature that will not let a person pass through it

971 • Water process features, such as pumping stations

972 • Shallow areas of flow that would not support the movement of a person

973 These features should be considered on a case-by-case basis and with the potential for a person in
974 the water to bypass them assessed.

975 *STRATEGIC ACTIONS*

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	Identify appropriate sources of information and resources to define a water search plan and area	New

976 *TACTICAL ACTIONS*

977 Incident commanders should:

978 • Establish a water rescue area of operations with attending agencies, based on the
979 information available

980 • Request and deploy resources to assist in defining the search area for a water rescue

981 • Identify features that can assist in identifying and determining the water rescue search
982 area

- 983 • Determine the distance a casualty may have travelled in moving water
- 984 • Consider mobilising appropriate resources to close off the water rescue search area

985 **Control measure – Co-ordinated search plan: Water rescue**

986 *CONTROL MEASURE KNOWLEDGE*

987 Police search advisers (PoISA) hold a Home Office licence and have a responsibility to plan, organise,
988 and manage a missing person search. While the PoISA will co-ordinate the overall search operations,
989 it is recognised that some functions will be supported by partner agencies with specific water rescue
990 expertise. This includes flood rescue tactical advisers and water and flood incident managers.

991 It may be beneficial for fire and rescue services to arrange joint training and exercises with
992 responders who may be involved in a water rescue to improve interoperability.

993 A missing person search aims to locate a person who is missing or otherwise establish and confirm
994 the person's whereabouts and identity. An assessment should be completed to improve intelligence
995 and inform search planning and management. Joint decision-making should determine the search
996 plan, including the type, area, and resources to be deployed. Once determined, the search plan
997 should be communicated and co-ordinated using the JESIP principles.

998 The [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of operations](#)
999 [\(FRCO\)](#) (page 28) provides details about the types of search in a flood environment which may be
1000 applied to a water rescue.

1001 To facilitate the selected type of search, the most appropriate resource should be tasked. For more
1002 information refer to Specialist resources: Water search and rescue.

1003 **Search exit strategy**

1004 As a general principle, search activity should continue until the casualty is located. Sometimes the
1005 casualty will not be found before the search needs to be called off. Search and rescue teams may be
1006 required to stop searching for several reasons, including the safety of personnel. The police have the
1007 responsibility to call off a search. **Submerged casualties**

1008 Information gathered during the initial response to an incident should be shared with oncoming
1009 resources to help limit the search area.

1010 If services have procedures and equipment to perform underwater searches, they should consider
1011 water flow and conditions as well as the point and means of entry. Most casualties who are
1012 submerged remain within a short distance of the point of entry; if underwater searching is required,
1013 this area should be the focus in the early stages of the search.

1014 For more information refer to [Rescue: Submerged casualties](#).

1015 *STRATEGIC ACTIONS*

1016 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21711	Liaise with local authorities or emergency planning groups to develop multi-agency arrangements for search procedures	No change
	Develop a memorandum of understanding with agencies that can assist with underwater searches	New
	Participate in joint training and exercises with other agencies to improve interoperability at water rescue incidents	New

1017 *TACTICAL ACTIONS*

1018 Incident commanders should:

- 1019 • Use situational awareness to determine the type of water rescue search activity required
- 1020 • Apply joint decision-making to develop a co-ordinated water rescue search plan
- 1021 • Develop and communicate a co-ordinated search plan following JESIP principles
- 1022 • Continue with the search until the casualty is found or the search is called off
- 1023 •

1024 **Hazard – Insufficient resources: Water search and rescue**

1025 *HAZARD KNOWLEDGE*

1026 Insufficient resources can impact on the successful outcome of an incident. If relevant information
1027 that informs the necessary resources are not determined at an early stage, opportunities may be
1028 missed resulting in the deterioration or death of a casualty. When requesting resources,
1029 consideration should be given to aspects of an incident that may impact on the outcome, such as:

- 1030
- Flow and volume of water
 - Water temperature
 - Access to the hazard and casualty
 - Visibility
 - Number of casualties
 - Size of casualties
- 1031
- 1032
- 1033
- 1034
- 1035

1036 If a casualty has been injured in a water environment, refer to [Failure to assess, identify and treat](#)
1037 [life-threatening injuries to a casualty: Water rescue](#).

1038 In spate conditions or if many people need rescuing, a fire and rescue service may require additional
1039 resources to assist. Early identification of the potential for diminished resources should be
1040 prioritised, to prevent a delay in the rescue of casualties.

1041 Personnel without the required specialist skills have limited equipment and training to perform
1042 water search and rescues. Attempting rescue may be hazardous without the right level of expertise
1043 and specialist equipment.

1044 Personnel may face difficult, morally challenging situations and may have to make decisions in
1045 extremely hazardous, emotionally charged and fast-moving situations. They may face an
1046 uncontrolled situation where hazards are not yet identified, and information is incomplete.

1047 What is reasonably practicable to achieve will depend on the circumstances and demands of the
1048 incident and the available resources balanced against the identified hazards and evaluated risks.

1049 For incidents involving a submerged casualty refer to [Actions associated with rescuing a submerged](#)
1050 [casualty](#).

1051 **Control measure – Deploy adequate personnel and resources: Water search and rescue**

1052 **[This control measure should be read in conjunction with Search, rescue and casualty care – Deploy](#)**
1053 **[adequate personnel and resources: Rescues](#)**

1054 *CONTROL MEASURE KNOWLEDGE*

1055 To reduce the likelihood of personnel being exposed to incidents where they are unable to act, fire
1056 and rescue services should gather information and deploy adequately trained personnel to

1057 appropriately screened calls, which result in the most appropriate resources being mobilised.
1058 Personnel should be sufficiently informed on the hazards that may exist, as well as the length of time
1059 a casualty has been submerged. Additionally, personnel should be aware of the limitations of their
1060 competence and equipment in the environment they are operating in.

1061 The capabilities and the expected agreed extent of the interventions of personnel should be
1062 understood in the context of the approved rescue techniques trained for and adopted by the fire
1063 and rescue service. Teams should not operate in a way that they are not equipped or trained for.

1064 Establishing a predetermined attendance for water rescues may be necessary, to ensure a swift and
1065 appropriate response to these incidents.

1066 If personnel identify the need for an advanced resource to perform a water rescue, they should
1067 request more appropriate assets and resources. This may be due to limitations in their own training,
1068 skills, equipment or knowledge.

1069 **Individual identification**

1070 The use of standard and agreed methods of individual identification during a water rescue will
1071 support:

- 1072 • Determining the capability of emergency responders
- 1073 • Distinguishing roles and responsibilities on the incident ground
- 1074 • More effective and efficient incident ground management
- 1075 • Appropriate deployment of personnel.

1076 The [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of operations](#)
1077 [\(FRCO\)](#) provides:

- 1078 • The accepted form of Individual identification through the use of colour-coded helmets and
1079 lighting (page 38)
- 1080 • The equipment applicable to each level of water rescue response (Annex E)

1081 **Emergency teams**

1082 In addition to appropriate downstream protection, consideration should be given to deploying
1083 emergency teams to carry out the rescue of personnel who are committed into a hazard area.
1084 Competent personnel should be equipped for immediate deployment with adequate equipment to
1085 perform a rescue. For more information refer to [Initiate firefighter emergency: Water rescue](#).

1086 **Water awareness**

1087 All personnel who are likely to be exposed to bodies of water, regardless of their level of
1088 competence, need to be aware of the hazards and risks that may be present. They also need to be
1089 aware of the hazards and risks associated with a water rescue.

1090 *STRATEGIC ACTIONS*

1091 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21685	<ul style="list-style-type: none"> Consider determining the acceptable actions and limitations during water rescue incidents 	Revised
	<ul style="list-style-type: none"> Inform fire control room personnel of the most appropriate information to gather to mobilise the most appropriate resource to an incident involving a submerged casualty 	New
21686	<ul style="list-style-type: none"> Make arrangements for specialist and emergency water rescue resources in line with their risk management plan 	Revised
	<ul style="list-style-type: none"> Consider providing the necessary resources and equipment to facilitate water search and rescue 	New
	<ul style="list-style-type: none"> Consider adopting the Department for Environment, Food & Rural Affairs (Defra) Flood rescue concept of operations (FRCO) for application to water rescue activities 	New
	<ul style="list-style-type: none"> Predetermine which personnel are competent to attend water search and rescue incidents 	New

1092 *TACTICAL ACTIONS*

1093 Incident commanders should:

- 1094
- Deploy appropriately trained personnel at incidents involving water
- 1095
- Recognise the limitations of personnel capabilities with recognition to their level of
- 1096
- training and competence
- 1097
- Use an appropriate system of identification for water safety, search and rescue teams
- 1098
- Request the attendance of personnel with the required skill levels
- 1099
- Request adequate emergency rescue teams to stand-by

1100 **Control measure – Specialist resources: Water search and rescue**

1101 **This control measure should be read in conjunction with Search, rescue and casualty care –**

1102 **[Specialist resources: Search](#)**

1103 *CONTROL MEASURE KNOWLEDGE*

1104 The police are responsible for co-ordinating search and rescue on land and inland waters. The
1105 Maritime and Coastguard Agency ([MCA](#)), through HM Coastguard (HMCG), will respond to rescues at
1106 sea, on the coastline, within tidal waters and in certain delegated inland waters. HMCG are
1107 responsible for co-ordinating search and rescue at sea. Local arrangements may exist for governing
1108 responsibility between HMCG and the police in certain areas.

1109 HMCG Search and Rescue have capabilities including:

- 1110 • Search
- 1111 • Water rescue
- 1112 • Mud rescue
- 1113 • Rope rescue

1114 HMCG and the police can call on various search and rescue assets, for example, fire and rescue
1115 services, lifeboats, helicopters, ambulance, cave rescue, mountain rescue and lowland search and
1116 rescue. Fire and rescue services will often provide an initial response or offer support in HMCG's
1117 statutory area of responsibility.

1118 The ambulance service is responsible for the clinical care of casualties in the pre-hospital
1119 environment. It has a legal duty of care for casualties that is not shared by other responding
1120 agencies.

1121 Hazardous Area Response Teams (HART) and Special Operations Rescue Teams (SORT) have skills
1122 and equipment that enable them to work with rescue agencies and gain access to casualties in the
1123 hazard area. However, there may be incidents where it would be unsafe for medical responders to
1124 go to the casualty. If personnel need to rescue the casualty, they should maintain communication
1125 with the medical responders.

1126 It is vital for the successful rescue of a person from water that agencies adopt a co-ordinated
1127 approach to work together, share situational awareness, and jointly agree on a plan. This should be
1128 done at the earliest opportunity, to prevent any delay in commencing the search. Joint training and
1129 exercises may help fire and rescue service personnel to understand the priorities and capabilities of
1130 other responding agencies and specialist resources.

1131 Attendance of the police should be requested to manage the co-ordination of search operations by
1132 police search advisors (PoISA).

1133 The [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of operations](#)
1134 [\(FRCO\)](#) (page 29) provides details about the type of search resources that may be available.

1135 Specialist resources for water search and rescue include:

- 1136 • Water rescue teams from other agencies
- 1137 • Voluntary search teams and community assets, such as mountain or lowland rescue teams
- 1138 • Maritime and Coastguard Agency (MCA)

- 1139 • HM Coastguard (HMCG) Search and Rescue Royal National Lifeboat Institution (RNLI)
- 1140 • Public technicians and specialists
- 1141 • Inland Waterways Rescue Association members
- 1142 • Technical rope over water rescue teams
- 1143 • Drones (classified as a type of [unmanned aircraft](#) by the Civil Aviation Authority) – for more
- 1144 information refer to Search, rescue and casualty care – Aerial resources: Drones for search
- 1145 • Helicopters – for more information refer to Search, rescue and casualty care – Aerial
- 1146 resources: Helicopters for search and rescue

1147 The Hazardous Area Response Team (HART) or Specialist Operations Response Team (SORT) may be
 1148 able to provide an on or in water response to assist personnel when stabilising casualties before
 1149 extrication and can provide tactical medical advice.

1150 For more information refer to:

- 1151 • Search, rescue and casualty care – Specialist resources: Search
- 1152 • [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of](#)
- 1153 [operations \(FRCO\)](#)

1154 **Body search and recovery**

1155 For information refer to [Apply the survivability model: Water rescue](#).

1156 *STRATEGIC ACTIONS*

1157 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	<ul style="list-style-type: none"> • Maintain contact information regarding applicable water rescue responders 	New
	<ul style="list-style-type: none"> • Make arrangements for the request of specialist water rescue resources 	New
New SA (Previously 15036)	<ul style="list-style-type: none"> • Consider carrying out joint training and exercises with specialist resources for water rescues 	Revised

1158 *TACTICAL ACTIONS*

1159 Incident commanders should:

- 1160 • Establish communications with police search advisors (PoISA) and other agencies

- 1161 • Jointly agreed on incident priorities with other responding agencies and specialist resources
1162 • Request and deploy adequate resources to complete or contribute to the level of water
1163 search required

1164 **Control measure – Request National Resilience resources for flood rescue**

1165 *CONTROL MEASURE KNOWLEDGE*

1166 If a fire and rescue service requires National Resilience (NR) resources to assist with a water rescue,
1167 the terminology used by NR will be ‘flood rescue’.

1168 Much of the information regarding flood rescue can be found in the [Department for Environment,](#)
1169 [Food & Rural Affairs \(Defra\) Flood rescue concept of operations \(FRCO\)](#). The information provided in
1170 this section of National Operational Guidance seeks to provide high-level detail that specifically
1171 involves the fire and rescue service.

1172 Interoperability is critical for routine cross border mutual aid operations and larger-scale incidents
1173 involving the deployment of national assets. The duty to co-ordinate inland flood rescue lies with the
1174 police; they will have primacy during major flood events. During a major flood event, flood rescue
1175 assets will be deployed from a wide range of organisations, including emergency services and
1176 volunteers.

1177 The common objectives for a flood rescue response are:

- 1178 • Saving and protecting human life
- 1179 • Relieving suffering
- 1180 • Protecting property
- 1181 • Providing the public with information
- 1182 • Containing the emergency – limiting its escalation or spread
- 1183 • Maintaining critical services
- 1184 • Maintaining normal services at an appropriate level
- 1185 • Protecting the health and safety of personnel
- 1186 • Safeguarding the environment
- 1187 • Facilitating investigations and inquiries
- 1188 • Promoting self-help and recovery
- 1189 • Restoring normality as soon as possible
- 1190 • Evaluating the response and identifying lessons to be learned

1191 Therefore, the response of the fire and rescue service may include the provision of additional assets,
1192 for example, high volume pumps (HVPs), water rescue and other related activities. For more
1193 information refer to Geophysical hazards - Flooding.

1194 Once a full picture of the potential flood or water rescue is established, a strategy for dealing with
 1195 the incident must be developed. This should set the priorities for the management of the event and
 1196 allow an accurate assessment of operational requirements. To provide a safe and efficient response,
 1197 it is essential that these resources are capable of operating at an incident and do so under a single
 1198 unified command system and supported with necessary functions, such as decontamination and
 1199 welfare facilities.

1200 **Requesting a national response**

1201 Assets and skills hosted by individual fire and rescue services, and other agencies, can respond if
 1202 specifically requested to do so as a national capability and where incident timescales allow. If the fire
 1203 and rescue service incident commander believes that national flood rescue resources are required,
 1204 they should provide the following information to the National Resilience Fire Control (NRFC):

- 1205 • Location of the incident or the expected time and location of impact
- 1206 • Nature of the incident and any specific hazards
- 1207 • Prevailing weather and, if known, water conditions
- 1208 • Estimated number of persons requiring rescue
- 1209 • Local resources already in attendance and/or available
- 1210 • The requirement for urban search and rescue (USAR) teams; they may be able to construct
 1211 landing platforms
- 1212 • An estimate of mutual aid resources required (as detailed in the Flood Rescue of Concept of
 1213 Operations) – this may be flood rescue teams and flood rescue tactical advisers
- 1214 • Host fire and rescue service point of contact name and contact details
- 1215 • The initial location for a rendezvous point (RVP), strategic holding area (SHA) or multi-agency
 1216 strategic holding area (MASHA)
- 1217 • Safe approach route to the incident, including any access issues caused by the flooding

1218 *STRATEGIC ACTIONS*

1219 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
22756	<ul style="list-style-type: none"> • Have systems in place to request national flood rescue resources 	No change
22757	<ul style="list-style-type: none"> • Consider predetermining locations for the rendezvous point, strategic holding area or multi-agency strategic holding area 	No change

1220 *TACTICAL ACTIONS*

1221 Incident commanders should:

- 1222 • Request flood rescue resources using agreed NCAF protocols
- 1223 • Establish the number of resources being provided and identify suitable locations for them
- 1224 such as a rendezvous point, strategic holding area or multi-agency strategic holding areas
- 1225 • Collate team data sheets on the arrival of flood rescue resources
- 1226 • Record all flood rescue assets being deployed
- 1227 • Establish communications protocols with flood rescue resources, including the issue of
- 1228 radios if not already held
- 1229 • Establish and record agreed call signs for all flood rescue resources
- 1230 • Nominate a site for each team at the rendezvous point, strategic holding area or multi-
- 1231 agency strategic holding areas
- 1232 • Request welfare facilities for flood rescue teams
- 1233 • Request decontamination facilities for flood rescue teams

1234 **Control measure – National Resilience: Mobilise appropriate assets for flooding**

1235 *CONTROL MEASURE KNOWLEDGE*

1236 When assessing mutual aid requirements, consideration must be given to the time of day, distance
1237 to be travelled and logistical arrangements, including rest and accommodation centres. The National
1238 Resilience Fire Control (NRFC), usually assisted by a National Resilience Officer or a flood rescue
1239 tactical adviser (TacAd), will co-ordinate the mobilisation of mutual aid for flood rescue, in
1240 partnership with the receiving authority.

1241 A system of team typing has been developed for flood rescue teams. This system assures the
1242 capabilities of each element deployed and that each operates to a common standard and
1243 specification irrespective of the organisation to which it belongs.

1244 The [Department for Environment, Food & Rural Affairs \(Defra\) Flood rescue concept of operations](#)
1245 [\(FRCO\)](#) provides further details on the specification for each team type.

1246 If assets that are on the national asset register are deployed through local mutual aid agreements,
1247 the NRFC must be informed so that these assets are flagged as unavailable for deployment
1248 elsewhere. If the assets being requested are not part of the fire and rescue service, the appropriate
1249 contact or control room should be contacted.

1250 *STRATEGIC ACTIONS*

1251 National Resilience should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
22770	<ul style="list-style-type: none"> Maintain a register of qualified flood rescue tactical advisers, including their current availability 	No change
22768	<ul style="list-style-type: none"> Request flood rescue assets by contacting responder organisations using agreed and necessary protocols for mobilisation 	Revised
22767	<ul style="list-style-type: none"> Maintain a register of flood rescue assets by gathering updates from the holders of those registered assets, including their current availability 	No change
22771	<ul style="list-style-type: none"> Mobilise flood rescue tactical advisers as required 	No change

1252 *TACTICAL ACTIONS*

1253 Specialist responders should:

- 1254
- Assist the NRFC with the mobilisation of declared flood rescue assets

1255 **Control measure – National Resilience: Accepting flood rescue assets**

1256 *CONTROL MEASURE KNOWLEDGE*

1257 All Flood rescue assets, irrespective of their organisation, will be required to comply with the
 1258 incident command structure. Upon arrival, all flood rescue assets should produce a pre-prepared
 1259 team datasheet following the concept of operations. This should be presented at the rendezvous
 1260 point (RVP), strategic holding areas (SHA) or multi-agency strategic holding areas (MASHA), so that
 1261 each asset can be checked in and directed as appropriate to the incident. Usually, a flood rescue
 1262 tactical adviser (TacAd) performs a ‘credentialing’ process to assess the capability of responding
 1263 assets.

1264 Details of incident arrangements, as detailed in the [Department for Environment, Food & Rural](#)
 1265 [Affairs \(Defra\) Flood rescue concept of operations \(FRCO\)](#) should be provided to the team leaders of
 1266 the flood rescue assets on arrival at the RVP, SHA or MASHA, including:

- 1267
- Communications detail
- 1268
- Logistics, using enhanced logistics support (ELS) protocols
- 1269
- Mapping or on-scene detail
- 1270
- Location of casualty landing sites and/or reception centres
- 1271
- Location of fuel provision for vehicles and powered craft

1272 *STRATEGIC ACTIONS*

1273 National Resilience should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
22773	<ul style="list-style-type: none"> Provide flood rescue supporting documentation for completion by specialist responders 	No change

1274 *TACTICAL ACTIONS*

1275 Specialist responders should:

- 1276 • Ensure that all flood rescue assets are checked in and provided with incident arrangements
1277 on arrival, before tasking

1278 **Control measure –National Resilience: Tasking flood rescue resources**

1279 *CONTROL MEASURE KNOWLEDGE*

1280 The resources to deal with the incident should be matched effectively against the incident need. The
1281 flood rescue tactical advisers (TacAds) will provide detailed tactical capability-relevant advice to the
1282 incident commander. This will inform the allocation of a specific site for each team within the
1283 holding area, with an established means of communication before tasking. Different team types
1284 should be identified and located accordingly for immediate deployment.

1285 The incident requirements should be recorded and communicated to the flood rescue response that
1286 will carry out the tasks required. Teams should be given a comprehensive operational and task-
1287 specific brief. To ensure flood rescue activity is effectively managed, briefings and records should
1288 include elements such as:

- 1289 • A record of the task to be carried out
- 1290 • Which flood asset the task has been assigned to
- 1291 • Start and finish times
- 1292 • How progress will be monitored
- 1293 • Search audit
- 1294 • Decision logs, narratives and action logs
- 1295 • Handover briefings

1296 A full debrief should be undertaken to capture lessons learned; this should assist with planning for
1297 the future.

1298 *STRATEGIC ACTIONS*

1299 National Resilience should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
22776	<ul style="list-style-type: none">Gather and assess information from debriefs, including any lessons learned that are relevant for specialist responders	No change

1300 *TACTICAL ACTIONS*

1301 Specialist responders should:

- 1302 • Provide briefings to flood rescue teams
- 1303 • Keep records and logs of flood rescue teams briefs and debriefs
- 1304 • Provide regular updates to the NRFC via the enhanced logistical support (ELS)

DRAFT

1305 **Hazard –Submerged casualty**

1306 *HAZARD KNOWLEDGE*

1307 Fire and rescue services may be mobilised to an incident involving a submerged casualty, putting
1308 personnel in a situation where their timely and effective action is expected.

1309 If intervention by personnel is not seen by the public, this could result in unwanted behaviour or
1310 actions, such as self-deploying into a hazard area which may lead to multiple casualties needing to
1311 be rescued. For more information refer to [Operations - People](#).

1312 Such pressure may lead to personnel feeling the need to deploy into a hazard area to save life where
1313 a diminished risk-benefit exists. Examples such as removing personal protective equipment (PPE),
1314 duck-diving or trying to enter a submerged vehicle are unacceptable levels of intervention and are
1315 high-risk activities.

1316 Fire and rescue services should not deploy resources to incidents that involve submerged casualties,
1317 which result in action being taken that is not supported by legislation, policy, procedure, equipment
1318 and training.

1319 Conversely, there may be incidents where an appropriate rescue of a submerged casualty can be
1320 achieved, if they are visible, within reach and not in a confined space or trapped.

1321 The time taken to rescue a submerged casualty can impact on whether their condition deteriorates,
1322 resulting in death or severe injury.

1323 This hazard also applies if a casualty is in a submerged road vehicle, as this will impact on their
1324 survivability. It may be possible to access a submerged road vehicle if the appropriate equipment is
1325 available. Alternatively, the road vehicle should be relocated to a position where it is no longer
1326 submerged, before a rescue can proceed. For more information refer to Casualties in a vehicle in
1327 water: Rescue.

1328 **Operational discretion**

1329 The use of operational discretion should not be applied to search for or rescue a submerged casualty
1330 if the activity contradicts service policy or procedures on actions such as removing PPE, entering
1331 underwater confined spaces or physically going underwater. The NFCC Position Statement illustrates
1332 the reasons for this decision and it is strongly advised that it is complied with when producing
1333 service policy, procedures and training.

1334 Additionally, the use of operational discretion to resolve such incidents may result in investigation
1335 and litigation from the Health and Safety Executive (HSE) if it is used to address foreseeable risks. For
1336 more information refer to Incident command – Decision-making.

1337 Due to the nature of water incidents, in particular incidents involving a submerged casualty, the
1338 likelihood of exposing personnel to situations where they cannot act, due to the limitations of their
1339 competence, legislation, policy or procedure, are high and should be minimised where possible. For
1340 more information refer to Operations - [Failing to manage health, safety and welfare](#).

1341 **Control measure – Appropriately informed actions - Search and rescue of a submerged**
1342 **casualty**

1343 *CONTROL MEASURE KNOWLEDGE*

1344 **NFCC Position statement – Submerged casualties**

1345 Unless services are able to address the identified gap in the required resources, equipment, training,
1346 and the actions that are required to remain compliant with legislation, when attending an incident
1347 involving a casualty that is submerged, all rescues of a submerged casualty should be taken from the
1348 land, the surface of the water or by personnel in the water.

1349 Personnel should be competent to risk assess and carry out rescues and should maintain the correct
1350 levels of personal protective equipment (PPE). Operational discretion should not be used as
1351 justification to remove PPE, enter confined spaces underwater or act outside of service policy to go
1352 underwater.

1353 There may be specific underwater situations that can be controlled to allow a rescue attempt. These
1354 situations will usually be when the casualty is visible and submerged in shallow water.

1355 The NFCC will consider future National Operational Learning cases but are unlikely to re-evaluate
1356 existing guidance unless they include new evidence, alternative safe systems of work or equipment,
1357 or other technical solutions that are deemed as a potential improvement in this matter.

1358 To assist with upholding the NFCC Position Statement on submerged casualties, it is important that
1359 the most appropriately equipped and competent resources are mobilised to a casualty who is
1360 submerged below the surface of the water. The position statement will assist fire and rescue
1361 services in identifying their own position against their identified risks in respects to undertaking
1362 rescues of submerged casualties.

1363 Personnel must not be deployed to perform a rescue at an incident where a casualty is submerged
1364 that knowingly requires personnel to remove PPE. Personnel must not attempt a rescue that is not
1365 performed from the surface of the water, in the water, from land, or within agreed protocols and
1366 parameters.

1367 Information gathered from the initial call and first attending responders should assist fire control
1368 rooms to mobilise the most appropriate and informed resources to the incident.

1369 **Dive teams**

1370 Fire and rescue services should try to identify dive teams that can provide an underwater search and
1371 rescue capability for incidents involving submerged casualties. If available, they should be mobilised
1372 to incidents where a fire and rescue service intervention is not possible. This may be due to the
1373 depth or position of a casualty, or a situation that may result in personnel being exposed to an
1374 underwater rescue situation.

1375 Restrictions that prohibit dive teams from providing assistance, such as volunteer staffing levels,
1376 weather or reduced visibility, should be considered when mobilising or requesting resources.

1377 **Information gathering**

1378 Fire control rooms and initial responding personnel should contribute to effective information
1379 gathering regarding the rescue of a submerged casualty. This can improve on the actions taken in
1380 respect to the appropriate weight and effective intervention, by ensuring that the necessary
1381 resources are mobilised. For more information refer to [Gather information to inform and support an](#)
1382 [effective water rescue response.](#)

1383 The information collated should be used in collaboration with the survivability model to determine
1384 the actions and resources required. For more information refer to [Apply the survivability model:](#)
1385 [Water rescue.](#)

1386 Depending on the information received, fire and rescue services may deem it necessary to minimise
1387 the risk of exposure by mobilising a member of personnel to survey the scene. This may be
1388 appropriate if a casualty has been submerged for longer than 90 minutes and the likelihood of them
1389 surviving due to the presence of an air pocket is minimal. Conversely, if the information received
1390 cannot be verified or the casualty is within the survivability model for rescue operations, mobilising
1391 an appropriate water rescue response should be considered.

1392 The information gathered from the initial call handling will assist the incident commander in
1393 determining the level of equipment, resources and competence that is required to undertake rescue.
1394 It will also help establish whether the rescue will be made from the surface of the water or using
1395 land access, such as the bankside or bridges. This information will also help to develop a tactical plan
1396 and establish whether a viable rescue attempt can be made. A rescue attempt of a submerged
1397 casualty should be within service policy and procedure.

1398 Once initial information has been established, if a rescue cannot be achieved; incident commanders
1399 may need to promptly consider alternative options, such as:

- 1400 • Request attendance of police dive teams
- 1401 • Mobilise enhanced rescue teams with capabilities to operate on the surface of the water
- 1402 • Attendance of resources with stand-off search and rescue capabilities, such as cameras and
1403 reach poles

1404 *STRATEGIC ACTIONS*

1405 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	<ul style="list-style-type: none">• Ensure that operational discretion is not used as a pre-planning measure for submerged casualty rescues	New
	<ul style="list-style-type: none">• Ensure that personnel understand and operate within	New

	their level of competence	
	<ul style="list-style-type: none"> Consider complying with the NFCC Position Statement on submerged casualties 	New
	<ul style="list-style-type: none"> Consider establishing memoranda of understanding with search and rescue dive teams 	New

1406 *TACTICAL ACTIONS*

1407 Incident commanders should:

- 1408 • Gather the necessary information to inform a safe and effective submerged casualty search
1409 and rescue
- 1410 • Ensure that personnel do not act outside of the limitations of their competency when
1411 searching for or rescuing a submerged casualty
- 1412 • Consider requesting specialist resources for submerged casualty search and rescue

1413 **Control measure – Search and rescue: Submerged casualty**

1414 *CONTROL MEASURE KNOWLEDGE*

1415 A search and rescue of a submerged casualty may be possible by using the equipment available
1416 while operating within the parameters of personnel competence and capabilities, either on the
1417 water, in the water or from the land. An assessment of the incident should determine what level of
1418 intervention is required and a request for the most appropriate resource should be made at the
1419 earliest opportunity.

1420 Examples of equipment that can be utilised at water search and rescue:

- 1421 • Reach poles and attachments
- 1422 • Bathyscope
- 1423 • Sonar equipment
- 1424 • Cameras
- 1425 • Underwater drones

1426 Deploying personnel under the [hierarchy of risk \(rescue formula\)](#) may adequately provide the
1427 options appropriate for providing a rescue capability within the parameters of legislation, training,
1428 and competence.

1429 If a rescue cannot be achieved, it may be necessary to apply the survivability model to inform the
1430 decision to cease rescue operations and help inform the actions of oncoming responders. For more
1431 information refer to [Apply the survivability model: Water rescue](#).

1432 At the point that a rescue cannot be achieved, the incident commander should request the
1433 attendance of the police, if they are not already at the incident, and establish functional cordons. For

1434 more information refer to [Cordon controls: Water rescue](#).

1435 *STRATEGIC ACTIONS*

1436 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	<ul style="list-style-type: none">Ensure all relevant personnel understand the acceptable methods and limitations for rescuing a submerged casualty	New
	<ul style="list-style-type: none">Consider providing appropriate equipment to facilitate a surface or land-based search and rescue of a submerged casualty	New

1437 *TACTICAL ACTIONS*

1438 Incident commanders should:

- 1439 Consider the use of specialist equipment to help locate and rescue submerged casualties
- 1440 Record when a casualty became submerged

1441 **Hazard – Entrapment or entanglement in water**

1442 **This hazard should be read in conjunction with Hydrological hazards**

1443 *HAZARD KNOWLEDGE*

1444 Entrapment and entanglement are hazards that may affect members of the public and personnel.
1445 Entrapment or entanglement in static or moving water is hazardous as it may be difficult to escape
1446 without assistance. If somebody is trapped in water, they may be at risk of hypothermia.

1447 Entrapment or entanglement in water may cause personnel or casualties to lose their footing or be
1448 pulled under the water. Once submerged, the force of water and the environment may make it
1449 difficult to keep their head above water, increasing the risk of drowning unless released.

1450 Entrapment or entanglement may be caused by:

- 1451 Strainers
- 1452 Submerged street furniture and displaced drainage covers during flooding
- 1453 Debris
- 1454 Loose rocks and unstable ground conditions
- 1455 Fire and rescue service lines, including incorrect or non-floating lines

1456 **Control measure – Clean line principle: Working near, on or in water**

1457 *CONTROL MEASURE KNOWLEDGE*

1458 Fixed lines can pull responders underneath the water and untreated lines may sink and snag on
1459 submerged objects when saturated. Any fixed line may hold a responder or casualty in a hazardous
1460 position.

1461 All lines used in the water environment should be designed and treated for use in water. All lines
1462 must always be easily releasable. Personnel should have other means of releasing lines if they
1463 present a hazard to casualties or emergency responders such as the ability to cut a line if necessary.

1464 The use of collective or personal work restraint systems that completely remove the risk of
1465 accidental entry when working near water may be considered where appropriate. The use of work
1466 restraint systems should be risk-assessed considering any reasonably foreseeable actions that may
1467 be required. If the risk of entry cannot be entirely removed, the clean line principle should be
1468 followed.

1469 The consideration for appropriate personal protective equipment (PPE) should always be
1470 considered. Releasable flotation devices for deployed personnel in a water environment and
1471 necessary lighting can contribute towards ensuring the safe use of lines within a water environment.
1472 For more information refer to Personal protective equipment: Water rescue.

1473 *STRATEGIC ACTIONS*

1474 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21373	<ul style="list-style-type: none">• Provide lines and equipment suitable for use at water rescues	Revised

1475 *TACTICAL ACTIONS*

1476 Incident commanders should:

- 1477 • Use the clean line principle at water rescue incidents
- 1478 • Deploy appropriate work restraint systems at water rescue incidents
- 1479 • Use lines suitable for water rescue incidents

1480 **Control measure – Remove entrapment or entanglement hazards in water**

1481 *CONTROL MEASURE KNOWLEDGE*

1482 Potential entrapment or entanglement hazards should be removed from the water where possible.

1483 This may involve cutting lines, removing debris or otherwise changing the environment to eliminate
1484 the risk.

1485 If personnel that are operating in the water and encounter entrapment or entanglement that cannot
1486 be released, a firefighter emergency may need to be declared. For more information refer to Initiate
1487 firefighter emergency: Water rescue.

1488 *STRATEGIC ACTIONS*

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	<ul style="list-style-type: none">Consider providing equipment suitable for dealing with entrapment or entanglement in water	New

1489 *TACTICAL ACTIONS*

1490 Incident commanders should:

- 1491
- 1492 Consider removing entrapment or entanglement hazards from the water when attending a water rescue incident
 - 1493 Consider cutting rescue lines during a water rescue incident if necessary

1494 **Hazard – Casualty in a road vehicle in water**

1495 **This hazard should be read in conjunction with Height, structures and confined spaces – Confined**
1496 **space environment**

1497 *HAZARD KNOWLEDGE*

1498 Road vehicles containing passengers may accidentally enter a body of water or become partially
1499 submerged in rising floodwater or tides. Road vehicles may be stable in low levels of water but
1500 become buoyant if water levels rise. A submerged road vehicle can be considered as a confined
1501 space.

1502 A road vehicle entering a body of water may quickly float away from the point of entry. The electrical
1503 systems and powered windows may work for a time, even if it is full of water.

1504 **Electric road vehicles**

1505 Electric and hybrid road vehicles are designed to be safe in water, even if fully submerged. The high-
1506 voltage system is isolated from the chassis and is designed to not pose a risk of shock or energize the
1507 surrounding water. However, attempting to isolate or disconnect the high-voltage circuitry while a
1508 vehicle is in water may result in electric shock as well as wider transmission of electricity through a
1509 body of water.

1510 When submerged, bubbles may be visible from the battery arrays, this is referred to as micro-
1511 bubbling and does not indicate a shock hazard nor energise the surrounding water.

1512 Submersion in water, especially salt water may damage high and low voltage components. Although
1513 not a common occurrence, this could result in an electrical short and potential fire when the vehicle
1514 is no longer submerged.

1515 If there is evidence or reason to believe that the high-voltage systems have been damaged, extreme
1516 caution should be exercised when entering the water or approaching the vehicle due to the risk of
1517 electric shock.

1518 For more information refer to– Transport – Electrical systems in modes of transport.

1519 **Road vehicle safety systems**

1520 When submerged, vehicle electronics may activate without warning and for no apparent reason
1521 because water is affecting the vehicle's circuitry.

1522 Supplementary restraint systems (SRS) may activate and act as a hazard to the casualties and
1523 personnel as well as restrict the ability to exit the vehicle.

1524 For more information regarding the systems that may be affected by water. For more information
1525 refer to Transport - [Road vehicle safety systems](#).

1526 **Road vehicle position and stability**

1527 Once a vehicle is full of water, other factors will influence how it behaves, including the underlying

1528 surface, water current and the weight and distribution of passengers or load. During floods,
1529 uncontrolled flows of water can pick up road vehicles and propel them at speed to hazardous areas,
1530 including electrical installations, deeper water, areas where members of the public are trapped or
1531 where emergency responders are working.

1532 Depending on ground conditions, a partially buoyant vehicle may pivot around its heaviest point.
1533 Eventually, road vehicles are likely to move to a position where its heaviest part is pointed into the
1534 flow.

1535 Although a vehicle may appear stable in this position, no vehicle in water should be considered safe
1536 until secured as changes in flow, ground conditions, changes in load position in a car or release by an
1537 object such as a branch or rock holding a vehicle in position may cause sudden movement.

1538 A vehicle's orientation to the flow will affect its movement. If the vehicle is side-on to the current on
1539 a solid riverbed in flowing water, a vehicle roll is almost inevitable. Even in slow currents, a vehicle
1540 may be rolled a considerable distance. If a vehicle lands on its wheels on a soft river bottom each
1541 tyre will create an eddy. This may scoop out mud and sand causing the vehicle to settle onto its
1542 chassis.

1543 If a vehicle comes to rest or becomes wedged against an obstacle, an eddy may present a seemingly
1544 safe area to work from. However, the obstacle or object may suddenly move due to its compromised
1545 stability causing the vehicle to rotate, roll or move while rescue operations are being attempted.
1546 Even seemingly stable road vehicles may need to be secured.

1547 Redistribution or removal of the load from a vehicle may cause it to flip or move suddenly.
1548 Responders should be aware of this risk and should avoid removing weight from a vehicle before
1549 stabilising and securing it. Movement of casualties inside a buoyant vehicle may cause unexpected
1550 vehicle movements.

1551 Any attempt to gain access to a vehicle or any sudden movement of the vehicle may trigger a
1552 vehicle's supplementary restraint systems (SRS). These systems may present a direct hazard to
1553 personnel and any movement of the vehicle created by the activation of the device may affect the
1554 vehicle's stability. For more information refer to Transport - [Road vehicle safety systems](#).

1555 Water conditions will dictate the best direction to approach an unsecured vehicle in water.
1556 Depending on the hydrology, flow of water around a vehicle, ground conditions and depth, a car
1557 may move or roll which will endanger personnel approaching from downstream. In flowing water,
1558 currents will pass under and around the vehicle creating a strainer or siphon-like effect. Creating
1559 openings on the upstream side may be difficult and affect the stability of the vehicle.

1560 **Evacuation from a road vehicle**

1561 When evacuating or rescuing people, consider the effect of pets and other animals. Controlling the
1562 movement and behaviour of animals during rescue attempts may not be possible and their
1563 movement may affect the stability of the vehicle. Animals may be distressed by the incident and
1564 require additional restraint to prevent them posing a hazard to rescuers.

1565 For more information on rescuing animals from road vehicles, refer to [Incidents involving animals –](#)

1566 [Animal in transit.](#)

1567 **Road vehicle underwater**

1568 If a vehicle is underwater and cannot be relocated, the vehicle and its occupants should be treated
1569 the same as a submerged casualty. For more information refer to [Appropriately informed actions -](#)
1570 [Search and rescue: Submerged casualty](#)

1571 **Control measure – Stabilise and anchor a road vehicle in water**

1572 *CONTROL MEASURE KNOWLEDGE*

1573 The risk of a vehicle moving or flipping due to the impacts of hydrology, should be considered as part
1574 of the rescue plan and appropriate control measures used to secure the vehicle before the start of
1575 casualty removal. Personnel should avoid working directly in the downstream path of unsecured
1576 road vehicles that are or may become buoyant.

1577 Direction may need to be given to people inside or on top of a vehicle to remain in place, to ensure
1578 that the vehicle remains stable. This will allow personnel to initiate appropriate stabilisation and
1579 anchoring before the occupants of the vehicle are requested to move. Anchoring a vehicle will
1580 reduce the likelihood of it moving and reduce the risk of harm to emergency service personnel,
1581 members of the public and persons trapped inside the vehicle. When anchoring a vehicle, consider
1582 the affects any method of securing the vehicle will have on the rescue of casualties, for example,
1583 securing and anchoring around the door pillars may restrict the doors when they are required to be
1584 opened as part of any rescue plan.

1585 *STRATEGIC ACTIONS*

1586 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21731	<ul style="list-style-type: none">• Provide appropriate equipment to stabilise or anchor road vehicles in water	Revised

1587 *TACTICAL ACTIONS*

1588 Incident commanders should:

- 1589
- Consider the stability of unsecured road vehicles
- 1590
- Consider hydrology and vehicle stability when approaching a vehicle in the water
- 1591
- Consider securing or anchoring road vehicles in water
- 1592
- Regularly assess and review the effectiveness of the stabilisation techniques employed

- 1593 • Consider how the stabilisation methods may interfere with the rescue plan
- 1594 • Direct the occupants of a vehicle to remain in place until adequately anchored and stabilised

1595 **Control measure – Avoid entering a road vehicle in water**

1596 *CONTROL MEASURE KNOWLEDGE*

1597 Entering an immersed, partially submerged or completely submerged vehicle can be extremely
1598 hazardous. Road vehicles can suddenly shift with movement or an increase in depth of the
1599 surrounding water, ultimately trapping rescuers inside and causing physical injury.

1600 Initial call interrogation can help to prevent unnecessary or inappropriate deployment of resources.
1601 An example of this would be to challenge an emergency call regarding an unoccupied vehicle in
1602 floodwater. The line of questioning to determine appropriate mobilisation includes:

- 1603 • The length of time the vehicle has been in the water
- 1604 • The depth and speed of flow of the water
- 1605 • If the vehicle is occupied or unoccupied

1606 A dynamic risk assessment should consider the window of opportunity for performing a life-saving
1607 rescue, using safe working practices and competent personnel to carry out tasks. This may mean
1608 considering the speed of water flow and how quickly an area is becoming inundated, the depth of
1609 the water and the likely path of travel the vehicle may take if it were to move.

1610 Personnel should avoid entering a submerged or partially submerged vehicle as this may affect its
1611 stability, potentially resulting in entrapment. The surface of a road vehicle is likely to be extremely
1612 slippery and standing on top of it is not recommended.

1613 Leaning into a vehicle to assist a casualty while wearing automatically inflating life jackets should be
1614 avoided. If the device is activated while fully or partially in a vehicle, either by accidentally triggering
1615 the device or if sensors become submerged, the inflated life jacket may cause the responder to
1616 become trapped.

1617 Casualties can be encouraged to self-extricate once appropriate control measures are established.
1618 For more information refer to Rescue from road vehicles in water.

1619 **Electric road vehicles**

1620 Hybrid and electric road vehicles should be isolated in the same way as conventional road vehicles,
1621 using the vehicle ignition. This will assist in preventing the unwanted movement of the vehicle. High-
1622 voltage circuitry should not be disconnected or touched if a vehicle is submerged, to prevent the risk
1623 of electrocution and the transmission of electricity through the water.

1624 An appropriate scene survey may be necessary to determine if the high-voltage system has been
1625 compromised through damage as a result of an accident. If a high-voltage battery has been
1626 damaged, there may be a risk of electric shock and transmission through the body of water.

1627 *STRATEGIC ACTIONS*

1628 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21731	<ul style="list-style-type: none"> • Provide appropriate means for assessing road vehicles in water 	Revised
	<ul style="list-style-type: none"> • Provide appropriate equipment to safely rescue casualties from a road vehicle in water 	New

1629 *TACTICAL ACTIONS*

1630 Incident commanders should:

- 1631 • Avoid entering submerged or partially submerged road vehicles
- 1632 • Survey the vehicle for positive identification of occupancy
- 1633 • Identify the likelihood of damage to an electric vehicle’s high-voltage system
- 1634 • Appropriately isolate the road vehicle
- 1635 • Prevent any interaction with the high-voltage system on an electric or hybrid road vehicle

1636 **Control measure – Gaining access to a road vehicle in water**

1637 *CONTROL MEASURE KNOWLEDGE*

1638 Opening windows, doors or taking any action that alters the weight of a vehicle in water will affect
 1639 its stability and buoyancy. The removal and safety of casualties should be the primary concern
 1640 during a rescue from a vehicle in water but altering the stability or buoyancy of a submerged or
 1641 partially submerged vehicle that has not been suitably anchored should be avoided where possible.

1642 Stabilisation should be prioritised in flowing water. Hydrology can impact on the stability of a vehicle
 1643 through actions such as the removal of weight from a vehicle, for example by removing a casualty, or
 1644 by opening a door. The resultant outcome may cause sudden uncontrolled vehicle movements and
 1645 present a hazard to both casualties and personnel. Working near an unsecured vehicle should be
 1646 avoided.

1647 Each situation will need to be carefully assessed to identify the appropriate method and angle of
 1648 approach to the road vehicle.

1649 If an opening needs to be made, personnel should consider how this will affect the vehicle’s stability
 1650 and do so from a position of safety. The use of hydraulic rescue equipment may be necessary but the
 1651 effect of the application of force, safety restraint systems and sudden movements of the vehicle or
 1652 parts of the vehicle should be considered.

1653 When removing structural elements of a vehicle in flowing water, large or heavy objects should be
 1654 secured, or the hazard to downstream responders considered.

1655 It may be necessary to brief and appoint a safety officer to monitor the stability and safety of the
 1656 vehicle if access to it is required to rescue a casualty. For more information refer to Safety officers:
 1657 Water rescue.

1658 *STRATEGIC ACTIONS*

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	<ul style="list-style-type: none"> • Consider providing appropriate equipment to gain access to a vehicle in the water 	New

1659 *TACTICAL ACTIONS*

1660 Incident commanders should:

- 1661 • Consider the possibility of air pockets maintaining the buoyancy of a vehicle in deep water
- 1662 • Consider hydrology and vehicle stability while gaining access to road vehicles in water
- 1663 • Consider nominating a briefed safety officer to monitor vehicle stability

1664 **Control measure – Rescue from a road vehicle in water**

1665 *CONTROL MEASURE KNOWLEDGE*

1666 If there are occupants in a road vehicle in water, before encouraging them to self-evacuate or
 1667 performing a rescue, protective safety measures should be deployed if necessary to protect them
 1668 once they enter the water. Protective safety measures can include:

- 1669 • Personal flotation devices (PFDs), such as:
 - 1670 ○ Life jackets
 - 1671 ○ Lifebelts or floats
- 1672 • Throwlines
- 1673 • Downstream protection, such as:
 - 1674 ○ Safety teams
 - 1675 ○ Rescue teams

1676 In the first instance, the occupants of a vehicle should be encouraged to self-extricate, but if they
 1677 cannot get out of the vehicle, personnel will need to perform a rescue.

1678 There should be early and clear communication with the occupants of the vehicle to ensure they are

1679 aware of the rescue plan. They should be provided with clear instructions if personnel need them to
 1680 comply with any of the activities. This should reduce the likelihood of vehicle occupants or other
 1681 members of the public taking unwanted or unplanned risks.

1682 Once a rescue has been completed, it may be necessary to hand over responsibility for the security
 1683 of a road vehicle, establish a means of protecting it or moving it when safe to do so. The last of these
 1684 options may be required to provide a clear route for emergency vehicles.

1685 **Relocation**

1686 Following a suitable risk assessment, the relocation of a road vehicle may be a viable option to save
 1687 the lives of any occupants trapped within a vehicle. This may also be a suitable option if a road
 1688 vehicle containing occupants becomes submerged.

1689 **Road vehicle safety systems**

1690 If personnel need to enter a road vehicle, steps should be taken to mitigate the risks from vehicle
 1691 safety systems activating. Water may trigger the actuation of systems, such as airbags, which could
 1692 result in injuries to the casualty or personnel and impact on the stability of the vehicle.

1693 The presence and location of road vehicle safety systems, such as supplementary restraint systems
 1694 (SRS), should be identified. Personnel should be briefed on the location and type of systems that
 1695 may need to be avoided or controlled, by using equipment such as airbag protectors.

1696 For more information refer to Transport – Road vehicle safety systems.

1697 *STRATEGIC ACTIONS*

1698 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	<ul style="list-style-type: none"> Provide appropriate communication equipment for water rescue incidents 	New
	<ul style="list-style-type: none"> Consider providing appropriate equipment to safely rescue casualties from a vehicle in water 	New
Transport	<ul style="list-style-type: none"> Provide personnel with access to up-to-date information regarding vehicle design, including vehicle safety systems 	No change

1699 *TACTICAL ACTIONS*

1700 Incident commanders should:

- 1701 • Make early, clear communication with the occupants of a road vehicle in water
- 1702 • Use available equipment to support self-extrication from a road vehicle in water, if

- 1703 appropriate
- 1704 • Consider the presence of vehicle safety systems in a road vehicle in water
- 1705 • Provide appropriate protective safety equipment to occupants of a vehicle in water
- 1706 • Consider relocating a vehicle in water

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1707 **Hazard – Deterioration in the condition of a casualty: Water rescue**

1708 **This hazard should be read in conjunction with Search, rescue and casualty care – Deterioration in**
1709 **the condition of a casualty**

1710 *HAZARD KNOWLEDGE*

1711 A compromised airway in a water environment is likely to be the main cause of death. This may be
1712 caused by several factors, including:

- 1713 • Loss of consciousness
- 1714 • Shock leading to cardiac arrest
- 1715 • Hydrology overcoming a casualty leading to drowning

1716 When water is inhaled or swallowed it may prevent respiration or trigger a cardiac arrest, eventually
1717 causing drowning. Small quantities of water can cause drowning and other health implications. It is
1718 also possible for submerged casualties to drown without inhaling or swallowing any water, as
1719 survival mechanisms can cause an airway to close to prevent water from entering the lungs.

1720 There remains a significant hazard to rescued people who may have inhaled or swallowed even a
1721 relatively small amount of water and even after breathing has resumed. Water can damage the
1722 inside surface of the lung, causing heart irregularities and reducing the ability to exchange air. It can
1723 lead to serious secondary complications after the event, including death. This delayed collapse is
1724 referred to as secondary drowning and can be a cause of death in casualties who have been
1725 successfully rescued.

1726 Hypothermic casualties may be extremely vulnerable and should be handled with additional care.
1727 Although the priority will be to move a casualty to a position of safety, responders should be aware
1728 that rough handling of hypothermic casualties can result in cardiac arrest.

1729 The blood pressure of casualties who have been in the water for some time, have become
1730 hypothermic or have lost significant volumes of fluid, maybe being maintained by the pressure of the
1731 water; this is referred to as hydrostatic squeeze. When removed there is a risk that blood pressure
1732 will drop, causing cardiovascular injury or hypovolemic shock.

1733 **Control measure – Specialist resources: Medical resources for water rescue**

1734 **This control measure should be read in conjunction with Search, rescue and casualty care –**
1735 **Specialist resources: Medical resources**

1736 *CONTROL MEASURE KNOWLEDGE*

1737 Due to entrapment, entanglement or the hazards related to moving a casualty, it may be necessary
1738 to treat a casualty in situ. Specialist teams are available that can access casualties in the water
1739 environment, stabilise and treat them.

1740 Mobilising specialist medical teams should be considered during the initial assessment of resources,
1741 as medical advice may be required during the planning stage of a water rescue.

1742 *STRATEGIC ACTIONS*

1743 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21717	<ul style="list-style-type: none"> Hold contact details for specialist medical responders to enable a timely response to water incidents 	No change
21718	<ul style="list-style-type: none"> Consider requesting specialist medical teams to incidents involving water 	No change

1744 *TACTICAL ACTIONS*

1745 Incident commanders should:

- 1746 • Consider requesting specialist medical teams to incidents involving water
- 1747 • Consider using medical advice when planning rescues from water

1748 **Control measure – Carry out structured assessment and treatment: Water rescue**

1749 **This control measure should be read in conjunction with Search, rescue and casualty care – Carry**
 1750 **out structured assessment and treatment**

1751 *CONTROL MEASURE KNOWLEDGE*

1752 A casualty who is still in water may require immediate intervention to keep their airway clear.

1753 Personnel can carry out measures to achieve this, but only if it is safe for them to enter the water.

1754 Alternative methods of maintaining a casualty’s airway may need to be considered, such as using
 1755 available equipment. For example, if the casualty cannot be removed from the water, equipment
 1756 can be used to support their weight and maintain their airway until specialist resources can rescue
 1757 them.

1758 Structured assessment and treatment of the casualty should be carried out. This should include
 1759 assessing the casualty to recognise potential signs and symptoms of drowning. Intervention may be
 1760 required to prevent a casualty from vomiting, as this may block their airway or trigger a cardiac
 1761 arrest.

1762 Personnel should monitor the casualty after they have been rescued from the water, until they are
 1763 handed over to a medical responder. It may not always be obvious that a casualty requires
 1764 immediate hospitalisation. However, it is recommended that a casualty who may have inhaled or
 1765 swallowed water is treated with oxygen and transferred to a hospital, unless a medical responder
 1766 advises otherwise.

1767 *STRATEGIC ACTION*

Reference No. if applicable	Strategic action	Revised, new, archive or no change
	<ul style="list-style-type: none"> Consider providing the necessary equipment to suitably assess and treat a casualty in water 	New

1768 *TACTICAL ACTIONS*

1769 Incident commanders should:

- 1770
- Consider initial actions to provide and maintain an airway
- 1771
- Provide appropriate first aid for casualties rescued from the water
- 1772
- Monitor the casualty after their rescue from the water, until they are handed over to a
- 1773 medical responder

1774 **Control measure – Rescue of a hypothermic casualty from water**

1775 *CONTROL MEASURE KNOWLEDGE*

1776 Due to the risks related to transporting hypothermic casualties, establishing a controlled method of
 1777 rescue should be considered. Specialist medical advice may be required when establishing a method
 1778 of removal. For more information refer to [Specialist resources: Medical resources for water rescue](#).

1779 Methods of removal may require stabilising casualties in situ and using on-water resources, rope
 1780 rescue or technical rescue teams to allow the casualty to be removed horizontally.

1781 Removing a casualty from the hazard area will remain the priority, but responders should consider
 1782 the risk of removing casualties too quickly or vertically, and where possible rescue casualties in a
 1783 horizontal position with legs elevated to reduce the risk of shock.

1784 *STRATEGIC ACTIONS*

1785 Fire and rescue services should:

Reference No. if applicable	Strategic action	Revised, new, archive or no change
21722	<ul style="list-style-type: none"> Consider providing relevant personnel with appropriate means of rescuing hypothermic casualties from water 	Revised

1786 *TACTICAL ACTIONS*

1787 Incident commanders should:

- 1788 • Consider requesting specialist teams to assist with the rescue of a hypothermic casualty
- 1789 • Consult with medical responders to help formulate a rescue plan and communicate to
1790 relevant responders
- 1791 • Remove casualties from water in a horizontal position and elevate legs where possible

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1792 **Removed content**

1793 **Hazard – Working environment: Water rescue and flooding [DUPLICATED**
1794 **CONTENT]**

1795

1796 **Hazard – Water rescue and flooding [COMBINED]**

1797 **Control measure – Establish appropriate cordon controls [DUPLICATED CONTENT]**

1798 **Control measure – Site-Specific Risk Information: Water rescue and flooding [RELOCATED]**

1799 **Control measure – Tide timetables and water temperature charts [COMBINED]**

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- 1801 **Control measure – Assess current and forecast weather conditions [DUPLICATED**
1802 **CONTENT]**Control measure – Arrangements to deal with firefighter emergencies
1803 **[DUPLICATED CONTENT]**
- 1804 **Control measure – Specialist resource: Helicopter [DUPLICATED CONTENT]**
- 1805 **Control measure - Specialist advice: Water Management systems [COMBINED]**
- 1806 **Control measure - Isolate equipment: Water management systems [COMBINED]**
- 1807 **Hazard – Biosecurity [DUPLICATED CONTENT]**
- 1808 **Control measure – Clean equipment, vehicles and personal protective equipment**
1809 **[DUPLICATED CONTENT]**
- 1810 **Control measure – Containment [DUPLICATED CONTENT]**
- 1812 **Control measure – Specialist advice: Biosecurity [DUPLICATED CONTENT]**
- 1813 **Hazard – Waterways incidents [RELOCATED]**
- 1814 **Control measure – Responsible person: Waterways incidents [RELOCATED]**
- 1815 **Control measure – Safe system of work: Waterway incidents [RELOCATED]**
- 1816 **Hazard – Insufficient resources: Flooding [RELOCATED]**
- 1817 **Control measure – Specialist resource: Flooding [RELOCATED]**
- 1818 **Control measure – Request National Resilience resources for high volume pumps**
1819 **[RELOCATED]**
- 1820 **Control measure – Deployment of high volume pumps resources [RELOCATED]**
- 1821 **Control measure – High volume pump hose deployment [RELOCATED]**
- 1822 **Control measure – Water extraction: Deploy high volume pump to remove flood water**
1823 **[RELOCATED]**
- 1824 **Hazard – Insufficient preparation for flooding [RELOCATED]**
- 1825 **Control measure – Prepare for flooding [RELOCATED]**
- 1826 **Control measure – Liaise with local emergency planning groups [RELOCATED]**
- 1827 **Control measure – Warn, inform and advise people: Flooding [RELOCATED]**

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