National Operational Guidance

Training specification

Height, structures and confined spaces

NFCC National Fire Chiefs Council

Developed and maintained by the NFCC

Contents

Hazard - Unguarded edges

Knowledge and understanding

Hazard	Learning outcome
Unguarded edges	Understand all associated hazard knowledge

Control measure - Safe system of work: Unguarded edges

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Safe system of work: Unguarded edges	Understand: • The need for all personnel to identify and communicate the hazards they encounter • What signs may be found where there are unguarded edges • The benefits of barriers and cordons when working near unguarded edges • The benefits of collective and personal fall protection when working near unguarded edges • The potential conflict of control measures and PPE in complex environments

Practical application

Control measure element	Learning outcome
Select the most appropriate PPE and other equipment for the hazards and activities identified when working near unguarded edges	Demonstrate the ability to: • Determine what PPE is appropriate based on the hazards identified and the required activities • Carry out a risk assessment to identify if there are any conflicts in control measures or PPE required for a more complex environment • Ensure personnel are wearing the most appropriate PPE when working near unguarded edges
Review the suitability of existing barriers or guard rails	Demonstrate the ability to: • Carry out a risk assessment to determine if the level of protection provided by a barrier or guard rail is sufficient for the person and the task to be carried out
Review the suitability of any existing collective protection	Demonstrate the ability to: • Review the suitability of existing collective protection and obtain assurance of its capability

Hazard - Work at height

Knowledge and understanding

Hazard	Learning outcome
Work at height	Understand all associated hazard knowledge

Control measure - Situational awareness: Work at height

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Situational awareness: Work at height	Understand: • The various sources of information, which may be available to assist with working at height situational awareness • When it may be necessary to adopt defensive tactics • The impact of medical conditions or medication that could affect personnel working at height • The need to monitor personnel working at height for physical impacts

Practical application

Control measure element	Learning outcome
Assign and brief personnel to carry out reconnaissance if support is needed to inform situational awareness	Demonstrate the ability to: • Gather information from personnel at the scene of operations • Gather information from personnel remote from the scene of operations
Consider adopting defensive tactics until specialist advice or assistance is obtained for work at height	Demonstrate the ability to: • Make a risk-assessed decision to withdraw temporarily pending specialist advice or assistance
Be aware of any personnel who should not be deployed to work at height, due to medical conditions or medication	Demonstrate the ability to: • Determine which personnel should not be deployed to work at height on medical grounds

Control measure element	Learning outcome
Monitor personnel for signs of stress, anxiety, vertigo or dizziness while working at height	Demonstrate the ability to: • Recognise any personnel suffering from adverse physical impacts when working at height

Control measure - Hierarchy of control: Work at height

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Health and safety measures for working at height	Understand: • The importance of risk assessment, planning and supervision • The need to identify competent people to work at height • The need for the right type of equipment when working at height
The hierarchy of control for working at height	Understand: • When it is appropriate to apply the 'avoid, prevent, minimise' approach • When it is appropriate to use ladders
Protection measures when working at height	Understand: • The use of collective protection systems • The use of personal protection systems

Control measure element	Learning outcome
Weather conditions	Understand: • The need to monitor weather conditions when working at height

Practical application

Control measure element	Learning outcome
All personnel must: Use any work at height equipment or safety device provided in accordance with training and manufacturer's guidelines	Demonstrate the ability to: • Use work at height equipment and safety devices in accordance with the training received • Use work at height equipment and safety devices in accordance with the manufacturer's guidelines
Manage risk for work at height using a hierarchy of control approach	Demonstrate the ability to: • Determine when it is appropriate to avoid, prevent or minimise the risks of working at height • Consider the appropriate use of ladders
Select the most appropriate work at height equipment for the activities and hazards identified	Demonstrate the ability to: • Consider the appropriate use of collective and personal protection systems
Monitor weather conditions when working at height	Demonstrate the ability to: • Recognise weather conditions that may escalate the level of risk when working at height

Control measure - Safe system of work: Work at height

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Planning for working at height	Understand: The benefits of planning for safe systems of work when working at height
Specialist resources for working at height	Understand: • The benefits of obtaining support from specialist resources when working at height • How to prepare for the arrival of the requested specialist resources
Cordon controls for working at height	Understand: • The specific safety considerations associated with cordons when working at height • The factors to be considered when establishing cordons for working at height
Methods for working at height	Understand: • The methods for working at height • The benefits and disbenefits for each method of working at height • The suitability of fall protection systems • The risk of suspension intolerance when deploying personnel to work at height
Safe work at height or rope rescue team typing	Understand: • The system of team typing for work at height and rope rescue

Control measure element	Learning outcome
Equipment for working at height	Understand: • The need for work at height equipment to be compatible with other PPE and RPE • The need for examination and inspection of work at height equipment before each use • The regulations that apply to equipment
Anchor points for working at height	Understand: • How to carry out a risk assessment of the anchor points and system prior to them being used • Why false chimneys should not be used as anchor points
Structural integrity when working at height	Understand: • The need to assess the integrity of any structure that is being relied on for working at height
Establish arrangements to deal with firefighter emergencies	Understand: • The need to establish a rescue plan and have adequate resources in place for personnel working at height

Practical application

Control measure element	Learning outcome
Fire control personnel should: Inform an available specialist adviser about incidents involving work at height	Demonstrate the ability to: • Inform an appropriate tactical adviser that work at height is taking place at an incident
Incident commanders must: Ensure work at height equipment inspections have been carried out by a competent person	Demonstrate the ability to: Ensure the necessary inspections of work at height equipment are carried out by a competent person

Control measure element	Learning outcome
Incident commanders must: Establish and maintain a recovery system for personnel deployed to work at height	Demonstrate the ability to: • Establish a recovery system for personnel working at height • Maintain a recovery system for personnel working at height
Incident commanders must: Ensure that emergency arrangements are maintained and resourced for the duration that personnel are subjected to working at height	Demonstrate the ability to: • Establish emergency arrangements for personnel working at height • Maintain emergency arrangements for personnel working at height
Incident commanders must: Ensure PPE is proportionate to the risk of objects falling from height	Demonstrate the ability to: • Ensure personnel wear PPE that takes into account the risk of objects falling from height
Use ladders for short duration tasks and request other equipment, such as an aerial appliance, for other activities	Demonstrate the ability to: • Select the most appropriate equipment based on the type and duration of the task or activities
Consider requesting specialist work at height resources	Demonstrate the ability to: Request appropriate work at height specialists for the incident
Secure and prepare the scene prior to arrival of specialist work at height resources	Demonstrate the ability to: • Secure the scene through the use of cordons • Identify access routes and rendezvous points (RVPs) • Gather information from on-site staff • Appropriately isolate utilities and on-site machinery
Establish and control inner cordons , taking into account the incident type, items falling from height and wind conditions	Demonstrate the ability to: • Establish and control inner cordons when personnel are working at height

Control measure element	Learning outcome
Select appropriate methods to achieve work at height following a risk assessment	Demonstrate the ability to: • Select the safest practical methods for work at height • Consider the risk of suspension trauma when selecting work at height methods
Secure any unattended work at height systems to ensure they cannot be interfered with	Demonstrate the ability to: • Consider the use of cordons or other measures to protect deployed work at height equipment
Ensure the suitability of the structure before carrying out work at height activities	Demonstrate the ability to: • Assess the suitability of structures to support the use of work at height equipment • Consider using alternative methods or systems if there is any doubt about structural integrity
Ensure anchor points are suitable for supporting the load that will be applied	Demonstrate the ability to: • Ensure the anchor system is suitable and of sufficient strength and stability for the purpose of supporting any foreseeable loading

Control measure - Use of secondary system

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Use a secondary system	Understand: • The benefits of having secondary systems in place when working at height • The need to build in an appropriate level of redundancy when using work at height systems

Practical application

Control measure element	Learning outcome
Use secondary systems to provide redundancy when working at height	Demonstrate the ability to: • Use appropriate secondary systems when working at height • Build in an appropriate level of redundancy when working at height

Hazard - Fragile surfaces

Knowledge and understanding

Hazard	Learning outcome
Fragile surfaces	Understand all associated hazard knowledge

Control measure - Safe system of work: Fragile surfaces

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Situational awareness	Understand: • How signage, SSRI and information from the responsible person or on-site staff can help to inform the risk assessment and tactical plan
Access options	Understand: • The need to avoid going on or near a fragile surface • What existing means of support or protection may exist • What other methods of access could be used
Fall protection systems	Understand: • How fall protection systems can be used when working on or near a fragile surface

Practical application

Control measure element	Learning outcome
Ensure personnel and other emergency responders are informed when fragile surfaces are present or suspected	Demonstrate the ability to: • Inform personnel and other emergency responders about the location and risks of fragile surfaces
Consult with the responsible person or on-site staff to identify any fragile surfaces	Demonstrate the ability to: • Use information obtained about fragile surfaces from the responsible person or on-site staff to inform the risk assessment and tactical plan
Consider the use of specialist equipment when fragile surfaces are present or suspected	Demonstrate the ability to: • Consider the use of equipment to gain access while avoiding the fragile surface • Consider the use of fall protection systems, in conjunction with anchor points and appropriate supervision, when working on or near fragile surfaces

Hazard - Equipment falling from height

Knowledge and understanding

Hazard	Learning outcome
Equipment falling from height	Understand all associated hazard knowledge

Control measure - Safe system of work: Equipment used at height

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Quantity of equipment	Understand: • The benefits of selecting the minimum amount of equipment when working at height • The need to ensure the equipment is sufficient for foreseeable requirements when working at height
Selection of equipment	Understand: • How procurement, pre-planning and training can mitigate the risks of using equipment at height
Secure work at height equipment	Understand: • The need to secure equipment: - When working at height - When being transported • The systems available to secure equipment

Practical application

Control measure element	Learning outcome
Inform personnel to only use essential equipment when working at height to avoid the risk of it falling	Demonstrate the ability to: • Use only essential equipment when working at height • Ensure the equipment is sufficient for foreseeable requirements when working at height
Ensure that equipment taken and used at height is secured to reduce the risk of it falling	Demonstrate the ability to: • Secure equipment appropriately when working at height • Secure equipment when it is being transported • Use appropriate systems to secure equipment

Hazard - Contaminated or damaged work at height equipment

Knowledge and understanding

Hazard	Learning outcome
Contaminated or damaged work at height equipment	Understand all associated hazard knowledge

Control measure - Protect work at height equipment in use or storage

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Protect work at height equipment in use or storage	Understand: • Control the hazards to work at height equipment using the hierarchical approach: - Removing the hazard - Avoiding the hazard - Protection against the hazard • How work at height equipment may be damaged during use
Protect work at height equipment in storage	Understand: • The need for protecting work at height equipment in storage from contamination or damage
Quarantine of work at height equipment	Understand: • Service procedures for quarantining work at height equipment if it is suspected of, or identified as, being compromised
Reinstatement or disposal of work at height equipment	Understand: • When work at height equipment may be reinstated and when it may have to be withdrawn and disposed of • The need to record the decision and action taken following examination of work at height equipment

Practical application

Control measure element	Learning outcome
All personnel should: Check that work at height equipment has not been contaminated or damaged while stored	Demonstrate the ability to: • Check work at height equipment for contamination or damage • Immediately report any contaminated or damaged work at height equipment
All personnel should: Avoid edges that are unprotected and may damage work at height equipment	Demonstrate the ability to: • Avoid working where abrasive or sharp edges could compromise the operational integrity of work at height equipment
All personnel should: Use equipment and procedures to protect rope and other work at height equipment from damage when in use	Demonstrate the ability to: • Use supplementary equipment to protect ropes or other equipment that are in contact with abrasive or sharp edges
Ensure that regular checks of the surrounding area are carried out for potential hazards that could affect work at height equipment	Demonstrate the ability to: • Carry out regular checks for hazards that could damage work at height equipment
Ensure any defective work at height equipment is quarantined for the duration of the incident	Demonstrate the ability to: • Quarantine work at height equipment until it has been examined by a competent person
Ensure the reporting and replacement of defective equipment is carried out as per service procedure	Demonstrate the ability to: • Follow service procedure if work at height equipment is suspected of, or identified as, being compromised; this may include it being: - Withdrawn - Declared defective - Managed under a strict quarantine

Hazard - Confined space environment

Knowledge and understanding

Hazard	Learning outcome
Confined space environment	Understand all associated hazard knowledge

Control measure - Identify a confined space

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Common types of confined spaces	Understand: • The most common types of confined spaces • Why it is not always easy to identify a confined space
Regulations	Understand: • The relevant Confined Spaces Regulations
Decision-making and risk assessment	Understand: • How to use decision-making for confined spaces • How to use appropriate risk assessments for confined spaces
Information gathering	Understand: • How to identify a confined space in industrial contexts
Joint on-site training	Understand: • The benefits of using joint on-site training to identify potential confined spaces in an industrial context

Practical application

Control measure element	Learning outcome
Identify whether work is within an enclosed space or confined space and inform personnel if appropriate	Demonstrate the ability to: • Determine whether the work environment is an enclosed space or a confined space • Inform personnel if the work environment is a confined space
Liaise with the responsible person or on-site staff to obtain details about the confined space	Demonstrate the ability to: • Gather information about a confined space from the responsible person or on-site staff

Control measure - Avoid entry: Confined space

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Achieving objectives while avoiding entry to a confined space	Understand: • The relevant Confined Spaces Regulations • What action to take if a risk assessment indicates that personnel should not be deployed into a confined space

Practical application

Control measure element	Learning outcome
Incident commanders must: • Evaluate the range of options that avoid committing personnel to work in a confined space	Demonstrate the ability to: • Evaluate options that avoid the need for personnel to enter a confined space

Control measure element	Learning outcome
Consider requesting specialist advice or assistance if the nature of the confined space is unsafe for personnel to enter	Demonstrate the ability to: • Request appropriate specialist advice or assistance for an incident involving a confined space

Control measure - Confined space: Risk assessment

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Fire and rescue service policies and resources	Understand: • The service's policy on: - What type and complexity of confined space incidents can be dealt with by initial non-specialist personnel - How more complex confined space incidents will be handled - Details of the specialist resources and equipment that may be required
Identify potential hazards	Understand: • How to gather information about the hazards present in a confined space
Risk assess the benefits of entering the confined space	Understand: • How to carry out a risk assessment for confined space working

Control measure element	Learning outcome
Safe system of work	Understand: • What elements should inform the safe system of work • The need for emergency arrangements

Practical application

Control measure element	Learning outcome
Incident commanders must: Ensure that personnel do not enter a confined space prior to carrying out a risk assessment	Demonstrate the ability to: • Risk-assess the confined space prior to committing personnel when entry is unavoidable
Incident commanders must: Establish a safe system of work and emergency arrangements prior to personnel entering a confined space	Demonstrate the ability to: • Establish a safe system of work for personnel entering a confined space • Establish emergency arrangements when personnel are entering a confined space
Adhere to their service's policy when responding to confined space incidents	Demonstrate the ability to: • Adhere to service policy when: - Deploying personnel to a confined space incident - Attending a confined space incident - Deploying personnel to a confined space

Control measure - Confined space: Supervision, resourcing and communication

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Supervision	Understand: • The need for competent supervision during a confined space incident • The role of a confined space supervisor • The role of dedicated safety officers at a confined space incident • The need for appropriate breathing apparatus (BA) entry control supervision for a confined space incident
Competent personnel	Understand: • The necessary safeguards for confined space incidents, including: - Deploying only competent personnel - Using appropriate equipment - Having appropriate supervision - Using appropriate PPE
Communications	Understand: • The need for an effective communication system at a confined space incident • The need for fallback arrangements for communications failure at a confined space incident • The impact on communications of other equipment being used in a confined space • The need for appropriate communication equipment if there is a risk of explosive atmospheres in a confined space • What alternative equipment can be use for communications in a confined space incident

Practical application

Control measure element	Learning outcome
Use only communications equipment that meets the appropriate ATEX classification when personnel enter any potentially explosive atmosphere	Demonstrate the ability to: • Ensure that only communications equipment that meets the appropriate ATEX classification is used in a potentially explosive atmosphere; this could include: - Fire and rescue service communications equipment - Communications equipment that belongs to other organisations - Personal communications equipment
Conduct regular checks to ensure communication equipment continues to function	Demonstrate the ability to: • Check the functionality of communications equipment at appropriate intervals
Implement fallback arrangements if there is a failure in the communications equipment	Demonstrate the ability to: • Implement fallback arrangements if communications equipment fails
Consider requesting and appointing a confined space supervisor	Demonstrate the ability to: • Establish appropriate supervision and safety precautions during confined space work
Apply the most appropriate level of BA entry control supervision for a confined space incident	Demonstrate the ability to: • Establish appropriate BA entry control supervision
Commit competent personnel to work in a confined space only following a risk assessment	Demonstrate the ability to: • Carry out a risk assessment before committing competent personnel to work in a confined space
Commit competent personnel to work in a confined space only following a risk assessment	Demonstrate the ability to: • Carry out a risk assessment before committing competent personnel to work in a confined space

Control measure element	Learning outcome
Confined space supervisors should: Liaise with the incident commander to establish or verify the safe system of work	Demonstrate the ability to: • Liaise with the incident commander to establish or verity the safe system of work
Confined space supervisors should: • Ensure an analytical risk assessment is carried out	Demonstrate the ability to: • Review the risk assessment and safe system of work at appropriate intervals
Confined space supervisors should: Regularly update the incident commander of progress or concerns	Demonstrate the ability to: • Provide the incident commander with updates on progress or concerns at appropriate intervals

Control measure - Safe system of work: Atmospheric conditions

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Atmospheric testing equipment	Understand: • The types of atmospheric testing equipment • What the testing equipment in use can check the atmosphere for
When atmospheric testing and monitoring may be required	Understand: • The environments and types of incidents that may require atmospheric testing and monitoring • That it may be necessary to request specialist advice or assistance for atmospheric testing and monitoring

Control measure element	Learning outcome
Exposure limits	Understand: • Workplace exposure limits
Testing and monitoring atmospheric conditions	Understand: • When atmospheric testing should be carried out • How atmospheric testing should be carried out • Who should carry out atmospheric testing • The need for regular atmospheric monitoring • The difference between active monitoring and passive monitoring of atmospheric conditions
Ventilation	Understand: • When the use of ventilation may be beneficial • What types of ventilation can be used
Removal of residues or materials	Understand: • When the removal of residues or materials may be beneficial • The potential risks of removing residues or materials
Monitoring equipment alarm actuation	Understand: • How the monitoring equipment functions • What actions to take if the monitoring equipment alarm actuates
Limited capability of atmospheric monitoring equipment	Understand: • The capabilities and limitations of atmospheric monitoring equipment • The regional detection, identification and monitoring (DIM) capability that is part of the National Resilience response

Practical application

Control measure element	Learning outcome
Carry out testing and monitoring of the atmosphere and use the results to inform the incident plan	Demonstrate the ability to: • Carry out testing and monitoring of the atmosphere • Use results of testing and monitoring of the atmosphere to inform the incident plan
Consider requesting specialist advice or assistance for atmospheric detection, identification and monitoring	Demonstrate the ability to: • Request appropriate specialist advice or assistance for atmospheric testing and monitoring
Consider ventilation to improve internal conditions	Demonstrate the ability to: • Determine the benefits of ventilation • Use the appropriate type of ventilation
Isolate or limit all ignition sources before ventilating if flammable gases may be present	Demonstrate the ability to: • Identify potential ignition sources • Control identified ignition sources
Identify the presence of materials that may release gases in a confined space, especially if disturbed	Demonstrate the ability to: • Consider whether there are substances present that may release gases • Gather information to determine the potential impact of gases being released
Consider the controlled removal of materials, to reduce the quantity of gases being released	Demonstrate the ability to: • Determine the benefits of removing residues or materials • Risk assess the impact of removing residues or materials • Remove residues or materials if this will improve the atmospheric conditions

Control measure - Confined space: Isolation of

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Control the confined space environment	Understand: • The need for awareness of: - The environment - Any processes that may affect the confined space - Any ingress of substances that could be hazardous to people in the confined space - How to gather information about substances present
Isolation from gases, liquids, and other flowing materials	Understand: • Methods for controlling ingress of substances into the confined space • Methods for removing or diverting liquids from the confined space • The limitations of and precautions to apply when using these methods

Control measure element	Learning outcome
Isolation from electrical or mechanical equipment	Understand: • Methods for controlling: - Electrical equipment - Mechanical equipment - Power sources • The impact of stored energy that may activate equipment • Why it may be beneficial to not isolate power sources • How to secure isolation of power sources • That it may be necessary to request specialist advice or assistance to isolate hazards

Practical application

Control measure element	Learning outcome
Refer to information provided by SSRI, site working plan or the responsible person, about the storage or use of gases, liquids or flowing materials in confined spaces	Demonstrate the ability to: • Obtain and consider information about the presence of gases, liquids or flowing materials in the confined space provided by the: - SSRI - Site working plan - Responsible person
Investigate the possibility of ingress from gas, liquids or flowing materials into the confined space, including surface water	Demonstrate the ability to: • Gather information about all potential sources of gas, liquids or flowing materials that may affect the confined space • Consider the potential impact of rainwater, water supplies and sewerage systems on the confined space

Control measure element	Learning outcome
Isolate the confined space or sources to prevent the ingress of gas, liquids or flowing materials	Demonstrate the ability to: • Investigate the possible ingress of substances into a confined space • Establish appropriate actions to prevent ingress of a substance into a confined space
If isolation or removal of electrical or mechanical equipment is possible, ensure that it occurs before personnel are committed to the confined space	Demonstrate the ability to: • Determine if it is appropriate to isolate or remove electrical or mechanical equipment • Use appropriate methods to isolate or remove electrical or mechanical equipment • Ensure there is no stored energy that could activate equipment • Use appropriate safeguards to prevent reactivation of isolated electrical or mechanical equipment

Control measure - Confined space: Health and safety considerations

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Selection and use of suitable equipment	Understand: • The need for equipment to be appropriate to the environment, especially if there is an explosive atmosphere • The need to appropriately select and secure equipment when it is being used in a confined space

Control measure element	Learning outcome
Personal protective equipment and respiratory protective equipment	Understand: • Ensure the PPE and RPE used in confined spaces takes into account: - Limited space and movement - High temperatures - The potential need for emergency evacuation of responders
Access and egress	Understand: • The need to identify and monitor access and egress routes • The need to identify alternative routes and when they may need to be used • The importance of maintaining the access and egress routes • Why it may be necessary to increase the size of openings to, or in, confined spaces • The benefits of appointing a confined space supervisor
Lighting	Understand: • The need for lighting equipment to be appropriate to the environment, especially if there is an explosive atmosphere
Be aware of electrostatic build-up	Understand: • What causes electrostatic build-up • What hazards are presented by electrostatic build-up
Establish arrangements to deal with firefighter emergencies	Understand: • The legislative requirements for establishing arrangements to deal with firefighter emergencies • The need for recovery systems
Limiting working time	Understand: • Why there may be a need to limit the time period that personnel are allowed to work in a confined space

Practical application

Control measure element	Learning outcome
Incident commanders must: Establish and maintain a recovery system for personnel deployed into confined space environments	Demonstrate the ability to: • Ensure there is a recovery system in place for all personnel entering the confined space hazard area
Incident commanders must: Ensure that emergency arrangements are maintained and resourced for the duration that personnel are committed to confined spaces	Demonstrate the ability to: • Ensure there are suitable and sufficient arrangements for the rescue of personnel from the confined space in an emergency
Use only ATEX approved equipment in confined spaces if there is a risk of an explosive atmosphere	Demonstrate the ability to: • Ensure only ATEX approved equipment is used in a confined space, if there is the risk of an explosive atmosphere
Appropriately select and secure equipment used in a confined space to prevent it causing harm	Demonstrate the ability to: • Ensure equipment is appropriately selected and secured when it is being used in a confined space
Identify the appropriate PPE and RPE for confined space work	Demonstrate the ability to: • Ensure personnel use appropriate PPE and RPE when working in a confined space

Control measure element	Learning outcome
Ensure that access and egress is appropriate for the operations being undertaken within the confined space and include contingencies for restricted access and egress	Demonstrate the ability to: • Identify and monitor access and egress routes • Identify alternative routes to be used in the event of the original access and egress presenting intolerable risks or becoming unsuitable during the incident • Maintain the access and egress route so that all personnel working in the confined space are able to withdraw as quickly as possible if required • Consider increasing the size of openings to, or in, confined spaces if they are not sufficient • Use a confined space supervisor to provide updates on hazards and operational requirements
Ensure that lighting equipment being used in a confined space is appropriate to the environment and hazards present	Demonstrate the ability to: • Ensure any lighting equipment used in a confined space is appropriate to the environment
Consider seeking advice from specialist rescue teams, confined space supervisors or on-site staff about the hazard of electrostatic build-up	Demonstrate the ability to: • Consider the presence of and seek advice on the hazard of electrostatic build-up
Eliminate or isolate sources of ignition if there is a risk of flammable gases in or near to a confined space	Demonstrate the ability to: • Control the impact of sources of ignition through the use of cordons • Ensure smoking and vaping are not allowed in or near to a confined space
Account for extended times in the incident plan due to difficulties operating in a confined space	Demonstrate the ability to: • Factor extended travel and access times into the incident plan

Control measure element	Learning outcome
Consider limiting the time personnel can be committed to working in a confined space	Demonstrate the ability to: • Control the duration time for working in a confined space

Hazard - Unstable or collapsed natural or built environments

Knowledge and understanding

Hazard	Learning outcome
Unstable or collapsed natural or built environments	Unstable or collapsed natural or built environments

Control measure - Cordon controls: Unstable or collapsed natural or built environments

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Prevent collapse or further collapse of an unstable surface, trench excavation or other natural or built environment	Understand: • The importance of ensuring fire and rescue service activity does not worsen the unstable or collapsed natural or built environment
Limit equipment being taken into the hazard area	Understand: • What equipment should be allowed into the hazard area

Control measure element	Learning outcome
Identify an area away from the hazard area to locate personnel, equipment, machinery and any items being removed including debris	Understand: • The need to limit the weight, load and movement in the hazard area
Isolate or move vehicles, machinery or equipment that could create vibration	Understand: • The need to minimise any vibration to the ground • The need to consider the impact of moving vehicles, machinery or equipment to the surrounding area

Practical application

Control measure element	Learning outcome
Establish cordon controls for an unstable or collapsed natural or built environment at an appropriate distance from the hazard area	Demonstrate the ability to: • Establish appropriate cordons to control access to the area surrounding an unstable or collapsed natural or built environment
Identify an appropriate area to locate equipment, personnel and debris to prevent further collapse of an unstable natural or built environment	Demonstrate the ability to: • Locate fire and rescue service equipment and personnel appropriately
Consider isolating, controlling or moving vehicles, machinery or equipment for incidents involving an unstable or collapsed natural or built environment	Demonstrate the ability to: • Appropriately isolate or move machinery, vehicles and equipment • Carry out a risk assessment to take into account the impact of moving vehicles, machinery or equipment before doing so • Request that vehicles, machinery or equipment are safety moved

Control measure - Safe system of work: Unstable
or collapsed natural or built environments

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
What activities a fire and rescue service may need to carry out for an unstable or collapsed natural or built environment	Understand: • The types of activity that may be required • The precautions that may need to be taken
Assessing an unstable or collapsed natural or built environment	Understand: • The need for early assessment • The need for specialist advice • Who can provide specialist advice • The need to look for signs of collapse
Precautions to take before committing personnel if the support system has been compromised	Understand: • The need to liaise with the responsible person or a competent person to determine a safe system of work • The need to minimise the number of personnel committed to the hazard area
Consider additional hazards	Understand: • The incident may also involve: - Working at height - Working near unguarded edges - Working in confined spaces - Restricted access and egress • The hazards presented by additional loading to the area

Practical application

Control measure element	Learning outcome
Avoid applying additional loads to the opening, such as fire and rescue service vehicles, equipment and personnel	Demonstrate the ability to: Appropriately locate fire and rescue vehicles, equipment and personnel
Consult with the responsible person or competent person to establish a safe system of work for an unstable or collapsed natural or built environment	Demonstrate the ability to: • Establish a safe system of work using information obtained from the responsible person or competent person
Consider requesting specialist advice regarding unstable or collapsed natural or built environments	Demonstrate the ability to: • Request appropriate specialist advice
Identify the type of material being excavated and the height and angle of an excavated face	Demonstrate the ability to: • Consider the properties of an excavation
Have emergency procedures in place for unstable or collapsed natural or built environments	Demonstrate the ability to: • Establish emergency procedures before committing personnel to the hazard area
Ensure that minimum numbers of personnel work in the hazard area	Demonstrate the ability to: • Control the number of personnel in the hazard area
Assess and continuously monitor the hazard area for signs of further collapse of an unstable or collapsed natural or built environment	Demonstrate the ability to: • Monitor the hazard area for signs of further collapse

Control measure element	Learning outcome
Consider spreading the load of equipment or personnel to reduce the pressure on the opening	Demonstrate the ability to: • Risk assess and consider spreading the load of equipment or personnel • Be aware that early signs of collapse may be hidden by materials used to spread the load

Control measure - Shoring

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Shoring	Understand: • The benefits of shoring and why shoring elements of structure may be necessary • The need for shoring operations to be carried out by competent personnel • When improvised shoring methods may be considered • The considerations and actions prior to using on-site resources for shoring • The need to monitor and assess shoring throughout the incident

Practical application

Control measure element	Learning outcome
Consider requesting specialist advice and resources for shoring	Demonstrate the ability to: • Assess the structural stability of the working environment to ascertain the need for shoring • Identify and request the support of additional resources and specialist advisers to aid shoring • Provide sufficient protection from secondary collapse so operations may proceed
Ensure the competent person for shoring continually assesses and monitors its effectiveness	Demonstrate the ability to: • Identify the person responsible for continually assessing and monitoring the effectiveness of shoring
Seek advice or assistance for shoring from the responsible person or competent person	Demonstrate the ability to: • Seek appropriate advice or assistance for shoring

Hazard - Above ground structures

Knowledge and understanding

Hazard	Learning outcome
Above ground structures	Understand all associated hazard knowledge

Control measure - Safe system of work: Above ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Type of above ground structure	Understand: • The benefits of using joint on-site training to identify and plan for potential incidents at above ground structures • The type of above ground structure • The hazards associated with the type of above ground structure • The types of activity that may be required at an incident in an above ground structure • Why other agencies may need to be involved with or lead in rescue intervention from an above ground structure
Access and egress	Understand: • The potential limitations for access and egress • The potential presence of an escape hatch that can be used as an emergency exit
Communication	Understand: • The potential for radio communications to be compromised • The need for contingency arrangements using alternative methods of communication, in case radio communications are compromised

Practical application

Control measure element	Learning outcome
Establish the type of above ground structure to identify additional hazards	Demonstrate the ability to: • Determine the type, purpose and layout of the above ground structure • Identify hazards and control measures that may be associated with the type of above ground structure

Control measure element	Learning outcome
Consider requesting specialist resources if access and egress to an above ground structure is limited	Demonstrate the ability to: • Request appropriate specialist resources • Consider declaring defensive mode if access and egress is limited; this may not be appropriate if there is a threat to life
Identify and evaluate all potential routes of access and egress before working at an above ground structure	Demonstrate the ability to: • Determine the most appropriate access and egress routes • Determine if there are any alternative routes, such as escape hatches
Establish and maintain safe means of access and egress when working at above ground structures	Demonstrate the ability to: • Establish and maintain: - Access and ingress routes - Alternative routes - Emergency or escape routes
Establish an effective system of communication for above ground structures, considering distances and the working environment	Demonstrate the ability to: • Ensure that communication takes into account any limitations presented by the above ground structure
Maintain visual contact with responders working on above ground structures if possible and use agreed hand or whistle signals	Demonstrate the ability to: • Maintain line of sight communication between supervisors and operators if possible • Ensure all personnel in the hazard area are aware of agreed hand or whistle signals
Establish and regularly monitor the effectiveness of communications with personnel operating in above ground structures	Demonstrate the ability to: • Establish contingency arrangements for alternative methods of communication in case radio communications are compromised

Hazard - Below ground structures

Knowledge and understanding

Hazard	Learning outcome
Below ground structures	Understand all associated hazard knowledge

Control measure - Situational awareness: Below ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Incidents in below ground structure	Understand: • The type of below ground structure • Sources of information about below ground structures • The hazards associated with the type of below ground structure • The potential for rapid escalation of an incident in a below ground structure • The initial considerations for dealing with an incident in a below ground structure
Tunnels	Understand: • How to access any pre-planned: - Arrangements for attendance - Actions to be taken in the event of an incident

Control measure element	Learning outcome
Sewers and associated below ground assets	Understand: • That sewage or wastewater undertakers should have emergency procedures in place • The potential requirement for specialist assistance
Operational mines	Understand: • The legislative requirements for mine operators regarding the escape and rescue of people • The potential requirement for specialist assistance • The potential limitations for first responders to deal with an incident at an operational mine
Caves and recreational below ground environments	Understand: • The potential limitations for first responders to deal with an incident at caves or recreational below ground environments • The potential requirement for specialist assistance
Abandoned mines	Understand: • The potential limitations for first responders to deal with an incident at an abandoned mine • The potential requirement for specialist assistance
Armed forces and civil protection below ground structures	Understand: • The role and responsibilities of the Defence Fire and Rescue Service • The roles and responsibilities of the fire and rescue service if their assistance is requested at the site
Evacuation and rescue	Understand: • The roles and responsibilities of the infrastructure manager for evacuation • The roles and responsibilities of the fire and rescue service for evacuation and rescue if required

Practical application

Control measure element	Learning outcome
Establish the type of below ground structure to identify additional hazards	Demonstrate the ability to: • Determine the type, purpose and layout of the below ground structure • Identify hazards and control measures that may be associated with the type of below ground structure
Identify the presence and status of any fixed installations that are present within the below ground structure	Demonstrate the ability to: • Identify the presence of fixed installations • Identify the status of fixed installations
Liaise with on-site staff when developing the tactical plan for incidents at below ground structures	Demonstrate the ability to: • Liaise with appropriate on-site staff, including: - Sewage or wastewater undertakers - Mine operators - Defence Fire and Rescue Service - Infrastructure managers
Confirm the current status of any managed evacuations for below ground structures and take action if required	Demonstrate the ability to: • Identify the progress of any managed evacuations instigated by the infrastructure manager • Assist with managed evacuations if required

Control measure - Specialist resources: Below ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Specialist resources	Understand: • The various specialist resources appropriate for a below ground structure incident • The benefits of using joint on-site training to identify and plan for potential incidents involving below ground structures, where fire and rescue service assistance may be requested
Environmental issues	Understand: • The impact of complex below ground structure layouts on the incident • The impact of weather, including flooding, on a below ground structure incident

Practical application

Control measure element	Learning outcome
Request specialist resources for assistance at below ground structure incidents	Demonstrate the ability to: • Request appropriate external specialist resources

Control measure - Specialist advice: Below ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Specialist advisers for below ground structures	Understand: • The typical sources of specialist advice for below ground structures • The roles and responsibilities of specialists for below ground structures

Practical application

Control measure element	Learning outcome
Request specialist advice or assistance based on the extent and urgency of the below ground structure incident	Demonstrate the ability to: • Seek advice from the appropriate specialist for the below ground structure incident
Consider the specialist advice received when developing the tactical plan for below ground structure incidents	Demonstrate the ability to: • Include the specialist advice received when developing the tactical plan for a below ground structure incident

Control measure - Monitoring systems: Below ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Below ground structure control rooms	Understand: • The information available from below ground structure control rooms • How to access the information available from below ground structure control rooms • The potential locations of below ground structure control rooms

Practical application

Control measure element	Learning outcome
Consider using the facilities available in the below ground structure control room to manage and monitor the incident	Demonstrate the ability to: • Use the information obtained from a below ground structure control room to manage and monitor the incident

Hazard - Ineffective communications: Below ground structures

Knowledge and understanding

Hazard	Learning outcome
Ineffective communications: Below ground structures	Understand all associated hazard knowledge

Control measure - Effective communications: Below ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Effective communications	Understand: • The capabilities and limitations of fire and rescue service communications equipment when used in below ground structures • The benefits of pre-planning and testing the range and extent of signals for the below ground structure • The resources, methods and systems that can enable effective communications in below ground structures • The need to establish resilient communications and regularly test that contact with personnel has not been compromised • Who needs to be included in the communications arrangements for the incident

Practical application

Control measure element	Learning outcome
Establish and maintain communications with the responsible person and others involved in the below ground structure incident	Demonstrate the ability to: • Consider establishing an maintaining communication with those involved in the below ground structure incident
Consider requesting specialist resources to establish communications for below ground structures	Demonstrate the ability to: • Consider the capabilities and limitations of the communications equipment available • Consider requesting appropriate specialist resources to enable or improve communication at the below ground structure incident

Control measure element	Learning outcome
Establish and regularly monitor the effectiveness of communications with personnel operating in below ground structures	Demonstrate the ability to: • Establish contingency arrangements for alternative methods of communication in case radio communications are compromised

Hazard - Access and egress: Below ground structures

Knowledge and understanding

Hazard	Learning outcome
Access and egress: Below ground structures	Understand all associated hazard knowledge

Control measure - Gain and maintain safe access and egress: Below ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Gain and maintain safe access and egress: Below ground structures	Understand: • How to gain and maintain safe access and egress for below ground structure incidents • What emergency arrangements need to be in place • The need to identify the precise location of the incident • The methods that can be used to indicate: - The extent of the inner cordon - Egress routes - Doorways or levels that lead out to the surface

Practical application

Control measure element	Learning outcome
Identify the location of all potential access and egress routes for below ground structures to inform the tactical plan	Demonstrate the ability to: • Consider all potential access and egress routes • Use this information to inform the tactical plan
Establish and maintain safe means of access to, and egress from, below ground structures at all times	Demonstrate the ability to: • Establish access and egress routes • Maintain access and egress routes • Understand the implications of the distance or location of the incident in relation to the access point
Only use suitable lifts, vehicles or on-site machinery to transport personnel and equipment in below ground structures	Demonstrate the ability to: • Appropriately select and use lifts, vehicles or on-site machinery to transport personnel and equipment

Control measure element	Learning outcome
Account for any extended travel times in the incident plan and establish contingencies for below ground structures	Demonstrate the ability to: • Identify the likely travel distances and working duration of personnel • Identify or anticipate any obstructions that may affect access • Factor in the effects of fatigue due to extended travel distances to and from the scene of operations, especially when carrying equipment
Consider the use of physical indicators to mark the inner cordon and egress routes for below ground structures	Demonstrate the ability to: • Appropriately use available marking systems to indicate: - The extent of the inner cordon - Egress routes - Doorways or levels that lead out to the surface

Hazard - Uncontrolled ventilation: Tunnels

Knowledge and understanding

Hazard	Learning outcome
Uncontrolled ventilation: Tunnels	Understand all associated hazard knowledge

Control measure - Understand and control ventilation systems in tunnels

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Ventilation systems	Understand: • The types and functions of ventilation systems in tunnels • The potential impact of the ventilation system and its status on the tactical plan • How to determine the most appropriate entry point for a tunnel • The benefits of using joint on-site training to gain familiarisation of tunnel ventilation systems

Practical application

Control measure element	Learning outcome
Identify the type of tunnel ventilation system	Demonstrate the ability to: • Liaise with the responsible person or the tunnel control room to determine the type and status of the ventilation system
Liaise with the responsible person or tunnel control room to establish control of the ventilation system	Demonstrate the ability to: • Establish control of the ventilation system where appropriate
Determine the appropriate entry point based on the type and status of the tunnel ventilation system	Determine the ability to: • Identify and use a preferred entry point based on the type and status of the tunnel ventilation system

Hazard - Tunnels under construction

Knowledge and understanding

Hazard	Learning outcome
Tunnels under construction	Understand all associated hazard knowledge

Control measure - Establish arrangements for tunnels under construction

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Emergency plans for tunnels under construction	Understand: • The process for the agreement of specialist controls and procedures for tunnels under construction • The limitations on fire and rescue service intervention for incidents at tunnels under construction
Compressed air working	Understand: • The roles and responsibilities of the contractor for firefighting or rescue of on-site staff • The potential role of the fire and rescue service, if requested to provide assistance with a contractor's emergency arrangements
Pre-planning and familiarisation	Understand: • The benefits of regular site inspection visits of tunnels under construction • The benefits of using joint on-site training to gain familiarisation of tunnels under construction • The provision and use of refuge chambers in tunnels under construction

Practical application

Control measure element	Learning outcome
Adhere to emergency plans for incidents in tunnels under construction	Demonstrate the ability to: • Know how to refer to the emergency plan for the special controls and procedures • Implement special controls if appropriate • Provide assistance with the contractor's emergency plans, if agreed and arranged
Not commit personnel to tunnels that are subject to compressed air working	Demonstrate the ability to: • Ensure personnel understand the hazards of compressed air working • Prevent personnel from entering a tunnel that is subject to compressed air working
Establish and communicate limits of operation in tunnels under construction, based on identified risks and available resources	Demonstrate the ability to: • Determine what assistance can be provided by the fire and rescue service • Ensure responders and the responsible person understand the limits of fire and rescue service operations

Hazard - Ineffective intervention strategy: Below ground structures

Knowledge and understanding

Hazard	Learning outcome
Ineffective intervention strategy: Below ground structures	Understand all associated hazard knowledge

Control measure - Intervention plan: Below ground structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Intervention plan: Below ground structures	Understand: • The need to seek confirmation from the responsible person on the status of: - The evacuation strategy - Protection systems • How to carry out a risk assessment to consider the use of available intervention options

Practical application

Control measure element	Learning outcome
Confirm the status of protection systems for below ground structures	Demonstrate the ability to: • Liaise with the responsible person to gain an understanding of the status and operation of protection systems
Co-ordinate the evacuation, ventilation, fixed installation and intervention strategies simultaneously	Demonstrate the ability to: • Identify and implement the tactical plan for the below ground structure incident • Co-ordinate activity and strategies including: - Evacuation - Ventilation - Fixed installations - Intervention

Hazard - Unstable or collapsed structure

Knowledge and understanding

Hazard	Learning outcome
Unstable or collapsed structure	Understand all associated hazard knowledge

Control measure - Cordon controls: Unstable or collapsed structures

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Cordon controls: Unstable or collapsed structure	Understand: • The factors that will influence cordon distance for unstable structures, including: - Construction materials - The height and type of structure - Weather conditions – current and predicted - The potential damage to surrounding structures and infrastructure - Scaffolding and tower cranes - Glass, particularly in windy conditions • The behaviour of portal or rigid frame structures when they collapse • Who can provide specialist advice and assistance when establishing cordons at incidents involving unstable structures

Practical application

Control measure element	Learning outcome
Evaluate and monitor the potential footprint of collapse and debris	Demonstrate the ability to: • Gather information to support the evaluation and monitoring of the potential footprint of collapse and debris • Identify the appropriate cordon distance for unstable or collapsed structures • Establish cordons, considering potential collapse of structures or equipment
Consider seeking specialist advice when defining the hazard area for an unstable or collapsed structure	Demonstrate the ability to: • Seek specialist advice when defining the hazard area for an unstable or collapsed structure • Consider the specialist advice when establishing cordons for unstable structures
Consider the impact of current or predicted weather conditions on the unstable or collapsed structure when establishing cordons	Demonstrate the ability to: • Obtain predicted weather information • Consider the impact of weather on the unstable or collapsed structure and be prepared to revise cordons during the incident

Control measure - Assess and monitor structural stability

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Assess and monitor structural integrity	Understand: • The types of structural design and construction materials (to an appropriate level) • What factors to consider when assessing structural stability: - Age, design and condition of the structure - Structural materials and construction methods • How to determine and monitor the hazard area • The need to consider secondary collapse and falling debris • The need for early assessment • The need for specialist advice • Who can provide specialist advice • How to recognise signs of collapse • The need for: - Committing the minimum number of personnel - Emergency procedures to be put in place • Marking safe routes, exposed elements or other hazards

Practical application

Control measure element	Learning outcome
Identify the age, design and condition of the structure	Demonstrate the ability to: • Consider the age, design and condition of the structure
Identify the type of structural materials and construction methods	Demonstrate the ability to: • Consider the structural materials and construction methods
Assess and continuously monitor the structure for signs of collapse	Demonstrate the ability to: • Assess and monitor the structure for signs of collapse

Control measure element	Learning outcome
Assesses and monitor the suitability of the structure for working in the hazard area	Demonstrate the ability to: • Assess structural stability • Consider the suitability of the structure for working in the hazard area
Consider the potential impact of an unstable or collapsed structure on surrounding structures and infrastructure	Demonstrate the ability to: • Consider the potential impact of an unstable or collapsed structure on surrounding structures and infrastructure
Ensure the minimum number of personnel work in the hazard area for an unstable or collapsed structure	Demonstrate the ability to: • Control the number of personnel in the hazard area
Have emergency arrangements in place for unstable or collapsed structures	Demonstrate the ability to: • Establish emergency arrangements before committing personnel to the hazard area
Consider appointing an external safety officer to monitor structural stability	Demonstrate the ability to: • Consider appointing and briefing an external safety officer to monitor structural stability
Consider requesting structural advice, assessment and monitoring from appropriate agencies	Demonstrate the ability to: • Seek assistance from appropriate specialist resources to provide: - Structural advice - Assessment of structural stability - Monitoring of structural stability

Control measure - Use of structural monitoring equipment

TRAINING SPECIFICATION

Knowledge and understanding

Control measure element	Learning outcome
Use of structural monitoring equipment	Understand: • The benefits of using structural monitoring equipment to monitor ground movement • Who is able to carry out structural monitoring • Why there may be delays in sourcing and implementing structural monitoring

Practical application

Control measure element	Learning outcome
Consider requesting structural monitoring equipment in consultation with USAR tactical advisers or other specialists	Demonstrate the ability to: • Request the use of structural monitoring equipment from: - USAR tactical advisers - Other specialists