

<b>Level:</b>	6
<b>Value for TQT:</b>	160
<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
1 Evaluate and implement pre-installation checks to identify technical and procedural risks.	1.1 Evaluate and implement pre-installation checks to identify technical and procedural risks for at least nine of the following: <ul style="list-style-type: none"> <li>– accuracy and completeness of project information</li> <li>– building condition</li> <li>– health and safety hazards</li> <li>– fire safety</li> <li>– temporary works</li> <li>– protection of existing fabric and services</li> <li>– suitability of materials</li> <li>– working in and around buildings and their occupants and neighbouring properties</li> <li>– environment and ecology including but not limited to safeguarding protected species</li> <li>– heritage significance</li> <li>– discovery of architectural or archaeological features.</li> </ul>
	1.2 Explain why it is important to evaluate and implement pre-installation checks to identify technical and procedural risks and how to do this.
	1.3 Explain why it is important to determine accuracy and completeness of project information and how to do this.
	1.4 Examine the implications of building conditions and common building defects for retrofit works including but not limited to: <ul style="list-style-type: none"> <li>– moisture ingress including, but not limited to, damp, salts and causes of dampness, rain penetration, rising damp</li> <li>– internal moisture vapour</li> <li>– poor indoor air quality</li> <li>– inadequate ventilation</li> <li>– existing and damaged services</li> <li>– structural defects</li> </ul>
	1.5 Evaluate the importance of building condition and repair and maintenance as the first stage in energy efficiency improvements.
	1.6 Explain any specific health and safety hazards including but not limited to poor ventilation (roof space, inside the property and under floor) and services.
	1.7 Explain the principles of building design for fire safety and the key components of the building and their implications for retrofit works.
	1.8 Explain the primary causes of failure to fire safety systems and their potential impact on users and occupants, building safety and each other, including compartmentation.

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
	1.9 Explain how to implement temporary works as required during retrofit works.
	1.10 Give reasons why it is important to explain the Whole Building approach to energy efficiency retrofit comprising building fabric, services, any low zero carbon technologies, renewable technologies and occupant behaviour, and how to do this.
	1.11 Explain how to identify traditional and protected buildings including the difference in performance characteristics between traditional and modern materials and construction methods with particular reference to the breathability and permeability characteristics of traditional building fabric.
	1.12 Explain how to identify building fabric, building structure, materials and construction methods for buildings of different ages including alterations and additions.
	1.13 Judge the proposed materials to ensure that they are both suitable and in sufficient quantity to achieve the design outcomes.
	1.14 Explain how to work in and around buildings and their occupants including neighbouring properties and site constraints.
	1.15 Measure the potential environmental and ecological impacts of retrofit works and how to respond including but not limited to safeguarding protected species.
	1.16 Explain key terms and concepts including but not limited to: <ul style="list-style-type: none"> <li>– heritage values</li> <li>– heritage significance</li> <li>– heritage impact assessment</li> <li>– conservation principles</li> <li>– sustainable development</li> <li>– management of traditional and historic buildings and structures.</li> </ul>
	1.17 Explain the legislation and official guidance including but not limited to heritage, traditional and protected buildings.
	1.18 Explain why it is important to report the discovery of architectural or archaeological features to relevant stakeholders, and how to do this.

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
2 Implement external and internal pre-installation building inspections and record and report the findings to stakeholders.	2.1 Implement external and internal pre-installation building inspections, and record and report findings to relevant stakeholders to include: <ul style="list-style-type: none"> <li>– suitable access</li> <li>– property suitability</li> <li>– adjoining structures</li> <li>– structural integrity</li> <li>– hazardous materials</li> <li>– dampness</li> <li>– decay</li> <li>– exposure ratings</li> <li>– combustion appliances, flues and ventilation</li> <li>– services (gas, electric, water, media cables)</li> </ul>
	2.2 Explain why implementation of external and internal pre-installation building inspections, recording findings and reporting them to the relevant stakeholders is required.
	2.3 Explain how to implement external and internal pre-installation building inspections and record and report to stakeholders for the following: <ul style="list-style-type: none"> <li>– suitable access</li> <li>– property suitability</li> <li>– adjoining structures</li> <li>– structural integrity</li> <li>– hazardous materials</li> <li>– dampness</li> <li>– decay</li> <li>– exposure ratings</li> <li>– combustion appliances, flues and ventilation</li> <li>– services (gas, electric, water, media cables)</li> <li>– invasive species.</li> </ul>
	2.4 Explain how to identify, assess and respond to hazards including hazardous materials, fire safety and flues and ventilation (incorrectly installed, blocked, damaged and insufficient).

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
<b>3</b> Implement and record suitable and sufficient control measures to mitigate risks arising from external and internal pre-installation building inspections.	<b>3.1</b> Implement and record suitable and sufficient control measures to mitigate risks arising from external and internal pre-installation building inspections to include: <ul style="list-style-type: none"> <li>– suitable access</li> <li>– property suitability</li> <li>– adjoining structures</li> <li>– structural integrity</li> <li>– hazardous materials</li> <li>– dampness</li> <li>– decay</li> <li>– exposure ratings</li> <li>– combustion appliances, flues and ventilation</li> <li>– services (gas, electric, water, media cables).</li> </ul>
	<b>3.2</b> Explain why implementation and recording of suitable and sufficient control measures to mitigate risks arising from external and internal pre-installation building inspections is required.
	<b>3.3</b> Explain how to implement and record suitable and sufficient control measures to mitigate risks arising from external and internal pre-installation building inspections for the following: <ul style="list-style-type: none"> <li>– suitable access</li> <li>– property suitability</li> <li>– adjoining structures</li> <li>– structural integrity</li> <li>– hazardous materials</li> <li>– dampness</li> <li>– decay</li> <li>– exposure ratings</li> <li>– combustion appliances, flues and ventilation</li> <li>– services (gas, electric, water, media cables)</li> <li>– invasive species.</li> </ul>
	<b>3.4</b> Explain how to report and record the key issues from external and internal pre-installation building inspections that may affect the commencement of the work whilst working within your authority to rectify or suspend works.

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
<p>4 Implement and record suitable and sufficient control measures to mitigate technical and procedural risks.</p>	<p>4.1 Implement and record suitable and sufficient control measures to mitigate technical and procedural risks for at least eight of the following:</p> <ul style="list-style-type: none"> <li>– accuracy and completeness of project information</li> <li>– building condition</li> <li>– health and safety hazards</li> <li>– fire safety</li> <li>– temporary works</li> <li>– protection of existing fabric and services</li> <li>– suitability of materials</li> <li>– working in and around buildings and their occupants and neighbouring properties</li> <li>– environment and ecology including but not limited to safeguarding protected species</li> <li>– heritage significance</li> <li>– discovery of architectural or archaeological features.</li> </ul>
	<p>4.2 Explain why suitable and sufficient control measures to mitigate the technical and procedural risks need to be implemented and recorded.</p>
	<p>4.3 Explain how to determine, implement and record suitable and sufficient control measures to mitigate the technical and procedural risks for the following:</p> <ul style="list-style-type: none"> <li>– accuracy and completeness of project information</li> <li>– building condition</li> <li>– health and safety hazards</li> <li>– fire safety</li> <li>– temporary works</li> <li>– protection of existing fabric and services</li> <li>– suitability of materials</li> <li>– working in and around buildings and their occupants and neighbouring properties</li> <li>– environment and ecology including but not limited to safeguarding protected species</li> <li>– heritage significance</li> <li>– discovery of architectural and archaeological features.</li> </ul>
	<p>4.4 Explain how to use due diligence to apply the principles and intent of fire safety legislation and guidance relating to the retrofit design, construction, management and use of the building.</p>
	<p>4.5 Examine the issues relating to the control of work onsite interpreting any statutory or manufacturers requirements for testing and maintaining fire prevention and protection systems and records.</p>

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
	<p>4.6 Measure the principles and benefits of effective fire risk management and the required mitigation measures to deliver safe buildings.</p> <p>4.7 Explain how to recognise, record and report the key issues from technical and procedural risks that may affect the commencement of the work whilst working within your authority to rectify or suspend works.</p>
<p>5 Identify, review and confirm information sources against the retrofit works plans.</p>	<p>5.1 Identify, review and confirm information sources against on site conditions to contribute to the retrofit works plan, risk assessments and method statements for at least six of the following:</p> <ul style="list-style-type: none"> <li>– drawings, design and specification information</li> <li>– building performance criteria to industry standards</li> <li>– manufacturers technical information and product data sheets</li> <li>– sub-contractor methods and scope of works</li> <li>– surveys</li> <li>– tests</li> <li>– examinations</li> <li>– specialist reports</li> <li>– statutory consents</li> <li>– current legislation, official and technical guidance</li> <li>– written scheme of investigation (WSI) for archaeology.</li> </ul> <p>5.2 Explain why identification and review of information sources against on-site conditions to contribute to the retrofit works plan, risk assessments and method statements are required for the following:</p> <ul style="list-style-type: none"> <li>– drawings, design and specification information</li> <li>– building performance criteria to industry standards</li> <li>– manufacturers' technical information and product data sheets</li> <li>– sub-contractor methods and scope of works</li> <li>– surveys</li> <li>– tests</li> <li>– examinations</li> <li>– specialist reports</li> <li>– statutory consents</li> <li>– current legislation, official and technical guidance</li> <li>– written scheme of investigation (WSI) for archaeology.</li> </ul>

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
	<p>5.3 Explain how to identify and review information sources against on site conditions to contribute to the retrofit works plan, risk assessments and method statements for the following:</p> <ul style="list-style-type: none"> <li>– drawings, design and specification information</li> <li>– building performance criteria to industry standards</li> <li>– manufacturers' technical information and product data sheets</li> <li>– sub-contractor methods and scope of works</li> <li>– surveys</li> <li>– tests</li> <li>– examinations</li> <li>– specialist reports</li> <li>– statutory consents</li> <li>– current legislation, official and technical guidance</li> <li>– written scheme of investigation (WSI) for archaeology</li> </ul>
	<p>5.4 Explain why it is important to comply with relevant legal duties and fire safety standards during the construction phase of retrofit works, and how to do this.</p>
	<p>5.5 Explain why documented information for fire safety including advising and sharing information with end-users and relevant stakeholders is required.</p>
	<p>5.6 Evaluate the range of energy assessment tools used for both domestic and non-domestic buildings.</p>
	<p>5.7 Examine the range of hygrothermal assessment tools for both domestic and non-domestic buildings.</p>
	<p>5.8 Analyse the sources of heat loss and heat gains.</p>
	<p>5.9 Explain heat loss through fabric, U values and calculations and thermal bridging.</p>
	<p>5.10 Explain the differences between one off, incremental and whole building retrofit plans.</p>
	<p>5.11 Explain how to review low carbon improvement plans.</p>

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
<p>6 Record and report issues with the planned retrofit works and recommend corrective actions.</p>	<p>6.1 Report and record issues with the planned retrofit works and recommend corrective actions for at least seven of the following information sources:</p> <ul style="list-style-type: none"> <li>– risk assessments</li> <li>– method statements</li> <li>– drawings, design and specification information</li> <li>– building performance criteria to industry standards</li> <li>– manufacturers technical information and product data sheets</li> <li>– sub-contractor methods and scope of works</li> <li>– surveys</li> <li>– tests</li> <li>– examinations</li> <li>– specialist reports</li> <li>– statutory consents</li> <li>– current legislation, official and technical guidance</li> <li>– the limitations, defects of the materials and their characteristics</li> <li>– written scheme of investigation (WSI) for archaeology.</li> </ul>
	<p>6.2 Explain why it is important and how to report issues with planned retrofit works and suggest corrective actions for the following:</p> <ul style="list-style-type: none"> <li>– risk assessments</li> <li>– method statements</li> <li>– drawings, design and specification information</li> <li>– building performance criteria to industry standards</li> <li>– manufacturers' technical information and product data sheets</li> <li>– sub-contractor methods and scope of works</li> <li>– surveys</li> <li>– tests</li> <li>– examinations</li> <li>– specialist reports</li> <li>– statutory consents</li> <li>– current legislation, official and technical guidance</li> <li>– the limitations, defects of the materials and their characteristics</li> <li>– written scheme of investigation (WSI) for archaeology.</li> </ul>
	<p>6.3 Explain the principles and factors affecting the fire safety of users and explain the impact on the building and performance in relation to retrofit works.</p>

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
7 Contribute to the project programme and plan the sequence of works for the installation of retrofit works.	7.1 Contribute to the project programme and plan the sequence of works for the installation of retrofit works, including but not limited to: <ul style="list-style-type: none"> <li>– repair</li> <li>– stabilisation</li> <li>– temporary works</li> <li>– opening-up and investigations</li> <li>– removal of fabric, structure or services, and making good</li> <li>– preparing the building for installation of fabric measures</li> <li>– installation of fabric, structure or services</li> <li>– testing</li> <li>– commissioning</li> <li>– handover.</li> </ul>
	7.2 Explain why contributing to the project programmes and method statements for working on and around existing buildings and structures are required.
	7.3 Examine how to contribute to a project programme for working on and around existing buildings and structures.
	7.4 Explain how to produce method statements for working on and around existing buildings and structures.
	7.5 Explain why planning the sequence of works for the installation of retrofit works is required.
	7.6 Explain how to plan the sequence of works for the installation of retrofit works: <ul style="list-style-type: none"> <li>– repair</li> <li>– stabilisation</li> <li>– temporary works</li> <li>– opening-up and investigations</li> <li>– removal of fabric, structure or services, and making good</li> <li>– preparing the building for installation of fabric measures</li> <li>– installation of fabric, structure or services</li> <li>– testing</li> <li>– commissioning</li> <li>– handover.</li> </ul>

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
	<p>7.7 Explain why it is required and how to identify and plan to avoid potential thermal and hygrothermal technical and performance risks of failure through planning and sequencing of works including but not limited to:</p> <ul style="list-style-type: none"> <li>– thermal bridges</li> <li>– ventilation</li> <li>– thermal bypass</li> <li>– condensation and interstitial condensation</li> <li>– alterations in structure including materials, components and the building</li> <li>– moisture movement</li> <li>– optimisation of heating systems.</li> </ul>
	<p>7.8 Analyse the implications to planning and sequencing of offsite construction methods and onsite assembly.</p>

<b>Learning outcomes</b> <i>The learner will be able to:</i>	<b>Assessment criteria</b> <i>The learner can:</i>
8 Plan the efficient use of resources required for retrofit works.	8.1 Plan the efficient use of resources required for retrofit works, including but not limited to: <ul style="list-style-type: none"> <li>– materials and components</li> <li>– services</li> <li>– plant, equipment or machinery</li> <li>– workforce</li> <li>– information</li> <li>– site facilities</li> <li>– waste management</li> <li>– structures</li> <li>– storage of materials within specified parameters.</li> </ul>
	8.2 Explain why it is important to plan the efficient use of resources required for retrofit works and how to do this for the following: <ul style="list-style-type: none"> <li>– materials and components</li> <li>– services</li> <li>– plant, equipment or machinery</li> <li>– workforce</li> <li>– information</li> <li>– site facilities</li> <li>– waste management</li> <li>– structures</li> <li>– storage of materials within specified parameters</li> </ul>
	8.3 Explain how to recognise and determine when specialist skills and knowledge are required and how to resource accordingly including but not limited to: <ul style="list-style-type: none"> <li>– electrical</li> <li>– asbestos</li> <li>– radon</li> <li>– heritage</li> <li>– ecology</li> <li>– ventilation</li> <li>– fire safety</li> </ul>
	8.4 Explain the principles of due diligence to deliver specialist skills as they apply to obtaining, electing and appointing contractors, selecting suppliers, executing work and record keeping.

<b>Additional information about this unit</b>	
Assessment Guidance	<p>This unit must be assessed in a work environment and in accordance with the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment</p> <p>Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy.</p> <p>Workplace evidence of skills cannot be simulated.</p>
Sector Subject Area	5.2 Building and Construction
Availability for use	Shared unit
Unit guided learning hours	60
Assessment Time	10