



Unit Title	Water distribution (A/506/1611)	
Level	4	
Credit Value	12	
Learning Outcomes – the learner will be able to:	Assessment Criteria – the learner can:	
1. Design a typical water distribution system and explain the operation and maintenance strategy required	1.1	design a water distribution system, from service reservoir to customer tap, for a new build housing estate.
	1.2	describe a planned maintenance strategy for an existing water distribution system designed in line with current industry and legislative standards.
	1.3	explain the operation of a service reservoir and pumping system within a distribution system.
2. Understand the significance of flow and pressure within a water distribution system	2.1	explain the factors which must be considered to maintain flow, pressure and head within a water distribution network system
	2.2	explain the significance of pressure, flow and head and their relationship to the water distribution system
	2.3	calculate pressure, flow and available head in a distribution system using typical formulae .
3. Understand how to manage leakage within a water supply zone	3.1	describe how a water undertaker identifies, detects , repairs and monitors leakage.
	3.2	analyse a water supply zone and make recommendations to manage leakage in the specific zone.
4. Understand pipe laying operations in a water distribution network	4.1	explain operational methods used in signing and excavation for pipe laying including the relevant legislation.
	4.2	explain different methods of pipe laying , including laying out, jointing and testing.
	4.3	describe what is required to adequately bed and reinstate in relation to pipe laying.
	4.4	explain techniques used in the renewal and rehabilitation of pipelines for both open and closed trench construction.
5. Understand the inspection of plumbing systems for compliance with the water fittings regulations	5.1	explain the principles of domestic and industrial plumbing systems .
	5.2	explain inspection techniques used to identify contraventions of water fittings regulations for a given system.
	5.3	describe how water based fire fighting systems comply with regulations.
6. Understand the requirements for maintaining water quality in the network	6.1	explain the principles of maintaining water quality in the network including the importance of mains hygiene.
	6.2	describe regulatory sampling and typical quality problems.
	6.3	describe techniques used to ensure that water quality is maintained in the network.



Additional information about the unit	
Unit purpose and aims	<p>This unit is designed to enable the learner to develop the knowledge and understanding associated with the principles of water network distribution systems.</p> <p>On completion of the unit the learner will be able to:</p> <ul style="list-style-type: none">• design a typical water distribution system and explain the operation and maintenance strategy required.• explain the significance of flow and pressure within a water distribution system.• analyse a water supply zone and make recommendations to resolve leakage issues within a water supply zone.• explain operational methods used in pipe laying within a water distribution network system.• explain inspection techniques used to inspect plumbing systems for compliance with water fittings regulations.
Unit expiry date	31/03/2019
Assessment requirements or guidance specified by a sector or regulatory body (if appropriate)	<p>In the assessment of this unit, the learner must ensure that the evidence that they produce covers the following:</p> <ol style="list-style-type: none">1. The design of a water distribution system must include:<ol style="list-style-type: none">(a) layout(b) pipe sizes(c) branches(d) other components.2. The planned maintenance strategy must include:<ol style="list-style-type: none">(a) inspection(b) timescale(c) priorities.3. The explanation of the operation of a service reservoir and pumping system must cover:<ol style="list-style-type: none">(a) the design of a service reservoir(b) the operating procedures, including flow and pressure.4. The learner must explain at least four factors which must be considered to maintain flow, pressure and head in a water distribution network system.5. The learner must calculate pressure flows and available head in a distribution system using at least four typical formulae.



	<p>6. The explanation of how a water undertaker identifies, detects, repairs and monitors leakage throughout a reorder water supply zone must include at least two methods used in detection.</p> <p>7. The learner must explain at least two operational methods used in signing and excavation for pipe laying and the explanation must cover:</p> <ul style="list-style-type: none">(a) safety procedures(b) supports(c) plant. <p>8. The learner must explain at least two different methods of pipe laying.</p> <p>9. The explanation of how to bed and reinstate must include:</p> <ul style="list-style-type: none">(a) what is meant by bedding(b) what is meant by reinstatement(c) at least two types of bedding(d) reinstatement for two different situations. <p>10. The learner's explanation of techniques used in the renewal and rehabilitation of pipelines must include:</p> <ul style="list-style-type: none">(a) one technique for open trench construction(b) one technique for closed trench construction. <p>11. Domestic and industrial plumbing systems must include:</p> <ul style="list-style-type: none">(a) one hot water system(b) one cold water system(c) two simple heating systems. <p>12. The learner's explanation of inspection techniques must cover at least three techniques.</p> <p>13. Techniques used to ensure the maintenance of water quality in the distribution network must include:</p> <ul style="list-style-type: none">(a) chlorine residuals(b) flushing. <p>The assessment of this unit will be via a combination of centre-devised assignments and tests, and will be conducted in supervised conditions. The assessment strategy for the unit has been agreed with industry stakeholders.</p>
Location of the unit within the subject/sector classification system	4.1 Engineering
Name of the organisation submitting the unit	CABWI Awarding Body



Level 4 Water

Availability for use	Shared
Unit guided learning hours	48