



<b>Unit title</b>	Locate, Mark and Avoid Supply Apparatus for Utilities Network Construction
<b>SQA code</b>	H8ML 04
<b>SCQF level</b>	5
<b>SCQF credit points</b>	4
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## History of changes

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<b>Title</b>	Locate, Mark and Avoid Supply Apparatus for Utilities Network Construction	
<b>Learning Outcomes</b>		<b>Assessment Criteria</b>
<b>The learner will:</b>		<b>The learner can:</b>
1	Be able to locate, mark and record position of supply apparatus for utilities network construction in accordance with approved procedures and practices.	<p>1.1 Use and interpret work instructions and utility plans to determine the extent of the work site and to enable the <b>supply apparatus</b> to be marked.</p> <p>1.2 Carry out site specific risk assessment, and review in accordance with company procedures.</p> <p>1.3 Use appropriate search techniques to enable the identification and marking of <b>supply apparatus</b>.</p> <p>1.4 Mark the position and type of <b>supply apparatus</b> and sub-structures on the work site in accordance with:  (a) Work instructions.  (b) Statutory and regulatory <b>Codes of Practice</b>.</p> <p>1.5 Mark risks of damage to <b>supply apparatus</b> and sub-structures in accordance with statutory and regulatory <b>Codes of Practice</b>.</p> <p>1.6 Record positions and types of <b>supply apparatus</b> and sub-structures in accordance with instructions and organisational requirements.</p> <p>1.7 Communicate details of the position and type of <b>supply apparatus</b> and sub-structures to personnel in accordance with instruction and organisational requirements.</p> <p>1.8 Report deviations in the position of equipment and identification of other structures in accordance with instruction and organisational requirements.</p>

Learning Outcomes	Assessment Criteria
The learner will:	The learner can:
<p>2 Be able to maintain the safety and integrity of supply apparatus according to specifications and Codes of Practice.</p>	<p>2.1 Maintain the position and condition of <b>supply apparatus</b> within the work site according to specifications and <b>Codes of Practice</b>.</p> <p>2.2 Avoid damage to <b>supply apparatus</b> when working on site.</p> <p>2.3 Check that exposed <b>supply apparatus</b> are supported correctly in line with specifications and <b>approved procedures and practices</b>.</p> <p>2.4 Take precautions to protect personnel and equipment from the effects of damage to <b>supply apparatus</b> according to <b>approved procedures and practices</b>.</p> <p>2.5 Check that all work complies with:  (a) The latest specifications.  (b) Statutory regulations.  (c) Company <b>Codes of Practice</b>.</p>
<p>3 Be able to use and communicate data and information.</p>	<p>3.1 Check any circumstances where information appears incorrect with the designated personnel.</p> <p>3.2 Use organisational information systems to record and store data and information.</p> <p>3.3 Follow all required lone working procedures when working alone.</p>

<b>Learning Outcomes</b>		<b>Assessment Criteria</b>	
<b>The learner will:</b>		<b>The learner can:</b>	
4	Be able to resolve problems which could arise from work on the highway.	4.1	Report any damage to <b>supply apparatus</b> promptly to the designated person and make the area safe.
		4.2	Resolve day to day problems within own area of responsibility.
		4.3	Advise the designated person where situations require intervention.
		4.4	Refer matters outside own responsibility to the designated people using <b>approved procedures</b> .
5	Know the safe working methods in utilities network construction operations.	5.1	Explain the main responsibilities of the employer and employee under the Health and Safety at Work Act.
		5.2	Explain the health and safety guidance governing work in excavations.
		5.3	Describe the safe procedures for handling hazardous materials.
		5.4	Explain own organisational accident recording and reporting procedures.
		5.5	Explain the range and use of personal protective equipment for the work.
6	Understand different types of supply apparatus.	6.1	Describe typical locations and depths of the usual range of underground <b>supply apparatus</b> .
		6.2	Explain the key physical properties of the supply pipeline or components of <b>supply apparatus</b> , including: <ul style="list-style-type: none"> <li>(a) Size (diameter).</li> <li>(b) Colour.</li> <li>(c) Material and its resistance to impact from excavation activities.</li> <li>(d) Methods of identification.</li> </ul>

Learning Outcomes	Assessment Criteria
The learner will:	The learner can:
	<p>6.3 Describe the physical properties of the supply being carried by different types of <b>supply apparatus</b>, including:</p> <ul style="list-style-type: none"> <li>(a) Ignition characteristics.</li> <li>(b) Density relative to air.</li> <li>(c) Electrocution risk.</li> <li>(d) Risk of water damage.</li> </ul> <p>6.4 Describe the risks that arise when the safety and integrity of <b>supply apparatus</b> is not maintained.</p> <p>6.5 Describe the industry procedures and practices for confirming the location and marking of <b>supply apparatus</b>.</p> <p>6.6 Explain different methods used to provide temporary and permanent support to protect <b>supply apparatus</b> exposed during site excavations.</p>
<p>7 Understand the importance of protecting supply apparatus.</p>	<p>7.1 Explain the importance of providing adequate support and protection for supply apparatus.</p> <p>7.2 Explain the methods of marking and warning of the presence of underground <b>supply apparatus</b>.</p> <p>7.3 Describe the possible effects of damage to the <b>supply apparatus</b>.</p> <p>7.4 Explain the implications of damage to the different types of <b>supply apparatus</b>, including where relevant:</p> <ul style="list-style-type: none"> <li>(a) Personal danger to the health or life of the operatives, or to others on site.</li> <li>(b) Damage to the environment.</li> <li>(c) Additional job costs in repair.</li> <li>(d) Delay to job progress.</li> </ul>

Learning Outcomes	Assessment Criteria
The learner will:	The learner can:
	<p>7.5 Explain the types of hazards associated with different supplies and actions to take in the case of damage.</p>
<p>8 Understand equipment and techniques used for locating and marking out supply apparatus.</p>	<p>8.1 Describe the principles of operation and method of use of electronic detection equipment.</p> <p>8.2 Describe the safe procedures for handling the range of equipment necessary to carry out the tasks.</p> <p>8.3 Explain how to interpret the results of readings from electronic detection equipment.</p> <p>8.4 Explain the possible effects of external influences on electronic detection equipment readings.</p> <p>8.5 Explain how to visually locate and identify underground <b>supply apparatus</b>, using:</p> <ul style="list-style-type: none"> <li>(a) Markers.</li> <li>(b) Signs and features.</li> <li>(c) Existing records.</li> </ul> <p>8.6 Describe situations where trial holes can be used to locate underground supplies.</p> <p>8.7 Describe how to mark the position of supply services on the surface to ensure accurate location of the excavation.</p> <p>8.8 Explain the consequences of marking out excavations incorrectly, including:</p> <ul style="list-style-type: none"> <li>(a) Costs.</li> <li>(b) Loss of time.</li> <li>(c) Material wastage.</li> </ul>

Learning Outcomes	Assessment Criteria
The learner will:	The learner can:
	<p>8.9 Explain the importance of protecting supply apparatus exposed during excavation work.</p> <p>8.10 Describe the precautions to be taken when locating supply apparatus, including statutory and regulatory requirements.</p>
<p>9 Know the legislation, responsibilities and reporting requirements for locating supply apparatus.</p>	<p>9.1 Describe the main sources of legislation relating to highways operations in the proximity of other <b>supply apparatus</b>.</p> <p>9.2 Name the responsible persons or organisations that must be notified where there is damage to supply apparatus or other underground structures.</p> <p>9.3 Explain the regulations that govern the location of supply apparatus where this exposes other services.</p> <p>9.4 Outline the requirements of the legislation that applies to new roads and street works.</p> <p>9.5 Explain why it is important to refer problems outside own area of job role responsibility to designated people.</p> <p>9.6 Describe the procedures for reporting and recording:</p> <ul style="list-style-type: none"> <li>(a) Job progress.</li> <li>(b) Problems.</li> <li>(c) Deviations to work programmes.</li> </ul> <p>9.7 Outline the roles and responsibilities of the organisations involved in location work and how to liaise with them effectively.</p>



<b>Additional information about the Unit</b>
<b>Unit purpose and aim(s)</b>
<p>This Unit allows learners to show that they have the skills and knowledge to locate and avoid supply apparatus during utilities network construction operations.</p> <p>The learner will be able to use appropriate search and detection methods to identify the supply apparatus for utilities and other agencies, and to mark them on the site prior to excavation. They must identify and avoid risks of damage to services and danger to personnel, and must follow safe working practices throughout the operation. They must also show that they can communicate information to the relevant people and organisations throughout location and avoidance activities, and must resolve or refer problems that arise during the work in line with own job.</p>
<b>Details of the relationship between the Unit and relevant national occupational standards (if appropriate)</b>
Energy & Utility Skills Suite: Multi-Utility Network Construction Unit: 019N MUNC06 Locate and avoid supply apparatus for utilities network construction.
<b>Details of the relationship between the Unit and other standards or curricula (if appropriate)</b>
<b>Assessment requirements specified by a sector or regulatory body (if appropriate)</b>
<p>Some terms, used in the Assessment Criteria, cover a range of situations, as follows:</p> <ol style="list-style-type: none"> <li>1. <b>Supply apparatus</b> covers: <ol style="list-style-type: none"> <li>(a) Supply apparatus for utilities and other agencies including cables, metal pipes and non-metallic pipes.</li> <li>(b) Above and below ground services.</li> <li>(c) Built structures (e.g. foundations).</li> <li>(d) The natural environment (e.g. tree roots, natural watercourses).</li> </ol> </li> <li>2. <b>Approved procedures and practices</b> are: <ol style="list-style-type: none"> <li>(a) Environmental.</li> <li>(b) Statutory.</li> <li>(c) Regulatory.</li> <li>(d) Emergency.</li> <li>(e) Operational.</li> <li>(f) Health and safety.</li> <li>(g) Organisational and company procedures.</li> <li>(h) Risk assessments.</li> </ol> </li> </ol>

3. **Search techniques** include:
- (a) Electronic location in following modes:
    - (i) With and without signal generator.
    - (ii) Induction.
    - (iii) Connection.
    - (iv) Radio.
    - (v) Power.
  - (b) Trial holes.
  - (c) Visual examination.
  - (d) Use of drawings and records.

4. **Codes of practice** are:
- (a) Statutory.
  - (b) Regulatory, including New Roads and Street Works Act.

Some terms in the Assessment Criteria cover a range of situations. Refer to the full assessment requirements and guidance for this Unit for a detailed list of terms and definitions, agreed with Energy & Utility Skills.

This Unit must be assessed in line with the Energy & Utility Skills assessment strategy for vocational qualifications based on its NOS for Multi-Utility Network Construction.

The learner must either be observed by an assessor on at least one occasion, or must provide an observation report or witness testimony from their line manager as part of the evidence for this Unit.

All evidence produced for this Unit must come from real work activities undertaken by the learner in their workplace. Simulated activities or assessment in a realistic working environment may not be used for assessment of the Unit.

## **Assessment (evidence) Requirements**

### **Workplace evidence**

The majority of the evidence used for this Unit must come from the learner's own work activities, both in their own 'reporting base' and carrying out network construction operations on site.

### **Knowledge and understanding**

The knowledge and understanding requirements for this Unit must be covered in full. The learner may demonstrate considerable knowledge through their workplace performance and during observed assessments, but it is likely that some assessor questioning will be needed to confirm that all knowledge requirements are met.

### **Guidance on Instruments of Assessment**

The evidence for this Unit is likely to be generated through a mixture of observation records, assessor-guided discussions and questioning, and workplace records, reports or documentation.