

Summit^{SKILLS}

Environmental Technology Systems

National Occupational Standards For Operatives

April 2008

Important note:

This document contains National Occupational Standards only. For the delivery of S-NVQ evidence requirements, assessment guidance and an assessment strategy are required.

This document does not contain - and is not intended to contain - any information on either evidence or assessment.

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EVTS 1 - PLAN FOR ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit is for people who make the preparations prior to work being conducted on site and is relevant to those who prepare for both installation and service and maintenance of environmental technology systems.

The person carrying out this work must review the work location to ensure that it is safe for the work to be carried out and that all of the necessary checks and tests have been conducted. This includes checking the work location for any existing damage or defects prior to commencement of the work.

The person carrying out this work must ensure that all the necessary preparations are made so that the work can take place safely and in accordance with current industry standards and Building Regulations.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Plan and prepare for installation of systems and components so they:

1. Carry out a review of the work location and identify factors which will impact on the work
2. Ensure that job information and documentation is current and relevant, and that required plant, equipment, instruments and tools are fit for purpose, and available for use
3. Identify from job information the point(s) within the work process where liaison with other persons will be necessary and identify whom these persons will be
4. Confirm that the relevant people have job information on all key aspects of the work process
5. Seek authorisation from the relevant person(s) prior to commencing work, that it is safe to undertake the work as specified
6. Ensure that safety provisions within the immediate work location, including access and egress to it, conform to the requirements of health and safety legislation
7. Report any pre-work damage or defects to existing building features to the job supervisor, or line manager and confirm that this existed prior to the work commencing
8. Check the external condition of materials delivered to site for any damage and the quantity of deliveries against the delivery paperwork
9. Carry out preparatory work as necessary

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The legal duties of employers and employees for health and safety as required by the Health and Safety at Work Act 1974 and other relevant legislation and regulations appropriate to site working, e.g. EAWR, Working at Height Regulations, COSHH, CDM, appropriate Building Regulations
- b) The regulations and working practices that will affect the work activity such as regulations governing system design, installation, siting requirements, operation and routine maintenance, the system types and their intended function
- c) How to carry out an assessment of risks and plan a safe system of work with regard to the work activity
- d) The importance of checking that the work location is safe with regard to access and egress, others working in that location and that safe systems of work are provided where required
- e) The importance of carrying out visual inspections and tests as well as reviewing the work location for planning purposes to determine the work requirements
- f) The importance of wearing appropriate personal protective equipment following safe and safe systems of work as may be required by risk assessments
- g) How to ensure that the customer is fully briefed on all aspects of the work programme
- h) The importance of protecting property prior to starting work and identifying pre-existing damage to property and building fabric
- i) How to ensure that plant, equipment, tools and instruments are fit for purpose and have current calibration/test certificates
- j) How to calculate resource requirements for materials, tools and other equipment
- k) Secure storage procedures for tools, equipment, materials and components—basic stores procedures to ensure security and to minimise loss or wastage
- l) The implications of different working conditions on systems and equipment

EVTS 2 - INSTALL ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit is for people who are required to carry out the installation of environmental technology systems, equipment and components.

This unit is about following the correct procedures for the installation of specialist environmental technology system components/equipment, and associated system components such as wiring systems, wiring enclosures, pipework systems and other components as specified.

Those carrying out the work need to show an understanding of the requirements for installing specialist environmental technology equipment, and appropriate associated system components. They should also demonstrate an understanding of the correct methods for identifying and isolating existing supplies, and the requirements for positioning and fixing components correctly in areas which have the potential to be hazardous.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Confirm that job information on all key aspects of the installation process is available
2. Confirm that all materials, tools and equipment necessary for the installation process will be available as required
3. Arrange safe storage provision for materials, tools and equipment, which meet industry requirements
4. Confirm that all preparatory work to meet the installation requirements of systems and components has been carried out
5. Confirm that the materials, tools and equipment required for the installation processes are fit for their intended purpose
6. Assemble system components using work methods that conform to industry requirements
7. Position system components to conform to the system design requirement
8. Fix system components using methods that conform to industry requirements
9. Connect system components to systems and input service connections using methods that meet industry requirements.
10. Carry out the installation processes in line with industry requirements, minimising damage to customer property and building features
11. Report to the immediate job supervisor, line manager or customer in accordance with industry requirements any circumstances that affect the progress of the installation
12. Confirm the integrity of the installed system using specified testing procedures

13. Take precautionary actions to prevent the unauthorised use of un-commissioned systems and components

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to measure and record site details for installation purposes
- b) The industry practices and work standards for installing system components
- c) The positioning and fixing requirements for system components which conform to the system design and intended functions
- d) The procedures required for connecting to input services or connecting into existing systems
- e) Methods of working which protect the building fabric, customer property and existing systems or components
- f) Job management structures and methods of reporting and recording job progress or problems delaying progress
- g) The care and maintenance requirements of tools and equipment, and the checks required to confirm they are in a safe condition
- h) The range of tests used to confirm the soundness of systems and components and how to use the range of specified testing procedures
- i) What precautionary actions are required during installation and testing

EVTS 3 - TEST ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit is about carrying out pre-commissioning checks and tests on environmental technology systems.

The person carrying out the work must be able to undertake the various checks and tests necessary before the system is brought into operation.

They are required to check the operation and correct position of components. They must also carry out tests to ensure there are no leaks or loose connections.

It is important that they are aware of the effect that isolating part of a system has on the full system.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Confirm that the system or component(s) installation complies with industry requirements
2. Check that input services to the system components are suited to their intended purpose
3. Check system or components for soundness using procedures that comply with industry requirements
4. Carry out pre-commissioning tests and checks in accordance with industry requirements

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The procedures, equipment and legislative requirements for applying specified tests to systems
- b) The methods of establishing that input services adequately supply all components within the system
- c) The methods of connecting components to systems
- d) The actions to take where pre-commissioning checks or tests reveal basic or complex system or component defects
- e) How to complete pre-commissioning documentation confirming the safe pre-commissioning of systems and components

EVTS 4 - COMMISSION ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit is about checking that components are installed correctly, bringing the environmental technology system into operation and ensuring that it functions effectively. It applies to a range of contexts that will in some cases involve responsibility for the work of others.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Ensure that the design specification of the system or component performance is available
2. Liaise with other persons at appropriate points within the commissioning process to minimise disturbance to work routines
3. Check the correct function of system or components against performance requirements
4. Adjust system controls to establish system or component compliance with the design specification
5. Provide the customer with information necessary for the continuing operation of the system or component

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The sources of information on the performance of systems or components
- b) The procedures for establishing correct system or component performance and checking against the design specification
- c) The routines and sequences for commissioning systems or components
- d) The points in the commissioning process where co-operation and liaison with other trades and customers may be required
- e) Sources of user information appropriate to different systems and components
- f) How to complete commissioning documentation confirming the safe commissioning of systems and components
- g) System handover procedures and demonstrating the operation of systems and components to end-users
- h) The actions to take when components being commissioned do not meet design requirements

EVTS 5 - INSPECT ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit is for people who are required to carry out inspections of environmental technology systems, equipment and components.

This unit is about carrying out inspection procedures to confirm that environmental technology systems have been installed correctly in accordance with appropriate technical standards and Building Regulations. It also covers ensuring that the appropriate health and safety precautions have been taken, including a risk assessment. It requires that all necessary documentation is completed following inspection.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Carry out final inspection procedures for environmental technology systems, equipment and components, so they:

1. Agree a programme of work with the responsible person and confirm with them those aspects of the risk assessment and relevant method statement which will impact on those working for them and their work
2. Confirm that their safe system of work is appropriate to the scope of work
3. Conduct a structural inspection in accordance with the requirements of the client and appropriate industry Codes of Practice
4. Confirm components and equipment is installed to required standards
5. Carry out a check to confirm that the installed system is in accordance with current appropriate standards
6. Ensure that documentation relating to the installation, connection and testing of the system and components has been completed accurately and clearly

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) Risk assessment procedures and knowledge of method statements to ensure safe systems of work
- b) The importance of ensuring correct component installation and how to check this
- c) What documentation is required and organisational procedures for document completion
- d) The scope, type and requirements of the inspection of environmental technology systems and associated components
- e) The approved recording and reporting procedures for inspection and test results
- f) The legal responsibilities in accordance with current health and safety regulations, legislation, Building Regulations and Codes of Practice

EVTS 6 - DIAGNOSE FAULTS IN ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit covers the key areas of maintenance work involving diagnosing the cause of faults in environmental technology systems and components. Diagnostic requirements in this unit apply only to system components such as: panels, pipe materials, taps, valves, pumps, electrical connections and control components.

The person carrying out this work should be able to locate simple faults in the system or component performance.

PERFORMANCE CRITERIA

The person carrying out this work must show that they can:

1. Obtain clear and detailed information about the reported faults including any components which need to be replaced
2. Advise the relevant people clearly and accurately about the potential disruption and consequences of carrying out a diagnosis of faults
3. Locate faults in systems or system components using procedures that comply with industry requirements
4. Report to the relevant person diagnosed faults in systems and components
5. Liaise with other persons to agree fault rectification procedures which will minimise disruption to work routines

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The necessary information for carrying out a successful fault diagnosis
- b) How to interpret information on system or component performance, including advice from users, visual inspections or checks or diagnosis tests to locate faults
- c) The potential disruption and consequences of carrying out a diagnosis of faults
- d) How to liaise with others to ensure co-operation in the fault diagnosis process
- e) The work action and sequences required to diagnose faults in systems and components
- f) The measures to ensure that systems do not present a safety hazard to potential users, or the workforce, when carrying out diagnosis procedures
- g) How to isolate unsafe systems and components
- h) The procedures for reporting diagnosed faults in systems and components

EVTS 7 - RECTIFY FAULTS IN ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit is about rectifying faults that have been diagnosed in environmental technology systems. The rectification requirements of this unit apply to system components such as: panels, pipe materials, taps, valves, pumps, electrical connections and control components.

The person carrying out the work should be able to determine the information required, (which may be verbal instructions), and the people who need to be kept informed during the work activities.

They should be able to rectify faults and restore the system or component performance to specification.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Rectify faults in systems to restore the system or component function to performance specification.
2. Complete functional tests to confirm the fault has been rectified and the system is operating correctly
3. Take precautionary actions to prevent the unauthorised use of unsafe systems or components

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to interpret information on system or component performance, including advice from users, visual inspections or checks or diagnosis tests to locate faults
- b) The work procedures for the rectification of faults in systems or components which will ensure minimum disruption to customers and routines
- c) How to liaise with others to ensure co-operation in the fault rectification process
- d) The work action and sequences required to rectify faults in systems and components
- e) The measures to ensure that systems do not present a safety hazard to potential users, or the workforce, when carrying out rectification procedures
- f) The actions to be taken when the system or component cannot be restored to full performance

- g) How to isolate unsafe systems and components
- h) How to carry out functional tests to confirm fault rectification has been successful
- i) How to systematically fault find and diagnose faults

EVTS 8 - SERVICE AND MAINTAIN ENVIRONMENTAL TECHNOLOGY SYSTEMS, EQUIPMENT AND COMPONENTS

UNIT DESCRIPTOR

This unit is about what is required to service and maintain environmental technology systems and components in order to satisfy industry requirements and ensure continued effective operation.

The person carrying out this work must be able to undertake servicing of equipment relating to appropriate environmental technology systems.

They are expected to establish the service and maintenance requirements for appropriate environmental technology systems and components and carry out service and maintenance of these systems and components.

They must also be able to follow instructions and job information, and complete accurate service and maintenance records.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Carry out service and maintenance activities using procedures which comply with industry requirements
2. Service and maintain system components to ensure continued effective operation of the system
3. Complete records to provide an accurate history of the service and maintenance of system components

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to use performance specifications for systems and components, and maintenance procedures necessary to restore or maintain the continued performance of systems and components
- b) The maintenance procedures necessary to ensure compliance with industry requirements for routine and non-routine service and maintenance activities
- c) How to complete records and reports of the maintenance of systems and components
- d) The action to take when the system or component does not work to full performance specification

Environmental Technology Systems (Technical Design & Management)

National Occupational Standards

April 2008

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EVTS 9 - DETERMINE LEGISLATIVE AND WORKING PRACTICE REQUIREMENTS FOR ENVIRONMENTAL TECHNOLOGY SYSTEMS

UNIT DESCRIPTOR

The unit covers a key area which focuses on the need for the person carrying out the work to identify the requirements for specifying working practices and procedures which protect the environment and promote the efficient use of energy and resources.

The person carrying out this work should be aware of the implications for the environment of work processes, and procedures, and of specifying materials and resources which minimise risks to the environment.

The person completing the work should be aware of appropriate environmental technologies and should be able to advise on how such technologies could be utilised. This should include being able to advise on the specific legislative and planning requirements impacting upon the installation of environmental technology systems and the approved working practices and installation techniques that should be specified.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Identify requirements of environmental technology systems, so that they can:

1. Advise on the advantages and disadvantages of diverse environmental technologies available in different situations
2. Outline the legislative, regulatory and planning requirements that apply to the installation and operation of **environmental technology system products**⁽¹⁾
3. Analyse building features and fabric and advise on the appropriateness of different **environmental technology system products**⁽¹⁾
4. Assess the impact the installation of **environmental technology system products**⁽¹⁾ can have on building performance
5. Advise on the **work activities**⁽²⁾ and installation requirements for different **environmental technology system products**⁽¹⁾
6. Specify **work activities**⁽²⁾ and procedures which minimise disruption to the environment
7. Specify materials and **resources**⁽³⁾ which minimise risk to the environment and the building fabric
8. Outline to **individuals and organisations**⁽⁴⁾ the operational characteristics and service/maintenance requirements for different **environmental technology system products**⁽¹⁾

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

(1) Environmental technology system products: Assets, components, equipment, materials, plant, services and systems

(2) Work activities: Work in progress, response to changed circumstances, work that affects others

(3) Resources: Equipment, materials, labour, consumables

(4) Individuals and organisations: Colleagues, co-contractors, suppliers, consultants, clients and customers

KNOWLEDGE REQUIREMENTS

The person carrying out the work must know and understand:

- a) The characteristics and benefits of different environmental technology systems
- b) The legislation and planning requirements governing the safe installation and operation of environmental technology systems
- c) Appropriate Building Regulations, including energy efficiency requirements for new dwellings and commercial properties (and where relevant the Code for Sustainable Homes)
- d) How to identify and advise on situations in which it would be advantageous to install environmental technology systems
- e) How to identify and advise on situations in which it would not be advantageous to install environmental technology systems
- f) How to determine the impact installation of environmental technology systems can have on the performance of buildings against regulatory requirements
- g) The potential implications for the environment of the work procedures used in installing or maintaining environmental technology systems or components
- h) Prefabrication and installation methods that reduce material wastage
- i) The materials and products that are classed as hazardous to the environment and how to identify them
- j) Organisational procedures for the handling and disposal of hazardous materials and products
- k) The materials and products that are classed as recyclable, how to identify them, and organisational procedures for dealing with them
- l) The importance of managing hazards to the environment that arise from work procedures and the appropriate actions that should be taken
- m) Appropriate environmentally friendly materials, products and procedures
- n) The relevant information that needs to be passed to relevant people to ensure the correct and economical use of energy dependant systems
- o) The servicing and maintenance requirements for different environmental technology systems and the implications these can have for end users
- p) The general advice that can be given on methods of reducing waste of resources, and effecting savings through employment of environmental technologies

EVTS 10 - DEVELOP ENVIRONMENTAL TECHNOLOGY SYSTEM DESIGN SOLUTIONS

UNIT DESCRIPTOR

This unit is about being able to demonstrate competence in obtaining and analysing information on project options and design parameters and identifying significant implications and constraints.

It also involves advising the client on the most appropriate course of action and the rationale for environmental technology system design selection. It is also about: identifying and discussing with the project team existing design principles; selecting the solutions best suited to the project; refining the design options and rejecting those options that do not meet the project requirements.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Assess significant factors affecting the project design:

1. Obtain information, options and design parameters which are relevant to the development of the design brief
2. Analyse the findings of investigations and identify **approved procedures and practices**⁽¹⁾ which may influence **work activities**⁽²⁾
3. Format and collate data and conclusions from all areas of specialist research and design evaluation, and circulate the documents to project team members
4. Analyse the information available with the project team, and produce realistic design parameters which recognise significant **implications and constraints**⁽³⁾
5. Assess the design parameters and circulate the assessment to the people responsible for project design, planning and scheduling
6. Advise the client on the most appropriate courses of action
7. Select design concepts for further development by the project team which appear to meet the requirements of the design brief and which resolve a significant number of **implications and constraints**⁽³⁾ on development

Assess significant factors affecting the project design:

8. Identify existing design options which are consistent with the brief and likely to lead to appropriate solutions, and select those which are most likely to contribute to design ideas
9. Obtain new sources of information and ideas, where existing **design options**⁽⁴⁾ do not meet the brief and suggest new and innovative **design options**⁽⁴⁾
10. Discuss the selected **design options**⁽⁴⁾ with project team members, assessing their observations and note them for future reference

11. Develop the **design options**⁽⁴⁾ which appear to have the greatest potential for success
12. Select and commission appropriate **tests**⁽⁵⁾ which will give valid and relevant information about the **design options**⁽⁴⁾
13. Implement and monitor **tests**⁽⁵⁾ so that the validity of the **design options**⁽⁴⁾ is maintained, and match the results to parameters of the brief

Refine design options:

14. Refine design options which meet the **implications and constraints**⁽³⁾ of the brief and test them until their ability to meet the design parameters is established
15. Reject design options which fail to meet the design parameters and identify possible alternatives
16. Recommend modifications to the brief to allow the consideration of selected options and approaches which have the potential to meet the design **implications and constraints**⁽³⁾, but fail to meet all the design brief requirements
17. Assess the implications of modifying the design brief so that the overall integrity is retained
18. Record test results and present feasible **design options**⁽⁴⁾ in sufficient detail to enable **individuals and organisations**⁽⁶⁾ to select the most appropriate

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

(1) Approved procedures and practices: Health, Safety and Environmental related to the individual and others, organisational, regulatory, statutory, relevant company policies, risk assessment

(2) Work activities: Work in progress, response to changed circumstances, work that affects others

(3) Implications and constraints: Customer considerations, work details, availability of resources, technical, timescales, regulatory, cost

(4) Design options: Those which are suggested by the brief, previous knowledge and experience of similar work, solutions by others to similar problems

(5) Tests: Physical, simulation, comparative, statistical, computer modelling

(6) Individuals and organisations: Colleagues, co-contractors, suppliers, consultants, clients and customers

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to obtain information, options and design parameters which are relevant to the development of the design brief
- b) How to format and collate data and conclusions and circulate documents containing data and conclusions to project team members
- c) How to analyse the findings of investigations
- d) How to identify significant factors which may influence existing and anticipated development
- e) How to assess the design parameters
- f) How to circulate the assessment of the design parameters to people who are responsible for project design, planning and scheduling
- g) How to produce realistic design parameters which recognise significant opportunities and constraints
- h) How to analyse the information available
- i) How to advise the client on the most appropriate courses of action
- j) How to select design concepts for further development by the project team
- k) How to identify existing design approaches which are consistent with the brief and likely to lead to appropriate solutions, and select those which are most likely to contribute to design ideas
- l) How to discuss the selected design options with project team members and note project team members' observations for future reference
- m) How to assess project team members' observations
- n) How to assess the implications of modifying the design brief
- o) How to select those design approaches which are most likely to contribute to design ideas
- p) How to develop the design options
- q) How to select, commission and implement appropriate tests
- r) How to identify possible alternative design options
- s) How to obtain new sources of information and ideas
- t) How to recommend modifications to the brief

- u) How to reject design options which fail to meet the design parameters
- v) How to refine and test design options
- w) How to monitor tests
- x) How to match the results of tests to significant parameters of the brief
- y) How to record and present test results and feasible design options

EVTS 11 - EVALUATE AND ADVISE ON ENVIRONMENTAL TECHNOLOGY SYSTEM DESIGNS

UNIT DESCRIPTOR

This unit is about being able to demonstrate competence in presenting the recommended environmental technology system design clearly and objectively to justify the choice in line with the project specification. It is also about evaluating the choice of design and agreeing and recording any changes with the client. In addition it also covers interpreting how the overall design concept can be met and advising all stakeholders on the implications and constraints of accepting, modifying or rejecting design proposals.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Prepare project design recommendations:

1. Choose **presentational methods**⁽¹⁾ and techniques which make the best use of **resources**⁽²⁾ and have the potential to communicate **design options**⁽³⁾ clearly
2. Agree with the project team and the client the purpose of the presentation and the **presentational methods**⁽¹⁾ which will be used
3. Prepare clear and accurate **presentational methods**⁽¹⁾ which support the **design options**⁽³⁾ and use them to facilitate discussions

Evaluate project design recommendations:

4. Present the recommendations, proposals and **design options**⁽³⁾ clearly and objectively and show how they are justified by the requirements of the brief
5. Present the information in a way which promotes the goodwill and trust of **individuals and organisations**⁽⁴⁾
6. Provide valid evidence to support changes to the agreed criteria in cases where the design proposal or **design options**⁽³⁾ do not meet all the **implications and constraints**⁽⁵⁾ of the brief
7. Encourage **individuals and organisations**⁽⁴⁾ to ask questions, ask for clarification and to make comments at appropriate stages in the presentation
8. Define, agree and record amendments and variations which are required by the client

Advise on the selection and modification of design recommendations:

9. Identify those elements of **design options**⁽³⁾ which meet the requirements of the original design brief and any subsequent modifications
10. Identify changes in the project that are not reflected in any formal variations to the design brief

11. **Inform⁽⁶⁾ individuals and organisations⁽⁴⁾** on how well the design concept proposals match the objective criteria in the design brief
12. **Inform⁽⁶⁾ individuals and organisations⁽⁴⁾** on the designer's creative interpretation of the brief and overall design concept
13. Explain how the overall design concept can meet the **implications and constraints⁽⁵⁾** in the brief, the aesthetic requirements of the client and **approved procedures and practices⁽⁷⁾**
14. **Inform⁽⁶⁾ individuals and organisations⁽⁴⁾** on the **implications and constraints⁽⁵⁾** of accepting, modifying or rejecting design proposals
15. **Inform⁽⁶⁾ individuals and organisations⁽⁴⁾** on how much more advice, research and consultancy will be necessary to produce a project design which is acceptable

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

(1) Presentational methods: Drawings, computer generated data, mathematical modelling, written reports

(2) Resources: Equipment, materials, labour, consumables

(3) Design options: Those which are suggested by the brief, previous knowledge and experience of similar work, solutions by others to similar problems

(4) Individuals and organisations: Colleagues, co-contractors, suppliers, consultants, clients and customers

(5) Implications and constraints: Customer considerations, work details, availability of resources, technical, timescales, regulatory, cost

(6) Inform: Orally, in writing

(7) Approved procedures and practices: Health, Safety and Environmental related to the individual and others, organisational, regulatory, statutory, relevant company policies, risk assessment

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to show recommendations, proposals and design options are justified by the requirements of the briefing
- b) How to provide valid evidence to support necessary changes to the agreed criteria
- c) How to choose presentation methods and techniques
- d) How to agree with the project team and the client the purpose of the presentation and the presentation methods which will be used
- e) How to present the recommendations, proposals and design options
- f) How to prepare clear and accurate presentation materials and use them to facilitate discussions
- g) How to encourage the audience to ask questions, ask for clarification and to make comments at appropriate stages in the presentation
- h) How to record amendments and variations which are required by the client
- i) How to define, agree and record amendments and variations which are required by the client
- j) How to explain how the overall design concept can meet both the technical and functional constraints in the brief, and the aesthetic requirements of the client and approved procedures and practices
- k) How to advise people who have an interest on how well the design concept proposals match the objective criteria in the design brief
- l) How to advise people who have an interest on the designers' creative interpretation of the brief and overall design concept
- m) How to advise people who have an interest on the implications of accepting, modifying or rejecting design proposals
- n) How to advise people who have an interest on how much more advice, research and consultancy will be necessary
- o) What elements of designs meet the requirements of the original design brief and any subsequent modifications required
- p) What changes in the project are not being reflected in any formal variations to the design brief

EVTS 12 - PREPARE AND AGREE ENVIRONMENTAL TECHNOLOGY SYSTEM DESIGNS

UNIT DESCRIPTOR

This unit is about being able to demonstrate competence in investigating and identifying important aspects of the design brief, agreeing with stakeholders the resource requirements and where the critical activities are within the project. It also involves demonstrating competence in selecting resources which will balance cost, quality and environmental impact, and being able to evaluate and record appropriate details.

The unit also covers competence in identifying and prioritising the resources and the implications and constraints which are going to influence the design solutions, including resolving any conflicts. In addition, it also involves demonstrating competence in calculating, analysing and testing the effectiveness of different design solutions and recording and presenting findings to stakeholders.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Identify and select materials, components and systems:

1. Identify and decide the relative importance of **work activities**⁽¹⁾ which are contained in the design brief and plan an **investigation**⁽²⁾, which fits in with the overall development programme, which will identify the significance of the most important **work activities**⁽¹⁾
2. Agree with stakeholders, the costs, timetables and clear statements of purpose
3. Investigate the **work activities**⁽¹⁾ which are significant to the overall design and what potential **implications and constraints**⁽³⁾ there might be in meeting them
4. Analyse the **work activities**⁽¹⁾ which are significant to the overall design, both individually, in combination with other project considerations and with **approved procedures and practices**⁽⁵⁾
5. Select **resources**⁽⁴⁾ which meet the identified **work activities**⁽¹⁾ and **approved procedures and practices**⁽⁵⁾ and which balance cost and quality
6. Assess whether existing design solutions which contain similar **work activities**⁽¹⁾ might be relevant
7. Choose the solutions which best meet the significant, **work activities**⁽¹⁾ evaluating them against the requirements of the design brief and keep records of them for the project team in accordance with **approved procedures and practices**⁽⁵⁾

Investigate, calculate and analyse detailed design solutions:

8. Identify relevant **resources**⁽⁴⁾ and implications and constraints which are likely to influence the detailed design solution, assessing their significance and prioritising them
9. Analyse the **resources**⁽⁴⁾ which will influence the detailed design, deciding which are the most important for the design solution and resolve any conflicts between the different factors

10. Calculate the relative effectiveness of different design solutions
11. Analyse and **test**⁽⁶⁾ the detailed design solutions against all relevant **resources**⁽⁴⁾
12. Conduct and commission **investigations**⁽²⁾ which are capable of confirming the performance of the detailed design solutions which have been selected
13. Record the data from calculations, **investigations**⁽²⁾ and analyses and pass them on for checking
14. Select the preferred designs and present them to **individuals and organisations**⁽⁷⁾ using appropriate **presentational method**⁽⁸⁾
15. Identify and record detailed design solutions which have not been selected but which might be useful in other projects

Negotiate and agree a detailed design:

16. Provide **individuals and organisations**⁽⁷⁾ with enough relevant and accurate information to agree a detailed design
17. Assess and justify the features and benefits of the recommended detailed design solution
18. Compare the recommended detailed design with the requirements of the detailed design brief and justify its selection
19. Confirm with **individuals and organisations**⁽⁷⁾ what the recommended detailed design solution will cost and how long it will take to implement
20. Reach an agreement on the detailed design solution which is acceptable to **individuals and organisations**⁽⁷⁾ and allows the project to progress to the next stage

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

(1) Work activities: Work in progress, response to changed circumstances, work that affects others

(2) Investigations: Research, specialist guidance and good practice, relevant previous solutions and feedback

(3) Implications and constraints: Customer considerations, work details, availability of resources, technical, timescales, regulatory, cost

(4) Resources: Equipment, materials, labour, consumables

(5) Approved procedures and practices: Health, Safety and Environmental related to the individual and others, organisational, regulatory, statutory, relevant company policies, risk assessment

(6) Tests: Physical, simulation, comparative, statistical, computer modelling

(7) Individuals and organisations: Colleagues, co-contractors, suppliers, consultants, clients and customers

(8) Presentation methods: Drawings, computer generated data, mathematical modelling, written reports

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to explain the relative importance of work activities contained within the design brief and the potential implications and constraints
- b) How to plan an investigation which will identify the critical work activities within the design brief
- c) How to assess whether existing design solutions might be relevant
- d) How to convey to stakeholders the resources required to deliver the project design
- e) How to analyse critical resources in combination with other project considerations
- f) How to select resource which balances cost and quality
- g) How to record solutions and evaluate against the project design
- h) How to identify relevant resources and data which are likely to influence the detailed design solution
- i) How to test and check the results of analysis of the preferred design solutions
- j) How to assess the significance of, and prioritise, relevant resource and data
- k) How to record detailed design solutions which have not been selected but which might be useful in other projects
- l) How to analyse the factors which will influence the detailed design
- m) How to analyse and test the detailed design solutions against all relevant factors
- n) How to decide which resources are the most important for the design solution
- o) How to calculate the relative effectiveness of different design solutions
- p) How to agree and apply approved procedures and practices for selecting detailed design solutions
- q) How to select design solutions
- r) How to conduct investigations which confirm the performance of the detailed design solutions which have been selected
- s) How to record and pass on the data from calculations, investigations and analyses
- t) How to commission investigations which confirm the performance of the detailed design solutions which have been selected
- u) How to present preferred design solutions to individuals and organisation

- v) How to provide individuals and organisations in the project with enough relevant and accurate information to agree a detailed design
- w) How to justify the recommended detailed design solution with the requirements of the detailed design brief
- x) How to confirm with individuals and organisations what the recommended detailed design solution will cost and how long it will take to implement
- y) How to assess the features and benefits of the recommended detailed design solution
- z) How to compare the recommended detailed design solution with the requirements of the detailed design brief
- aa) How to reach an agreement on the detailed design solution which is acceptable to individuals and organisations and allows the project to progress to the next stage

EVTS - 13 PLAN AND IMPLEMENT WORK METHODS AND RESOURCES TO ACHIEVE ENVIRONMENTAL TECHNOLOGY SYSTEMS INSTALLATION REQUIREMENTS

UNIT DESCRIPTOR

This unit is about being able to demonstrate competence in assessing project data, calculating resource requirements, optimising the use of resources, recruiting reliable and quality individuals and organisations to form a project team, plotting a critical path and identifying the consequences of variations to the project.

The unit covers preparing method statements, promoting their use, including evaluating, analysing and quantifying the method statement adopted. It also involves developing a system for monitoring and evaluating project outcomes; identifying the resources required for the project team to operate; negotiating project team contracts; producing specifications for individual and organisational responsibilities, communicating those responsibilities and being able to retrieve appropriate information.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Evaluate work methods:

1. Assess the available **project data**⁽¹⁾ accurately and summarise it to enable decisions on **work activities**⁽²⁾ to be made
2. Obtain information from alternative sources in cases where the available **project data**⁽¹⁾ is insufficient
3. Identify work methods which will make the best use of **resources**⁽³⁾ and which meet **approved procedures and practices**⁽⁴⁾
4. Evaluate the methods against relevant technical and **project data**⁽¹⁾ and select the one which best meets the criteria

Select work methods:

5. Recommend the selected method to decision makers and encourage them to adopt it
6. Analyse the method which has been selected for its activity content and quantify it accurately
7. Prepare a method statement which is accurate, clear, concise and acceptable to all **individuals and organisations**⁽⁵⁾ involved

Plan work activities and resources

8. Identify **work activities**⁽²⁾ and calculate the **resources**⁽³⁾ needed from the information available obtaining clarification and advice where the **resources**⁽³⁾ needed are not available
9. Analyse the **work activities**⁽²⁾ against **project data**⁽¹⁾ and the requirements of **significant factors**⁽⁶⁾

10. Calculate how long each activity will take, identify **work activities**⁽²⁾ which influence each other and sequence them logically and realistically so that they make the best use of the **resources**⁽³⁾ available
11. Produce detailed plans for **work activities**⁽²⁾ which are consistent with **approved procedures and practices**⁽⁴⁾
12. Identify alterations to **work activities**⁽²⁾ which will meet changed circumstances or offer cost and time benefits, calculating the savings accurately and justifying them to decision makers
13. Develop a system for monitoring the **work activities**⁽²⁾ implementing it and using the results to improve future production and planning

Select and form a project work team

14. Identify the **individuals and organisations**⁽⁵⁾ that are needed and where they can be obtained, and select those that meet agreed timescales and budget limits
15. Identify any **significant factors**⁽⁶⁾ which will affect the number, type and availability of individuals and organisations
16. Evaluate the quality and potential reliability of **individuals and organisations**⁽⁵⁾ and **resources**⁽³⁾ and circulate the results to decision makers
17. Negotiate and agree proposals for team membership which are likely to produce effective **working relationships**⁽⁷⁾
18. Follow **approved procedures and practices**⁽⁴⁾ for obtaining **individuals and organisations**⁽⁵⁾
19. Produce appropriate contractual arrangements and terms of appointment for the **individuals and organisations**⁽⁵⁾ and confirm in writing with stakeholders
20. Negotiate contracts and agreements in a way which preserves goodwill and trust

Establish and maintain project organisation and communication systems

21. Identify what the organisational and communication needs are for the project
22. Develop and introduce systems which are compatible with **approved procedures and practices**⁽⁴⁾ and which enable clear and effective management, and administrative and operational controls
23. Produce accurate and unambiguous information about people's roles and responsibilities and the organisational structure, and circulate the information to **individuals and organisations**⁽⁵⁾ who have an interest
24. Introduce methods of communicating, reporting, recording and retrieving information which are appropriate to the needs of the project and comply with **approved procedures and practices**⁽⁴⁾ and monitor the methods regularly for effectiveness
25. Set up systems for recording and providing feedback on the ways in which **resources**⁽³⁾ are allocated and used

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

- (1) Project data:** Conditions of contract, specifications, drawings, timescales, scope of work
- (2) Work activities:** Work in progress, response to changed circumstances, work that affects others
- (3) Resources:** Equipment, materials, labour, consumables
- (4) Approved procedures and practices:** Health, Safety and Environmental related to the individual and others, organisational, regulatory, statutory, relevant company policies, risk assessment
- (5) Individuals and organisations:** Colleagues, co-contractors, suppliers, consultants, clients
- (6) Significant factors:** Location, cost, time, skills, experience and knowledge required and available, training and development requirements, equal opportunities and disability rights
- (7) Working relationships:** Formal, informal

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to summarise and assess the available project data
- b) How to recommend the selected method to decision makers and encourage them to adopt it
- c) How to prepare a method statement
- d) How to obtain more information from alternative sources in cases where the available project data is insufficient
- e) How to identify work methods which will make the best use of resources and which meet approved procedures and practices
- f) How to evaluate the methods against relevant technical and project criteria and select the method which best meets the criteria
- g) How to analyse and quantify the method which has been selected for its activity content
- h) How to calculate the resources needed from the information available
- i) The activities that influence each other
- j) Alterations to the work programme which may cause changed circumstances or offer cost and time benefits
- k) How to obtain clarification and advice where the resources needed are not available
- l) How to calculate the savings resulting from alterations to the work programme
- m) How to prepare a draft work programme
- n) How to develop and implement a system for monitoring the works programme
- o) How to justify to decision makers the savings resulting from alterations to the work programme
- p) How to calculate how long each activity will take and sequence activities
- q) How to use the results of monitoring to improve future production and planning
- r) How to analyse the activities against project requirements and the requirements of significant external factors
- s) How to produce detailed programmes and schedules of planned activities
- t) How to select individuals and organisations that meet agreed timescales and budget limits
- u) How to identify the individuals and organisations that are needed and where they can be obtained

- v) How to identify significant factors which will affect the number, type and availability of individuals and organisations
- w) How to circulate the results of evaluating the quality and reliability of individuals and organisations and resources to decision makers
- x) How to evaluate the quality and potential reliability of people, services and resources
- y) How to negotiate and agree proposals for team membership
- z) How to follow approved procedures and practices for obtaining individuals and organisations
- aa) How to negotiate contracts and agreements
- bb) How to produce and confirm in writing appropriate contractual arrangements and terms of appointment for the individuals and organisations selected
- cc) How to identify the organisational and communication needs for the project
- dd) How to develop and introduce systems which are compatible with those used by the client and supply chain and which enable clear and effective management, and administrative and operational controls
- ee) How to produce and circulate to people and organisations who have an interest, accurate and unambiguous information about people's roles and responsibilities and the organisational structure
- ff) How to monitor the methods of communicating, reporting, recording and retrieving information
- gg) How to introduce methods of communicating, reporting, recording and retrieving information which are appropriate to the needs of the project
- hh) How to set up systems for recording and providing feedback on the ways in which resources are allocated and used

EVTS 14 - IMPLEMENT WORKS TO ACHIEVE ENVIRONMENTAL TECHNOLOGY SYSTEMS INSTALLATION

UNIT DESCRIPTOR

This unit is about being able to demonstrate competence in providing management control of the project work activities by ensuring that methods and procedures are implemented, that QA systems are applied and that there is compliance with relevant regulations and guidelines. It also involves controlling resources and issuing instructions to ensure that activities are carried out effectively and in line with required methods and procedures.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

1. Identify any **special requirements**⁽¹⁾, record them and pass them on to people who may be affected
2. Identify any **factors which might compromise the proposed work**⁽²⁾, describe and summarise them accurately, and pass on the **information**⁽⁴⁾ to the appropriate authorities
3. Identify access points for the site and works which are the most convenient for works traffic and which minimise disruption
4. Provide accurate details about the proposed work to the utility and emergency services
5. Make arrangements for adequate site safety and security before work starts, and during work on the site
6. Plan the **site layout for operational purposes**⁽³⁾ and pass on **information**⁽⁴⁾ about the plans to the people who will be working on the site
7. Plan the storage and use of **resources**⁽⁵⁾ so that materials handling and movement is efficient and wastage is minimised
8. Place and maintain notices which provide accurate **information**⁽⁴⁾ to the public and which conform to statutory requirements
9. Assemble and review relevant **information**⁽⁴⁾ used in the preparation of the project plan, clarifying any information which is not clear and updating it for further planning purposes
10. Provide adequate notice, as required in the contract, to all the people who will be affected about when the work will start, how long it will take and when it will finish, and confirming all the dates in writing
11. Agree a programme and methods with the people who will be doing the work
12. Identify, record and obtain **information**⁽⁴⁾ requirements before work starts
13. Organise attendance for sub-contractors in accordance with contractual agreements
14. Plan and obtain sufficient **resources**⁽⁵⁾ of the appropriate type which will meet the project requirements and timescales

15. Organise and control the site and **resources**⁽⁵⁾ so that conditions are safe, the site is tidy and creates a favourable image of the organisation, its products, its services and the project as a whole
16. Develop plans to meet special requirements and contingencies which are sufficient to minimise disruption to those likely to be affected by the works programme
17. Identify, communicate and monitor necessary consequent actions and responsibilities for implementation

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

(1) Special requirements: - relating to: occupiers, environmental considerations, vehicular access, health and safety, hazards, trespass, near neighbours, public access, site conditions, statutory regulations and limitations, codes of practice

(2) Factors which might compromise the proposed works: site conditions, statutory regulations and limitations, codes of practice; health, safety and welfare, environment, hazards

(3) Site layout for operational purposes: storage, temporary accommodation, work areas, plant, temporary services, access, security, continuing use by occupiers

(4) Information: survey reports, design, contractual, statutory consents, contractor's pre-planning information, Health and Safety Plan

(5) Resources: people, plant and equipment, materials and components, sub-contractors, information

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to identify any special requirements
- b) How to record special requirements and pass them on to people who will be affected
- c) How to identify and describe as factors which might compromise the proposed works
- d) How to summarise and pass on information about any factors which might compromise the proposed works to the appropriate authorities
- e) How to give details about the proposed works to the utility and emergency services
- f) How to make arrangements for adequate site safety
- g) How to place and maintain notices
- h) How to identify access points for the site and works which are the most convenient for works traffic and which minimise disruption
- i) How to plan the site layout for operational purposes
- j) How to plan the storage and use of materials and components
- k) What to identify as information requirements before work starts
- l) How to assemble relevant information which was used in the preparation of the project plan, and clarify and update any information which is not clear
- m) How to give adequate notice, as required in the contract, to all the people who will be affected about when the work will start, how long it will take and when it will finish, and confirm all the dates in writing
- n) How to review relevant information which was used in the preparation of the project plan
- o) How to plan and obtain sufficient resources
- p) How to control and organise the site and resources so that conditions are safe, the site is tidy and creates a favourable image of the organisation, its products and its services and the project
- q) How to organise attendance for sub-contractors in accordance with contractual agreements
- r) How to agree a programme and methods with the people who will be doing the work
- s) How to identify and communicate consequent actions and responsibilities for implementation
- t) How to monitor necessary consequent actions and responsibilities for implementation
- u) How to develop plans to meet special requirements and contingencies

EVTS 15 - COMMISSION AND HANDOVER ENVIRONMENTAL TECHNOLOGY SYSTEMS AFTER INSTALLATION

UNIT DESCRIPTOR

This unit is about being able to demonstrate competence in identifying the customer's needs for environmental technology systems configuration. It also involves commissioning and transferring control of the installation back to the customer, ensuring the customer is satisfied with the work carried out. The unit also covers being able to plan the resources required for the commissioning procedures, and ensuring that accurate records of the installation and commissioning procedures are completed - including any variations to the original specification.

PERFORMANCE CRITERIA

The person carrying out this work must show that they:

Configuration:

1. Identify the client's requirements for the **configuration⁽¹⁾** of the **environmental technology system products⁽²⁾**
2. Plan the most appropriate way to configure the **environmental technology system products⁽²⁾**
3. Determine and obtain the **resources⁽³⁾** required to undertake the **configuration⁽¹⁾**
4. Check that **configuration⁽¹⁾** methods and procedures are implemented correctly
5. Verify that the **configuration⁽¹⁾** achieves the client's requirements
6. Identify any problems with the **configuration⁽¹⁾** and effectively resolve them
7. Ensure that the **configuration⁽¹⁾** complies with all relevant **approved procedures and practices⁽⁴⁾**
8. Record information on the **configuration⁽¹⁾** in the appropriate **information systems⁽⁵⁾**

Commissioning:

9. Specify the methods and procedures for **commissioning⁽⁶⁾** the **environmental technology system products⁽²⁾**
10. Plan the most appropriate way to **commission⁽⁶⁾** the **environmental technology system products⁽²⁾**
11. Confirm that **conditions⁽⁷⁾** are suitable to implement the **commissioning⁽⁶⁾** procedures
12. Determine and obtain the **resources⁽³⁾** required to undertake the **commissioning⁽⁶⁾** procedures
13. Ensure that the **commissioning⁽⁶⁾** is implemented correctly
14. Identify any problems with the **commissioning⁽⁶⁾** and effectively resolve them

15. Assess the results of the **commissioning**⁽⁶⁾ to identify the outputs of the **environmental technology system products**⁽²⁾
16. Confirm that the **environmental technology system products**⁽²⁾ meet specifications and comply with all relevant **approved procedures and practices**⁽⁴⁾
17. Ensure that the results of the **commissioning**⁽⁶⁾ are recorded in the appropriate **information systems**⁽⁵⁾ and passed to stakeholders

Handover

18. Ensure that the **environmental technology system products**⁽²⁾ are ready for handover and comply with all relevant **approved procedures and practices**⁽⁴⁾
19. Provide clear and accurate information to the relevant people on the **environmental technology system products**⁽²⁾
20. Identify and explain any aspects of the **environmental technology system products**⁽²⁾ that vary from the agreed specifications and requirements
21. Obtain acceptance of the **environmental technology system products**⁽²⁾ according to the agreed handover procedures
22. Ensure that all relevant documentation is correctly completed and recorded in the appropriate **information systems**⁽⁵⁾ in accordance with **approved procedures and practices**⁽⁴⁾

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

(1) Configuration: Set up and confirm operational performance requirements of installation/products

(2) Environmental technology system products: Assets, components, equipment, materials, plant, services and systems

(3) Resources: Equipment, materials, labour, consumables

(4) Approved procedures and practices: Health, Safety and Environmental related to the individual and others, organisational, regulatory, statutory, relevant company policies, risk assessment

(5) Information systems: Electronic, paper based

(6) Commission(ing): Function/operation tests, trials and handover

(7) Conditions: Authorisation, availability of resources, preparation of products, preparation of site, health and safety, environmental

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) How to identify the client's requirements for the configuration of the environmental technology system products
- b) How to identify and resolve any problems with the configuration
- c) How to determine and obtain the resources required to undertake the configuration
- d) How to plan the most appropriate way to configure the environmental technology system products
- e) How to check that configuration methods and procedures are implemented correctly
- f) How to ensure that the configuration complies with all relevant approved procedures, practices and client requirements
- g) How to record information on the configuration in the appropriate information systems
- h) How to confirm that the environmental technology system products meet specifications and comply with all relevant approved procedures and practices
- i) How to plan the most appropriate way to commission the environmental technology systems
- j) How to specify the methods and procedures for commissioning environmental technology system products
- k) How to identify and resolve problems with commissioning
- l) How to determine and obtain the resources required to undertake commissioning
- m) How to ensure that commissioning is implemented correctly
- n) How to assess the results of commissioning to identify the outputs of the environmental technology system products
- o) How to confirm that conditions are suitable to implement commissioning
- p) How to ensure that the results of commissioning are recorded in the appropriate information systems and passed to stakeholders
- q) How to confirm the procedures for handing over control of the environmental technology system products
- r) How to provide clear and accurate information to the relevant people on environmental technology system products
- s) How to obtain acceptance of the environmental technology system products according to the agreed handover procedures
- t) How to identify any aspects of the environmental technology system products that vary from the agreed specifications and requirements

- u) How to ensure that the environmental technology products are ready for handover and comply with all relevant approved procedures and practices
- v) How to ensure that all relevant documentation is correctly completed and recorded in the appropriate information system

EVTS 16 - MANAGE INSTALLATION, SERVICING AND MAINTENANCE OF ENVIRONMENTAL TECHNOLOGY SYSTEMS

UNIT DESCRIPTOR

This unit is about being able to demonstrate competence in planning, managing and supervising work to install, service and maintain environmental technology systems in the work location. It involves preparing risk assessments and method statements to ensure work is completed safely with the minimum of disruption. It also involves producing maintenance programmes to ensure systems operation retains maximum efficiency and identifying areas where it may be necessary to instruct a specialist, possibly from an external source, such as an original equipment manufacturer or commissioning agent.

PERFORMANCE OBJECTIVES

The person carrying out this work must show that they:

Planning

1. Identify other **individuals and organisations**⁽¹⁾ who will be at the work location and plan the coordination of the project's requirements with theirs
2. Confirm the quantities of **resources**⁽²⁾ required and check that they meet with the **project specification**⁽³⁾
3. Identify any areas of skilled work within the project where other experts or specialists are required
4. Identify whether specialists are available within your own team or whether it is necessary to outsource work
5. Identify a programme of **work activities**⁽⁴⁾ and communicate **instructions**⁽⁵⁾ to individuals and organisations
6. Order **resources**⁽²⁾ ahead of time to ensure their arrival in accordance with scheduling
7. Confirm with **individuals and organisations**⁽¹⁾ that risk assessments and method statements are carried out in accordance with the **project specifications**⁽³⁾ and approved procedures and practices
8. Ensure that pre-site planning is agreed and is in accordance with the **project specification**⁽³⁾ and **approved procedures and practices**⁽⁶⁾

Prior to commencement of the work

9. Confirm before work starts which operatives are competent to operate plant and equipment
10. Allocate work to operatives which optimises work efficiencies, resource usage and matches the **project specification**⁽³⁾
11. Brief the operatives fully on the key details of the project, its requirements and schedule and confirm their full understanding prior to the commencement of work

12. Check that **resources**⁽²⁾ arrive on site in sequence appropriate to the project and to other operatives at the work location, in accordance with the **project specification**⁽³⁾ and in quantities which meet the project requirements
13. Confirm that factors which affect the validity of risk assessments are dealt with promptly to enable amendments to be made
14. Establish practicable and appropriate communications systems

During the work activity:

15. Check regularly that the work undertaken is in accordance with the **project specification**⁽³⁾ and **approved procedures and practices**⁽⁶⁾ and that it complies with appropriate quality assurance standards
16. Initiate prompt and corrective action on work which fails to meet the **project specification**⁽³⁾ and **approved procedures and practices**⁽⁶⁾
17. Monitor work progress against the **project specification**⁽³⁾ and take corrective action as required
18. Identify problems promptly, record them fully and communicate the details accordingly
19. Agree any variations required to the **project specification**⁽³⁾ in accordance with **approved procedures and practices**⁽⁶⁾
20. Maintain systems for recording and reporting the cost of **resources**⁽²⁾ in accordance with **approved procedures and practices**⁽⁶⁾
21. Confirm when it is appropriate for commissioning procedures to take place and ensure that they are followed in accordance with the project requirements and **approved procedures and practices**⁽⁶⁾

At the end of the project

22. Oversee the removal of plant and equipment as stated in the **project specification**⁽³⁾
23. Oversee the final handover of the environmental technology system to the client/end user
24. Prepare, complete and hand over relevant final documentation on the project in accordance with **approved procedures and practices**⁽⁶⁾

KEY WORDS AND PHRASES – These are to clarify terms used in performance objective statements

(1) Individuals and organisations: Colleagues, co-contractors, suppliers, consultants, clients and customers

(2) Resources: Equipment, materials, labour, consumables

(3) Project specification: Conditions of contract, work instructions, drawings, maintenance instruction sheets

(4) Work activities: Work in progress, response to changed circumstances, work that affects others

(5) Instructions: The operatives required to carry out the work, external sources of specialism, that are required if appropriate, the deadlines for key activities, when the materials and equipment need to be at the work location

(6) Approved procedures and practices: Health, Safety and Environmental related to the individual and others, organisational, regulatory, statutory, relevant company policies, risk assessment

KNOWLEDGE REQUIREMENTS

The person carrying out this work must know and understand:

- a) The scope, purpose and requirements of the work which is being managed
- b) The importance of planning the project in a sequence to ensure an effective project completion
- c) The importance of ensuring that pre-site planning takes place and includes the requirements for health and safety
- d) The purpose and importance of risk assessments and method statements and their implications for safe working as well as keeping them updated in view of variations
- e) How to plan a project effectively, including identifying resource quantities that will be required and when
- f) The importance of identifying risks and planning workable and acceptable contingencies
- g) The size of workforce necessary to undertake the work requirements to comply with the project schedule
- h) The safety requirements with regard to contractors and how to plan work allocations, duties and responsibilities of the workforce
- i) The importance of briefing operatives fully about the project and its requirements
- j) The importance of ensuring the sequence and delivery of resources matches the project budget and specification
- k) Systems which provide for client and contractor requirements, inspecting work, recording outcomes, cost control and alerting to possible work problems
- l) The importance of checking the standard of work being undertaken, taking prompt action where there are problems and recording those problems
- m) Organisational quality assurance standards appropriate to the project
- n) The importance of regularly monitoring progress and the implications of poor time-management
- o) The importance of dealing with problems promptly and seeking agreement on variations and recording the agreements
- p) Commissioning procedures appropriate to the project being managed and approved procedures and practices in relation to commissioning systems
- q) How to complete the handover of environmental technology systems to clients/end users
- r) How to prepare and complete final documentation relevant to the project and who it should be given to

