



Defence Awarding
Organisation

Qualification Handbook

DAO Level 5 Diploma in Engineering
Survey (Military Engineering)

QN: 601/8680/X

The Qualification

Overall Objective for the Qualifications

This handbook relates to the following qualification:

L5 Diploma in Engineering Survey (Military Engineering)

This qualification provides the standards that must be achieved by individuals that are working within the Armed Forces in the role of Class 1 Engineering Surveyors

Pre-entry Requirements

Learners who are taking this qualification should hold the DAO Level 3 Diploma in Engineering Survey OR have successfully completed a Class 2 ME Surveyor course OR equivalent Survey qualification

Learners should be employed in the Military Engineer (Survey) trade

Unit Content and Rules of Combination

This qualification is made up of a total of 12 mandatory units and 1 Optional unit. To be awarded this qualification the candidate must achieve a total of 78 credits as shown in the table below.

URN	Level	Unit of assessment	GLH	TQT	Credit value
H/508/3098	2	Establish a Safe Working Environment in Engineering Survey	18	30	3
R/508/3100	4	Plan a non-routine Survey Engineering Task	85	100	10
M/508/3105	5	Apply complex setting out procedures for survey tasks	45	50	5
T/508/3106	5	Conduct a complex Engineering Survey desk top study	85	100	10
A/508/3110	4	Produce complex graphical outputs	21	30	3
L/508/3189	5	Produce Engineering designs	150	220	22

T/508/3168	5	Conduct complex engineering site surveys	62	80	8
A/508/3169	5	Publish and quality control Engineering Survey data	40	60	6
M/508/3170	4	Control complex engineering survey tasks	20	30	3
T/508/3171	5	Utilise digital imagery	28	40	4
F/508/3173	3	Advise on Survey Engineering trade capability via a presentation	9	20	2
J/508/3174	4	Supervise multiple Survey Engineering trade tasks	11	20	2
A/508/3172	5	Conduct complex engineering survey tasks utilising Global Navigation Satellite Systems (Optional)	18	20	2

Age Restriction

This qualification is available to learners aged 18 years and over.

Opportunities for Progression

This qualification creates an opportunity to progress if selected to Clerk of Works training and may provide evidence for professional recognition

Exemption

No exemptions have been identified.

Credit Transfer

Credits from identical RQF units that have already been achieved by the learner may be transferred.

Glossary

For the purposes of this qualification the definitions below apply.

In the unit titles, the words Non-routine and Complex are used to differentiate between those tasks carried out by a Class 2 ME Engineering Surveyor, and the more complex, detailed and advanced tasks carried out by the Class 1 ME Engineering Surveyor.

Carry out	Takes action on basis of
Communicate	Gets in touch with others through letters, messages or orally

Complex	so complicated or intricate as to be hard to understand or deal with
Compute	Determines by calculation
Conduct	Supervises and personally performs work necessary to accomplish the results desired
Construct	Puts together, systematically; builds, devises
Determine	Sets bounds or limits to, comes to a decision concerning, obtains definite and first-hand knowledge
Establish	Makes firm, set out on a firm basis, as in establishing a specific procedure to be followed
Identify	Establishes the identity of, distinguishes or discriminates
Install	Sets up or fixes: Establishes in a place
Interpret	Make out or bring out the meaning of
Manufacture	Makes by hand, machinery or other agency. Manufactures a product
Prepare	Make ready or get ready for
Procure	Obtains, secures, gets, purchases through appropriate channels
Produce	Bring into existence
Select	Takes by preference from among others: Picks out from
State	Say or express, fully or clearly, in speech or writing
Use	Employ, partakes of; exploits

Qualification Units

URN:	H/508/3098
Title:	Establish a Safe Working Environment in Engineering Survey
Level:	2
Credit value:	3
GLH	27
TQT	30
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Identify current H&S legislation	1.1 Identify current H&S regulations applicable to task 1.2 Select within the workplace, appropriate sources of information and guidance on H&S issues 1.3 Recognise extent of own authority regarding H&S responsibilities for self and others
2. Control hazards in the workplace	2.1 Identify the risk assessment process 2.2 Determine H&S requirements for tools/equipment and trade materials 2.3 Identify personal risk associated with a task 2.4 Identify hazards 2.5 Mitigate identified risks 2.6 Inform line management of any risk that cannot be mitigated 2.7 Complete risk assessment
3. Establish a safe system of work	3.1 Identify safe lifting and carrying techniques 3.2 Use correct safe lifting and carrying techniques 3.3 Identify the warning signs and labels of main groups of hazards or dangerous substances 3.4 Identify types and use of firefighting appliance 3.5 Identify safe systems of work 3.6 Carry out good housekeeping 3.7 Apply safe working practices and procedures
4. Establish safe working areas	4.1 Identify the importance of working in a safe environment 4.2 Identify safe conditions 4.3 Identify an area for the safe disposal of waste material 4.4 Identify an area for the safe storage of material 4.5 Formulate environmental protection measures 4.6 Prepare a safe working area
5. Identify Personal	5.1 Identify the need for PPE

Protective Equipment (PPE)	5.2 Identify types of PPE
6. Comply with accident and emergency procedures	6.1 Identify appropriately qualified first aiders or appointed person and location of first aid facility 6.2 Identify procedures to be followed in the event of an injury to self and / or other personnel 6.3 Identify the procedures to be followed in the event of fire and evacuation of premises 6.4 Identify the procedures to be taken in the event of dangerous occurrences or hazardous malfunctions
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to work safely to establish a safe working environment for themselves and others when conducting Engineering surveys.
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	R/508/3100
Title:	Plan a non-routine Survey Engineering Task
Level:	4
Credit value:	10
GLH	85
TQT	100
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Evaluate task requirements from a briefing	1.1 Establish task budgets 1.2 Identify roles and responsibilities of key personnel
2. Determine task solution	2.1 Identify costs attached to the proposed solution
3. Carry out task planning	3.1 Determine cost of material to complete the task 3.2 Analyse planning requirements for concurrent trade tasks involving military and civilian personnel 3.3 Produce a works programme
4. Communicate task solution to tasking authority	4.1 Communicate task solution verbally to the tasking authority utilising written briefing notes, drawings and sketches
Additional information about the unit	
Unit aim(s)	The aim of this unit is to develop learners skills in the planning of complex and non-routine Engineering Survey tasks
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	M/508/3105
Title:	Apply complex setting out procedures for survey tasks
Level:	5
Credit value:	5
GLH	45
TQT	50
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Set out alignments	1.1 Identify how to set out transition curves 1.2 Set out transition curves 1.3 Identify how to set out compound curves 1.4 Set out compound curves
2. Make arbitrary adjustments	2.1 Determine how to make rigorous adjustments 2.2 Carry out least squares adjustments to survey network computations to produce most probable solutions 2.3 Utilise in service software to carry out least squares adjustment of conventional angle and distance observations 2.4 Carry out least squares adjustment of survey observations
3. Set out for control of marine works	3.1 Determine how to set out, measure and compute survey control so that hydrographical survey can be carried out 3.2 Identify how to set out for the control of Jetties 3.3 Set out for the control of Jetties 3.4 Identify how to set out for the control of moles 3.5 Set out for the control of moles 3.6 Identify how to set out for the control of marine sheet piles 3.7 Set out for the control of marine sheet piles 3.8 Identify how to set out for the control of cofferdams 3.9 Set out for the control of cofferdams 3.10 Identify how to set out for the control of caissons 3.11 Set out for the control of caissons 3.12 Identify how to set out for pile foundations 3.13 Set out pile foundations
4. Set out for control of underground tunnelling works	4.1 Identify how to set out for cut and cover tunnels 4.2 Set out for cut and cover tunnels 4.3 Identify how to set out for thrust boring 4.4 Conduct the setting out for thrust boring 4.5 Identify how to set out for classical tunnelling method 4.6 Conduct the setting out for classical tunnelling method 4.7 Identify how to set out for shield and mole tunnelling 4.8 Conduct the setting out for shield and mole tunnelling

	4.9 Identify how to set out for hard tunnelling 4.10 Conduct the setting out for hard tunnelling
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to set out works in arduous situations where specialist techniques are employed
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	T/508/3105
Title:	Conduct a complex Engineering Survey desk top study
Level:	5
Credit value:	10
GLH	85
TQT	100
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Manage an engineering survey office	1.1 Carry out advanced user training on surveying equipment & procedures
2. Plan survey control networks	2.1 Determine how to conduct the planning of survey control networks 2.2 Plan survey control networks for marine works 2.3 Plan survey control networks for digital imagery 2.4 Plan survey control networks for underground tunnelling works
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to carry out desktop studies for complex and non-routine projects
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	A/508/3110
Title:	Produce complex graphical outputs
Level:	4
Credit value:	3
GLH	21
TQT	30
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Make visual records for engineering surveys	1.1 Identify how to orientate plans 1.2 Orientate plans 1.3 Identify how to plot geometric designs 1.4 Plot geometric designs
2. Construct plans for existing infrastructures	2.1 Produce location plans of railways
3. Produce computer generated digital terrain models	3.1 Produce topographical models
4. Produce hydrographic survey plans utilising current in-service survey software	4.1 Determine the requirements to produce underwater profiles utilising current in-service software 4.2 Produce underwater profiles utilising current in-service software 4.3 Determine hydrographic chart requirements 4.4 Construct hydrographic charts
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to produce complex digital models of topographic and underwater features
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	L/508/3189
Title:	Produce Engineering designs
Level:	5
Credit value:	22
GLH	150
TQT	220
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Carry out Paper location of a proposed task	1.1 Determine linear alignments 1.2 Select potential linear alignments 1.3 Produce trial centre line profile 1.4 Assess suitability of sites to meet the requirement 1.5 Select potential sites and alignments
2. Apply soil characteristics to geometric design	2.1 Identify differing soil characteristics in the design of alignments 2.2 Apply soil characteristics to the design of alignments 2.3 Identify potential problems of differing soil/ground types when carrying out design
3. Design horizontal alignments	3.1 Identify the requirements of grade contouring 3.2 Carry out grade contouring 3.3 Identify how to design horizontal straights 3.4 Design horizontal straights 3.5 Identify how to calculate for horizontal curve 3.6 Calculate horizontal curve by offset 3.7 Calculate horizontal curve by theodolite 3.8 Calculate horizontal curves
4. Design vertical alignments	4.1 Determine calculations for vertical alignments 4.2 Calculate grades 4.3 Identify vertical curve terms 4.4 Calculate simple vertical curves 4.5 Calculate cubic vertical curves 4.6 Identify when to use cubic vertical curves 4.7 Present information to allow cubic vertical curves to be set out 4.8 Calculate vertical curves by continuous chainage 4.9 Calculate vertical curves by computer
5. Carry out phasing of horizontal and vertical alignments	5.1 Identify how to synchronize the positions of horizontal and vertical curves 5.2 Synchronize the positions of horizontal and vertical curves
6. Design transition	6.1 Identify transition curve terms

curves	<p>6.2 Identify how to carry out calculations for transition curves</p> <p>6.3 Identify how to calculate clothiod spirals</p> <p>6.4 Calculate clothiod spirals by hand</p> <p>6.5 Calculate transition curves</p> <p>6.6 Correct use of highway transitional curve tables</p>
7. Calculate quantities	<p>7.1 Identify how to calculate volumes by hand</p> <p>7.2 Carry out the calculation for volumes by hand</p> <p>7.3 Identify how to calculate volumes by computer</p> <p>7.4 Carry out the calculation for volumes by computer</p> <p>7.5 Identify how to calculate Areas</p> <p>7.6 Carry out the calculation for Areas</p> <p>7.7 Identify how to calculate quantities</p> <p>7.8 Carry out the calculation for quantities</p> <p>7.9 Obtain the engineering characteristics of soils</p> <p>7.10 Identify how to produce cross sections by hand</p> <p>7.11 Construct cross sections by hand</p>
8. Design Tracks	<p>8.1 Identify the method of designing temporary and light vehicle tracks</p> <p>8.2 Design light vehicle tracks</p> <p>8.3 Design temporary tracks</p>
9. Design military roads	<p>9.1 Identify military road criteria</p> <p>9.2 Design formations for military roads by hand</p> <p>9.3 Calculate formation changes for military roads by hand</p> <p>9.4 Identify the standard widening rules for military roads</p> <p>9.5 Design road widening for military roads by hand</p> <p>9.6 Identify the requirements for super elevations</p> <p>9.7 Design super elevations for military roads by hand</p> <p>9.8 Identify how to produce mass diagrams</p> <p>Produce mass diagrams</p>
10. Design civilian roads	<p>10.1 Identify civilian road criteria and calculations</p> <p>10.2 Design formations for civilian roads</p> <p>10.3 Calculate/design formation changes for civilian roads</p> <p>10.4 Design road widening and widening at curves for civilian roads</p> <p>10.5 Design super elevations for civilian roads</p> <p>10.6 Design civilian roads utilising current in-service survey software</p>
11. Design road junctions	<p>11.1 Identify road junction terms</p> <p>11.2 Identify visibility standards</p> <p>11.3 Design junction features</p> <p>11.4 Design 3-leg junction</p> <p>11.5 Design 4-leg junction</p> <p>11.6 Identify the different types of roundabouts and where they are used</p> <p>11.7 Design roundabouts</p> <p>11.8 Identify the requirement for junctions formation changes</p> <p>11.9 Calculate road junctions formation changes</p>

	11.10 Design road junctions & junction formation
12. Design parking areas	12.1 Identify the requirements for fuel tanker parks 12.2 Identify how to design fuel tanker parks 12.3 Identify the requirements to design vehicle parking areas 12.4 Identify how to design vehicle parking areas
13. Design drainage systems	13.1 Identify the requirements for the design of drainage systems 13.2 Identify how to design foul sewers 13.3 Identify how to design storm water drains 13.4 Identify how to design subsoil drainage 13.5 Identify how to calculate catchment areas 13.6 Calculate catchment areas 13.7 Design road drainage and culverts 13.8 Design drainage ditches
14. Design ranges	14.1 Identify the requirements for the design of ranges 14.2 Identify how to design ranges
15. Design airfield layouts	15.1 Identify the requirements for the design of airfield layouts 15.2 Identify how to design airfield layouts
16. Design layouts of railways	16.1 Identify how to design railway alignments 16.2 Identify how to design narrow gauge rail systems 16.3 Identify the requirements for the design layouts of railways 16.4 Identify how to design layouts of railways
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to design complex engineering elements for a wide range of construction projects
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	T/508/3168
Title:	Conduct complex engineering site surveys
Level:	5
Credit value:	8
GLH	62
TQT	80
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Perform deformation checks	1.1 Identify how to perform deformation checks 1.2 Carry out deformation checks field procedure 1.3 Conduct deformation checks 1.4 Present deformation check data
2. Perform hydrographic surveys	2.1 Identify how to use tide prediction tables 2.2 Identify how to use tide gauges 2.3 Identify how to use lead lines 2.4 Identify how to use echo sounders 2.5 Carry out initial surveys for marine structures 2.6 Carry out detailed surveys for marine structures 2.7 Identify the requirements to complete hydrographic surveys 2.8 Assist on hydrographic surveys 2.9 Carry out hydrographic surveys 2.10 Advise on use of boats for a task
3. Perform underground surveys	3.1 Determine the methods of transferring survey control into a tunnel 3.2 Identify the types of tunnelling methods 3.3 Transfer survey control into a tunnel to establish wriggle surveys 3.4 Identify the use of a gyroscopic theodolite to establish the directional heading of a tunnel 3.5 Utilise a gyroscopic theodolite to establish the directional heading of a tunnel 3.6 Assist on underground surveys 3.7 Carry out tunnel surveys
4. Carry out structural bridge surveys	4.1 Identify the requirement for a survey of a bridge structure using taped and Tacheometric measurement 4.2 Carry out the survey of a bridge structure using taped and Tacheometric measurement 4.3 Produce structural bridge survey drawings
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to carry out Engineering

	Surveys over a wide range of complex sites and conditions
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	A/508/3169
Title:	Publish and Quality Control Engineering Survey data
Level:	5
Credit value:	6
GLH	40
TQT	60
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Produce construction design plans utilising current in-service survey software	1.1 Identify how to produce site plans 1.2 Produce site plans 1.3 Identify how to produce earthwork plans 1.4 Produce earthwork plans 1.5 Produce construction plans and profile drawings 1.6 Produce drainage plans 1.7 Identify how to produce hydrographical survey drawings 1.8 Produce hydrographical survey drawings 1.9 Identify how to produce design overlays for existing plans, maps & digital imagery 1.10 Produce overlays for existing plans, maps & digital imagery 1.11 Identify how to plot geometric designs on existing site plans 1.12 Plot geometric designs on existing site plans
2. Quality control published survey data	2.1 Identify the procedure to ensure the accuracy of drawings, plans, and maps 2.2 Verify accuracy of drawings, plans, and maps
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to quality control and publish Engineering Survey data
Unit expiry date	31/01/2021
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	This unit has some synergy with the following NOS CITB COSVR218 Co-ordinate and confirm the dimensional requirements of the work COSBEDO08 Prepare drawings and schedules in built environment design

Details of the relationship between the unit and other standards or curricula (if appropriate)	This unit maps to the Class 1 Military Engineer (Surveyor) Course
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Endorsement of the unit by a sector or other appropriate body (if required)	This unit is endorsed by XXX (who will be the SSC), the Sector Skills Council for Justice
Location of the unit within the subject/sector classification system	N/A
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	M/508/3170
Title:	Control complex engineering survey tasks
Level:	4
Credit value:	3
GLH	20
TQT	30
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Control line and level of marine works	1.1 Determine suitable method to control line and level of jetties, moles, caissons and cofferdams
2. Control line and level of underground tunnelling works	2.1 Identify the relationship between position and direction of heading, and the effect on the alignment of the tunnel 2.2 Identify pitch, roll and yaw 2.3 Identify the method of measuring tunnel deviations and the acceptable deviations 2.4 Measure tunnel deviations
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to know how to control line and level during construction projects
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	T/508/3171
Title:	Utilise digital imagery
Level:	5
Credit value:	4
GLH	28
TQT	40
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Carry out the use of single digital imagery	1.1 Determine the survey control requirements for digital imagery surveys 1.2 Identify the advantages and disadvantages of using vertical and oblique digital imagery 1.3 Use oblique digital imagery 1.4 Use vertical digital imagery
2. Calculate scale from digital imagery	2.1 Identify how to calculate the scale of vertical digital imagery 2.2 Calculate digital imagery scale by ground comparison 2.3 Calculate digital imagery scale by map comparison 2.4 Calculate digital imagery scale by aircraft height method 2.5 Identify how to use interpretation kits with digital imagery 2.6 Produce detailed site plans utilising measurements taken from digital imagery
3. Transfer data between photos, maps and ground	3.1 Identify how to append features to maps and digital imagery by local scale or object comparison 3.2 Append features to maps and digital imagery by local scale or object comparison
4. Interpret digital imagery	4.1 Identify how to interpret digital imagery to identify ground features 4.2 Interpret digital imagery to identify ground features 4.3 Carry out an evaluation of terrain
5. Produce horizontally dimensioned sketches	5.1 Identify how to utilise digital imagery to produce horizontally dimensioned sketches 5.2 Utilise digital imagery to produce horizontally dimensioned sketches
6. Apply digital imagery as a source of information for engineering tasks	6.1 Identify sources of digital imagery 6.2 Identify how to interpret digital imagery to gain information for engineering tasks 6.3 Interpret digital imagery to gain information for engineering tasks 6.4 Select suitable routes utilising digital imagery information 6.5 Utilise digital imagery to identify possible sources of

	construction materials
Additional information about the unit	
Unit aim(s)	The aim of this unit is to allow learners to interpret, analyse and apply digital imagery to Engineering Survey projects
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	A/508/3172
Title:	Conduct complex engineering survey tasks utilising Global Navigation Satellite Systems
Level:	5
Credit value:	2
GLH	18
TQT	20
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Evaluate in-service Global Navigation Satellite Systems (GNSS) data	<p>1.1 Identify the various GPS signals and how they are transmitted</p> <p>1.2 Determine how to obtain and process Receiver Independent Exchange Format (RINEX) data</p> <p>1.3 Process Receiver Independent Exchange Format (RINEX) data</p> <p>1.4 Identify how to obtain Real Time Kinematic (RTK) positioning</p> <p>1.5 Process Real Time Kinematic (RTK) positioning data</p> <p>1.6 Identify the accuracy of Almanac data</p> <p>1.7 Determine how to correct error readings when using GNSS</p>
2. Conduct detailed surveys utilising GNSS equipment	<p>2.1 Identify the methods of three dimensional projection and the effects of projection on representations of the earth's surface</p> <p>2.2 Identify how to set out engineering survey control using current in-service GNSS equipment</p> <p>2.3 Identify how to measure major control and reduce survey observations to the values which they represent on projections of the earth's surface</p> <p>2.4 Conduct the planning of survey control networks for integration with national survey datums - utilising GNSS</p> <p>2.5 Set out engineering survey control using current in-service GNSS equipment</p> <p>2.6 Measure major control and reduce survey observations to the values which they represent on projections of the earth's surface</p> <p>2.7 Carry out detailed surveys utilising current in-service GNSS equipment</p> <p>2.8 Process GNSS survey data utilising current in-service GNSS software</p>
Additional information about the unit	
Unit aim(s)	This unit will allow learners to analyse, evaluate and utilise data

	from GNSS systems
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	F/508/3173
Title:	Advise on Survey Engineering trade capability via a presentation
Level:	3
Credit value:	2
GLH	9
TQT	20
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Advise on employment capabilities	1.1 Provide briefings on engineering survey and employment capabilities by giving formal presentations
Additional information about the unit	
Unit aim(s)	This unit will allow learners to communicate to management about complex aspects of surveyor engineering capability
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	J/508/3174
Title:	Supervise multiple Survey Engineering trade tasks
Level:	4
Credit value:	2
GLH	11
TQT	20
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Apply supervisory techniques	1.1 Supervise and coordinate multiple concurrent tasks across a construction site
2. Interpret and apply Surveyor Engineer standards	2.1 Identify how to interpret standards for the task 2.2 Ensure compliance with and enforce all regulations and Codes of Practice for the surveyor engineer task 2.3 Ensure compliance with tolerances and specifications from working drawings, diagrams and written briefs 2.4 Apply relevant standards to task
3. Technically direct engineering survey teams	3.1 Identify the factors that affect the makeup of a survey team 3.2 Carry out administrative planning for setting up an engineering survey team 3.3 Technically direct engineering survey teams on a task
4. Technically direct the running of an engineering survey office	4.1 Identify how to technically direct the running of an engineering survey office 4.2 Identify how to maintain drawing ledgers 4.3 Maintain drawing ledgers 4.4 Identify how to select survey equipment for task 4.5 Select survey equipment for task
Additional information about the unit	
Unit aim(s)	This unit will allow learners to apply a wide range of standards over multiple sites and to direct the running of a survey office.
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation