Level 6 Diploma in Utility Mapping and Surveying

Qualification Specification

Contents

Introduction

The ProQual Utility Mapping and Surveying suite of qualifications provides nationally recognised qualifications for those working in a surveying or construction environment. The Level 6 Diploma is aimed at those working in a Principal Surveyor role.

The units in the Diploma cover topics relating to planning and managing site surveying operations; presenting survey information; assessing and producing mapping data; identifying hazards and risks; implementing risk reduction methods; plan and manage vacuum excavation.

The awarding body for this qualification is ProQual Awarding Body and the regulatory body is the Office of Qualifications and Examinations Regulation (Ofqual). The specification for these qualifications has been approved by the Welsh Government for use by centres in Wales and by the Council for the Curriculum Examinations and Assessment (CCEA) for use by centres in Northern Ireland.

This qualification has been accredited onto the Regulated Qualifications Framework (RQF), and it provides a progression route to further qualifications and unit accreditation in ProQual's Utility Mapping and Surveying qualifications suite or other discipline-related qualifications.

Qualification Profile
Level 6 Diploma in Utility Mapping and Surveying

Qualification title	**ProQual Level 6 Diploma in Utility Mapping and Surveying**
Ofqual qualification number	600/5210/7
Level	Level 6
Total qualification time	400
Guided learning hours	230
Assessment	Pass or fail Internally assessed and verified by centre staff External quality assurance by ProQual verifiers
Qualification start date	1/5/12
Qualification end date	

Entry Requirements

There are no formal entry requirements for this qualification.

Centres should carry out an **initial assessment** of candidate skills and knowledge to identify any gaps and help plan the assessment.

Qualification Structure

Candidates must complete **5 Mandatory** units.

Mandatory Units		
Unit Reference Number	**Unit Title**	**Unit Level**
A/600/6733	Agree project requirements and plan site surveying in geomatics and site surveying management	6
M/600/6745	Manage the analyses and presentation of site surveying information in geomatics and site surveying management	5
A/600/6750	Identify, assess and present spatial data in geomatics and site surveying management	6
L/503/9841	Vacuum excavations	4
L/600/6736	Identify hazards and control risks in geomatics and site surveying management	5

Centre Requirements

Centres must be approved to offer this qualification. If your centre is not approved please complete and submit form **ProQual Additional Qualification Approval Application**.

Staff
Staff delivering this qualification must be appropriately qualified and/or occupationally competent.

Assessors/Internal Quality Assurance
For each competence-based unit centres must be able to provide at least one assessor and one internal quality assurance verifier who are suitably qualified for the specific occupational area. Assessors and internal quality assurance verifiers for competence-based units or qualifications will normally need to hold appropriate assessor or quality assurance verifier qualifications, such as:

- Award in Assessing Competence in the Work Environment
- Award in Assessing Vocationally Related Achievement
- Certificate in Assessing Vocational Achievement
- Award in the Internal Quality Assurance of Assessment Processes and Practices
- Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practices

Support for Candidates

Materials produced by centres to support candidates should:

- enable them to track their achievements as they progress through the learning outcomes and assessment criteria;
- provide information on where ProQual's policies and procedures can be viewed;
- provide a means of enabling Internal and External Quality Assurance staff to authenticate evidence

Assessment

This qualification must be assessed in a work environment.

Learning outcomes set out what a candidate is expected to know, understand or be able to do.

Assessment criteria specify the standard a candidate must meet to show the learning outcome has been achieved.

For learning outcomes and assessment criteria for this qualification, see page 8.

Internal Quality Assurance

An internal quality assurance verifier confirms that assessment decisions made in centres are made by competent and qualified assessors, that they are the result of sound and fair assessment practice and that they are recorded accurately and appropriately.

Adjustments to Assessment

Adjustments to standard assessment arrangements are made on the individual needs of candidates. ProQual's Reasonable Adjustments Policy and Special Consideration Policy sets out the steps to follow when implementing reasonable adjustments and special considerations and the service that ProQual provides for some of these arrangements.

Centres should contact ProQual for further information or queries about the contents of the policy.

Results Enquiries and Appeals

All enquiries relating to assessment or other decisions should be dealt with by centres, with reference to ProQual's Enquiries and Appeals Procedures.

Certification

Candidates who achieve the requirements for qualifications will be awarded:

- A certificate listing all units achieved, and
- A certificate giving the full qualification title -

  ProQual Level 6 Diploma in Utility Mapping and Surveying

Claiming certificates

Centres may claim certificates for candidates who have been registered with ProQual and who have successfully achieved the requirements for a qualification. All certificates will be issued to the centre for successful candidates.

Unit certificates

If a candidate does not achieve all of the units required for a qualification, the centre may claim a unit certificate for the candidate which will list all of the units achieved.

Replacement certificates

If a replacement certificate is required a request must be made to ProQual in writing. Replacement certificates are labelled as such and are only provided when the claim has been authenticated. Refer to the Fee Schedule for details of charges for replacement certificates.

Learning Outcomes and Assessment Criteria

Unit A/600/6733
Agree project requirements and plan site surveying in geomatics and site surveying management

This unit covers the key responsibilities for understanding client and project requirements and for planning site surveying accordingly, as well as maintaining and developing his/her skills.

It is about understanding and communicating project and client requirements. It is also concerned with the planning for site surveying, including obtaining any advice and permissions needed.

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Be able to identify, assess and agree project requirements for site surveying	1.1 identify and agree with the client what their goals and priorities are, both now and for the future
	1.2 identify what data is needed, how accurate the data needs to be and what data outputs are required from site surveying
	1.3 clarify the client's requirements, the options available and the constraints and risks which might apply to the project
	1.4 analyse and assess how accurate, up to date and complete the existing information is, and decide what additional information is needed
	1.5 make a preliminary investigation to identify any access problems and equipment which will be needed, and assess the implications for site surveying
	1.6 summarise and present the project requirements and client's preferences
	1.7 agree project requirements and budget with clients in writing
	1.8 estimate, accurately, and justify the cost of site surveying
2 Understand how to identify, assess and agree project requirements for site surveying	2.1 Explain how to identify and agree with the client what their goals and priorities are, both now and for the future
	2.2 Describe how to identify what data is needed, how accurate the data needs to be and what data outputs are required from site surveying
	2.3 Explain how to clarify the client's requirements, the options available and the constraints and risks which might apply to the project
	2.4 Examine how to analyse and assess how accurate, up to date and complete the existing information is, and decide what additional information is needed

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	2.5 Examine how to make a preliminary investigation to identify any access problems and equipment which will be needed, and assess the implications for site surveying
	2.6 Explain how to summarise and present the project requirements and client's preferences
	2.7 Evaluate how to agree project requirements and budget with clients in writing
	2.8 Examine how to estimate, accurately, and justify the cost of site surveying
3 Be able to plan site surveying processes and operations	3.1 develop a clear and accurate site surveying method statement, specification and a programme
	3.2 assess any constraints which might affect the planning of site surveying and limit the processes which are selected
	3.3 consult with experts for advice where additional, specialist information is needed and commission any specialist site surveying that may be needed
	3.4 obtain permission to carry out the site surveying from owners of sites who will be affected and from any legal authorities which have to be notified
	3.5 identify and implement quality assurance and safety standards which are suitable for site surveying
4 Understand how to plan site surveying processes and operations	4.1 Propose how to develop a clear and accurate site surveying method statement, specification and a programme
	4.2 Examine how to assess any constraints which might affect the planning of site surveying and limit the processes which are selected
	4.3 Explain how to consult with experts for advice where additional, specialist information is needed and commission any specialist site surveying that may be needed
	4.4 Explain how to obtain permission to carry out the site surveying from owners of sites who will be affected and from any legal authorities which have to be notified
	4.5 Describe how to identify and implement quality assurance and safety standards which are suitable for site surveying

Assessment

Taken as a whole, the evidence must show that the candidate consistently meets all the assessment criteria, across all the ranges.

The following ranges apply:

Learning outcomes 1 and 2

1. Goals and priorities:

- quantity
- quality
- cost
- time
- purpose
- user requirements

2. Site surveying:

- Geographical Information System
- measured building
- engineering
- topographical
- boundary
- hydrographical
- geodetic
- photogrammetric
- underground utilities
- tunnelling and mining
- environmental
- monitoring and deformation
- setting out

3. Constraints and risks:

- available resources
- health and safety
- the environment
- security
- appropriate insurance cover

4. Presenting:

- orally
- in writing
- graphically
- electronically

Learning Outcomes 3 and 4

1. Site surveying methods:

- visual
- approximate measured
- detailed measurement of all specified features
- graphic
- instrumental

2. Site surveying:

- Geographical Information System
- measured building
- engineering
- topographical
- boundary
- hydrographical
- geodetic
- photogrammetric
- underground utilities
- tunnelling and mining
- environmental
- monitoring and deformation
- setting out

3. Permission from:

- client
- site owner and occupiers
- adjoining owners and occupiers
- notifiable authorities

Taken as a whole, the evidence must show that the candidate consistently meets all the assessment criteria, across the ranges.

Performance Evidence

There must be workplace evidence against each assessment criteria. Where the workplace evidence does not cover a whole range, knowledge evidence must be provided to cover the remaining items of range for each relevant assessment criteria.

Learning Outcome 1

Product Evidence

The candidate must provide documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Summary(ies) of client's goals, priorities and requirements

2. Client's requirements and budget agreed in writing
3. Record(s) of the analysis and assessment of how accurate, up to date and complete the existing information is, and also of the decisions made about what additional information is needed.
4. Record(s) of the preliminary investigation to identify any access problems and equipment which will be needed, and he assessment of the implications for the site survey.
5. Record(s) of estimated and justified site surveying costs.

Process Evidence:

1. Presentation(s) of the summary of requirements and preferences, constraints and risks that apply to the project.

Learning Outcome 3

Product Evidence:
The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Method statement(s), specification(s) and programme(s) for site surveying which include assessed constraints; expert advice; permissions; chosen site surveying methods; identified quality assurance and safety standards.

Simulations are not considered to be acceptable for producing this evidence.

Unit M/600/6745
Manage the analyses and presentation of site surveying information in geomatics and site surveying management

This unit is about managing the preparation and conducting of site surveying information. It covers the recording, checking, compiling and communicating site surveying information.

It is about ensuring that the necessary checks and arrangements are made prior to site surveying operations; ensuring that the site survey is conducted using a method which maintains the required level of accuracy; ensuring that site surveying information is provided in a suitable format for presentation; and ensuring that registers and records and drawings are kept up to date and in a secure environment.

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Be able to manage the preparations for site surveying operations	1.1 ensure that the site surveying method statement is confirmed with the people who will be affected and is accurate before starting the work
	1.2 ensure that the permission of people who will be affected has been checked and confirmed before starting work
	1.3 ensure that suitable equipment is arranged to be brought to the site and kept safely and securely
	1.4 ensure that equipment is checked and adjusted in accordance with quality assurance procedures so that it is fit for purpose before it is used for taking measurements
	1.5 ensure that the people who will be involved in site surveying are briefed about site surveying arrangements and the safety arrangements
	1.6 ensure that people and organisations who will be affected by the site surveying are contacted and provided with clear and accurate information and asked for their cooperation
	1.7 ensure that safety arrangements for personal safety are checked and confirmed and conform to good practice, legislation and regulation
2 Understand how to manage the preparations for site surveying operations	2.1 Explain how to ensure that the site surveying method statement is confirmed with the people who will be affected and is accurate before starting the work
	2.2 Explain how to ensure that the permission of people who will be affected has been checked and confirmed before starting work
	2.3 Explain how to ensure that suitable equipment is arranged to be brought to the site and kept safely and securely
	2.4 Explain how to ensure that equipment is checked and adjusted in accordance with quality assurance

Learning Outcome - The learner will:		Assessment Criterion - The learner can:
		procedures so that it is fit for purpose before it is used for taking measurements
	2.5	Explain how to ensure that the people who will be involved in site surveying are briefed about site surveying arrangements and the safety arrangements
	2.6	Explain how to ensure that people and organisations who will be affected by the site surveying are contacted and provided with clear and accurate information and asked for their cooperation
	2.7	Explain how to ensure that safety arrangements for personal safety are checked and confirmed and conform to good practice, legislation and regulation
3 Be able to manage the observation and recording of site surveys	3.1	ensure that the site surveying is conducted using a method which maintains the level of accuracy required, balances content and cost and keeps disruption to a minimum
	3.2	confirm safe working practices when on the site
	3.3	ensure that experts are consulted when specialist information is needed which is relevant to the site surveying method
	3.4	ensure that appropriate horizontal and vertical controls are set and recorded
	3.5	ensure that appropriate observations and measurements are taken using valid methods
	3.6	ensure that work procedures and practices are changed to allow for different circumstances and conditions
	3.7	ensure that site surveying data is recorded clearly and appropriately and store it securely for later analysis
	3.8	ensure that a clear and appropriate record is kept of the time spent on the survey and of any problems that come up which may affect cost or accuracy
	3.9	ensure that the equipment is operated, maintained, transported and stored in accordance with the manufacturer's recommendations and good practice
4 Understand how to manage the observation and recording of site surveys	4.1	Explain how to ensure that the site surveying is conducted using a method which maintains the level of accuracy required, balances content and cost and keeps disruption to a minimum
	4.2	Explain how to confirm safe working practices when on the site
	4.3	Explain how to ensure that experts are consulted when specialist information is needed which is relevant to the site surveying method
	4.4	Explain how to ensure that appropriate horizontal and vertical controls are set and recorded

Learning Outcome - The learner will:		Assessment Criterion - The learner can:	
		4.5	Explain how to ensure that appropriate observations and measurements are taken using valid methods
		4.6	Explain how to ensure that work procedures and practices are changed to allow for different circumstances and conditions
		4.7	Explain how to ensure that site surveying data is recorded clearly and appropriately and store it securely for later analysis
		4.8	Explain how to ensure that a clear and appropriate record is kept of the time spent on the survey and of any problems that come up which may affect cost or accuracy
		4.9	Explain how to ensure that the equipment is operated, maintained, transported and stored in accordance with the manufacturer's recommendations and good practice
5	Be able to manage the analysis and presentation site survey information	5.1	collect together enough site surveying information to allow an appropriate analysis to be made
		5.2	check and verify the site surveying information
		5.3	analyse and process the site surveying information accurately
		5.4	present the site surveying information, the commentary and any supporting information accurately, clearly and in a format which is suitable for those who need to use it
		5.5	use methods and media which are suitable for the drawings required, and which can be produced with the resources and time available
		5.6	produce drawings and associated information using standard drawing conventions which are complete, accurate, and comply with the design information
		5.7	obtain necessary checks and approvals for the content and presentation of drawings which are consistent with quality assurance procedures
		5.8	advise people who will be using the site surveying information on how to interpret it
		5.9	keep registers and records of drawings which are complete, accurate and up-to-date and consistent with quality assurance procedures and held in a confidential and secure environment
6	Understand how to manage the analysis and presentation site survey information	6.1	Explain how to collect together enough site surveying information to allow an appropriate analysis to be made
		6.2	Explain how to check and verify the site surveying information

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	6.3 Examine how to analyse and process the site surveying information accurately
	6.4 Explain how to present the site surveying information, the commentary and any supporting information accurately, clearly and in a format which is suitable for those who need to use it
	6.5 Explain how to use methods and media which are suitable for the drawings required, and which can be produced with the resources and time available
	6.6 Explain how to produce drawings and associated information using standard drawing conventions which are complete, accurate, and comply with the design information
	6.7 Explain how to obtain necessary checks and approvals for the content and presentation of drawings which are consistent with quality assurance procedures
	6.8 Propose how to advise people who will be using the site surveying information on how to interpret it
	6.9 Explain how to keep registers and records of drawings which are complete, accurate and up-to-date and consistent with quality assurance procedures and held in a confidential and secure environment

Assessment

The following ranges apply:

Learning Outcomes 1 and 2

1. Site surveying: (Candidates are required to complete two of the following range items and have knowledge of four others)

- Geographical Information Systems
- measured building
- engineering
- topographical
- boundary
- hydrographical
- geodetic
- photogrammetric
- underground utilities
- tunnelling and mining
- environmental
- monitoring and deformation
- setting out

2. Site surveying method:

- visual
- approximate measured
- detailed measurement of all specified features
- graphic
- instrumental

3. Permission from:
- client
- site owner and occupiers
- adjoining owners and occupiers
- notifiable authorities

4. Equipment:
- mechanical
- optical
- electronic
- geographical positioning system

5. Site surveying arrangements:
- working responsibilities
- details of the survey method
- the site
- the equipment
- calibration certificates

6. Safety arrangements:
- personal safety
- equipment and clothing
- health and safety practice and regulations
- industry codes of practice
- regulations applying to the survey site
- signage
- site access and working area

Learning Outcomes 3 and 4

1. Site surveying: (Candidates are required to complete two of the following range items and have knowledge of four others)
- Geographical Information System
- measured building
- engineering
- topographical
- boundary
- hydrographical
- geodetic
- photogrammetric
- underground utilities
- tunnelling and mining
- environmental
- monitoring and deformation

- setting out

2. Site surveying – method:

- visual
- approximate measured
- detailed measurement of all specified features
- graphic
- instrumental

3. Safe working practices:

- personal safety
- equipment and clothing
- safe use of access equipment
- health and safety practice and regulations
- industry codes of practice
- regulations applying to the survey site
- signage
- site access and working area

4. Circumstances and conditions:

- topography
- water
- obstacles
- climatic variation
- live conditions (e.g. buildings and sites in use, roads, railways, runways)
- planned circumstances
- emergency circumstances

5. Equipment:

- mechanical
- optical
- electronic
- geographic positioning systems

Learning Outcomes 5 and 6

1. Site surveying: (Candidates are required to complete two of the following range of items and have knowledge of four others)

- Geographical Information System
- measured building
- engineering
- topographical
- boundary
- hydrographical
- geodetic
- photogrammetric
- underground utilities
- tunnelling and mining
- environmental
- monitoring and deformation

- setting out

2. Presenting:
- orally
- in writing
- graphically
- digitally
- using physical models

3. Information:
- visual
- approximate measured
- detailed measurement of all specified features
- graphic
- instrumental

4. Media:
- hard coy
- digital

5. Drawings:
- sketches
- schedules
- presentation drawings

6. Drawing conventions:
- detailing standards
- codes of practice
- current industry practice

7. Checks and approvals cover:
- format
- presentation
- accuracy
- technical content
- completeness
- drawing number and revisions
- cross-referencing and correlation with associated documents
- status of drawings
- free from mistakes

8. Registers and records:
- incoming and outgoing drawing and document registers
- records of document approval and revision

Taken as a whole, the evidence must show that the candidate consistently meets all the assessment criteria, across the ranges.

Performance Evidence

There must be workplace evidence against each assessment criteria. Where the workplace evidence does not cover a whole range, knowledge evidence must be provided to cover the remaining items of range for each relevant assessment criteria.

Learning Outcome 1

Product Evidence
The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Record(s) of pre-work checks and confirmation of: the site surveying method statement; permissions; equipment
2. Record(s) of equipment checks and adjustments
3. Record(s) of briefings and requests for co-operation
4. Records of site checks

Process Evidence:

1. Checks and confirmations of safety arrangements for personal safety

Learning Outcome 3

Product Evidence
The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Site surveying records and reports including: records of costs; horizontal and vertical controls; observations and measurements; the time taken; problems; procedures and practices
2. Record(s) of consultation(s) with experts
3. Equipment operational and maintenance record(s)

Simulations are considered to be an acceptable alternative for producing evidence for the following item(s) which are considered to be rare/infrequent, but key/critical to demonstrating competence. The following realistic working environment and context must be adopted for the simulation: appropriate: tools, equipment and instruments; types of contingencies; standards and quality specifications; physical conditions; type of interaction; communication methods and media; information and data.

1. Site surveying conducted including: level of accuracy; safe working practices; controls; observations and measurements; changing work procedures and practices.

Learning Outcome 5

Product Evidence
The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Site survey information
2. Analysis of site survey information
3. Drawing(s) produced using suitable methods and media and standard drawing conventions
4. Register(s) and record(s) of drawings which include checks and approvals for the content and presentation of drawings

Unit A/600/6750
Identify, assess and present spatial data in geomatics and site surveying management

This unit is about ensuring that the necessary data is collected and processed and also about checking and presenting data. It is concerned with identifying data needs and arranging for data to be collected. It also deals with the checking of data and putting it into a suitable format for use. It is about processing and presenting mapping data.

Learning Outcome - The learner will:		Assessment Criterion - The learner can:	
1	Be able to identify mapping and data requirements	1.1	identify what survey data is needed, how accurate the survey data needs to be and what survey data outputs are required from the mapping
		1.2	develop a clear and accurate method statement, a programme and a budget for the mapping, and agree them with the client
		1.3	choose mapping methods and compilation sources which are suitable
		1.4	select, plan and schedule processes for the collection of compilation material, the compiling and managing of data, and the presentation of results
		1.5	commission mapping by selecting people and organisations who are competent to do the work
2	Understand how to identify mapping and data requirements	2.1	Describe how to identify what survey data is needed, how accurate the survey data needs to be and what survey data outputs are required from the mapping
		2.2	Propose how to develop a clear and accurate method statement, a programme and a budget for the mapping, and agree them with the client
		2.3	Evaluate how to choose mapping methods and compilation sources which are suitable
		2.4	Evaluate how to select, plan and schedule processes for the collection of compilation material, the compiling and managing of data, and the presentation of results
		2.5	Evaluate how to commission mapping by selecting people and organisations who are competent to do the work
3	Be able to assess and produce mapping data	3.1	review and confirm that the mapping conforms to the present method statement
		3.2	select and use appropriate data standards
		3.3	identify and implement data security requirements for various applications and types of data
		3.4	identify and implement data security requirements for various applications and types of data

Learning Outcome - The learner will:		Assessment Criterion - The learner can:	
		3.5	obtain and agree terms for permission to use data, including copyright
		3.6	identify the requirements for compilation material and maintain complete and accurate compilation records and histories throughout the project
		3.7	check data selected from all the specified sources and reject invalid data
		3.8	interpret, analyse, extract, compile and compute data accurately and in a suitable form for processing and presentation
4	Understand how to assess and produce mapping data	4.1	Examine how to review and confirm that the mapping conforms to the present method statement
		4.2	Evaluate how to select and use appropriate data standards
		4.3	Describe how to identify and implement data security requirements for various applications and types of data
		4.4	Describe how to identify and implement appropriate data quality assurance procedures and rejection criteria
		4.5	Explain how to obtain and agree terms for permission to use data, including copyright
		4.6	Describe how to identify the requirements for compilation material and maintain complete and accurate compilation records and histories throughout the project
		4.7	Explain how to check data selected from all the specified sources and reject invalid data
		4.8	Examine how to interpret, analyse, extract, compile and compute data accurately and in a suitable form for processing and presentation
5	Be able to present mapping data	5.1	specify the resources and software which will be needed to process the mapping data and to set up databases
		5.2	process the data to provide the information and database formats which are required
		5.3	present the information clearly, accurately and in formats which are suitable for the intended use
		5.4	present the database, data system specification, commentary and supporting information in a suitable format for the intended use which will allow continuing maintenance
		5.5	provide advice on the use, interpretation, management and maintenance of the information, the database and the data system

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
6 Understand how to present mapping data	6.1 Evaluate how to specify the resources and software which will be needed to process the mapping data and to set up databases
	6.2 Explain how to process the data to provide the information and database formats which are required
	6.3 Explain how to present the information clearly, accurately and in formats which are suitable for the intended use
	6.4 Explain how to present the database, data system specification, commentary and supporting information in a suitable format for the intended use which will allow continuing maintenance
	6.5 Propose how to provide advice on the use, interpretation, management and maintenance of the information, the database and the data system

Assessment

The following ranges apply:

Learning Outcomes 1 and 2

1. Site surveying:

- Geographical Information System
- measured building
- engineering
- topographical
- boundary
- hydrographical
- geodetic
- photogrammetric
- underground utilities
- tunnelling and mining
- environmental
- monitoring and deformation
- setting out

2. Data:

- accuracy
- precision
- cartographic
- format

- attributes
- data transfer
- metadata
- archival
- statutory

3. Compilation material:

- photographs
- aerial photographs
- remote sensed data
- digital maps
- maps
- charts
- plans
- drawings
- archive records
- legal documents
- computer records
- Geographic Information Systems

4. Mapping:

- cartographic
- thematic
- statistical
- Geographic Information Systems
- maps
- charts
- plans

Learning Outcomes 3 and 4

1. Mapping:

- thematic
- statistical
- digital
- geographic information data
- maps
- charts
- plans

2. Data standards:

- accuracy
- precision
- cartographic
- format
- attributes

- data transfer
- metadata
- archival
- statutory

3. Compilation material:

- photographs
- remote sensed data
- digital maps
- charts
- plans
- drawings
- archive records
- legal documents
- computer records
- geographic information data

4. Sources:

- local authorities
- statutory authorities
- public utilities
- government departments
- consultative bodies (e.g. heritage bodies)
- public and specialist libraries and archives
- client records
- site owners
- previous owners

Learning Outcomes 5 and 6

1. Mapping:

- thematic
- statistical
- digital
- Geographic Information Systems
- maps
- charts
- plans

2. Processing the data – standards:

- accuracy
- precision
- cartographic
- format
- attributes
- data transfer

- metadata
- archival
- statutory

Taken as a whole, the evidence must show that the candidate consistently meets all the assessment criteria, across the ranges.

Performance Evidence
There must be workplace evidence against each assessment criteria. Where the workplace evidence does not cover a whole range, knowledge evidence must be provided to cover the remaining items of range for each relevant assessment criteria.

Learning Outcome 1

Product Evidence
The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Record(s) of identified survey data and output needs; an agreed method statement, programme and budget; chosen mapping methods and compilation courses; processes for the collection of compilation material and the compiling and management of data and presentation of results; and commissioned mapping

Simulations are not considered to be acceptable for producing this evidence.

Learning Outcome 3

Product Evidence
The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Review(s) of the mapping method statements
2. Interpreted, analysed, extracted, compiled and computed mapping data

Learning Outcome 5

Product Evidence
The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be common and key/critical to demonstrating competence:

1. Specification(s) of the resources and software needed
2. Record(s) of data processed and advice given

3. Presented data, databases, data system specification, commentary and support information.

Unit L/600/6736
Identify hazards and control risks in geomatics and site surveying management

This unit covers the candidate's key responsibilities for maintaining a healthy, safe and productive work environment, with risks minimised.

It is concerned with identifying hazards and risks and maintaining policies to reduce risks. It is about taking steps to maintain a healthy, safe and productive work environment which meets legal and organisational requirements. The work environment could be a survey site or office.

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
1 Be able to identify hazards and risks and implement risk reduction methods	1.1 undertake risk management processes
	1.2 review information and any factors and costs relating to potential hazards
	1.3 identify the hazards arising from processes that need to be assessed
	1.4 assess the significant hazards to identify the residual risks and apply effective methods to reduce risks
	1.5 verify that the risk reduction methods and procedures comply with all relevant regulations and guidelines
	1.6 check that resultant information on significant residual risks is provided to the appropriate people
	1.7 identify the resources that are necessary to implement the risk reduction methods and procedures
	1.8 identify the activities required to implement the risk reduction methods and procedures
	1.9 implement and maintain risk reduction methods and procedures
	1.10 promote the implementation of the risk reduction methods and procedures
	1.11 record the risk reduction methods and procedures in the appropriate information systems
2 Understand how to identify hazards and risks and implement risk reduction methods	2.1 Evaluate how to undertake risk management processes
	2.2 Examine how to review information and any factors and costs relating to potential hazards
	2.3 Describe how to identify the hazards arising from processes that need to be assessed
	2.4 Examine how to assess the significant hazards to identify the residual risks and apply effective methods to reduce risks

Learning Outcome - The learner will:		Assessment Criterion - The learner can:	
		2.5	Examine how to verify that the risk reduction methods and procedures comply with all relevant regulations and guidelines
		2.6	Explain how to check that resultant information on significant residual risks is provided to the appropriate people
		2.7	Describe how to identify the resources that are necessary to implement the risk reduction methods and procedures
		2.8	Describe how to identify the activities required to implement the risk reduction methods and procedures
		2.9	Explain how to implement and maintain risk reduction methods and procedures
		2.10	Propose how to promote the implementation of the risk reduction methods and procedures
		2.11	Explain how to record the risk reduction methods and procedures in the appropriate information systems
3	Be able to establish and use systems for managing health, safety and welfare	3.1	ensure that health, safety and welfare responsibilities have been allocated to people which are consistent with statutory requirements, and the specific project requirements
		3.2	arrange for hazard warnings to be posted which are appropriate to operations and the project environment
		3.3	ensure that health, safety and welfare equipment and resources have been allocated, which meet the project, contractual and statutory requirements
		3.4	ensure that there are appropriate and sufficient qualified first aiders and brief the work force about first aid arrangements
		3.5	develop systems which meet statutory requirements for identifying and reducing hazards and for reporting accidents and emergencies and preventing recurrences
		3.6	ensure that the workforce have been provided with appropriate health, safety and welfare training
4	Understand how to establish and use systems for managing health, safety and welfare	4.1	Explain how to ensure that health, safety and welfare responsibilities have been allocated to people which are consistent with statutory requirements, and the specific project requirements
		4.2	Explain how to arrange for hazard warnings to be posted which are appropriate to operations and the project environment
		4.3	Explain how to ensure that health, safety and welfare equipment and resources have been allocated, which

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	meet the project, contractual and statutory requirements
	4.4 Explain how to ensure that there are appropriate and sufficient qualified first aiders and brief the work force about first aid arrangements
	4.5 Evaluate how to develop systems which meet statutory requirements for identifying and reducing hazards and for reporting accidents and emergencies and preventing recurrences
	4.6 Explain how to ensure that the workforce have been provided with appropriate health, safety and welfare training

Assessment

The following ranges apply:

Learning Outcomes 1 and 2

1. Risk Management:
- hazard identification
- risk assessment
- prevention and protection
- method statement

2. Hazards:
- falls from height
- slips, trips and falls (same level)
- hit by falling or moving objects
- manual handling
- health issues
- power sources
- hazardous substances
- trapped by a device or structure collapsing or overturning
- confined spaces
- fire
- water

3. Assessing:
- likelihood of occurrence
- severity of harm incurred

4. Methods:

- eliminate
- control at source
- cumulative protection
- manage
- personal protection equipment

Learning Outcomes 3 and 4

1. Statutory requirements:

- construction specific health , safety and welfare regulations
- general health, safety and welfare legislation
- recognised industry Codes of Practice

2. Specific project requirements:

- contract
- organisational policy
- site operations

Taken as a whole, the evidence must show that the candidate consistently meets all the assessment criteria, across the ranges.

Performance Evidence

There must be workplace evidence against each assessment criteria. Where the workplace evidence does not cover a whole range, knowledge evidence must be provided to cover the remaining items of range for each relevant assessment criteria.

Learning Outcome 1

The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be critical to demonstrating competence:

1. Information on risk management processes and significant residual risks which includes reviewed information on factors relating to hazards, assessed significant hazards, and implemented and recorded risk reduction methods.

Simulations are not considered to be acceptable for producing this evidence.

Learning Outcome 3

The candidate must produce documentary evidence from the workplace covering the following item(s) that are considered to be critical to demonstrating competence:

1. Record(s) of allocating health, safety and welfare responsibilities and resources, arranging for hazard warnings to be posted, appointment of first aiders and briefings of the workforce about first aid arrangements.
2. Record(s) of systems for identifying and reducing hazards, reporting accidents and emergencies and preventing recurrences and for ensuring that the workforce have been provided with appropriate health, safety and welfare training.

This unit must be assessed in a work environment.

Unit L/503/9841
Vacuum Excavations

This unit is about planning and managing a vacuum excavation.

Learning Outcome - The learner will:		Assessment Criterion - The learner can:	
1	Know the range of applications for a vacuum excavator	1.1	Explain the situations when it would be appropriate to use a vacuum excavator
		1.2	Describe the different applications (uses) of a vacuum excavator
		1.3	Describe the benefits of using vacuum excavation
		1.4	Explain the limitations of using such equipment
		1.5	Explain what environmental considerations should be taken into account when undertaking a vacuum excavation
2	Know the Safety aspects and key features of vacuum excavators	2.1	Undertake a specific risk assessment and draw up a method statement for the vacuum excavation operation using all the acknowledged guidance
		2.2	Describe the safety features of the equipment
		2.3	Undertake safety checks on the equipment prior to use
		2.4	Explain how to operate the equipment correctly in accordance with manufacturer's instructions
		2.5	Describe how to maintain the equipment
3	Interpret the given information relating to the work and resources when carrying out vacuum excavation	3.1	Describe different types of information, their source and how they are interpreted in relation to: • drawings • instructions • specifications • method statements • schedules • manufacturers' information
		3.2	State the organisational procedures developed to report and rectify • inappropriate information, and • unsuitable resources and state how the procedures are implemented
4	Be able to plan and manage a vacuum excavation	4.1	Organise the work according to given information or instructions using all available resources
		4.2	Describe how to communicate ideas between team members
		4.3	Guide and direct plant and plant operations to given work instructions using different communication methods

Learning Outcome - The learner will:	Assessment Criterion - The learner can:
	4.4 Describe how to organise and communicate with team members and other associated occupations
	4.5 Develop a clear and accurate method of excavation
	4.6 State the purpose of the work programme and explain why deadlines should be kept
	4.7 Communicate within a team when preparing and using the excavation plant
	4.8 Describe how to apply safe work practices, follow procedures, report problems and establish the authority needed to rectify them
	4.9 Explain how to communicate site rules and specific safety requirements

Assessment

The following ranges apply:

Learning Outcome 2

1. Acknowledged guidance:
- HSE guides
- Statutory requirements
- Organisational policy and procedures
- Manufacturers guides
- Recognised Codes of Practice
- Safe working practices

2. Manufacturer's instructions:
- Equipment operational manuals
- Equipment maintenance manuals

Learning Outcome 3

1. Organisational procedures:
- Internal reporting procedures
- Quality assurance procedures
- Statutory requirements
- Contract conditions

Learning Outcomes 3 and 4

1. Information:
- Method statement
- Project plan
- Drawings/plans
- Client requirements

- Site rules
- Authorities to start work
- Site access and working area

Learning Outcome 4

1. Available resources:
- Plant and equipment resources
- Scope and use of equipment
- Operative resources
- Client instructions
- Method statements
- Operational/site requirements
- Project programme

2. Communication:
- Written instructions
- Toolbox talks
- Team talks
- Progress meetings
- Marked up programmes

3. Safe working practice:
- Communicate with team
- Regulations applying to the site

4. Site rules:
- Site induction
- Site specific rules
- Check PPE
- Operational set up
- Scope of operation
- Construction specific; HSW
- Health and safety practice and regulations
- Environmental controls on site

The candidate must produce work-based documentary evidence against each of the assessment criteria. Where the work place evidence does not cover the whole range, knowledge evidence must be provided to cover the remaining items of the range for each relevant assessment criteria.

ProQual Awarding Body
Cave House
Annie Med Lane
South Cave
HU15 2HG

Tel: 01430 423822

www.proqualab.com

enquiries@proqualab.com