# END POINT ASSESSMENT PLAN FOR

# GEOSPATIAL MAPPING AND SCIENCE SPECIALIST - LEVEL 6 DEGREE APPRENTICESHIP (NON-INTEGRATED)

Geospatial Mapping and Science Specialists interpret and analyse geospatial data (data relating to geographic position on the earth's surface) and use leading edge digital technology such as laser scanning, Geographic Information Systems, remote sensing and imagery. They provide data analysis and advice for mapping, satellite navigation systems (Satnavs), Global Positioning Systems (GPS), infrastructure, the identification of local, sub-urban or international boundaries, military, mining and a wide range of other purposes. Geospatial Mapping and Science Specialists can specialise in geospatial engineering (infrastructure including roads, buildings, bridges, offshore construction such as wind turbines and oil rigs), hydrography (coastlines, seabed, harbours and rivers), utilities (networked infrastructure such as water, electricity, gas) or geospatial surveying (mapping of land, boundaries, land registry).

The Geospatial Mapping and Science Specialist (Degree) Apprenticeship has been designed by an employer working group which includes employers of varying sizes and has also included the professional bodies, the Royal Institution of Chartered Surveyors (RICS) and the Chartered Institution of Civil Engineering Surveyors (ICES). This Assessment Plan sets out the requirements for the End Point Assessment (EPA). The assessment process has been designed to:

- Allow apprentices to demonstrate occupational competence as a Geospatial Mapping and Science Specialist
- Be relevant to professional Geospatial Mapping and Science roles
- Lead to a professional qualification
- Be accessible and relevant for employers of all sizes, disciplines and locations

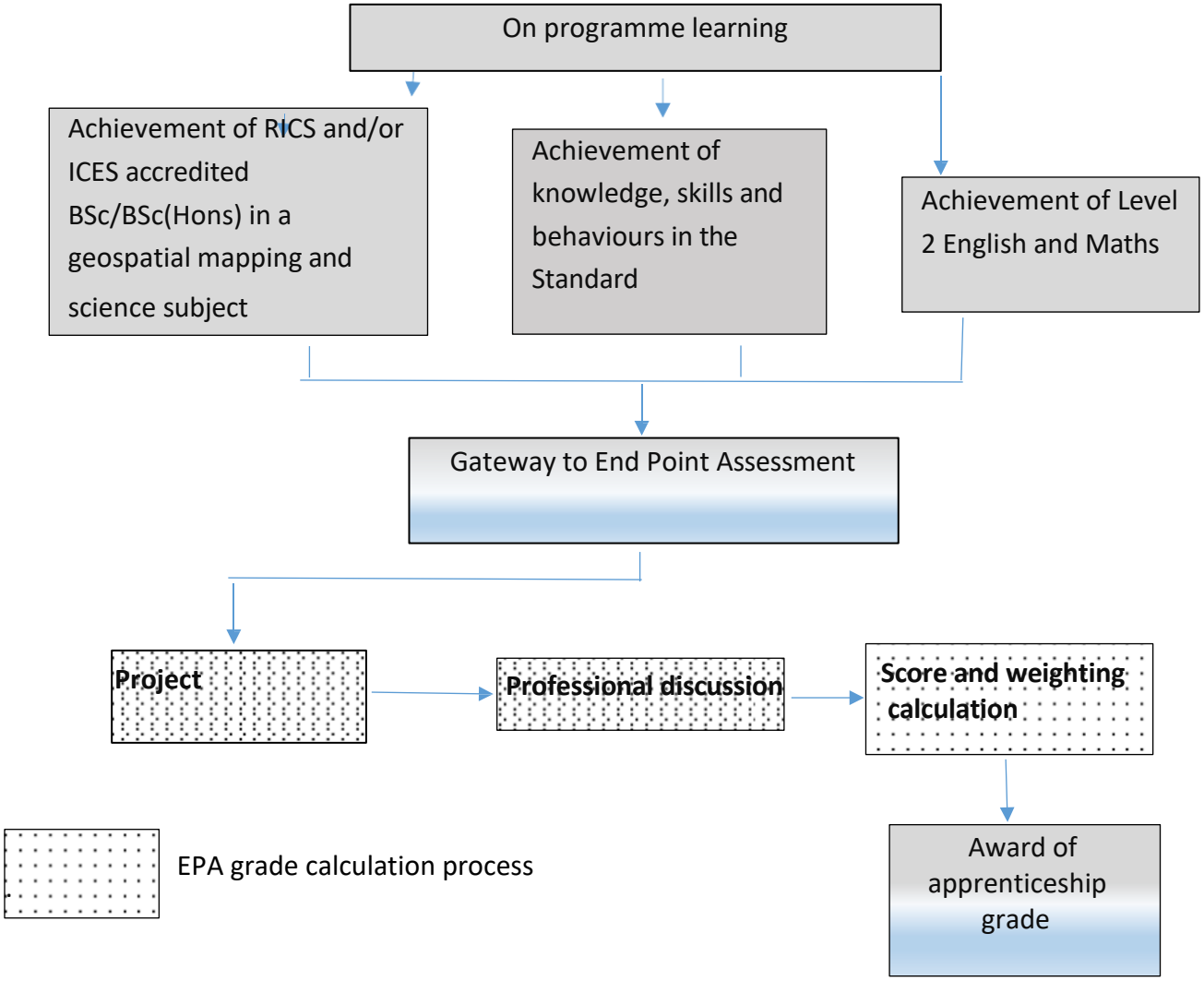
**Summary of Assessment**

In order to successfully achieve the Geospatial Mapping and Science Specialist (Degree) Apprenticeship apprentices must pass a degree in a geospatial science subject that is accredited by the RICS or ICES, demonstrate the knowledge, skills and behaviours in the Standard and pass the End Point Assessment (EPA). Higher Education Institutions will work with employers to allow apprentices to develop the required competency in the standard and to prepare for the EPA. The employer will decide when the apprentice is ready to pass through the gateway to the EPA.

The EPA will include the following components:

1. Written project
2. Professional discussion

All of the above will be assessed by an End Point Assessment Organisation (EPAO) which is on the apprenticeship providers and assessment register (APAR).



| Assessment Overview | | | |
|---|---|---|---|
| **Assessment Method** | **Area Assessed** | **Assessed by** | **Grading** |
| Project | Knowledge, skills and behaviours – details are set out in Appendix B | End point assessment organisation | Fail/Pass/Merit/Distinction |
| Professional discussion | Knowledge, skills and behaviours – details are set out in Appendix B | End point assessment organisation | Fail/Pass/Merit/Distinction |

**On-programme Activities**

The on-programme assessment will include a degree that is accredited by either the RICS or ICES. The degree will include a range of modules studied by either traditional face to face teaching, e learning or a blended learning approach delivered by universities and covering the breadth and depth of the standard. Individual modules will be assessed and must be passed in accordance with standard University regulations.

Employers will develop their own programmes to support work based experience. It is recommended that employers implement formative on programme assessment to help apprentices demonstrate that they have developed the required knowledge, skills and behaviours before taking the EPA.

**Assessment Gateway**

The apprentice must successfully complete the degree before being able to take the EPA. The employer will ensure that the apprentice has achieved maths and English qualifications in line with the apprenticeship funding rules. . Apprentices will typically complete the EPA within 6 months of going through the gateway to the EPA.

**End-point - Assessment**

***What***

The EPA will assess all of the apprentice's knowledge, skills and behaviours across the apprenticeship standard. The details of what will be assessed for each method is set out in Appendix B.

***How***

The EPA will typically take 6 months. The flowchart in Appendix A summarises the process. There are two components to the EPA:

Project

Apprentices will undertake a work based project. All projects must be agreed by one of the independent assessors who will assess the project to ensure that apprentices will be able to demonstrate all aspects of the standard required. Apprentices should provide project proposals for approval within two months of passing the gateway to the EPA and approval or rejection must be given by the EPAO within two weeks of the project proposal submission by the apprentice to the EPAO. The project should be completed within 4 months of the agreement of the project by the EPAO. The project must provide an opportunity for the apprentice to provide evidence of all of the core knowledge and skills, the optional knowledge and skill chosen depending on the apprentice's job role and all the behaviours as set out in Appendix B. Project proposals must include the following minimum information:

- Project title
- 500 word synopsis including a summary of the key issues or challenges, options for dealing with these and the apprentice's role
- The timeline for the project
- The date of the proposed submission of the written project

If a proposal is not accepted the apprentice may submit up to two alternative proposals. If the proposal is not accepted the independent assessor must provide feedback to the apprentice explaining the reasons why.
The project will be presented as a 3000 word (with a 10% tolerance either way) report and must include illustrations, calculations and plans and be verified by the apprentice's employer that the project is a true reflection of the apprentice's involvement and that the report is their own work. The project must include the following:

- A summary of the project and the apprentice's role and level of responsibility
- The key issues or challenges on the project
- The practical application of knowledge, skills and behaviours
- The options considered, solutions identified and reasons why some options were not feasible
- What the apprentice achieved and how this was achieved
- A reflection and critical analysis of the apprentice's performance and the lessons learnt
- Verification by the apprentice's employer that the project is a true reflection of the apprentice's involvement and that the report is their own work

The following are examples of project proposals:

- A hydrographic survey of a river to establish the water depth and type of riverbed for engineering works to facilitate the crossing of a cable.
- Installation of geodetic control network for a large linear infrastructure project with ongoing densification of appropriate levels of horizontal and vertical control for all sub-contractors and potential users. Use of post processing software and other survey related software packages
- Management of the survey of a road bridge from the scoping of the task to the presentation of the client

report

Two independent assessors will assess the project. Each independent assessor will give a percentage mark in accordance with the grading criteria in Appendix C and the two marks will be averaged to give the apprentice's project grade. The apprentice must be advised of their grade within two weeks of the submission of the project for assessment.
This date must be at least two weeks before the date of the professional discussion.

Apprentices must pass the project before taking the professional discussion . See 'End Point – Grading' for information regarding retakes/resits.

Professional discussion

The professional discussion will provide additional rigour for the end point assessment process by testing the apprentice's ability to defend and to explain the validity of courses of action. Before taking the professional discussion apprentices will be required to provide a 5500 word (with a 10% tolerance either way) summary of how they have met the apprenticeship standard. This will provide reflective evidence of the knowledge and experience the apprentice has gained over the period of the apprenticeship. The report should be presented with an introduction explaining the purpose of the summary then with a heading and summary for each of the knowledge, skills and behaviours of the standard showing how each of these has been achieved. The summary must highlight the practical elements of the apprentice's experience and fieldwork identifying the equipment, instruments and technologies used. The summary must be verified by the apprentice's employer that the project is a true reflection of the apprentice's experience. Appendix D provides an example of a template that could be used for the summary of experience although EPAO's may develop alternative templates.

The summary of experience must be submitted to the EPAO at least two weeks prior to the agreed professional discussion date. The summary will be reviewed by two independent assessors who will together formulate the questions for the professional discussion. The questions must be consistent in terms of demand and level for all apprentices.

The professional discussion will be in the form of an interview with a panel of two independent assessors and will take one hour. It can be conducted face to face or via an online platform. The online platform must include a video link so that apprentices can see independent assessors and independent assessors can see the apprentice. The identity of the apprentice must be checked and confirmed prior to commencement. The location or the platform will be sourced by the EPAO. It explores with the apprentice what has been produced in the summary of experience. I ndependent Assessors will:

- Clarify the evidence in the summary of experience
- Confirm and validate judgements made by the independent assessors about the quality and appropriateness of the information presented
- Confirm and validate understanding of the behaviours
- Explore aspects of the work in more detail, including how it was carried out and why a course of action was taken
- Explore the practical application of knowledge, skills and behaviours including the use of equipment,

instruments and technologies

- Give a percentage mark in accordance with the grading criteria in the appendix to this Plan

Each independent assessor will give a percentage mark in accordance with the grading criteria Appendix C and the two marks will be averaged to give the apprentice's professional discussion grade.

***Who***

The EPAO will provide independent external assessment of knowledge, skills and behaviours through the assessment of the project and professional discussion. The EPAO must be on the APAR. The independent assessors must:

- Have a minimum of 3 years post professional qualification experience and be working in relevant employment
- Be a chartered professional of the RICS or a Member or Fellow of the ICES
- Have evidence of up to date CPD (as required by the relevant professional body)

Have experience of assessing learners or willingness to undertake training

**End-point – final judgement**

The EPAO will determine the final grade by using the average of the two independent assessors' percentage marks for the project and the average of the two independent assessors' percentage marks for the professional discussion and apply the relevant weightings as set out in 'End Point – Grading' below. The resulting overall percentage will determine the apprentice's final grade.

**Independence**

The EPA will be assessed by two independent assessors who work for an EPAO on the APAR. The independent assessors will have no previous relationship to the apprentice and will make a holistic judgement of each apprentice's work on the basis of the evidence supplied as set out above. The EPA will be assessed and verified independently of the employer or any training provider.

All independent assessors must be managed by an EPAO who will develop assessment materials.

The EPAO must implement a Conflict of Interest policy which ensures that any independent assessor declares a known conflict of interest with an employer or apprentice. A conflict of interest can be defined as a person who is connected to the development and/or delivery of the assessments or has interests in any other activity which has the potential to lead that person to act contrary to his or her involvement in the development and/or delivery of the EPA.

**End-point - Grading**

Independent assessors will grade apprentices as Fail, Pass, Merit or Distinction using all the information gained in the EPA process described above and with reference to the grading criteria in Appendix C. The apprenticeship grade will be based on the outcomes of the two EPA components: the project and the professional discussion.

The end point assessment components are weighted as follows:

- Project – 60% of grade
- Professional discussion – 40% of grade

A pass represents achievement of at least the minimum standard for the industry and for which apprentices have achieved all the knowledge and skills required within the standard and demonstrated a consistent level of behaviours. To achieve a pass or higher grade the apprentice must achieve a minimum of a pass in each of the EPA components. The following table provides the percentage marks to be achieved for each grade for each component of the standard.

| *EPA component* | *Weighting* | *Fail (%)* | *Pass (%)* | *Merit (%)* | *Distinction (%)* |
|---|---|---|---|---|---|
| *Project* | *60%* | *0 - 49* | *50 - 60* | *61 - 70* | *71- 100* |
| *Professional discussion* | *40%* | *0 - 49* | *50 - 60* | *61 - 70* | *71- 100* |
| *Overall grade* | | *0 - 49* | *50 - 60* | *61 - 70* | *71- 100* |

The Appendix provides the criteria for each of the grades for each element of the EPA. The final grade will then be decided by applying the above weighting to the marks given by the two independent assessors for the project and the professional discussion.

*Example*

*An apprentice gains an average mark of 60% for their project and an average mark of 70% for their professional discussion. These would then be weighted as follows:*

*60% x 60% for project = 36%*

*70%x 40% for professional discussion = 28%*

*Total = 64% = Overall Merit for the EPA*

Where an apprentice fails the project or the professional discussion they may retake or resit the relevant component once, and this must be retaken or resat within a 3 month period. Where an apprentice retakes or resits a component the apprentice can only be awarded a maximum grade of a pass for the apprenticeship. Retakes and resits will not be allowed to improve the apprenticeship grade (other than fail to pass).

| End-point – Summary of roles and responsibilities | |
|---|---|
| **Stakeholder** | **Role** |
| Employer | • Decides when the apprentice is ready for end point assessment |
| Training provider | • Supports the employer on deciding if the apprentice is ready for the EPA gateway<br>• Supports the employer in contacting EPAO<br>• Monitors the performance of the apprentice during the degree |
| EPAO | • Delivers and assesses the EPA<br>• Conducts internal quality assurance<br>• Develops assessment processes and specifications based on the standard<br>• Develops assessment tools, materials and resources<br>• Registers apprentices for the EPA<br>• Manages assessment arrangements to enable apprentices to submit assessment documents<br>• Arranges retakes/resits of assessments for apprentices who fail the EPA and provides feedback to the employer<br>• Develops and implements an appeals process |
| Professional bodies | • Conduct external quality assurance of EPA – ICES to be lead organisation for external quality assurance<br>• Conduct quality assurance and recognition of degree |

**Quality Assurance – internal**

The EPAO will internally provide quality assurance by:

- Providing independent assessor training at least once a year
- Arranging new independent assessors to undertake mock assessments
- Sampling of assessment decisions. A minimum of 20% of assessment decisions to be sampled. Sampling should be of all elements of the entire process of assessment including submissions and independent assessor feedback and should be used to review consistency of feedback and approach by assessors
- Requiring independent assessors to attend at least one standardisation event per year and delivering the standardisation events

- Undertaking moderation of assessment decisions. The method used must ensure consistency of grading between independent assessors. Moderation should review all marks by all independent assessors to enable consideration of the overall standard and to enable comparison of the grading standards applied by different independent assessors and for different components of the EPA
- Adopting a performance management process for independent assessors and using training to address poor performance
- Undertaking annual performance appraisals of independent assessors
- Appointing internal verifiers

**Quality Assurance – external**

The professional body approach has been chosen for the external quality assurance. External quality assurance will be conducted on a non-profit basis by the RICS and the ICES in partnership. ICES will be the lead organisation and will draw on the services of the RICS and oversee their input into the EQA model. ICES will be the main point of contact.

**Implementation**

The costs of this apprenticeship have considered the range and diversity of employers within the sector and the number of smaller businesses who are likely to employ apprentices.

Affordability was considered by the adoption of the use of online platforms for professional discussions. This will also ensure feasibility of delivery across England and for apprentices in more remote locations. The cost of the EPA will be no more than 20% of the overall apprenticeship. The funding band is awaiting confirmation. The direct costs of end point assessment will include:

- 1 day of the cost of two independent assessors (1 day being spread over the components of the EPA)
- Venue for professional discussion (when face to face)
- External quality assurance

*Professional body recognition:*

Following successful completion (Pass or higher) of the EPA, apprentices will become eligible to apply for chartered status with the RICS or Member of the ICES.

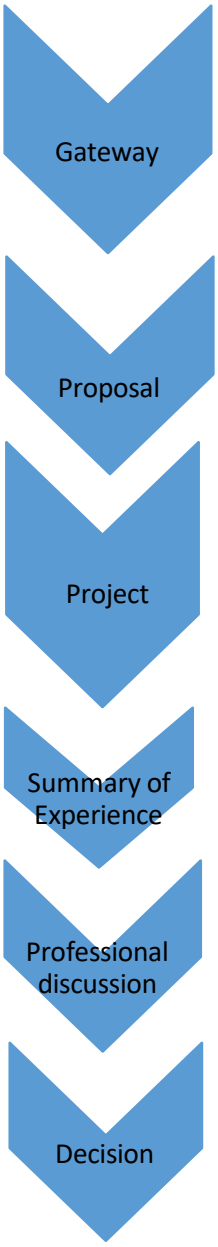
*Consistency:*

Due to the nature of the EPA this will be deliverable across England and will be applicable to all employers regardless of their size. There are opportunities for assessment to be undertaken virtually which will ensure that the apprenticeship can be delivered across the different regions of England. Research has indicated sufficient numbers of independent assessors to assess the anticipated volume of apprentices. Management and feasibility were key to the development of this EPA Plan and the Plan presented offers the most viable and flexible solution whilst ensuring professional body recognition.

Volumes

It is anticipated that there will be approximately 15 starts in the first year and 50 starts per year once the apprenticeship is fully established.

## APPENDIX A – FLOWCHART OF EPA PROCESS




- Successful achievement of RICS/ICES accredited BSc/BSc(Hons)
- Satisfactory completion of knowledge, skill and behaviours set out in the apprenticeship standard
- Successful achievement of English and maths qualifications in line with apprenticeship funding rules.
- Employer confirmation and request for End Point Assessment

- Apprentice submits project proposal to EPAO for approval
- One independent assessor reviews proposal and provides feedback to apprentice advising whether the project is suitable

- Apprentice provides a 3000 project report
- Two independent assessors review, assess and grade the project report

- Apprentice provides a 5500 word summary of experience
- Two independent assessors review the summary, assess it, and agree areas to be explored and questions to ask in the professional discussion

- 60 minute professional discussion with two independent assessors either online or face to face

- Independent Assessors submit grade for the professional discussion

## APPENDIX B – MAPPING OF EPA METHODOLOGY TO STANDARD

| CORE KNOWLEDGE TO BE ASSESSED | PROJECT | PROFESSIONAL DISCUSSION |
|---|---|---|
| **Cadastre (land boundaries) and land management**<br>Field and office procedures for boundary and/or cadastral surveys. Understand legal and physical land boundaries and legal title | ✓ | ✓ |
| **Advanced geospatial technology**<br>The principles of geospatial technologies including remote sensing, laser scanning and Geographic Information Systems | ✓ | ✓ |
| **Advanced mapping and measurement**<br>Primary data capture techniques and the importance of accuracy and precision. Electronic Distance Measurement, automatic levels, lasers and other instrumentation | ✓ | ✓ |
| **Geospatial data management and analysis**<br>How to analyse and manage geospatial data. Interpretation of plan and map data and legal documents. Holding, retrieving and security of data. | ✓ | ✓ |
| **Geodesy**<br>The principles of geodesy including co-ordinate systems, transformations, projections, datums and their importance | ✓ | ✓ |
| **Health and safety**<br>How to ensure safe and secure working environments for self and others and the principles of managing risk. | ✓ | ✓ |
| **Law of land and sea**<br>The law and regulations and the role of legal advisers relating to land and sea | ✓ | ✓ |
| **Sustainability**<br>How to embed sustainability into your work and best practice principles including the principles of 'One Planet Living,' balancing economic, environmental and social objectives, minimising energy use, using sustainable consumables, use of appropriate equipment to minimise carbon emissions | ✓ | ✓ |

| | | |
|---|---|---|
| **Personal effectiveness**<br>Understanding client requirements, how to supervise tasks and others, safety and conflict avoidance. | X | ✓ |
| **Project Management**<br>How to manage projects and tasks to specified programmes, targets and budgets | ✓ | X |

| **OPTIONAL KNOWLEDGE TO BE ASSESSED<br>ONE OF THE FOLLOWING** | | |
|---|---|---|
| **Geospatial Engineering**<br>Understanding of the principles of setting out, 3 dimensional machine control, deformation monitoring, drawings and plans | ✓ | ✓ |
| **Hydrography**<br>Understand the principles and limitations of hydrographic survey including methods of collection, analysis, quality control and processing and presentation of hydrographic data | ✓ | ✓ |
| **Utilities**<br>Understanding of the law, regulation and geospatial data requirements for organisations owning or operating a networked infrastructure | ✓ | ✓ |
| **Geospatial surveying**<br>Understand how to specify, plan and undertake surveys using appropriate instrumentation. | ✓ | ✓ |

| CORE SKILLS TO BE ASSESSED | PROJECT | PROFESSIONAL DISCUSSION |
|---|---|---|
| **Cadastre (land boundaries) and land management**<br>Undertake and manage boundary and/or cadastral surveys adopting appropriate scales and selecting appropriate supporting documentation. Use and interpret aerial photography and digital imagery. | ✓ | ✓ |
| **Advanced geospatial technology**<br>Identify, assess and source datasets from a range of technologies (including laser scanning, remote sensing and Geographic Information Systems) to meet client requirements and assess quality and fitness for purpose | ✓ | ✓ |
| **Advanced mapping and measurement**<br>Use the primary data capture techniques ensuring accuracy and precision, use appropriate co-ordinate systems, datums, transformations and projections. | ✓ | ✓ |
| **Geospatial data management and analysis**<br>Analyse and manage geospatial data including plan, map and legal data and ensure security of data. Retrieve and analyse data from manual and electronic sources. | ✓ | ✓ |
| **Health and safety**<br>Ensure safe and secure working environments and manage risk appropriately | ✓ | ✓ |
| **Law of land and sea**<br>Apply law and regulations relating to land and/or sea and ensure compliance | ✓ | ✓ |
| **Sustainability**<br>Manage activities in a way that contributes positively to sustainability and implements best practice. Apply the principles of 'One Planet Living' to your work and appropriately balance social, economic and environmental objectives. | ✓ | ✓ |
| **Personal effectiveness**<br>Understanding client requirements, how to supervise tasks and others, safety and conflict avoidance. | X | ✓ |

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| **Project Management**<br>How to manage projects and tasks to specified programmes, targets and budgets | ✓ | X |

| **OPTIONAL SKILLS TO BE ASSESSED**<br>**ONE OF THE FOLLOWING** | | |
|---|---|---|
| **Geospatial engineering**<br>Undertake setting out, prepare data for 3 dimensional machine control, deformation monitoring and as built surveys and analyse construction drawings and plans. | ✓ | ✓ |
| **Hydrography**<br>Undertake hydrographic surveys including assessment of survey requirements, equipment specifications and suitability, taking responsibility for the survey works in accordance with the approved specification, evaluating and presenting survey findings and advising clients | ✓ | ✓ |
| **Utilities**<br>Collect appropriate, accurate, geospatial data for organisations owning or operating a networked infra-Structure | ✓ | ✓ |
| **Geospatial surveying**<br>Specify, plan and undertake surveys using appropriate instrumentation. Evaluate information and explain complex survey issues to clients. | ✓ | ✓ |

| BEHAVIOURS TO BE ASSESSED | PROJECT | PROFESSIONAL DISCUSSION |
|---|---|---|
| **Provide a high standard of service**<br>Provide the best possible advice, support or performance of agreed terms of engagement with attention to detail. Show commitment to Continuing Professional Development for self and others | ✓ | ✓ |
| **Act in a way that promotes trust in the profession**<br>Act in a professional and positive manner at all times | ✓ | ✓ |
| **Treat others with respect**<br>Treat everyone with courtesy, politeness and respect and consider cultural sensitivities and business practices | **X** | ✓ |
| **Take responsibility**<br>Always act with skill, care, diligence, and deal with any complaint in an appropriate professional manner. | ✓ | ✓ |
| **Act with integrity**<br>Always be trustworthy, open and transparent. Respect client confidentiality and provide professional, unbiased advice | ✓ | ✓ |

**APPENDIX C**

**GRADING CRITERIA**

| | FAIL | PASS | MERIT | DISTINCTION |
|---|---|---|---|---|
| **PROJECT (60% of overall grade)** | 0-49 | 50-60 | 61-70 | 71-100 |
| | Fails to provide sufficient evidence of all the knowledge, skills and behaviours being assessed by this method | Provides evidence of all the knowledge, skills and behaviours being assessed by this method<br><br>Well-structured and presented report using clear headings and sections<br><br>Identifies a key issue<br><br>Discusses the key options or challenges of the project<br><br>Makes efforts to reflect and analyse their performance and lessons learnt | Meets the pass criteria and also:<br><br>Effectively analyses and interprets knowledge being assessed by this method to inform solutions<br><br>Uses skills being assessed by this method to appraise options<br><br>Provides a good reflective account of the project<br><br>Demonstrates learning from experience | Meets the pass and merit criteria and also:<br><br>Critically appraises knowledge relevant to the project<br><br>Extensively applies skills being assessed by this method to the project and to evaluate options<br><br>The report follows a clear and logical sequence<br><br>throughout and is articulate and fluent with a robust conclusion |

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| | | Complies with maximum word length of 3000 words (subject to 10% tolerance either way)<br>Use of appropriate professional and technical language<br>Shows analysis of the outcome of the project<br>Recommends a viable solution to the key issue | Analyses options<br>Clearly articulates the rationale for decisions made<br>Works independently | Evaluates all options, solutions and challenges<br>Provides a reflective critical analysis of the project<br>Exercises initiative and personal responsibility |
| **Professional discussion (40% of overall grade)** | 0-49 | 50 - 60 | 61- 70 | 71-100 |
| | Fails to provide sufficient evidence of all the knowledge, skills and behaviours being assessed by this method | Provides evidence to demonstrate all the knowledge, skills and behaviours being assessed by this method<br>Is able to clarify information provided relating the summary of experience | Meets the pass criteria and also:<br>Analyses knowledge being assessed by this method to provide solutions and shows conceptual understanding<br>Accurately responds to questions | Meets the pass and merit criteria and also:<br>Evaluates and critically appraises knowledge to provide solutions<br>Critically evaluates arguments to make judgements and to achieve solutions<br>I |

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| | | Satisfactorily validates the information provided in the summary of experience<br><br>Shows awareness of the rationale for their actions and those of others<br>Shows the ability to reflect on experience | Develops and sustains arguments and shows the ability to solve problems<br><br>Uses examples of the use of skills being assessed by this method to support answers to questions<br><br>Supplements information in the summary with additional information when ap-propriate to do so<br><br>Clearly articulates the rationale for actions and decisions made<br><br>Clearly demonstrates reflective learning | Uses an extensive range of relevant examples of the use of skills being assessed by this method to support answers to questions<br><br>Evaluates information in<br><br>order to make decisions<br><br>Assimilates and synthesises information<br><br>Takes action to address reflection on learning |

**APPENDIX D**

**EXAMPLE TEMPLATE FOR THE SUMMARY OF EXPERIENCE**

**The Summary of Experience should reflect the role and level of the activities undertaken by the apprentice**

| CORE KNOWLEDGE | APPRENTICE STATEMENT OF HOW KNOWLEDGE HAS BEEN GAINED (approximately 200 words per area of knowledge) | EXAMPLES OF WORK TASKS UNDERTAKEN THAT HAVE USED THIS KNOWLEDGE (approximately 50 words per area of knowledge) |
|---|---|---|
| **Cadastre (land boundaries) and land management**<br>Field and office procedures for boundary and/or cadastral surveys. Understand legal and physical land<br>boundaries and legal title | | |
| **Advanced geospatial technology**<br>The principles of geospatial technologies including remote sensing, laser scanning and Geographic Information Systems | | |
| **Advanced mapping and measurement**<br>Primary data capture techniques and the importance of accuracy and precision. Electronic Distance Measurement, automatic levels, lasers and other instrumentation | | |
| **Geospatial data management and analysis**<br>How to analyse and manage geospatial data. Interpretation of plan and map data and legal documents. Holding, retrieving and security of data. | | |

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| **Geodesy**<br>The principles of geodesy including co-ordinate systems, transformations, projections, datums and their importance | | |
| **Health and safety**<br>How to ensure safe and secure working environments for self and others and the principles of managing risk. | | |
| **Law of land and sea**<br>The law and regulations and the role of legal advisers relating to land and sea | | |
| **Sustainability**<br>How to embed sustainability into your work and best practice principles including the principles of 'One Planet Living,' balancing economic, environmental and social objectives, minimising energy use, using sustainable consumables, use of appropriate equipment to minimise carbon emissions | | |
| **OPTIONAL KNOWLEDGE TO BE ASSESSED ONE OF THE FOLLOWING** | | |
| **Geospatial Engineering**<br>Understanding of the principles of setting out, 3 dimensional machine control, deformation monitoring, drawings and plans | | |

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| **Hydrography**<br>Understand the principles and limitations of hydro-graphic survey including methods of collection, analysis, quality control and processing and presentation of hydrographic data | | |
| **Utilities**<br>Understanding of the law, regulation and geospatial data requirements for organisations owning or operating a networked infrastructure | | |
| **Geospatial surveying**<br>Understand how to specify, plan and undertake surveys using appropriate instrumentation. | | |

| CORE SKILLS | APPRENTICE STATEMENT OF HOW SKILL HAS BEEN ACHIEVED (approximately 200 words per skill) | EXAMPLES OF WORK TASKS UN-DERTAKEN AND ANY EQUIPMENT OR INSTRUMENTS USED (approximately 50 words per skill) |
|---|---|---|
| **Cadastre (land boundaries) and land management**<br>Undertake and manage boundary and/or cadastral surveys adopting appropriate scales and selecting ap-propriate supporting documentation. Use and interpret aerial photography and digital imagery. | | |
| **Advanced geospatial technology**<br>Identify, assess and source datasets from a range of technologies (including laser scanning, remote sensing | | |

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| and Geographic Information Systems) to meet client requirements and assess quality and fitness for purpose | | |
| **Advanced mapping and measurement**<br>Use the primary data capture techniques ensuring accuracy and precision, use appropriate co-ordinate systems, datums, transformations and projections. | | |
| **Geospatial data management and analysis**<br>Analyse and manage geospatial data including plan, map and legal data and ensure security of data.<br>Retrieve and analyse data from manual and electronic sources. | | |
| **Health and safety**<br>Ensure safe and secure working environments and manage risk appropriately | | |
| **Law of land and sea**<br>Apply law and regulations relating to land and/or sea and ensure compliance | | |
| **Sustainability**<br>Manage activities in a way that contributes positively to sustainability and implements best practice. Apply the principles of 'One Planet Living' to your work and appropriately balance social, economic and environmental objectives. | | |

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|---|---|---|
| **Personal effectiveness**<br>Respond appropriately to client requirements, supervise tasks and others, adopt a strong safety culture and ensure effective conflict avoidance. Effectively manage projects and tasks to specified programmes, targets and budgets and show independent judgement and responsibility | | |
| **OPTIONAL SKILLS TO BE ASSESSED**<br>**ONE OF THE FOLLOWING** | | |
| **Geospatial engineering**<br>Undertake setting out, prepare data for 3 dimensional machine control, deformation monitoring and as built surveys and analyse construction drawings and plans | | |
| **Hydrography**<br>Undertake hydrographic surveys including assessment of survey requirements, equipment specifications and suitability, taking responsibility for the survey works in accordance with the approved specification, evaluating and presenting survey findings and advising cli- ents | | |

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|---|---|---|
| **Utilities**<br>Collect appropriate, accurate, geospatial data for organisations owning or operating a networked infra-structure | | |
| **Geospatial surveying**<br>Specify, plan and undertake surveys using appropriate instrumentation. Evaluate information and explain complex survey issues to clients. | | |

| BEHAVIOURS | STATEMENT OF HOW BEHAVIOUR HAS BEEN DEMONSTRATED THROUGH LEARNING AND WORK EXPERIENCE (approximately 200 words per behaviour) | EXAMPLES OF WHERE BEHAVIOUR HAS BEEN ADOPTED (approximately 50 words per behaviour) |
|---|---|---|
| **Provide a high standard of service**<br>Provide the best possible advice, support or performance of agreed terms of engagement with attention to detail. Show commitment to Continuing<br>Professional Development for self and others | | |
| **Act in a way that promotes trust in the profession**<br>Act in a professional and positive manner at all times | | |
| **Treat others with respect**<br>Treat everyone with courtesy, politeness and respect and consider cultural sensitivities and business practices | | |
| **Take responsibility**<br>Always act with skill, care and diligence and deal with any complaint in an appropriate professional manner. | | |
| **Act with integrity**<br>Always be trustworthy, open and transparent. Respect client confidentiality and provide professional, unbiased advice | | |