Course/Unit Support Notes

Advanced Higher Geography Course/Unit Support Notes

Please refer to the note of changes at the end of this document for details of changes from previous version (where applicable).

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Contents

Introduction

These support notes are not mandatory. They provide advice and guidance on approaches to delivering and assessing the Advanced **Higher Geography** Course. They are intended for teachers and lecturers who are delivering the Course and its Units.

These support notes cover both the Advanced Higher Course and the Units in it.

The Advanced Higher *Course/Unit Support Notes* should be read in conjunction with the relevant:

Mandatory information:
- Course Specification
- Course Assessment Specification
- Unit Specifications

Assessment support:
- Specimen and Exemplar Question Papers and Marking Instructions
- Exemplar Question Paper Guidance
- Guidance on the use of past paper questions
- Coursework information:
  - General assessment information
  - Coursework Assessment Task*
- Unit Assessment Support*

*These documents are for assessors and are confidential. Assessors may access these through the SQA Co-ordinator in their centres.

Related information
Advanced Higher Course Comparison

Further information on the Course/Units for Advanced Higher Geography
This information begins on page 10 and both teachers and learners may find it helpful.

General guidance on the Course/ Units

Aims

The main aims of this Course are to enable learners to:

- understand the ways in which people and the environment interact in response to physical and human processes
- study spatial relationships to develop a balanced and critical understanding of the changing world
- further acquire a geographical perspective on environmental and social issues and their significance
- further develop skills of independent research, fieldwork, analysis, synthesis, evaluation and presentation
- further develop the techniques to collect, extract, analyse and interpret information to explain geographical phenomena using appropriate terminology
- further develop expertise in the use of maps, diagrams, statistical techniques and written accounts

The purpose of Geography is to further develop the learner's understanding of our changing world and its human and physical processes. Opportunities for practical activities, including fieldwork, will be essential parts of this Course so that learners can interact with their environment.

This Course will help create informed and active citizens who can use modern technology. It will do this by helping learners to develop a greater understanding of the human and physical processes which have an impact on their environment, and by encouraging skills of data collection and interpretation.

Progression

Examples of further and higher education programmes that learners might progress to are**:** geology**,** town and transport planning, chartered surveying, renewable energy, land and water management, environmental consultancy, development, tourism, conservation, demography, housing and social welfare.

Advanced Higher Courses provide good preparation for learners progressing to further and higher education because learners doing Advanced Higher Courses must be able to work with a degree of independence. Advanced Higher Courses may also allow 'advanced standing' or partial credit towards the first year of study of a degree programme.

Advanced Higher Courses may also be part of the Scottish Baccalaureate. The Scottish Baccalaureates in Expressive Arts, Languages, Science and Social Sciences consist of coherent groups of subjects at Higher and Advanced Higher level. Each award consists of two Advanced Highers, one Higher and an Interdisciplinary Project.

Skills, knowledge and understanding covered in this Course

Teachers and lecturers should refer to the *Course Assessment Specification* for mandatory information about the skills, knowledge and understanding to be covered in this Course.

The development of subject specific and generic skills is central to the Course. Learners should be made aware of the skills they are developing and of the transferability of them. It is the transferability that will help learners with further study and enhance their personal effectiveness.

The skills, knowledge and understanding that will be developed in the Advanced Higher Geography Course are:

- developing and using a wide range of research and mapping skills and techniques in complex geographical contexts
- developing and using a wide range of numerical and graphical skills and techniques in geographical contexts
- developing and using a wide range of statistical techniques
- developing and using knowledge and understanding of geographical terminology, ideas and systems
- using complex information to explain and analyse a wide range of geographical phenomena
- developing and applying skills, knowledge and understanding to analyse a wide range of complex geographical evidence

Skills, knowledge and understanding to be included in the Course will be appropriate to the SCQF level of the Course. The SCQF level descriptors give further information on characteristics and expected performance at each SCQF level (www.sqa.org.uk/scqf).

Approaches to learning and teaching

At Advanced Higher, learners will further develop the ability to work independently. Teachers and lecturers should encourage learners to use an enquiring, critical and problem-solving approach to their learning. Learners should also be given the opportunity to practise and develop research skills and evaluation and analytical skills. Some of the approaches to teaching and learning suggested for other levels (in particular Higher) may also apply at Advanced Higher level.

Practice in the skills
Teachers/lecturers should not give direct and specific help to learners with the analysis and evaluation of the particular issues, though it would certainly be helpful to discuss with them such matters as 'For what reasons do you prefer the arguments of x to those of y?'

The teacher/lecturer could issue sources and ask learners to identify the main arguments used. The learners could critically evaluate that line of argument by highlighting statements which support the argument or undermine it. Learners could also be asked to identify any bias, credibility or information which is missing. Learners could discuss how reliable the sources are in the text and whether the data is up-to-date. The teacher/lecturer could ask if the learner comes to the same conclusions as the writer.

Learners should engage in a variety of learning activities as appropriate to the subject. These may include for example:

- researching information for their subject rather than receiving information from their teacher or lecturer
- undertaking fieldwork
- using active and open-ended learning activities such as research, case studies and presentation tasks
- making accurate and relevant searches for information on the internet and selecting credible websites as sources of information
- engaging in wide-ranging independent reading
- recording in a systematic way the results of research and independent investigation from different sources
- presenting findings/conclusions of research and investigation activities to a group
- participating in groupwork with peers and using collaborative learning opportunities to develop teamwork
- participating in informed debate and discussion with peers where they can demonstrate skills in constructing and sustaining lines of argument to provide challenge and enjoyment, breadth, and depth to learning
- reaching conclusions from a wide range of complex information
- using appropriate written and/or oral communication and presentation skills to present information

- using appropriate technological resources (using voice recorders to capture interview responses)
- using appropriate media resources (eg video clips)
- using real-life contexts and experiences familiar and relevant to candidates to exemplify skills, knowledge and understanding
- participating in field trips and visits

Teachers and lecturers should support learners by having regular discussions with them and giving regular feedback. Some learning and teaching activities may be carried out on a group basis and, where this applies, learners could also receive feedback from their peers.

Teachers and lecturers should, where possible, provide opportunities to personalise learning, and enable learners to have choices in approaches to learning and teaching. The flexibility in Advanced Higher Courses and the independence with which learners carry out the work lend themselves to this. Teachers and lecturers should also create opportunities for, and use, inclusive approaches to learning and teaching. This can be achieved by encouraging the use of a variety of learning and teaching strategies which suit the needs of all learners.

Centres are free to sequence the teaching of the Outcomes, Units and/or Course in any order they wish.

Developing skills for learning, skills for life and skills for work

The following skills for learning, skills for life and skills for work should be developed in this Course.

Teacher and lectures should ensure that learners have opportunities to develop these skills as an integral part of their learning experience.

It is important that learners are aware of the skills for learning, skills for life and skills for work that they are developing in the Course, and the activities they are involved in that provide realistic opportunities to practise and/or improve them.

Reading
Throughout the Course, and while undertaking the assignment, learners will have the opportunity to develop reading skills. They may read a variety of texts, including academic journals, newspaper reports, online articles, etc. This will help learners develop their skills to read critically and evaluate the ideas contained in written sources, drawing conclusions with justification, constructing arguments in a balanced and structured way; and expressing reasoned views about the texts they study. This in turn will further develop their ability to understand and use a wide range of evidence on contemporary issues.

Writing
The Course will provide considerable opportunities to develop writing skills within the Units. Learners should be encouraged to undertake extended writing wherever appropriate. For example, the requirements to apply knowledge and understanding about a range of contemporary political or social issues and being able to adopt a comparative approach provide an ideal opportunity for learners to develop the skill of extended writing.

Personal learning
The Course, and in particular the Question Paper and project, will provide extensive opportunities for learners to undertake individually-led work including: carrying out independent research; evaluating, analysing and synthesising evidence; making and justifying decisions; and communicating, by a variety of means, views, opinions, decisions and conclusions based on evidence.

Citizenship
At Advanced Higher level, learners will develop citizenship through deepening their understanding of issues facing contemporary society. They will be required to apply their knowledge and understanding of factual elements of social and political issues and topics. They will also be required to link these with underlying theoretical or abstract ideas which will require a greater depth and detail of understanding.

Applying, analysing and evaluating
At Advanced Higher level, learners will be required to apply their knowledge and understanding of factual elements of political and social issues and questions. They will also be required to link these with underlying theoretical or abstract ideas which will require a greater depth and detail of understanding. This enables learners to explore challenging abstract ideas by engaging with a wide range of source material, and both evaluating and synthesising information. This depth of study affords them a unique opportunity of intellectual engagement with the subject matter.

This Course will allow learners to use different sources of information, including academic literature, scientific sources, newspaper or online articles, blogs, etc. Any piece of information, or source, is capable of yielding more or less relevant input to a study, depending on the skills of the learner. However, teachers/ lecturers should direct learners to more complex, and potentially richer, sources of information.

The project-folio
This project-folio will provide opportunities for candidates to develop knowledge and understanding of Geography at Advanced Higher level and to apply this knowledge and understanding to a study and issue. The project-folio encourages candidates to develop as independent learners and to develop transferable skills, such as problem-solving, research, critical evaluation and presentation, all of which will be of future value in the world of work or further academic study.

Research for the geographical study and issue may be related to topics studied in class or, alternatively, candidates are free to research any appropriate study

and issue of their own choice. A successful project-folio is likely to be in an area in which candidates have a genuine interest, either from a topic they have studied, future career or personal point of view.

There may also be opportunities for other, additional skills for learning, skills for life and skills for work to be developed in the Course. For example, the use of debating, discussion groups or visits from subject experts could develop skills of listening and talking. However, this could vary across centres depending on approaches being used to deliver the Course in a centre, and so this is for centres to manage.

Approaches to assessment

There are different approaches to assessment, and teachers/lecturers should use their professional judgement, subject knowledge and experience, as well as their understanding of their learners and their varying needs, to determine the most appropriate approaches and, where necessary, to consider workable alternatives.

Unit assessment support packs

Information about Unit assessment is found within the Unit Specifications and Unit assessment support packs.

The purpose of Unit assessment is to ensure that learners have achieved at least the minimum level of competence in the skills, knowledge and understanding required in Advanced Higher Geography.

Teachers and lecturers preparing assessment methods should be clear about what that evidence will look like.

Flexibility in the method of assessment provides opportunities for learners to demonstrate competence in a variety of ways and so reduces barriers to attainment.

Teachers and lecturers should note that learners' day-to-day work may produce evidence which satisfies assessment requirements of a Unit, or Units, either in full or partially.

Course assessment

Information about Course assessment is found within the Course Assessment Specification, the Specimen Question Paper and the Coursework information (Task and General).

The purpose of Course assessment is to assess the added value of challenge and application, through the Question Paper and the project-folio. In the Question Paper, candidates will apply their skills, knowledge and understanding of the mandatory content. The project-folio will assess the challenge of applying skills of research and presenting findings in the form of a study/issue.

Each Course has additional time which may be used at the discretion of the teacher or lecturer to enable learners to prepare for Course assessment. This time may be used near the start of the Course and at various points throughout the Course for consolidation and support. It may also be used for preparation for Unit assessment, and, towards the end of the Course, for further integration, revision and preparation and/or gathering evidence for Course assessment.

Examples of activities which may help learners prepare for course assessment could include:

- selecting topics, gathering and researching information, evaluating and analysing findings, developing and justifying conclusions, presenting the information
- reviewing Specimen/Exemplar Question Papers and/or Coursework documents
- practising Question Paper techniques, revising for the Question Paper
- clarifying requirements of the project and the amount and nature of the support that can be expected

Authenticity

Teachers/lecturers are responsible for ensuring that evidence presented by learners for Course or Unit assessment is the learner's own work.

There are a number of techniques and strategies to ensure that learners present work that is their own. Teachers and lecturers should put in place mechanisms to authenticate learner evidence.

For example:

- regular checkpoint/progress meetings with learners
- short personal interviews
- checklists which record activity/progress
- learners' notes from their independent reading

Groupwork approaches are acceptable as part of learning and teaching, including preparation for assessment.

For more information, please refer to SQA's *Guide to Assessment*.

Equality and inclusion

It is recognised that centres have their own duties under equality and other legislation and policy initiatives. The guidance given in these *Course/Unit Support Notes* is designed to sit alongside these duties but is specific to the delivery and assessment of the Course.

It is important that centres are aware of and understand SQA's assessment arrangements for disabled learners, and those with additional support needs, when making requests for adjustments to published assessment arrangements. Centres will find more guidance on this in the series of publications on Assessment Arrangements on SQA's website: www.sqa.org.uk/sqa/14977.html.

Further information on the Units in the Course

Relationship Grid

The following grids attempt to illustrate the distinction between the various aspects of the Advanced Higher Geography Course:

- Unit and Coursework
- Unit and Project
- Unit and Question Paper
- Project and Question Paper
- Folio A-Study and Folio B-Essay in the Project

The details in the grids for Advanced Higher Geography should be read in conjunction with the relevant:

Mandatory documentation:

- Course Specification
- Unit Specifications
- Course Assessment Specification

Advice and guidance:

- Course and Unit Support Notes

Assessment:

- Unit assessment support materials: judging evidence table
- Coursework Component:
  - general assessment information on the Coursework: general marking principles
  - the Coursework assessment task: general marking principles, detailed marking instructions
- Question Paper:
  - Specimen Question Paper: general marking principles, detailed marking instructions

Unit	Outcomes and Assessment Standards Making assessment judgements	Project	Question Paper
Geographical Skills	At the discretion of the centre/learner Free open choice of context — high degree of personalisation and choice	At the discretion of the centre/learner Free open choice of context — high degree of personalisation and choice	At the discretion of SQA SQA will decide the context of the question from information shared in the CAS
	Minimum Competence — in each Assessment Standard one example of candidate evidence is required. This evidence does not have to be related to each other across the Assessment Standards.	**Added Value** — develops out of Outcome 1-4. The added value will be the wide range of skills used and the depth of knowledge demanded. A wide range is defined as at least three techniques.	**Added Value** — develops out of Outcome 1-4. The added value will be the wide range of skills used and the depth of knowledge demanded. A wide range is defined as at least three techniques.
	Outcomes and Assessment Standards	**Project-folio Section A:**	**Question Paper**
		Geographical study — the candidate is required to demonstrate the ability to undertake detailed research of a geographical nature which uses primary and/or secondary sources, to gather and process data and which reports findings appropriately.	The Question Paper will focus on the following skill areas: ♦ Map interpretation ♦ Gathering and processing techniques ♦ Geographical data handling

Unit	Outcomes and Assessment Standards Making assessment judgements	Project	Question Paper
	Outcome 1 Develop independent geographical research skills by:	Folio Section A is worth 60 marks/ In order to complete Geographical Study, candidates will:	Questions within the paper may focus on one particular skill area or they may integrate more than one skill area. Questions will attempt to integrate knowledge and skills in an appropriate geographical way, allowing candidates to show greater depth and understanding of the subject. Candidates will well be expected to use more than one skill to answer a question/task. Questions will not normally duplicate assessment tasks assessed at Unit or within the Coursework project. Questions will draw on the skills learned across the Course and will expect candidates to show greater knowledge, application and analysis of information.

Unit	Outcomes and Assessment Standards Making assessment judgements	Project	Question Paper
	1.1 Identifying an appropriate complex geographical topic for research	A. Justify the choice of a complex geographical topic to research	Not assessed in the Question Paper.
	1.2 Planning a programme of research	B. **Plan** and carry out detailed research, which could include fieldwork	Candidates may be asked in a Gathering and Processing Techniques question to plan a piece of research.
	1.3 Identifying appropriate processing techniques to present findings from the research		Candidates may be asked in a Gathering and Processing Techniques question how to present findings from research.
	Outcome 2 Apply a wide range of research methods and fieldwork techniques by:		
	2.1 Researching, collecting and recording valid and reliable information from at least two secondary sources	B. Plan and **carry out** detailed research, which could include fieldwork. Candidates are expected to link the gathering technique to the geography behind it, eg comparing with models/ relating to literature/changes over time. This is the added value of the project	Candidates may be asked in a Gathering and Processing Techniques question how information from sources has been gathered.
	2.2 Applying one appropriate fieldwork technique associated with physical geography to gather valid and reliable evidence		Candidates may be asked in a Gathering and Processing Techniques question to explain/evaluate a fieldwork technique.

Unit	Outcomes and Assessment Standards Making assessment judgements	Project	Question Paper
	2.3 Applying one appropriate fieldwork technique associated with human geography to gather valid and reliable evidence	compared to the minimum competence at Unit level.	Candidates may be asked in a Gathering and Processing Techniques question to explain/evaluate a fieldwork technique
		C. Evaluate the research techniques and the reliability of data gathered	Candidates may be expected to evaluate evidence supplied in all questions, eg evaluate from a set of given information.
		D. Demonstrate a detailed knowledge and understanding of the topic from wider reading	All questions
	Outcome 3 Apply an appropriate statistical technique in a geographical context by:		
	3.1 Making a calculation using the statistical technique	E. Use a wide range of appropriate techniques to process the gathered information	Knowledge of a range of appropriate techniques to process gathered information may be asked in Gathering and Processing Techniques/ Geographical Data Handling questions.

Unit	Outcomes and Assessment Standards Making assessment judgements	Project	Question Paper
		F. Analyse all the information that has been gathered and processed to identify and explain relationships	Candidates may be asked to analyse information in any question
	3.2 Analysing the results of the calculation to reach a valid conclusion.	G. Reach reasoned conclusions supported by a range of evidence	Candidates will be expected to reach conclusions from evidence supplied in all questions.
	Outcome 4 Apply an appropriate mapping technique in a geographical context by		
	4.1 Constructing an appropriate map or map-based diagram clearly and accurately to illustrate information	E. Use a wide range of appropriate techniques to process the gathered information	Candidates may be asked in Map Interpretation questions to complete a map or map-based diagram, eg overlay.
		F. Analyse all the information that has been gathered and processed to identify and explain relationships	Candidates may be asked to analyse information in any question.
	4.2 Analysing a map or map-based diagram to reach a valid conclusion	G. Reach reasoned conclusions supported by a range of evidence	Candidates will be expected to reach conclusions from evidence supplied in all questions.

Unit	Outcomes and Assessment Standards Making assessment judgements	Project	Question Paper
Geographical Issues	At the discretion of the centre/learner Free open choice of context — high degree of personalisation and choice	At the discretion of the centre/learner Free open choice of context — high degree of personalisation and choice	Not assessed in the Question Paper. However, some Assessment Standards and skills used in the project-folio B may be used by candidates to answer parts of questions across the Question Paper.
	Minimum Competence — in each Assessment Standard one example of candidate evidence is required	**Added Value** — develops out of Outcome 1. The added value will be the wide range of sources used and the depth of knowledge demanded. A wide range is defined as at least three sources.	Not assessed in the Question Paper. However, some Assessment Standards and skills used in the project-folio B may be used by candidates to answer parts of questions across the Question Paper.
	Outcome and Assessment Standards	**Project -folio Section B**	
	Outcome 1 Critically evaluate viewpoints using evidence from a wide range of sources relating to a complex, current geographical issue by:	**Geographical issue** — the candidate is required to demonstrate the ability to carry out a critical evaluation of a current complex geographical issue by identifying viewpoints, from a wide range of sources, about the issue and evaluating these	

Unit	Outcomes and Assessment Standards Making assessment judgements	Project	Question Paper
		viewpoints in a way that allows valid conclusions to be drawn. Folio Section B is worth 40 marks. In order to complete a Geographical Issue candidates will:	
		A. Justify the choice of a current complex geographical issue to critically evaluate	Not assessed in the Question Paper.
		B. Undertake wider background reading from a wide range of sources relating to the geographical issue	Not assessed in the Question Paper.
	1.1 Summarising a wide range of viewpoints on a complex geographical issue	C. Summarise a wide range of viewpoints on the complex geographical issue	Not assessed in the Question Paper.
	1.2 Evaluating a wide range of viewpoints, to assess the degree of credibility and balance	D. Critically evaluate each of the viewpoints	Not assessed in the Question Paper.
	1.3 Reaching a reasoned conclusion supported by evidence	E. Reach reasoned conclusions supported by a wide range of evidence	Candidates will be expected to reach conclusions from evidence supplied in all questions.

Course Units

Geographical Skills **Unit**
The general aim of this Unit is to allow candidates to further develop their range of geographical methods and techniques. These include mapping skills, graphical techniques and a range of statistical techniques for gathering, analysing and interpreting geographical data. Learners will also develop a range of independent geographical research skills.

To achieve this they will:

- develop independent geographical research skills
- apply a wide range of research methods and fieldwork techniques
- apply an appropriate statistical technique in a geographical context
- apply an appropriate mapping technique in a geographical context

Developing independent geographical research skills
At Unit level candidates may need support and guidance in **planning** their choice of topic. This will include a degree of background reading to support their choice of topic and should be supported by appropriate learning and teaching experiences.

- Candidates should identify a topic that has a sufficient level of demand to allow scope for:
  - wide-ranging research
  - gathering and using both primary and secondary sources
  - detailed analysis of data
  - detailed processing of data

- Candidates should produce a **plan** which must include an appropriate:
  - location to carry out the research
  - research methodology
  - suitable fieldwork technique(s) for the chosen topic
  - timing for the research

- In their **plan** candidates should **identify** appropriate but different processing techniques which could be used to present findings from their research.

Research/fieldwork
The candidate's choice of topic may use either:

- primary fieldwork sources
  or
- secondary sources
  or
- a combination of both

Group fieldwork data is perfectly acceptable. An example of this might be data collected as part of a river study. This may well be better for safe working and a

larger set of data can be collected. However, the group nature of the data must be acknowledged by candidates in their response.

At Unit level, fieldwork is an integral part of the learning and teaching. It provides candidates with the opportunity to apply appropriate fieldwork techniques in both a physical and human context. It also gives the candidate an opportunity to demonstrate skills in this area of the Advanced Higher curriculum. The timing of fieldwork is important. If not timed appropriately, candidates may not leave enough time to complete the Unit assessment. This should be discussed with the candidates to help them understand why time scheduling is so critical. The use of a fieldwork notebook is good practice.

Consideration should be given at all times to candidates' safety when carrying out any fieldwork.

Physical gathering techniques
Candidates should provide evidence of how a fieldwork technique associated with physical geography is used.

To do this they must provide:

- identification of a physical fieldwork technique
- detailed explanation of the sampling technique used, to allow for the collection of valid and reliable data
- detailed description of how the data was collected to provide relevant evidence
- a record of the data collected (which might include annotated photographs/ diagrams/sketches where appropriate)

Candidates should be encouraged to use appropriate websites and text books on how to apply physical techniques.

Possible physical techniques that could be used might include:

Beach profile analysis
This technique involves measurement of the changes in the gradient of a beach from sea level to the shore top. This may involve recognising the significant features of the beach and develop an understanding of how it may change over time.

Micro-climate analysis
This technique is used to measure:

- wind speed and direction — anemometer and weather vane respectively (use a compass and Beaufort scale if these are unavailable)
- temperature, relative humidity and light level — use a thermometer, hygrometer and light meter
- precipitation — rain gauge and recording sheet

Pebble analysis
This technique is used to measure the size, shape and rock type of pebbles within a prescribed area, for example:

- pebble angularity — several samples taken across the width of a river and compared to a pebble size table
- pebble size — use calipers to measure the axis proportions

Slope analysis
This technique is carried out to investigate the variations in variables along a slope transect, for example:

- humus depth — soil profiles cut into slope transect and humus depths recorded
- acidity — pH measuring paper or a digital pH measurer

Soil analysis
These study techniques measure the properties of a soil sample.

- pH — either an electronic meter can be used or the test-tube and indicator solution method where a soil sample is mixed with barium sulphate, pure water and pH indicator solution and compared to a pH chart
- temperature and moisture — temperature and moisture probes can be used. Alternatively, a soil sample can be taken in a sealed plastic bag and the moisture content found by weighing, drying out in an oven and then re-weighing
- soil profile — a section is dug out of the soil so that the different horizons can be seen. Written descriptions can be recorded of the structure, texture, organic content, colour and depth of each horizon

Stream analysis
These techniques are appropriate to studying how the physical properties of a river and its channel vary along its course, for example:

- river depth — use a meter ruler or ranging pole and take measurements at regular 30cm to 50cm intervals (depending on the channel size). Can be used to build cross-section graphs.
- river width — stretch a tape measure taut across the river at 90^{o} to the channel. The start and finish points of the tape will depend on whether you are investigating the river at its existing level or in high spate. Measuring at the vegetation line can show this variation.
- wetted perimeter — wetted perimeter can be measured using a heavy chain, rope or measure tape, which should be stretched across the river bed from one bank to the other. Can be used to establish discharge levels from cross-section area graphs.
- flow rate — either use a flow meter or a floating object such as an orange to record the time taken for the object to travel over a set distance. Speed equals distance over time.

Vegetation sampling
This technique is used to determine the amount and variety of vegetation in a prescribed area, for example:

- vegetation amount — a quadrat randomly thrown and number of species per square recorded as a % total
- vegetation type — a camera is useful, or plastic bags to store samples for later identification

Human gathering techniques
Candidates should provide evidence of how a fieldwork technique associated with human geography is used.

To do this they must provide:

- identification of a human fieldwork technique
- detailed explanation of the sampling technique used, to allow for the collection of valid and reliable data
- detailed description of how the data was collected, to provide relevant evidence
- a record of the data collected (which might include annotated photographs/ diagrams/sketches where appropriate)

Candidates should be encouraged to use appropriate websites and text books on how to apply human techniques.

Possible human techniques that could be used might include:

Environmental quality survey
Use a decibel meter to measure noise levels (free apps are available). Use a perception study to record levels of air quality. A camera can record levels of graffiti, litter and vandalism.

Interview design and implementation
Interviews are more focused and flexible than questionnaires, where open-ended (rather than closed) questions are more appropriate and the opportunity for respondents to give their opinions without being pigeonholed by option boxes is possible. Interviews can pursue more interesting points and can adapt to the conversation.

Pedestrian survey
Use a recording sheet and ‘click’ counter to record pedestrian numbers at selected sites. Site selection and time of day will be important considerations.

Perception studies
Use mental maps or perception surveys to examine and compare people's perceptions of, for example, a suburban environment or the limits of their neighbourhood, gathered largely through questionnaires and interviews.

Questionnaire design and implementation
Questionnaires are where the opinions of a group or groups of people are relevant. They can gather information about the people (eg a survey to investigate the characteristics of a group), information about patterns and processes (eg the sphere of influence of services for shoppers or commuters), or information about opinions and behaviour.

Rural land use mapping
Use OS maps and land-use records to map land uses for use in choropleth mapping. Interview farmers for details on changes in land use. Consult older maps for evidence of change in the landscape.

Urban land use mapping
Use OS maps and land-use mapping keys (RICEPOTS) to record land use, building height and quality. Use recording sheets to record environmental quality surveys, interviews and questionnaires. Decibel metres (easily available as free Apps) can be used to measure noise pollution.

Traffic survey
Traffic counts will require a timer. Record outbound and inbound traffic, time at stand still and various vehicle types. Location choice and time of day will be important considerations.

Possible combinations of contextually appropriate or complimentary gathering techniques												
Skill area	**Skill sub-area**		These columns suggest some possible combinations of contextually appropriate or complementary gathering techniques.									
			Slope study	**Beach study**	**River study**	**Pebble size**	**Perception study**	**Urban transect**	**Vegetation study**	**Sphere of influence**	**Micro-climate study**	**Land-use change study**
2. Gathering and Processing Techniques	Physical	Beach analysis		X		X	x		X			
		Micro-climate analysis		X				x	X		X	
		Pebble analysis		X	X	x						
		Slope analysis	X	x		X			X			
		Soil analysis	X	X			X		X			
		Stream analysis			X	x						
		Vegetation analysis	X	X					X			
	Human	Environmental quality survey						x				
		Interview design and implementation										X
		Pedestrian survey						X		X		
		Perception studies						X			X	X
		Questionnaire design and implementation								X		X
		Rural land-use mapping						X	X	X		X
		Urban land-use mapping						X		X	X	X
		Traffic survey						X		X		

In the project-study, candidates are expected to link the above techniques with the geography behind them. This is part of the added value of the project/Question Paper, eg comparing with models/relating to literature/changes over time.

Processing techniques

Candidates should provide evidence of using a statistical technique in a geographical context to complete a calculation.

Candidates should be encouraged to use appropriate websites and textbooks on how to apply statistical techniques.

Possible statistical techniques that could be used:

Descriptive statistics:

- Measures of central tendency
  - Mean: the mean is the average where you add up all the values and then divide by the number of values.
  - Median: the median is the middle value in the list of numbers. Example: to find the median of {13, 20, 11, 16, 15, 9, 25}. Put them in order: {9, 11, 13, 15, 16, 20, 25}. The middle number is 15, so the median is 15. (If there are two middle numbers, you average them.)
  - Mode: the mode of a set of numbers is the one that occurs most often. For example, in the set {2, 3, 5, 3, 9}, the mode is 5 because there are 2 threes and only one of each of the others.

- Measures of dispersion
  - Range — the difference between the lowest and highest values. In {4, 6, 9, 3, 7} the lowest value is 3, and the highest is 9, so the range is 9 − 3 = 6.
  - Interquartile range — the lower quartile is the median of the lower half of the data set. The upper quartile is the median of the upper half of the data set. The interquartile range is the spread of the middle 50% of the data values. This is useful for adding rigour to statistical analysis.
  - Standard deviation — the standard deviation is a measure of how spread out numbers are. So, using the standard deviation we have a way of knowing what is normal or typical, and what is at either extreme.
  - Standard error of the mean — this quantifies how accurately we know the true mean of a population or other data set.
  - Coefficient of variation — this is a useful statistic for comparing the degree of variation from one data series to another, even if the means are drastically different from each other.

Inferential statistical testing:

- Chi-squared analysis — chi-squared is used to determine whether there is a significant difference between the expected frequencies of a dataset and the observed frequencies in one or more dataset categories. For example, in observing two different shell types along a dune transect we can determine whether the observed pattern is significant.
- Linear regression analysis — this is used for observing the change in variable y in relation to the magnitude of variable x. Good for measuring the strength of a relationship.
- Nearest neighbour analysis — an example of the search for order in settlement or other patterns in the landscape is the use of a technique known

as nearest neighbour analysis. This attempts to measure the distributions according to whether they are clustered, random or regular.

- Pearson's product moment correlation coefficient — Pearson's is another method of finding the strength of a relationship but is more accurate than Spearman's.
- Spearman's rank correlation coefficient — Spearman's rank is a simple and effective way to find the strength of a relationship/correlation.

Mapping techniques

Candidates should provide evidence of using a map or map-based technique used in a geographical context.

Candidates should be encouraged to use appropriate websites and textbooks on how to use map or map-based techniques.

Possible map or map-based techniques that could be used:

Annotated diagram/overlay — a comparative method of displaying information such as changes in household income and house price.

Choropleth map — a choropleth map is one in which areas are shaded or patterned in proportion to the **measurement** of the value being shown on the map, eg population density or per-capita income.

Cross-sections — cross-section maps show a feature such as a meander, sand dune or mountain in section as if sliced in two.

Dot map — a dot distribution map (sometimes referred to as a *dot density map*) is as a map that uses a dots to show the presence of a feature or value. Dot maps rely on a visual scatter to show spatial pattern.

Flow line map — flow maps show movement of objects or systems from one location to another, eg migration numbers or inputs and export trade balances.

Isoline map — isoline maps show spatial distributions.

Proportional symbols map — proportional symbol maps use simple symbols (usually a circle or square) and change their proportions relative to the data value found at that location.

Sphere of influence map — a sphere of influence map shows the area of influence of a factor such as number of tourist visits or distance commuted relative to a reference point on the map.

Transects — a straight line drawn across a photo or map against which values, distributions, patterns, **observations** and measurements can be shown.

Guide to using a data-handling technique

The following is a simple guide to the basic steps needed to complete a data-handling technique from first steps. It would be up to the candidate to identify various sources of appropriate and valuable data, and then to process and interpret this information in a manner which addresses their hypothesis. This might typically involve a variety of data sets, processed techniques and statistical skills to reach reasoned conclusions.			
Skill area	**Skill sub-area**		**Boulder size study** **Hypothesis:** boulder size decreases in size and angularity progressing downstream **Null hypothesis:** there will be no relationship between distance downstream and boulder size
3. Geographical Data Handling **The form of data-handling, presentation and statistical testing will be variable factors which will only become apparent as the question is developed.**	Handling different data types	Nominal	This data can be assigned a value where the value given is just a label — useful for correlations and therefore Spearman's and Pearson's can easily be applied.
		Ordinal	
		Interval	
	Sampling Methods	Random	
		Regular	
		Stratified	Stratified gathering would allow dangerous areas to be avoided, and more selective data sets to be gathered.
	Graphical presentation of data	Systems diagrams	
		Logarithmic graph	
		Kite diagram	This would show how boulder size varies in range against distance downstream.
		Scattergraphs	
		Polar graph	
		Triangular graph	
		Dispersion diagrams	
		Bipolar analysis	

		Map or map-based diagram, eg: ♦ annotated overlay ♦ choropleth map ♦ cross-section ♦ dot map ♦ flow line map ♦ proportional symbols ♦ sphere of influence ♦ isoline map ♦ transect	A transect map allows representation, using a variety of graphic techniques, of how boulder size and angularity vary the progressing downstream.
	Descriptive statistics	Measures of central tendency	
		♦ mean	
		♦ median	
		♦ mode	
		Measures of dispersion	
		♦ range	
		♦ interquartile range	This would allow assessment, in further detail, the dispersal of boulders as shown on a kite diagram and could be used in combination with standard deviation.
		♦ standard deviation ♦ standard error of the mean ♦ coefficient of variation	

	Inferential statistical testing	Chi squared	If two pebble types were identified as typical to the bedload then their populations could be easily compared for their statistical dispersal downstream using this statistical technique.
		Linear regression	
		Nearest neighbour	
		Pearson's product moment correlation coefficient	As could Spearmans, though with greater accuracy as it takes advantage larger data sets — regular sampling done earlier in the investigation would have perhaps suited this more.
		Spearman's rank correlation coefficient	This can be used to assess the correlation between boulder size and variables such as distance of stream velocity.

How topic choice might affect choice of suitable techniques

Topics for research	Physical/human technique	Sampling to gathering valid and reliable data	Explanation of how technique will provide valid and reliable data	Detailed description of the application of the techniques/ gathering process	Appropriate statistical techniques to process data/information	Appropriate mapping techniques to process data
River study	Stream analysis focusing on boulder size analysis	Boulder size	Will provide accurate mean boulder sizes and angularity along river transect length	At regular intervals boulders can be sampled at regular intervals across the width of the stream using calipers for exact results.	Chi squared would be able to compare populations of angular and sub angular samples, or pebbles of different types. Pearson's product analysis can establish a correlation between distance downstream and pebble size.	Stream ordering Transect cross sections Scatter plots to show correlations

Candidate checklist

Research step	Checklist/action
Choose topic	
Decide on hypothesis and null hypothesis. You well may have several hypotheses.	
Decide on gathering techniques appropriate	
Explanation of how technique will provide valid and reliable data	
Detailed description of the technique/gathering process	
Apply an appropriate statistical technique to process data/information further	
Include an appropriate mapping or map-based diagram to process data	

***Geographical Issues* Unit**
The general aim of this Unit is to develop critical thinking and the ability to evaluate viewpoints using evidence from a wide range of sources on complex, current geographical issues.

Learners who complete this Unit will critically evaluate viewpoints using evidence from a wide range of sources relating to a complex, current geographical issue. At Unit level, candidates will need support and guidance in summarising, evaluating and reaching a conclusion. This may include a degree of background reading to support their work and should be supported by appropriate learning and teaching experiences.

Suitable issues to critically evaluate
The critical evaluation is based on viewpoints expressed in the sources and requires candidates to reach a conclusion. It is therefore practical to base the issue on a question or opinion.

- At Unit level, candidates are provided with a topic to evaluate and relevant and appropriate sources.
- At Unit level, candidates are **not** required to identify a topic or select sources.
- Centres should note that there is no requirement to base the issue on any particular content, although it should have a clear geographical link, be current and of a suitably complex nature.
- Issues of a local nature are also useful as candidates may have a knowledge of the issue but candidates should take care not to be influenced by personal opinion as this will distract from the critical nature of the evaluation

Suitable sources for critical evaluation
There is no specified length required for a source; however centres should be careful not to select sources that are overly complex or lengthy. It is also important to consider that information could be interpreted from different sources including visual, graphical and numerical. While the audience for which the sources are intended is important in relation to the evaluation of the source, it should be of a suitably complex nature.

It is important to check the department, school and local library for relevant journals, reference magazines and newspaper articles which could provide sources or background reading. While the source should be up-to-date, the exact length duration of this will depend on the issue being investigated and may be something which should allow comments on the critical evaluation rather than being dismissed. Journals would normally be peer reviewed but centres/candidates should not be under pressure to subscribe to or buy articles to fit with an issue. Expert is also a term which would allow for comments in the evaluation and is not one which relies solely on academic qualifications.

A large amount of suitably complex information and of reasonable length can be located though the Open University website below.
http://www.open.edu/openlearn/

How to summarise sources
At Unit level the candidate response must include summaries of the main viewpoints from at least three sources.

Sources should:

- be relevant to the topic
- contain sufficient detail and be of sufficient length to allow for summary
- give a range of viewpoints

The viewpoints could come to the same conclusion but the arguments may be based on very different criteria. These need not be for or against but should have sufficient controversy to allow evaluation and for a conclusion to be reached.

Summaries for each viewpoint should be approximately 100 words in length. This word count is for illustrative purposes only and does not indicate a specified word count.

In summarising, candidates should ensure that their summaries are:

- staying relevant to the topic
- covering the three viewpoints
- of sufficient detail and length to show a good understanding of the individual viewpoints
- approximately 100 words in length (this word count is for illustrative purposes only and does not indicate a specified word count)

How to evaluate sources
In evaluating each of the viewpoints on the issue, Candidates should ensure their response refers to

- the degree of balance within the source
- the credibility of the content within the source
- the degree of credibility of the author or the publisher

Reaching a conclusion on the issue
In reaching a conclusion on the issue candidates:

- should use relevant evidence from all three sources
- may identify arguments
  - for the issue
  - against the issue
  - or a selection of responses from the ‘for’ and ‘against’ positions
- The conclusion need not be original, nor need it represent the candidate’s own personal view.

Project-folio

Researching a topic for the study and/or issue for Advanced Higher Geography Coursework: A candidate guide

The general aim of this section is to help you further develop a wide range of your independent research skills.

It will allow you to develop your independent research skills by providing guidance in:

- identifying an appropriate, complex topic for the study and/or issue to research
- planning a programme of research
- researching, collecting and recording information
- evaluating, synthesising, and analysing information or evidence
- understanding approaches to organising, presenting and referencing findings in an appropriate geographical style

The following guidance relates to each of these skills and processes. You should note that this advice is intended as general guidance only, and that you should also refer to the Advanced Higher Geography documents for specific subject information to support your area of research:

- Course Specification
- Course Assessment Specification
- Unit Specification

1. Identifying an appropriate complex topic and/or for research

A complex study and/or issue requires you to analyse data or information and make judgements, rather than undertake a simply descriptive or approach to a topic/ issue. The topic or issue identified might be worded as a question, statement, or a description of the area of study, and should be complex enough that the you challenge yourself to provide a convincing overall conclusion(s) to the questions raised in your area of research

An appropriate complex topic/issue is also one which will enable you to investigate different perspectives, opinions or points of view. For some topics this may mean significant differences of opinion — including major differences in the interpretation of data, issues, events or developments.

It is likely that a complex topic and/or issue will give rise to a number of additional questions, or related issues, which will need to be considered in order to reach an overall conclusion. These might develop as you read more widely about your chosen topic or issue. Also, providing good synthesis of research materials and well developed analysis of information to reach an appropriate judgement(s) is an important feature of a well-developed piece of research

You might approach topics and/or issues which involve evaluation, analysis and synthesis by posing one or more of the following questions, although these approaches are not the only ways to do this, and this is not an exhaustive list

- What is the current relevance/importance of the study/issue…?
- What data/information do I need to collect..?
- How important is some data/information…?
- To what extent does …?
- How far does/should…?
- How justified is this view…?
- How important a part…?
- Which (pieces of information) better explain…?

Evidence of how you approached Identifying an appropriate, complex study and/or issue for research can be generated in a variety of ways, such as a checklist, indicating the chosen issue and describing the process of choosing it. A short explanation could be produced to justify the issue selected.

2. Planning a programme of research

Once the topic and/or issue has been agreed with your teacher or lecturer, you should begin planning a programme of research. This could include a variety of steps, such as:

- developing wider knowledge of any content, context or information, through wider background reading or web-based information, relevant your chosen topic and/or issue
- coming to decisions about the way(s) in which your chosen topic and/or issue will be researched
- identifying a suitable range of resources for your topic and/or issue
- planning timescales for each part of your researching process
- agreeing key deadline dates for the completion of the different stages involved in researching the topic and/or issue

Developing further knowledge of contexts relevant to the chosen topic and/or issue

This will involve wider background reading, for example a textbook, online resources, newspaper articles, chapters or articles from journals or other similar sources. Your teachers or lecturers can help you identify suitable background reading at this early stage, as well as helping you plan a timescale for completion of your research

Making decisions about the way in which the chosen topic and/or issue will be researched

You should take care to ensure that a sensible range of data/information/factors/ views/outcomes is considered, and that concentration on a narrow set of data/information/factors/views/outcomes does not exclude consideration of alternative data or information.

You may find it helpful to construct a mind-map or other diagram of possible questions/issues at this stage. Alternatively, you could discuss the chosen study and /or issue with class colleagues or by a brainstorming session during which they might contribute possible alternative approaches/interpretations or ideas. These approaches can prove a useful tool in suggesting how questions/issues relate to each other and to the overall chosen topic and/or issue.

To ensure that the approach taken is sufficiently in-depth, it may be useful to plan how many questions/issues or headings are in your final plan. Your teachers or lecturers can give advice about which information to include or reject, and help with your critical thinking skills and discuss with you why you are using or rejecting particular points or information.

Good planning is essential to researching your chosen study and/or issue as it provides a structure for collecting information. However, remember that once you start your research, changes to your plan may be necessary, for example if new evidence or information emerges, or you wish to change the focus of your research. This should be seen as an important part of planning a programme of research, and you should recognise that this need to amend elements of any original plan is a valid aspect of almost all independent research.

Sources of information often refer to the views/evidence cited or referred to by other sources or authors. Noting references to these may help you understand more about different interpretations of information, and help you in developing a good analysis and conclusion at a later stage.

Checks on progress could take the form of a discussion between yourself and your teacher/lecturer; or individual presentation to the group. In any discussion of progress made, it may be helpful for you and your teacher/lecturer to make sure that you are using evidence analytically and that a good structure to the is emerging.

Possible ways of generating evidence
Evidence of how you approached your planning can be generated in a variety of ways, such as a copy of your notes could be retained as evidence of researching, collecting and recording information. Recording a detailed list of sources you consulted may also help provide evidence for this stage of the process.

3. Researching, collecting and recording information

You might find it helpful to focus research on one aspect of your chosen topic and/or issue at a time, rather than attempting to research, collect and record information relating to the whole topic and/or issue at the same time.

For example, where the chosen topic and/or issue involves reference to a particular data set or a range of factors, you may choose to start with research focused on this aspect of the topic and/or issue. Researching one aspect at a time can help to break the task up into more manageable sections and helps you to review your progress. A progress record sheet as part of your log or record keeping could be used to help you support this process.

Once a starting point has been identified, you should decide how best to record information gathered. Word-processed or hand written note-making will be the most straightforward way of proceeding. Although you will have had some previous experience of collecting and recording information, it is worth emphasising that it is good practice to:

- use the list of contents/index in any textbooks to identify sections relevant to the topic and/or issue being studied
- carry out initial reading or web-based research, to identify the most important and relevant material(s)
- be aware that many writers (particularly in academic journals) summarise their arguments at the end of a section or chapter — alternatively, their views may be outlined in the introduction or in the conclusion to the book or article
- many of these writers cross reference their work to other writers, and you should be careful to note this

You could complete a simple task like the one provided below to become familiar with different sources of information and how sources are recorded or listed (bibliographies). Your teachers or lecturers might have a short guide about conducting research and observing ethical standards in research to help you understand the importance of acknowledging sources and/or using sensitive information.

There is no single approved way of collecting and recording information but the following advice may prove useful:

- Always note the author and title of the book/article being consulted. If it's a published work, the date of publication should also be recorded.
- If the information is from an online or web based source, note the URL and the date when accessed.
- Summarise relevant factual evidence briefly, noting page references. By summarising, rather than quoting directly, you will both save yourself time and avoid unintended plagiarism. Similarly, there is no need to write in sentences and abbreviations can speed up the note-making process.
- Record statements of the author's views by using phrases such as:

‘ According to Singer, 2012 "…".'

- The recording of **brief** direct quotations may be helpful but these should be limited to a few words or phrases. Lengthy quotations are unhelpful. Page references or noting the location of online or web based for views/quotations should be noted to help your referencing at a later stage.
- Writers for academic sources often refer to the views/evidence cited by other academics sources. Noting references to these may help you understand more about different academic/scientific interpretations, and help you develop a convincing explanation or analysis at a later stage in your research.
- Checks on your progress could take the form of a discussion between you and your teacher/lecturer; or an individual presentation to your class group. In any discussion of progress made, it may be helpful for your teacher/lecturer to make sure that you are is using evidence appropriately and that a convincing explanations and analyses is emerging from your research

Possible ways of generating evidence

Evidence of how you approached researching, collecting and recording information can be generated in a variety of ways, such as noting how you used background reading, online or web based sources. This is a potential way to develop your skills of critical analysis, evaluation and synthesis. Keeping a literature review table or record can help you group together resources which address the same topic and or issue. The issues and themes emerging from the literature can be recorded and act as a framework for your research. An example is provided at the end of this section.

4. Evaluating, analysing and synthesising evidence for a study and/or issue

Evaluation, analysis and synthesis will involve you in considering a range of information to identify patterns, trends, exceptions and so on. Pictures, maps, tables of statistics and written sources may all be relevant and you should look closely at these to pick out what is relevant to your chosen topic and/or issue.

It is important that, having analysed the information and identified the relevance of viewpoints presented in the sources, you make a critical evaluation of the details you have collected. This will include you evaluating the validity of the information presented and making a judgement on how you interpret the viewpoint(s) in the sources.

When using and reviewing sources it may be helpful to take the following points into account:

Identifying a suitable range of resources

- As noted above, researching an appropriate topic and/or issue at Advanced Higher should involve a wide range of academic and other reading and it is therefore important that you plan ahead to ensure that the resources you need are available when you need them. The starting point is likely to be resources held within the geography department, but school and public libraries may also be able to help you with access resources. Some university libraries also provide reference facilities to final year school learners.
- Sources might include online or web-based journals/papers, newspaper or press articles or press releases and blogs.
- For some topics/issues there are many published works and you may need teacher/lecturer guidance to help you select appropriate reading. You may also need help or advice to distinguish between school textbooks (or books written for the general reader) and those written by academics with specialist knowledge of the topic. A good range of academic work should be consulted in your background reading and you should be able to recognise that different approaches and perspectives on topics and/or issues may involve slightly different interpretations of contexts or ideas and will require your careful reading.
- Researchers and authors use a wide variety of research methods to create new information and you should be aware of some of these differences, for example the differences between qualitative and quantitative data. . Research methodology also shapes thinking, so you should try to ‘think like’ or ‘think

within' this particular piece of research. This will hopefully help you to become a critical user of specific pieces of information

Possible ways of generating evidence
Evidence of evaluation, analysis and synthesis can be generated in a variety of ways. You should try to keep a log or other record as you go through the process of evaluation, analysis and synthesis. Evidence of this process will vary depending on the topic and/or issue you have chosen and you may need some teacher/lecturer guidance to help you decide on the best method(s) for this. You should record sources you use in the process, including the author, page references and publication date.

5. Understanding approaches to organising, presenting and referencing findings, in an appropriate geographical way/style

A critical skill is to understand how your findings should be presented in such a way as to be clear, reliable and reflect a relevant geographical style. There is no single way to achieve this and you should consider different possible approaches to organising and referencing your work.

Organising
A key issue in communicating the ideas you have evaluated, synthesised and analysed from your research is to be able to structure your findings appropriately. This will normally involve laying out issues relevant to the question(s) posed in your topic and/or issue in a logical manner which develops and leads to a conclusion which can be supported by the evidence you have gathered.

This may mean going into detail on the various areas. These might well include:

- matters of detail raised by the study and/or issue
- alternative interpretations that have been produced by different viewpoints
- detailed analysis of particular pieces of evidence/data/information that have a substantial bearing on the study and/or issue
- a wide-ranging consideration of all aspects of the study and/or issue

Presenting
The list below is one set of systems to present your topic and/or issue. You should consult your teacher/lecturer for specific information about the specific ways appropriate to the subject in question, and also any relevant information in the following Advanced Higher Geography documents for specific subject information on your area of research.

- Course Specification
- Course Assessment Specification and
- Unit Specification

Please note that:

- Writing should be presented on A4 single-sided pages.
- A consistent referencing system should be used throughout.

- Main text should use a standard font.
- Font size for the main text should be 12pt; titles/headings may be larger.
- Line spacing should be 1.5.
- Margins should be 2.5 cm on both LHS and RHS.
- Text contained in diagrams may be smaller or larger but must be legible.
- Direct quotes from the literature or primary sources can be indented, single-spaced and with a small gap to separate from the main text.
- Formatting should be consistent for the headings and subheading use; same font, bold, italics.
- Page numbers should be inserted at the foot of the page.

Layout of the project

Both parts of the project have defined word limits. The study should have no more than 3,000 words and the issue should have no more than 1,800 words. However, you might consider that a well-produced study would not normally exceed 25 A4 pages and a well-produced issue would not normally exceed 12 A4 pages.

If a study and/or issue is judged to be of excessive word length, then the study and/or issue will be referred to the Principal Assessor.

When considering the layout of your project you may want to consider, for example:

- Presenting text on A4 single-sided pages.
- Larger page sizes can be used but will be judged against the equivalent A4 size, eg one A3 page is equal to two A4 pages
- Using a standard font/size throughout, eg Arial 12pt (titles/headings may be larger).
- Using consistent line spacing, eg 1.5.
- Using consistent formatting of headings and subheading, eg same font, bold, italics.
- Numbering each page
- Making sure that text contained in diagrams is legible and relevant to the diagram.
- Presenting direct quotes from the literature or primary sources in such a way that they are clearly separate from the main text.

References

- You should understand how to use appropriate referencing system or convention
- You should be accurate in your references.
- All your quotations should be referenced.
- Specific facts such as statistics should usually be referenced unless they are the commonly used in all books on the subject.
- If a paragraph is based in its entirety on one book, then that should be referenced, even if there is no direct quotation.

The style of referencing can be the straightforward one of:
Author, Date, Title, page number

Example: Gillespie, R. (2011) *Critical Navigation Skills*, p93

Learners may use the conventional *ibid* and *op cit* as appropriate.

Research findings should be accompanied by a bibliography. As with references, learning how to construct and present a proper bibliography is part of the process of generating evidence of research for a topic and/or issue. The bibliography should be a genuine note of all sources used. It is important that the author's name and the title are entered correctly. The date and publisher should also be included (see above).

Most university websites have advice on setting out a bibliography. Some well-known standard formats include Harvard, MLA and APA. The main point is that you should be consistent in the format you choose to use and which is most appropriate for your area of research.

Websites should also be recorded in the bibliography. Web addresses should be listed, with the dates at which they were accessed. This is done because websites are subject to frequent alteration.

Agreeing key deadline dates for the completion of the different stages involved in researching the study and issue

You may find the process of researching independently a challenging task. Therefore it may be helpful for your teacher/lecturer/yourself to agree dates at which your progress can be reviewed.

Key dates might include:

- selection of a topic and/or issue study and/or issue
- completion of a plan for researching the study and/or issue
- reviews/discussion of the collecting and recording evidence

Question Paper

The purpose of the Question Paper is to demonstrate application of skills and breadth of knowledge and understanding from across the Course by sampling from the mandatory information on Course coverage.

This Question Paper will give learners an opportunity to demonstrate the following skills and knowledge and understanding:

- knowledge of a wide range of geographical methods and techniques and understanding of the contexts in which they ought to be used
- application of a wide range of geographical methods and techniques including mapping skills, research /fieldwork skills, graphical techniques and statistical techniques for analysing and interpreting geographical data

The Question Paper will be marked out of 50.

The questions or sub-questions will cover the three skill areas of **Map Interpretation**, **Gathering and Processing Techniques**, and **Geographical Data Handling**, using relevant accompanying supplementary items.

Questions within the paper may focus on one particular skill area or they may integrate more than one skill area.

Candidates will answer all questions.

Question Paper: Skill areas

Map interpretation: (20 marks) — the candidate will be expected to demonstrate mapping skills techniques through their ability to use evidence from maps and other supplementary items to support a response. 1:25000 scale Ordnance Survey (OS) *Explorer Series* topographical sheets of England and Wales will be used. Although assessing the skills of map interpretation, it is anticipated that candidates will apply prior knowledge of map reading and interpretation to these questions, eg use of scale, drawing to scale, interpretation of relief and surface features, etc. This will also include grid references and reference to features symbolised on the map.

In addition to the OS map, supplementary items will be provided in the form of one or more of the following: maps or map-based diagrams, photographs, sketches, graphical information or outline drawings or drawings based on photographs, data tables and written text about the area.

Gathering and processing techniques: (10 marks) — the candidate will be expected to demonstrate their knowledge and understanding of gathering and processing techniques in the context of research/fieldwork, and the analysis/ evaluation of data which might be obtained as a result of using those techniques. Questions **may** use the supplementary items supplied with the Question Paper. (Candidates will not be asked to carry out calculations or complete tables of data in the Question Paper. These are assessed at Unit level and in the project-folio.)

The Question Paper will sample from the following skills and techniques:

a) Physical

- beach profile analysis
- micro-climate analysis
- pebble analysis
- slope analysis
- soil analysis
- stream analysis
- vegetation analysis

b) Human

- environmental quality survey
- interview design and implementation
- pedestrian survey
- perception studies
- questionnaire design and implementation
- rural land use mapping
- traffic survey
- urban land use mapping

Geographical data handling: (20 marks) — candidates will be expected to interpret and analyse a given set of data, including statistical data, to evaluate any techniques used and their effectiveness in order to explain geographical relationships Questions will use the supplementary items supplied with the Question Paper.

The Question Paper will sample from the following skills and techniques:

- Handling different data types — nominal, ordinal, interval
- Sampling methods — random, regular, stratified
- Graphical presentation of data — bipolar analysis, dispersion diagram, kite diagram, logarithmic graph, polar graph, systems diagrams, scattergraph, triangular graph
- Map or map-based diagram — annotated overlay, choropleth map, cross-section, dot map, flow line map, isoline map, proportional symbols, sphere of influence map, transect
- Descriptive statistics
  - measures of central tendency — mean, median, mode
  - measures of dispersion — range, interquartile range, standard deviation, standard error of the mean, coefficient of variation
- Inferential statistics: chi squared analysis, linear regression analysis, nearest neighbour analysis, Pearson's product moment correlation coefficient, Spearman's rank correlation coefficient

Use of an atlas

The centre must provide an atlas for each learner for use in the examination. It should be suitable for use at SCQF level 7 and be of a general type (ie not devoted to one region or purely thematic). An atlas is a very valuable resource and will help candidates locate the OS map extract in its broader setting and

provide thematic information for questions. Centres are responsible for ensuring that atlases used are clean copies and contain no additional material.

Possible format of the Question Paper

The three skill areas will always be represented in the Question Paper and the mark allocation for these will be constant. However questions within the paper may focus on one particular skill area or they may integrate more than one skill area, so over time the format of the paper may vary. The following table illustrates some possible alternative ways in which the paper may be organised.

	Question Paper Skills Areas		
	Map Interpretation 20 marks	**Gathering and Processing Techniques 10 marks**	**Geographical Data Handling 20 marks**

Specimen Question Paper	**Map Interpretation** Overlays	**Gathering and Processing Techniques**	**Geographical Data Handling** Supplementary items
	OS map shared between these two skill areas		

Exemplar Question Paper	**Map Interpretation** OS map Overlays	**Gathering and Processing Techniques**	**Geographical Data Handling** Supplementary item

Alternative 1	**Map Interpretation** OS Map Overlay item	**Gathering and Processing Techniques**	**Geographical Data Handling**
		Supplementary items shared between these skill areas	

Alternative 2	**Map Interpretation** OS map Supplementary items	**Gathering and Processing Techniques + Geographical Data Handling** Two skill areas integrated and supplementary items shared

Alternative 3	**Map Interpretation + Gathering and Processing Techniques**	**Geographical Data Handling**
	Two skill areas integrated and supplementary items shared, eg OS map**,** overlays**,** supplementary item	Supplementary item

Alternative 4	**Map Interpretation** Overlays	**Gathering and Processing Techniques**	**Geographical Data Handling**
	OS map + supplementary items shared across the three skill areas		

Alternative 5	**Map Interpretation** Overlays	**Gathering and Processing Techniques**	**Geographical Data Handling**
	OS map shared with Geographical Data Handling	Supplementary item	OS map shared with Map Interpretation

Alternative 6	**Map Interpretation + Gathering and Processing Techniques + Geographical Data Handling**
	Three skill areas integrated and supplementary items shared, eg OS map**,** overlays**,** supplementary item

Appendix 1: Reference documents

The following reference documents will provide useful information and background.

- Assessment Arrangements (for disabled candidates and/or those with additional support needs) — various publications are available on SQA's website at: www.sqa.org.uk/sqa//14977.html.
- Building the Curriculum 4: Skills for learning, skills for life and skills for work
- Building the Curriculum 5: A framework for assessment
- Course Specification
- Design Principles for National Courses
- *Guide to Assessment*
- Principles and practice papers for curriculum areas
- *SCQF Handbook: User Guide* and SCQF level descriptors
- *SQA Skills Framework: Skills for Learning, Skills for Life and Skills for Work*
- *Skills for Learning, Skills for Life and Skills for Work: Using the Curriculum Tool*
- *Coursework Authenticity: A Guide for Teachers and Lecturers*

Administrative information

Published: May 2015 (version 2.0)

History of changes to Advanced Higher Course/Unit Support Notes

Course details	Version	Description of change	Authorised by	Date
	2.0	Minor changes to pages 1-11 in line with changes to mandatory documents. Extensive changes to the rest of the document based on widespread consultation/development of Course/Unit materials.	Qualifications Development Manager	May 2015