

The A Level Content Advisory Board

REPORT OF THE ALCAB PANEL ON GEOGRAPHY

July 2014

CONTENTS

Executive summary: key recommendations	....	2
Guiding principles	....	5
Practical considerations	....	8
Purpose and aims of geography A level	....	8
Prescription of core content	....	10
Proposed content	....	11
Physical geography	....	12
Human geography	....	17
Fieldwork and independent investigation	....	23
Geographical skills	....	27
Core content in relation to the draft criteria considered by the Smith Review	....	29
Non-core content	....	31
A level and AS level geography	....	31
Continuing professional development	....	32
Annex 1: List of panel members	....	33
Annex 2: list of members of reference group	....	34

Executive Summary

Key recommendations:

- 1. A and AS level content should enable learners to be inspired by their geographical understanding of the world they live in and to engage critically with real world issues and real world locations through the application of geographical knowledge, theory and concepts.**
- 2. A and AS level content should be pitched at an appropriate level of demand by showing clear progression in content, concepts and skills from GCSE. It must prepare students who go on to study geography and related subjects at university, and be relevant to those who end their studies of geography at A level.**
- 3. There must be a 60 per cent core content, which comprises four substantive themes, fieldwork, and skills content. The awarding organisations should be free to select the remaining 40 per cent non-core content in order to create distinctive specifications.**
- 4. A and AS level content must be balanced between human and physical geography. Within this balanced content people and environment themes must be a significant part of the new specifications and must build from a clear understanding of relevant processes in physical and human geography.**
- 5. A/AS level content must be accessible to a diversity of learners.**
- 6. Fieldwork in physical and human geography is integral to both A and AS level.**
- 7. A level specifications should include opportunities for students to undertake some independent investigative and research work which must include fieldwork.**
- 8. The core content must include the following themes: global systems and global governance; changing places; landscape systems; and water and carbon cycling.**
- 9. Funding should be made available for the development of appropriate training and resources for teachers in order to facilitate teaching of the new core content.**

Membership of the geography panel

There are twelve members of the ALCAB geography panel (Annex 1). Two were directly nominated by the Royal Geographical Society with the Institute of British Geographers and the Geographical Association and the remaining members were chosen from a pool of 35 who replied to an advertisement.

In addition to the main panel a reference group comprising a further 21 members was recruited from an excellent pool of applicants for the main panel (See Annex 2). This group operated virtually and offered the main panel valuable feedback at two key stages in the process.

Methods and meetings

Four day-long meetings of the panel were held: on 6 March, 8 May and 28 May 2014 at the Royal Geographical Society-Institute of British Geographers and on 10 April 2014 at the Geographical Association. At each meeting, in addition to the panel and the content criteria writer, observers from the Department for Education (DfE), the A Level Content Advisory Board (ALCAB), and Ofqual were present. At the first and third meetings representatives of the four main awarding organisations were also present.

In addition to formal meetings the panel worked through a discussion group and email to develop the discussion between meetings.

Panel discussions were informed by a range of sources of evidence:

- At the initial meeting the panel was briefed by DfE, ALCAB, Ofqual and the content criteria writer on the policy and regulatory context for the panel's discussions.
- At the initial meeting the awarding organisations gave their views on key considerations for the ALCAB process.
- The Royal Geographical Society and the Geographical Association briefed the panel on the school geography context including the reforms of Key Stages 1-4 and the current revision of the Quality Assurance Agency (QAA) benchmarking statement for geography in higher education.

- The Royal Geographical Society and the Geographical Association submitted discussion papers summarising their responses to the criteria consultation held in 2013.
- An approach was made to the heads of all UK university geography departments through the Royal Geographical Society. They were asked an open ended question: ‘what content do you feel it is important to include in A level geography?’ This generated detailed responses from eleven institutions. In addition, the panel, which jointly represents a further nine higher education institutions, offered feedback from local consultation.
- The same question was asked of the reference group and ten responses were generated.
- The panel also received a submission from the Royal Meteorological Society.
- Each of the four awarding organisations submitted evidence from its previous consultations and research into A level content.
- The content criteria writer consulted with the representatives of the awarding organisations about their responses to a first draft of the criteria.
- The panel had access to continuing advice about the ‘teachability’ of content proposals through the inclusion of a practising teacher on the panel and through input from the Royal Geographical Society and the Geographical Association. In addition to this the panel initiated three specific events in order to engage with the wider community of geography A level teachers as detailed below.
- A session was held at the annual conference of the Geographical Association in Guildford on 16 April 2014 and was attended by 66 teachers. Dr Alastair Owens, a panel member, briefed teachers on the ALCAB process and they were invited to contribute views particularly on two issues:
 - the need for balance between human and physical geography and the need for greater rigour in physical geography; and
 - the proportion of the content which should be core.
- A focus group was held at the Royal Geographical Society on 29 April 2014. This was attended by seven teachers and produced a report which was then commented on by a further group of seven teachers.

- A focus group was organised by the Geographical Association in Sheffield, with eight teachers and three representatives of the Geographical Association attending.
- Panel members carried out informal scoping using their own networks of academic and teacher contacts.
- The panel also received discussion papers on fieldwork from the Geographical Association, on A level content from the Royal Geographical Society, and on the aims of A level geography jointly from these two bodies.

Guiding principles

Consultation with stakeholders in higher and secondary education revealed a high degree of consensus among the geographical community about the desirable characteristics of geography A/AS level. The following key points emerged from the panel's discussions informed by evidence from the consultation. These points constitute a set of principles and considerations which provided the context for the panel's discussion of content:

- There is a unanimous view that fieldwork is central to geographical enquiry. Fieldwork must be integral to both A and AS level and comprise fieldwork in both human and physical geography.
- The new geography A level must be part of a clear progression from age 11 to 19 and minimise repetition of material from earlier key stages. There must be clear progression from GCSE to A/AS level and through to university study.
- A and AS level geography must provide a balanced geographical education for students who do not progress to higher level study.
- The content criteria must frame geography as a contemporary and engaging subject and recognise the degree to which the discipline engages with 'real world concerns'.
- The new A/AS level must have a balance of human geography and physical geography at an appropriate level of demand, and must include a significant component of people-environment study which builds on understanding of

human and physical processes¹. The awarding organisations expressed the view that this balance should be made explicit in the content criteria and the panel endorsed this view.

- Students at A and AS level must have an understanding of geography as a discipline and as a distinctive body of knowledge.
- A and AS level content must engage with themes that are relevant to contemporary geographical study and issues.
- The panel considered in particular concepts such as representation, meaning and identity are important to parts of human geography in higher education but which have had limited expression at A level.
- Students must have an understanding of human and physical processes and must be able to answer 'why' and 'how' questions in both areas.² This concern was expressed by the higher education community and echoed by the awarding organisations and in the teacher consultation. The panel considers an understanding of process in human and physical geography as fundamental.
- The interface between human and physical geography is one of the unique features of geography. An understanding of interdisciplinary approaches to 'people and the environment' is one of geography's key characteristics and must be an important and attractive part of the A/AS level. An understanding of people-environment interactions must develop from a sound understanding of process in both physical and human geography.
- Geography is a broad subject and there is no need or possibility for A/AS level to cover all of geography, but it must deliver high-level understanding of a range of aspects of the discipline. The A level should focus on a limited number of topics

¹ Note on terminology. In the previous A level criteria human geography, physical geography and people-environment topics were separately specified. The panel worked from the basis that geography can be divided into human or physical geography and that people-environment themes draw on process understanding developed in either or both fields. Therefore the statement that there should be a balance of human and physical geography does not in any way exclude or downplay the importance of people-environment themes. The panel expects to see these as a key part of new specifications drawing in a balanced way on understanding from human and physical geography.

² The higher education community identified the importance of a focus on processes rather than simply patterns or impacts. There is a perception that this has been particularly problematic in physical geography. Physical geographers feel that where specifications include impacts and responses in physical topics, for example, 'an understanding of flooding, its impacts and peoples responses', there is a tendency to focus on the people-environment aspects of the topics at the expense of understanding physical process.

in sufficient depth in order to equip students with core knowledge and concepts, as well as providing an understanding of modes of geographical enquiry which they can develop in an higher education context if they pursue further geographical study.

- Geographers must be competent in a range of geographical skills, which include qualitative and quantitative research methods, fieldwork skills, and data manipulation/graphical skills as well as the ability to quantify rates and processes (understanding of units, and measurement).
- Geographical skills must be embedded within the content so that it is clear why these are an important part of geographical understanding.
- Geographical information science is an important part of geography and an important arena for the employment of geographers at all levels. This area includes geographical information systems, remote sensing and the collection and handling of geo-located data. There is a need for students to engage with these key technologies.
- Students must understand the importance of key concepts in geographical understanding, including those of space, place, time, and scale. Students must also be familiar with, and recognise the importance to their studies of, a broader range of concepts relevant to the four core themes and non-core topics. These must include the concepts of causality, systems, difference, inequality, representation, interdependence, mitigation and adaptation, sustainability, risk, resilience and thresholds.
- The A level must include an independent research element, developing extended geographical knowledge and skills as well as extended writing and research skills. This is an essential preparation for higher education geography as well as developing transferable research, writing and analytical skills.
- The new A/AS level content must be relevant and accessible to a diversity of learners with a range of backgrounds and life experience working in a variety of learning contexts.

Practical considerations

A number of practical constraints on the formulation of new criteria emerged, particularly from discussions with teachers. These were:

- Teachers stressed the importance of fieldwork and noted that for them to deliver fieldwork in a crowded curriculum it needed to be explicitly specified as a core requirement.
- There was a view that current A level specifications were heavy on content and a challenge to teach in the available time.
- It was recognised by teachers that A/AS level geography had a wider purpose than simply entry to higher education and that the content should take account of this.
- Teachers were concerned about the potential for co-teaching A and AS level in the new structure. Concerns focused on the level of assessment and the shorter time available for AS level study. Several teachers reported that they did not expect to offer AS levels under the new system.
- Teachers were concerned that tight prescription on the use of geographical information systems as part of the skills package may be difficult for some schools to deliver within their available resources.
- It is important to retain an element of choice in the specifications, which will allow teachers to deliver material aligned to their own strengths and local situation.

The panel was mindful of these potential issues in developing its content recommendations.

Purpose and aims of geography A level

Whilst the primary remit of the ALCAB panel relates to the identification of content to support higher education, the panel recognised that workable recommendations on content must also recognise the wider role of A levels. Panel discussion of the overall aims of a geography A level identified the following key purposes.

- To prepare students for higher education. Content must allow clear progression from Key Stage 4 through to higher education. An attractive curriculum also meets the needs of higher education for the preparation of appropriately qualified and engaged geographers for higher education courses. The panel felt that the breadth of geography was such that preparation for cognate degrees was best dealt with by focusing on an attractive and diverse geography offering.
- To provide an appropriate geographical education to the 80 per cent of A/AS level candidates who do not go on to higher education geography courses. This is an important part of education for life and employment given the 'real world' engagement of geography and the geography curriculum.
- Delivery of skills for employment. The panel agreed that geography delivers a range of specifically geographical skills largely focused on handling spatial data, mapping and geographical information systems. However, equally as important is the fact that geography, by engaging with a diverse range of subject matter, requires students to practice and have a mastery of a broad range of numerical, graphical, and reading skills as well as knowledge of the world and global issues. This is what makes geographers strongly employable. This aim is therefore addressed through a broad and challenging geography curriculum.

The panel further considered the academic aims of geography A level, which must be reflected in the content criteria:

- The acquisition of a rigorous understanding of processes that shape human and physical geography and the concepts that are used to understand them at a range of time and space scales and in a range of locational contexts.
- The application of an understanding of process to major contemporary issues focused on the relationship between people and environment.
- Experience and understanding of the key role that fieldwork plays in the generation of geographical knowledge and understanding.
- Content that enables learners to think geographically, to be inspired by their geographical understanding of the world they live in and to engage critically with real world issues and real world locations through the application of geographical knowledge, theory and concepts.

- An understanding of the ways in which differences in values, attitudes and circumstances impact on an understanding of people-environment relations and developing the knowledge and ability to engage with these questions as citizens in the 21st century.
- The acquisition of skills required for geographical investigation including observation and data collection, handling geo-located data, as well as analysis, interpreting and presenting geographical information.

Prescription of core content

The panel considered the degree of prescription that is appropriate for core content. Arguments for core content at A/AS level were:

- The need for higher education departments to have some common base of assumed A/AS subject knowledge.
- Core content is prescribed and is an efficient way to introduce up to date concepts and themes into the A/AS level curriculum and to ensure a balance of human and physical geography.
- The Smith report recommended the identification of a core in order to align content more closely between the awarding organisations.

The argument against excessive prescription is that teachers need to be able to teach to their expertise. Given the breadth of the discipline a degree of choice means that students are more likely to be taught by enthusiastic teachers with a high level of topic expertise.

The panel's view is that a core content is desirable and that a core comprising 60 per cent³ of the A and AS level is appropriate. This is consistent with feedback from teacher engagement which supported prescription of the core at levels of up to 50 per cent or up to 60 per cent (varying by event). The provision of 40 per cent non-core content will allow the awarding organisations to develop their own individual existing strengths in the new specifications and to develop distinctive offerings whilst ensuring a common core of knowledge.

³ Note that this 60 per cent includes skills and fieldwork delivered embedded in the core content.

Proposed content

The panel considered it likely that the awarding organisations may draw from and extend high quality material from their current content in the non-core material (whilst not duplicating material in the new GCSE) and therefore that there was merit in specifying new core content.

Extensive discussion of content informed by both higher education and teacher input has led to the proposal of four core areas of content. Together with field work and geographical skills these will constitute the 60 per cent core material.

The panel's thinking on content was influenced by feedback from higher education on key aspects of geography required as preparation for higher education courses, by considerations of what worked well in existing specifications, considerations of progression (informed by an analysis of content across the whole school curriculum), and by a desire to provide a coherent core content characterised by process understanding and conceptual approaches at a level consistent with A/AS level study.

The proposed core content requires a balance between human and physical geography. An informed understanding of people-environment interactions is an important part of geographical study. The absence of pure people-environment topics from the core was, however, a deliberate choice. The panel intended that the core should provide a rigorous introduction to human and physical geography and to understanding of processes, which would provide the underpinnings for an informed understanding of people-environment topics developed in non-core content. It is important to emphasise here the principle identified in section 3 that the specifications must contain significant people-environment material building on understanding of physical and human geography.

Details of the four areas of core content are outlined below. While this is prescriptive, there are also some elements of choice within these core areas. The awarding organisations will have a degree of freedom to shape distinctive offerings within the core. The panel's intention is to provide sufficient guidance so that A level candidates arrive in higher education with a sound core knowledge whilst giving the awarding organisations the opportunity to use their expertise in order to develop exciting, innovative and challenging specifications. Given the breadth of geography as a discipline, and the varying circumstances of schools and learners, this is desirable.

Each of the four core content areas has a clear conceptual framework and approach. An understanding of processes operating at a range of scales, and of linkages of processes into systems is common across the content. This common framework across the four core content areas, together with the potential for people-environment links in each theme, should allow the awarding organisations to develop appropriately linked content in order to produce coherent specifications. Familiarity with these frameworks is an important preparation for higher education and will provide a common grounding for all students progressing to further study from geography A level.

Details of the content expected in the core areas are specified below. The panel has developed descriptions of this content, which have a higher level of detail than the content criteria, but these should not be read as proposed specifications. The intent is to provide more detail on the panel's thinking on content and to give clear guidance on the main areas of study that must be covered and which the awarding organisations can use to guide the development of their specifications.

Physical geography

The panel's discussions on core physical geography content identified two key areas for study: water and carbon cycling and landscape systems.

Material cycling in the earth system, specifically water and carbon cycling, is seen as a useful integrative theme, which allows a breadth of physical geography to be explored and requires rigour in understanding process and quantification. The water and carbon cycling theme addresses the key process basis for two major contemporary environmental issues - climate change and flooding - and as such provides process underpinning for the development of a range of people-environment themes in non-core people-environment content.

This content area is new but will incorporate some elements of the core content that was considered by the Smith review, such as elements of climate change, hydro-meteorology and some elements of water resource and flood hazard.

A second core area in physical geography will cover landscape systems. This theme will study the links between process and form in detail in relation to one of three landscape types: dryland landscapes, glaciated landscapes and coastal landscapes. It will focus on flows of energy and matter and the way in which they combine to produce a dynamic geomorphological system. It will include consideration of the role

of climate and climate history in conditioning landscape and human impacts on such systems. This unit is a development of the core content considered by the Smith review.

Details of the two core areas of physical geography are developed below:

Water and carbon cycles

Rationale

Understanding spatial and temporal variations in the processes which cycle material in the earth system is a key part of physical geography. Water and carbon are both vital for living organisms and their cycling, which describes the continuous movement of water and carbon through the biological and physical components of the earth, is critical for humans and ecosystems and has strong links to global climate. These cycles also link the earth's lands, oceans, and atmosphere into an integrated system and provide a relevant context for understanding an earth systems approach to physical geography.

This integrative topic will provide progression from the understanding of ecosystems, resources, and weather and climate change, developed at GCSE and will introduce students to more advanced concepts and areas of study that are an important part of contemporary physical geography. The expectation is that students will have a clear understanding of the physical processes that control the cycling of water and carbon between land, oceans and the atmosphere and the factors that influence change in flux and storage of water and carbon in time and space

Water and carbon cycles have been selected here as two key exemplars, but students should understand that the conceptual approach has wider application to the cycling of material and energy in the earth system (study of other cycles is not required). The approach can be generalised and as such will be valuable preparation for students undertaking further study in geography and related subjects in higher education.

Water and carbon cycling are central to understanding and responding to many contemporary environmental issues such as climate change, sustainable water supply and flooding. This core topic therefore provides a strong process basis for the development of people-environment topics by the awarding organisations as part of the non-core content.

Core themes

The content should be approached through an understanding of a systems approach. Students must be familiar with the principal drivers of change for each cycle, with the major stores and the processes that drive flux between the stores, and with the time and space scales at which fluxes, stores and drivers vary.

Key components of study for both cycles must include:

- The distribution and size of major stores of water and carbon on land, in the oceans and the atmosphere, and an understanding of factors driving change in the magnitude of these stores over time and in space.
- An understanding of pathways and processes⁴ that control the cycling of water and carbon. These should include land-atmosphere-ocean pathways for the movement of water and carbon and be considered at a range of time and space scales.⁵
- An understanding of the major controls on carbon and water cycling at global scales and how they vary over time including (i) natural variation, and (ii) human impacts, including land use change.
- An understanding of the links between the two cycles. Climate change provides a key context for exploring these linkages, which will develop an understanding of concepts such as feedback and thresholds.

For all of the above the level of demand must be appropriate to A/AS level, content must show progression from understanding developed at earlier key stages, and must build on two key principles: firstly, the understanding of a systems approach,

⁴ These processes must be studied at an appropriate level of detail for A/AS level so that for example understanding of runoff generation in river catchments will require understanding catchment hydrological processes. Consideration of carbon sequestration on land requires understanding of processes controlling fixation of carbon from the atmosphere by vegetation, loss of carbon through organic matter decomposition in soils and loss of carbon by erosion or human action.

⁵ For example students should understand controls on water flux at the hill slope scale but also broader climatic controls on rainfall, runoff and evaporation at continental scales. Similarly an understanding of the varying timescales over which processes operate is important so that for example, carbon cycle processes vary from those operating at short timescales such as photosynthesis, to the very long-term, such as the transformation of carbon into limestone and its subsequent release as the rock is weathered.

and secondly a rigorous understanding of the key environmental processes driving the cycles.

This content will develop a range of quantitative skills including an understanding of simple mass balance, unit conversions, and the analysis and presentation of data. Through the understanding that small scale processes drive global changes this theme provides an opportunity for students to carry out fieldwork, which they can understand as directly relevant to major environmental issues which fire their enthusiasm for geographical study.

Landscape systems

Rationale

This theme will introduce students to the integrated study of earth surface processes, landforms and resultant landscapes within the conceptual framework of a systems approach, for the first time. It will build on the knowledge gained at GCSE about landscapes of the UK, introducing greater conceptual complexity and a more detailed understanding of earth surface processes, together with their associated transfers of energy and movements of materials. The core themes will be introduced through an examination of one of the following: glaciated landscapes⁶, coastal landscapes or dryland landscapes.

The panel considered carefully whether to include fluvial landscapes as a case study under this topic but decided that this particular system already receives considerable coverage elsewhere at Key Stages 2-4 and that an important element of the new A level content was that it introduces new content that broadens student experience of key geographical issues. It also noted that elements of fluvial landscapes might be addressed in dryland landscapes (which often contain rivers) and also in the second physical geography core (water and carbon cycles), which includes consideration of the hydrological cycle.

Through this content students must understand the physical relationships between landform and process and comprehend the concept that landscapes are shaped by processes that operate at a range of spatial and time scales. They will learn that an understanding of environmental history is a core part of understanding contemporary and future landscape systems.

⁶ Including landscapes produced by the action of both valley glaciers and ice sheets.

The topic must examine landscapes beyond the UK, thereby introducing students to new content not covered at previous levels, but may also use UK examples since UK locations may be important for fieldwork opportunities. This topic will be studied in relation to one landscape type but will equip students with tools and conceptual approaches relevant to the study of any landscape system. It will constitute a sound foundation for courses in higher education in this area, and for non-core themes at A/AS level that concern people–environment interactions.

Core themes

Two main aspects will characterise the approach to be taken:

- A systems approach to understanding process and form

The systems approach will educate students about a variety of geomorphological processes and how these processes shape landforms and hence landscapes. In so doing, it will introduce new concepts, including those of causality, feedbacks, thresholds, equilibrium, and sediment budgets within geomorphological systems. The topic must include the study of flows of energy and matter, and how these combine to create specific landforms within the chosen system.

- Spatial and temporal scales and change in landscapes

Study must embrace an understanding of physical processes and patterns at a variety of spatial (landform to landscape) and temporal (seconds to millennia) scales. It will examine how landforms are inter-related and how, together, they make up characteristic landscapes. It will examine how landforms and landscapes evolve as a result of past, present and future climate-driven processes.

Students will study one of the following three representative landscape systems:

- Dryland landscapes. Drylands are characterised by limited soil moisture, caused by low precipitation and high evaporation. They occur at all latitudes of the planet, from high latitude polar regions to mid and low latitude deserts. Dryland landscapes are characterised by varied interactions between climate, soil and vegetation, and cover 41 per cent of the earth's surface and are inhabited by over two billion people (a third of the world's population). Dryland landscapes are therefore a major element of the physical geography of the world. They are a new topic for study at AS and A level and provide an exciting opportunity for students to gain geographical understanding of a range of dynamic landforms and associated landscapes.

- Coastal landscapes. Coastal landscapes exist at the interface between the world's land and its seas (freshwater and marine). They support a diverse range of landforms that develop by the interaction of winds, waves and currents, and the sediment supply sourced from terrestrial and offshore sources. Coastal landscapes include a range of landforms shaped by different processes that record the dynamic interaction between the atmosphere, ocean and terrestrial processes over a range of timescales. They include, but are not restricted to, rocky, sandy, estuarine and carbonate coastlines. Nowhere in the UK is more than 70 miles from the coast and about three million people live directly on the coastline. Globally it is estimated that more than a billion people live in coastal areas.
- Glaciated landscapes. Glaciated landscapes bear the erosional and/or depositional imprints of the former or present passage of glacier ice in a range of styles according to the morphology of the former ice bodies (i.e. glaciers and ice sheets) and the duration and number of glacial episodes. Glaciated landscapes are well developed in the UK, especially in upland settings, and approximately 75 per cent of the UK landscape has been glaciated and supports glaciated landscapes. Glaciated landscapes in the UK and abroad provide exciting new opportunities for AS and A level students to undertake fieldwork in land systems that are either presently or formerly impacted by glacial processes.

Human geography

Two core areas of content have been discussed in human geography. The first will consider global systems and global governance. It will focus on the processes and flows that occur at the global level, and the ways in which these influence people, places and institutions. The conceptual framework will emphasise the way in which global systems have local consequences. The content will be organised on two main themes: global interdependence and inequalities, and global governance.

The second core area of human geography content relates to 'changing places'. This theme will be based on a locality, most likely where the students live, and an alternate contrasting location. It will develop nuanced geographical understanding of a particular and familiar place. This is a new theme when viewed against the content criteria considered by the Smith Review and provides a strong context to introduce some of the ideas and methods in human geography, particularly around meaning

and representation, which higher education institutions felt were lacking in the current A level.

Details of the two core areas of human geography are developed below:

Global systems and global governance

Rationale

This topic involves study of how global systems and global governance shape relationships between citizens, states and non-state actors (for example, the United Nations, multinational companies or non-governmental organisations) around the world. It builds on GCSE studies on development and globalisation but introduces students to the geopolitical circumstances and factors shaping how actors such as states (but not exclusively) are affected by flows of people, money, ideas, technology, and renewable and non-renewable resources, and by factors such as extreme weather. States and non-state actors have to respond to these flows and global systems, which can sometimes act to promote stability, growth and development, but which can also be the cause of inequalities, conflicts and injustice.

The focus on global systems is not intended to be geographically comprehensive. By using case studies, students will learn how the world is shaped around us. Global systems, including those that regulate and order trade, financial transactions and migration, create interdependencies, which produce uneven geographies of benefits and costs. Geopolitics is concerned with how states and governments seek to exploit, manage and preserve those global systems within and beyond their national territories.

Two sub-themes are introduced: (i) global interdependence; and (ii) inequalities and global governance. The first theme addresses the existence of an unequal but interdependent world. Interdependence focuses on the relationships that are created by global systems, while inequality alerts us to how the world is shaped in unequal ways. Some states, especially superpowers, have greater capacity than others to drive global systems and influence geopolitical events. The second theme, global governance, examines the role of rules, norms and laws in reproducing global systems and the geographical consequences for citizens and places.

Study will include identified topics in each of the two key sub-themes, as noted below. Both sub-themes have scope for thinking about how scale, including local, regional, national, international and global, helps students to make sense of how global interdependence, inequality and governance manifest themselves.

Core themes:

Global interdependence and inequalities

Global systems, when they do function, are highly unequal in their constitution and impacts on states. Some actors, especially superpowers such as the United States and China, have a decisive impact on the making of the world. Larger states might be able to resist global rules and/or simply ignore the comments of others about their actions. Such geographical differences and inequalities can also make demands on other states to react to these circumstances. But inequalities can also be more subtle, and work inside states as well, as some citizens and some localities experience greater exposure to the inequities of global systems when it comes to wealth creation, employment and welfare protection.

This core theme asks students to think about how, why and where interdependence and inequalities exist in the world today.

Students should select one of the following topics through which to address these themes:

- Access to markets in the contemporary world⁷;
- Human development and life expectancy;
- Population movement and immigration control.

Although both qualitative and quantitative approaches should be drawn upon to some extent, this topic lends itself to the use of quantitative data and methods such as the world top income database and global wealth reporting by financial and inter-governmental institutions such as the United Nations.

Global governance

The world around us is regulated and structured through systems and rules. Many of these have been responsible for positive changes in the way in which global geopolitics operates. United Nations' agreements on human rights and genocide coupled with international law were crucial in creating the post-1945 international system. This is a system where nation-states, with exclusive sovereignty over their

⁷ For example, considerations of inequality in trade relations and 'fair trade'.

national territories, were supposed to be treated as equal partners under the auspices of the United Nations Charter.

This sub-theme theme asks students to think about how global governance works, with strong links of course to the first theme of global interdependence and inequalities. Students can explore how the 'global commons', human rights protection and territorial integrity provide powerful case studies for investigating how these systems and rules work.

Students should select one of the following topics through which to address the theme of global governance:

- The governance of the global commons (for example, Antarctica, oceans, the atmosphere and climate change);
- Human rights protection and the geopolitics of intervention;
- Sovereignty and territorial integrity.

Although both qualitative and quantitative approaches should be drawn on to some extent, this topic lends itself to the use of qualitative material and methods.

Changing place, changing places

Rationale

This topic aims to explore both the continuity and the changing nature of place and places through empirical data and as perceived by groups and individuals. Students must examine two sub-themes: (i) the socio-economic and demographic characteristics, relationships and connections of places; and (ii) the cultural meanings and representations attached to places. The understanding of places, as shaped by flows (of people, goods/resources, money/investment and ideas), and interconnections both within and beyond the places themselves, are also central to this topic and are relevant to both sub-themes.

The place within which students live and study⁸ are likely to be the starting point for investigation but at least one further contrasting place⁹ must also be studied in order to extend the opportunities for understanding concepts, including those of similarity,

⁸ Comprising a locality, neighbourhood or small community either urban or rural

⁹ As above. This can be in the UK or elsewhere; however at least one of the places studied must be in the UK.

difference and inequality, and for comparing processes of past and present development and change. By examining how local change and actions relate to the wider contexts of national, international and global forces, the dynamic nature of local places will be illuminated. Students must use both quantitative and qualitative approaches across the theme as a whole in order to illuminate their understanding and to gain experience of different methods for undertaking geographical enquiry. Equal overall weight should be given to quantitative and qualitative approaches.

Core themes:

Study will include one of the identified topics in each of the two key sub-themes, as noted below. Note that study for both sub-themes should move across scales, including local, regional, national, international and global, revealing the way in which local places are embedded within and interconnected to these wider scales.

Relationships and connections

Relationships and connections between people, the economy, and the environment help to explain why places are dynamic and constantly changing. Relationships and connections operate through a combination of local forces and links between communities, such as employment opportunities and migration, and external forces operating at different scales from regional to global, such as government policies, the decisions of multinational corporations or the impacts of regional or global economic restructuring. Those forces for change are reflected in the demographic, socio-economic and cultural characteristics of residents and in the fabric and nature of places.

Students should select one of the following topics through which to address the concepts of relationships and connections as applied to place:

- Demography, and cultural difference and diversity;
- Economic and social inequalities;
- Food production, circulation, and consumption.

Although both qualitative and quantitative approaches should be drawn on to some extent, this content lends itself to the use of quantitative data and methods,

Meaning and representation

Meaning and representation relates to how humans perceive, engage with and form attachments to the world. This might be the everyday meanings that humans attach to places bound up with a sense of identity and belonging. It also extends to ways that meanings of place might be created, such as through place making and marketing.

Representations of places are important because of the way in which they shape peoples' actions and behaviours, and those of businesses, institutions and governments. Representations also provide a reference point for people's sense of identity, underpinning their attachments to place, particularly in times of change.

Attention to meaning highlights the processes of representation through which places are depicted, variously by external agencies and by those who live in them. The meanings and identities ascribed to a place may also be related to its function, both social and economic, in the present and in the past. Places can have multiple meanings and identities, reflecting different perceptions and perspectives.

Students should select one of the following topics through which to address the concepts of meaning and representation as applied to place:

- Place making and marketing, drawing on examples such as regional development agencies, tourist marketing, and property marketing materials.
- Representation of place through photography and film, music and art, literature and poetry, through cartography, census data, statistical representations, digital worlds and geo-spatial technologies such as geographical information systems.
- Lived experience of place in the past and present. Developing understanding of how residents understand and see the places in which they live. These understandings may sometimes contrast with governmental and corporate representations such as those in place marketing or planning documents.

Although both qualitative and quantitative approaches should be drawn on to some extent, this content lends itself to the use of qualitative material and methods.

Fieldwork and independent investigation

Fieldwork is an essential component of geography. The ability to conduct field investigations in order to test ideas, build evidence, reflect on concepts, and create new geographical knowledge is one of the defining characteristics of a geographer.

This message came through as the strongest single response from higher education institutions and from teachers and the panel fully endorses this view. We note that a similar statement has been made in the current draft revision of the Quality Assurance Agency subject benchmark for geography in higher education. Fieldwork at A/AS level is therefore important as a preparation for higher education as well as a key educational context for geography at A/AS level. The panel therefore takes the view that fieldwork must be a core requirement in A level and AS level geography. Our recommendation therefore is that fieldwork experience in both human and physical geography should be core in both year 1 of A level (and at AS level) and in year 2 of A level.

We also recommend that A level fieldwork is assessed through an independent investigation (see below).

Because of the strength of feeling around the requirement that A/AS level students should undertake fieldwork the panel has formulated detailed recommendations about fieldwork.

Fieldwork requires the application of knowledge, skills and understanding of concepts to the particular circumstances of a real world location in order to investigate a defined question and create geographical understanding.

At A/AS level, students require sufficient time in the field to achieve the required depth of understanding and to develop the ability to apply their geographical knowledge and appropriate data collection and measurement techniques in real world contexts. The amount of time in the field that is required or achievable will vary with context and with the approach taken to supporting an independent fieldwork study. Fieldwork can be completed in a number of ways; locally, or on residential trips, and as full days or as part days, and can relate to either core or non-core content. As a guide to an appropriate degree of field experience at this level we recommend a minimum of four days of fieldwork as part of A level study and two days for AS level specifications (note these are not additive for the A level). This can include time spent in the field on an independent investigation (at A level) as long as the requirement to undertake human and physical fieldwork is achieved in each year. This represents time spent in the field and in addition there will be time required for

project planning, practicing field techniques, write-up and analysis of field investigations. The panel recognises that many schools may wish to exceed the minimum guideline and have the capacity to do so.

Fieldwork must draw on some core content and may also draw on non-core content for substantive themes. It must span human and physical geography and include both qualitative and quantitative data collection. The core content has been drafted with a view to making appropriate fieldwork contexts available for different groups and settings. For example, hydrological investigations in the context of the water cycling topic may be undertaken in either urban or rural settings whilst the changing places content has a focus on local neighbourhoods, which allows wide scope for the development of fieldwork content appropriate to differing school contexts.

Some themes are less amenable to fieldwork for logistical reasons. For example, dryland fieldwork is not possible in the UK, although fieldwork related to the other options in the landscape theme is possible. Similarly, aspects of development are not amenable to UK-based fieldwork. The panel agreed that to limit study only to areas with potential for fieldwork in the UK would unnecessarily curtail the breadth of topics. Within the core there are sufficient topics that local fieldwork in both human and physical geography should be accessible in all contexts and fieldwork may also relate to non-core material selected by the awarding organisations.

Key areas of knowledge and skill that are required at A and AS level are distinguished in the list below with all of the AS level skills required at A level in addition to the A level skills:

- The ability to define research questions that underpin field investigations. (A)
- The ability to research relevant literature sources and to understand and write up the theoretical or comparative context for a 'research question'. (A)
- The ability to observe and record phenomena in the field and to devise and justify practical approaches taken in the field including frequency/timing of observation, sampling, and data collection approaches. (AS/A)
- Practical knowledge of field methodologies appropriate to the investigation of core human and physical content including the measurement of physical processes. (AS/A)

- The ability to implement these methods to collect data/information of good quality and relevant to the topic under investigation (AS/A)
- Knowledge of the techniques appropriate for analysing field data and representing results and the ability to select appropriate approaches and apply them. (A)
- The ability to interrogate field data in order to comment on its accuracy and representativeness and develop geographical understanding. (A)
- The ability to apply existing knowledge and concepts to order and understand field observations. (AS/A)
- The ability to write up field results clearly and logically to produce a fieldwork report, to evaluate and reflect on fieldwork investigations and how the results relate to the wider context. (A)
- An understanding of the ethical dimensions of field research. (A)
- The ability to write a coherent, argued and evidence-based analysis of fieldwork findings in order to answer a specific geographical question. (A)

The panel's strong view is that the only appropriate method of assessment for fieldwork at A level is through a non-examination-assessed independent investigation. In order for students to demonstrate the full suite of skills above, a piece of field research and extended writing is required. The panel's view is that nothing students can write in an examination can demonstrate the synthesis of skills, knowledge and practical ability that is the hallmark of excellent fieldwork. The panel recommends therefore that at A level there should be a requirement for an independent investigation that incorporates field evidence and that is supported by the student's own research and/or secondary data.

This meets the desire from higher education departments that students have undertaken a substantial piece of independent work and that they develop some independent research skills. Independent in this context does not mean lone working. The panel recognised that for logistical and health and safety reasons students will often undertake fieldwork in groups. This is appropriate and reflects the real world situation where fieldwork is commonly a team exercise. What is important is that students show independence of thought in the contextualisation, analysis and

reporting of their work so that they produce an independent investigation that demonstrates the required fieldwork attributes identified above.

The panel recognised that the demands of co-teachability might require a different assessment model for AS level fieldwork.

Fieldwork opportunities in core material

As noted above, fieldwork will draw on core and non-core content. The panel took the view that limiting the choice of core topics only to those with clear local fieldwork opportunities unnecessarily limited the range of contexts and environments which could be studied. Instead, the panel has identified key fieldwork opportunities associated with core topics which will allow the awarding organisations to develop specifications offering a balanced range of fieldwork options accessible from a wide range of learning contexts. These notes are only offered as guidance and should not place any limit on the development of innovative fieldwork approaches relating to any of the core content.

In the human geography core the widest range of fieldwork opportunities occurs in the changing places content. Because this content explicitly studies a local area there is an opportunity for local fieldwork to address any of the themes within this area. As identified in the content description, local fieldwork in this area will draw on both qualitative and quantitative approaches. Changing places fieldwork opportunities will be easily accessible from all possible learning contexts.

Although it may appear that by its nature the global systems and global governance content is less amenable to small-scale primary fieldwork, there is scope for local investigations which address the impact of global scale processes in particular contexts. Population movement, human rights and access to markets are potential themes which lend themselves to this approach. The global systems content is an excellent opportunity to integrate secondary research on the global system with local observation.

The landscape systems content lends itself readily to fieldwork, including the observation and measurement of physical processes, the identification of landforms and descriptions of associated sediments, and the geo-spatial mapping of different inter-related elements in the landscape as a whole. The panel notes that coastal and glacial landscapes readily lend themselves to UK fieldwork. The panel recognised

that centres offering drylands are likely to look elsewhere in the content for fieldwork options.

Water and carbon cycling offers the potential for a wide range of fieldwork investigations, such as measurement of rainfall, infiltration and runoff (including river flow estimation) and the simple estimation of carbon storage in soils and vegetation. In particular this topic offers good opportunities for fieldwork in urban settings. The concept of the cycle provides an excellent opportunity for students to understand the links between their small scale investigation and global environmental systems, and provides good opportunities to integrate field measurement with secondary data.

Geographical skills

We would expect A/AS level students to be familiar with methods of collecting, visualising, analysing and interpreting qualitative and quantitative data. There should be application of data collection and analysis methods learned at GCSE and reinforced at A/AS level, and the range of methods and approaches must be extended through their application in the core and option topics studied.

This should include:

- An understanding of different types of geographical information, experience of collecting and/or manipulating such information, and application and understanding of suitable analytical approaches for the different information types. In each case, this should encompass the following (overlapping) forms of data and methods:
 - qualitative and quantitative data and methods;
 - primary and secondary data;
 - visual and textual data;
 - numerical data and digital spatial data; and
 - innovative forms of data collection (for example, 'big data' and crowd-sourced data).

- Informed questioning of data sources, analytical methodologies, data reporting and presentation. This should involve a critical approach to data, for example, the ability to identify sources of error in data, and to be able to identify the misuse of data.
- Skills specific to qualitative data include:
 - An ability to use and understand a mixture of methodological approaches including interviews and interpreting textual and visual sources, as applied to particular data sets and communities.
 - An understanding of the opportunities and limitations of qualitative techniques such as coding and sampling, and how they actively create particular geographical representations of places and communities.
 - A basic understanding of the ethical and socio-political implications of collecting, studying and representing geographical data on communities.
- Skills specific to quantitative data include:
 - An understanding of what makes data geographical and of the geo-spatial technologies (for example, geographical information systems, remote sensing, global positioning systems) that are used to collect, analyse and present geographical data.
 - The ability to collect geo-located data, and to understand a range of approaches to the use and analysis of such data. This might include virtual globes, understanding of the application of geographical information systems to combine data layers, or the use of location based-services or geo-spatially referenced field data.
 - An understanding of the purpose, use and difference between descriptive statistics of central tendency and dispersion, descriptive measures of difference and association, inferential statistics and the foundations of relational statistics (for example, measures of correlation or lines of best fit on a scatter plot); together with an understanding of measurement, measurement errors, and sampling.

Geographical skills must be understood in the context of geographical knowledge covered in both the core and non-core content. The consensus among the panel and in the teacher consultations was strongly that skills teaching should be embedded and not a stand-alone component of specifications. The awarding organisations should deliver a balanced selection of skills at AS level appropriate to the selected core content and at an appropriate level of demand.

Core content in relation to the draft criteria considered by the Smith Review

Some of the core content proposed by panel is an extension of topics previously considered and put forward by the Smith Review, whilst in some areas there are new content proposals. The thinking behind these changes is summarised below.

In physical geography the landscape systems content is broadly similar in scope to the landscape and change content identified in the previous draft subject content document considered by the Smith review. It is, however, outlined in more detail in order to make it clear how this content differs from and builds upon the study of UK landscapes at GCSE. A more significant change is the substitution of water and carbon cycling for the global climate system topic previously proposed. The justification for this change is as follows:

- Climate change is a significant component of the GCSE content and a key principle in selecting content was to avoid excessive repetition. The panel took the view that an understanding of processes driving climate change through study of the carbon cycle will extend GCSE knowledge and underpin further study in higher education. The water cycle, which is a topic that has not been studied in detail at GCSE, is well suited to developing a process-based understanding of the impacts of climate change.
- As written the previous core content excluded weather (as noted by the Royal Meteorological Society's submission to the panel). In current A level specifications weather and climate topics are typically optional content and there are excellent existing units on weather and climate, which could be retained as non-core content in the new A/AS levels.
- The proposed topic on carbon and water cycling includes understanding of a key driver of climate change and the opportunity to study aspects of hydro-meteorology. It demands understanding of earth, ocean and atmosphere

interactions and therefore provides a more widely applicable basis for further study.

- Meteorology is not a major component of most current higher education courses in geography. Consequently, whilst the preservation of good non-core content in this area is desirable, the panel felt that a more integrative topic was appropriate for inclusion in the core.

The core human geography content on the global system and global governance is closely related to the previous topic on economic change. It has the same focus on geo-politics and development, globalisation, and global processes, but widens the scope beyond just economic systems. The rationale for this change is the significant coverage of economic globalisation in the GCSE specifications. The content outlined here is complementary, building on existing knowledge and extending the range of material considered in the context of global systems.

The changing places topic replaces the core content previously identified as population dynamics. This topic shifts the emphasis to the study of place and also has some emphasis on meaning and representation. The topic outlines a conceptual framework, which emphasises both the social, economic and demographic character of places and also the cultural meanings and representations attached to places. The key cultural, social and demographic content in the previous specification is therefore preserved, but will be studied in a way which is more in line with the approaches current in higher education geography.

Perhaps the most significant departure from the previous content criteria is the fact that the panel has chosen not to specify a core people-environment topic. As discussed above, this is a deliberate choice. The awarding organisations have an excellent track record in producing attractive and innovative material in this area. Prescribing material here would potentially limit the range of material offered. The panel regards choice in this area as positive since it allows schools and teachers to play to their strengths and provides a diversity of provision consistent with the breadth of the discipline.

The presence of people-environment topics in the new specifications is required by the principle that there should be a significant component of this material in the content, but the panel was content to leave the choice of topics to the awarding organisations. Since the people-environment material needs to be supported by sound process knowledge it is expected that these topics will either develop out of

core material or will include some element of process understanding within the units.

Non-core content

The panel does not seek to prescribe content beyond the core (other than the principle of balance between human and physical content). In specifying the core material set out above the panel aimed to ensure the inclusion of a common core relevant to further study.

The core content is focused on topics that develop understanding of processes in human and physical geography. Therefore the requirement to offer a significant component of people-environment study will require that the latter are an important part of the non-core content. The panel recognises that there are some excellent and popular topics in existing options that the awarding organisations may wish to use in developing core content. Topics such as weather and climate, tectonics, ecosystems, health, sustainability, tourism, energy and water resources, food supply, urbanisation, pollution, environmental management, amongst others are important areas of geography which are either not covered or partially covered in the core content. This is an inevitable consequence of selecting material from a broad discipline in order to ensure suitable depth of study, but the panel would hope to see rigorous, attractive and popular content retained from existing specifications in the non-core content. This will also address a concern from teachers that the new specifications should be evolutionary rather than revolutionary.

A level and AS level geography

The panel discussed the intersection between the core content and the two qualifications. The option of confining core content to A level was discussed. However, the consensus was that there should be a core at A and AS level for two reasons: (i) in order to facilitate co-teaching; and (ii) so that the people-environment topics are supported by a thorough process grounding in physical and human geography. The panel took the clear view that fieldwork should form part of the core at A and AS level.

A further discussion took place about which content should be core at A and AS level. The panel took the view that geographical skills and fieldwork should be core at both levels. For fieldwork we have defined the skills that should be taught at AS level and these are listed above. For geographical skills the awarding organisations

must identify a balanced selection that should be addressed at AS level and which is consistent with their content choices.

The panel was similarly content for the awarding organisations to determine the division of the core content between A and AS level, subject to the provision that both years should have an equal balance of human and physical topics. The panel did not regard any of the core themes as having a greater intellectual demand than the others, rather they represent the breadth of the discipline and can be taught and assessed at either level. A choice of core content at each level provides further freedom for the awarding organisations to develop distinctive, rigorous and attractive specifications.

Continuing professional development (CPD)

Because of the way that parts of the A level geography curriculum have become increasingly divergent from geography in higher education there is likely to be a need for investment in CPD and resources in order to support teachers in delivering elements of the new curriculum.

Key areas that are likely to require support include:

- Physical processes related to carbon cycling, since this is not covered in detail in existing specifications;
- Techniques, particularly approaches to understanding geographical information and geo-located data;
- The teaching of themes relating to meaning and representation, particularly in the context of the changing places unit; and
- Consideration of the ethical dimensions of fieldwork.

This is will have resource implications but could be delivered successfully by subject associations. The DfE funded 'Action Plan for Geography' programme, which is delivered jointly by the Geographical Association and the Royal Geographical Society, was cited as an example of best practice. The panel believes that investment in appropriate CPD and accompanying resources will be essential for the effective delivery of the new qualifications.

Annex 1

List of panel members

Professor Martin Evans	University of Manchester (Chair)
Dr Pippa Chapman	University of Leeds
Professor Klaus Dodds	University of London
Dr Rita Gardner	Royal Geographical Society
Professor Richard Harris	University of Bristol
Mr Alan Kinder	Geographical Association
Professor Anthony Long	University of Durham
Dr Emma Mawdsley	University of Cambridge
Ms Bridget Oeppen	Hills Road Sixth Form College, Cambridge
Dr Alastair Owens	Queen Mary, University of London
Professor Richard Phillips	University of Sheffield
Dr Ruth Weaver	Plymouth University

Appendix 2

Membership of the Geography Panel Reference Group

Dr Jane Boygle	Manchester Metropolitan University
Dr Andrew Brooks	King's College London
Dr Sarah Dyer	Exeter University
Dr Jennifer Ferreira	Independent
Professor David Green	King's College London
Andrew Harland	Examination Officers Association
Dr Sharon Leahy	University of St Andrews
Dr Christopher Laing	University of Exeter
Robert Lucas	Field Studies Council
Mrs Gill Miller	University of Chester
Mr Stuart Oliver	St Mary's University, Twickenham
Professor Timothy Quine	University Of Exeter
Simon Ross	Queen's College, Taunton
Professor Stephen Royle	Queen's University Belfast
Robert Sharpe	Esri UK
Dr Simon Tate	Newcastle University
Dr Paul S Turner	Mander Portman Woodward Sixth Form College
Professor Nigel Walford	Kingston University
Dr Louise Waite	University of Leeds
Lorraine Wild	Oxford University School of Geography
Dr Katie Willis	Royal Holloway, University of London
Professor Richard Yarwood	Plymouth University