Geo Factsheet

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Lessons Learnt from the First NEAs: Part 2

There have been several lessons learnt from the first outing of the GCE Geography NEAs (Non-Examined Assessment, or coursework). This Factsheet will take you through, step by step, the different stages of the enquiry process, and consider potential areas for improvement and highlight best-practice. This bumper edition Factsheet is split into two main parts: "getting started" and the final push on the "home stretch".

Part 2: "The Home Stretch"
1) *Managing the Word-Length*
2) *Approach: Making It Independent & Individual*
3) *Developing Good Analytical Skills*
4) *Writing Conclusions and Evaluations*

This is the second Geography Factsheet which looks specifically at the lessons learned from the first round of submitted geographical investigations. In this piece, we will be looking towards the back end of the enquiry process, the 'home stretch'. All the planning is done and the research sorted, so you are ready to collect the data and then deliver a quality write up.

In this Factsheet, you will find ***Examiner Comments*** *which include additional comments and messages from Awarding Bodies.*

1) Managing the Word-Length

Let's start with word-length. It is recommended that projects should be between round 3,000 to 4,000 word in length (to give you an idea this article is around 3,500-4,000 words).

So, the rule here is that more words does not necessarily mean better. Remember there is not a specific penalty for over-long work, however the person marking you work may decide to lower their score based on quality of written communication criteria.

Keeping fairly close to the word limit is really something you should try to do if at all possible. If you are way outside of the recommended number of words, then more than likely you are doing something wrong. **Figure 1** provides possible reasons for overlong work.

Examiner Comment: *The Awarding Bodies have stated that students should produce investigations that are concise and focused throughout. Some candidates considerably exceeded the word recommendation.*

Figure 1 There are several reasons why some projects are simply too long

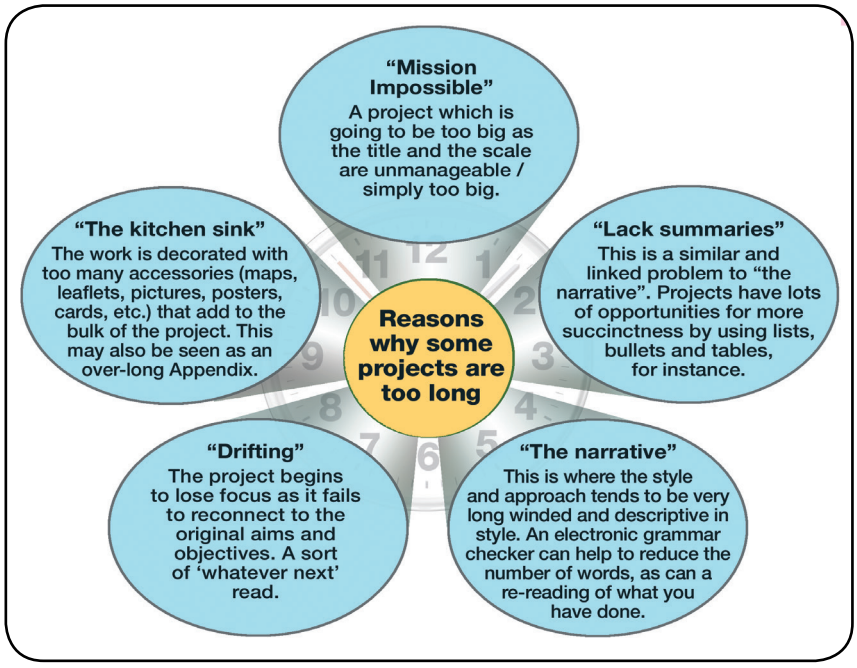


Table 1 Advised word count in different sections of the NEA

Section / stage / part of the enquiry	Approximate number of words*
Purpose of the investigation / Introduction	700-1000. Don't be too descriptive about the place; instead save words to write about processes, systems and parallel examples. Often this section is too long.
Field methodologies and data collection	600 – 800. May be done in table format which encourages brevity. Likely needs a risk assessment and ethical considerations. Often this section is too long.
Data presentation and analysis, interpretation	900-1200. Use of summaries and bullet points can save words. Some aspects of analysis can be included as part of an Appendix, rather than written out in full.
Conclusions and critical evaluation of the overall investigation	900-1200. Often carries a lot of marks, therefore it needs careful consideration. Use of diagrams (e.g. concept maps, spider diagrams, etc.) can be helpful to show linkages between different aspects.

*intended to be a guide, check with specific Awarding Body guidance.

Figure 1 (**Page 1**) provides examples of why some projects often end up simply too long and too much work, which is best avoided if possible.

> ***Examiner Comment:*** *Of particular concern for some Awarding Bodies was the lack of individuality, especially in terms of primary fieldwork. They expressed concerns that some data collection methods were too generic and generalised and just completed as a group rather than being focused on a particular fieldwork approach.*

2) Approach: Making it Independent & Individual

Remember that your project must be grounded by primary data collection in the field. Classroom based desk-studies (or pure EPQ-style approaches) using only published and secondary data are not allowable. There are some key areas to look at and think about:

1) Sample sizes, especially for quantitative data.
2) Design vs. methodology (and how many techniques to use).
3) Qualitative vs. quantitative.

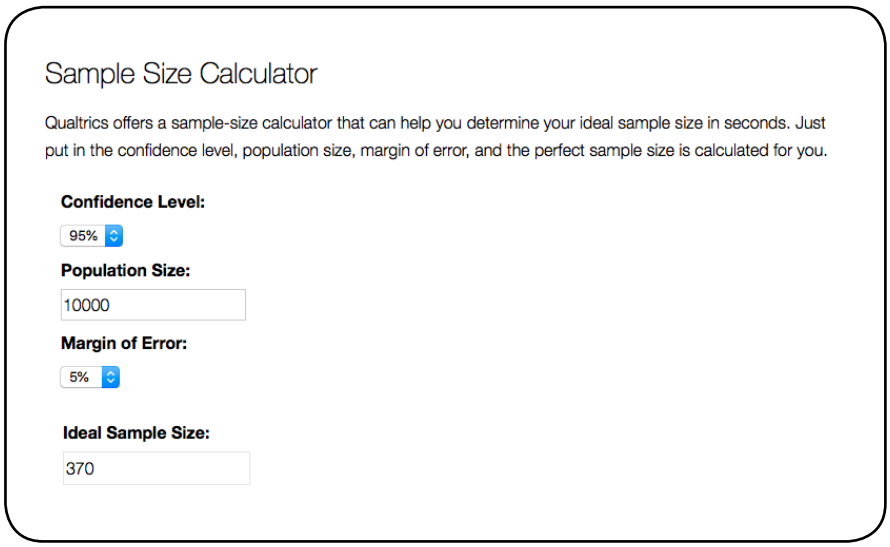
If you are collecting quantitative data, then justifying the sample size is important. As a general rule of thumb more samples give better confidence in your results. But you perhaps you should try a be a little more mathematical so that you can justify sample sizes (see **Table 2**).

Table 2 Considerations in sample size estimation

Population size	Think of the population not just as people, but simply the number of items that you could measure. On a beach, the number of stones, for example, is very large and you will simply have to guess a very large number! In an urban area used a pre-defined census boundary to look up the population, or make a more educated estimation.
Margin of error / confidence intervals	No sample will be perfect, so you must decide how much error to allow. The higher this number the less sure you are about your conclusions. It's probably a good idea to get down to between 10-20% if you can – over 40% and its pretty meaningless. The industry standard tends to be 5%. If you've ever seen a political poll (prediction) then they use confidence intervals. For example: "52% of voters said yes to Option Z, with a margin of error of +/- 5%."
Confidence Level	Tells you how confident you are of this result. It is expressed as a percentage (%) of times that different samples (if repeated samples were drawn) would produce the same result. The 95% confidence level is the most commonly used – so it's a good idea to use this value.

Note: Some people also think about the "standard of deviation", (i.e. how much variation you expect in your sample population or responses). This requires an additional calculation or estimate.

Figure 2 An example of an online sample size calculator (https://www.qualtrics.com/blog/calculating-sample-size/)



Luckily there are several online sample size calculators that you can use to calculate sample size. **Figure 2** provides an example. Often students do not have a sufficiently large sample size especially when undertaking questionnaire to get meaningful results. However, if you have done say 50, then you can use a calculator to give a useful margin of error figure.

You will need to also decide on how many primary fieldwork techniques and secondary data sources are appropriate for your investigation. Too few and there is a risk that you can't hit the different criteria in the mark scheme, too many and it will be impractical to get the detail in the data. Bear in mind that some techniques may be relatively quick and therefore can be easily repeated, others require much more setting up and take a long time to collect data. Compare the two examples below:

1) Measuring the shape and size of sediment / pebbles	**2) An interview about contemporary change in a residential community**
• Typically takes less than 1 minute per measurement. • Easily repeated to get a large sample size. Lends itself to working a group as long as you can show individuality.	• Can take 30 – 45 minutes per face-to-face interview. • Not easy to repeat and the set-up time can be considerable.

Ideally your investigation would make use of a combination of qualitative and quantitative data. Remember that there is a big range of qualitative approaches that are often overlooked. A range of examples are provided in **Table 3** on **Page 3** (information adapted from David Holmes / Pearson Edexcel (2017)**:** **https://qualifications.pearson.com/content/dam/pdf/A%20Level/Geography/2016/teaching-and-learning-materials/Fieldwork-Planner-and-Guide.pdf**

Table 3 Examples of qualitative fieldwork techniques

Approach	Details
Focus group	A small group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a place, service, concept, strategy, etc.
Interview	Often face-to-face over a period of several minutes with open ended style questions. A recording or transcript is going to be essential to allow future data processing.
Historic texts and images	These can take a variety of forms such as brochures, newspapers and even old postcards (especially good for coastal settlement change).
Oral history	The collection and recording of historical information using tape / video recordings of interviews with people having personal knowledge of past events. This will often be conducted by interview, but it may be possible to use oral histories from sources such as YouTube.
Perception studies	Might include mental maps, interviews, etc. to extract attitudes between visitors and local residents, for instance.
Participant Observation	An observation technique - making notes and documenting the type, movements and activities of people.

Independence in fieldwork does not mean lone working and group work is perfectly acceptable. However, if you are working as part of a group to collect your fieldwork data, then you do need to demonstrate independence. There are several ways that you can do this, which should be identified within your write-up. Some examples are given below:

- Using a **pilot survey** in a different location to the main group data collection, showing that you can refine your methods.
- Highlighting and **extracting your own data** from a group data set (identifying other data as secondary).
- Customising and **adapting fieldwork recording sheets**. This applies to those that you might get from an internet source or be given as part of planned field-trip.
- Taking your **own photographs**. **Figure 3** for example, shows how different apps can be downloaded to do time-lapse photography which might be useful for looking a "flows" in an area. Also add geo-location to them for added individuality. Some students have even used a drone for air-photographs, but ensure you have official permission and supervision!
- Use your phone for **data collection apps** which you select and source. **Figure 4** shows how a free protractor app can double as a clinometer.
- Making your **own maps**. This could include site information, or just a customised version of an online map. Remember to always use a scale.
- Researching appropriate **graphical** and **statistical** techniques.

3) Developing Good Analytical Skills

Remember what analysis is for. It's about making sense of the data and information you have collected so that someone else reading your work can also understand your lines of reasoning and judgements. Analysis typically carries lots of marks and often includes both data presentation as well as the more traditional statistical elements.

Data presentation allows the user to see what information you have collected. It's often a very good idea to integrate presentation with analysis rather than seeing it as separate sections as it can help with your flow in terms of a discussion.

Figure 3 Examples of Android Apps that that can do time lapse photography and video

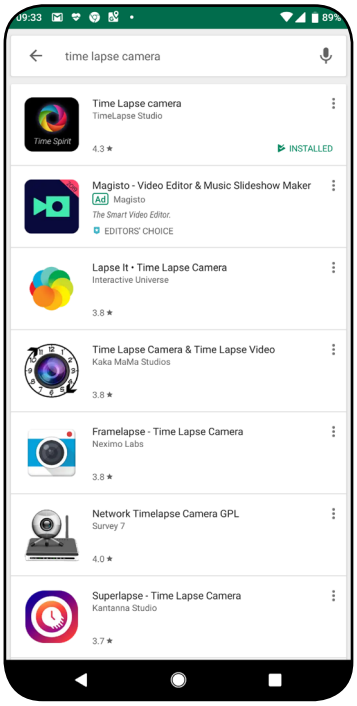
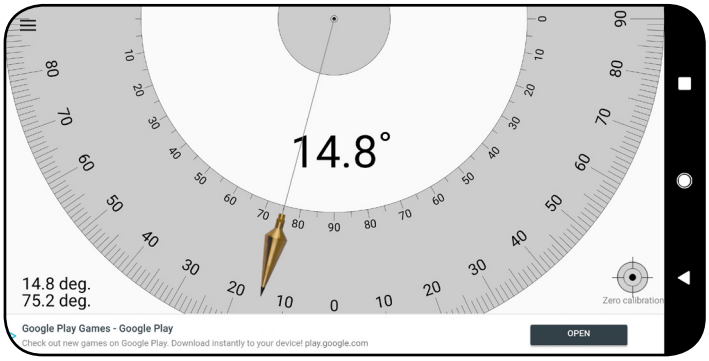


Figure 4 An app that can be useful to measure gradients



Examiner Comment: *The Awarding Bodies identified several issues with some investigations: lack of spatial elements using graphs, poor quality presentation as well as missed opportunities for statistical testing.*

Figure 5a A correctly selected graph using clear colours and easily readable labels

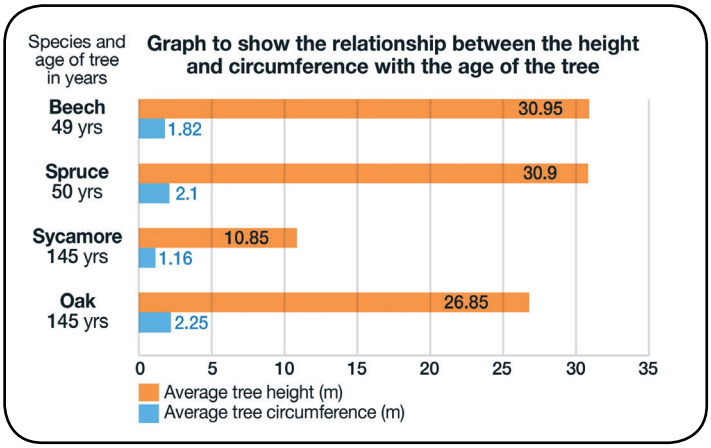
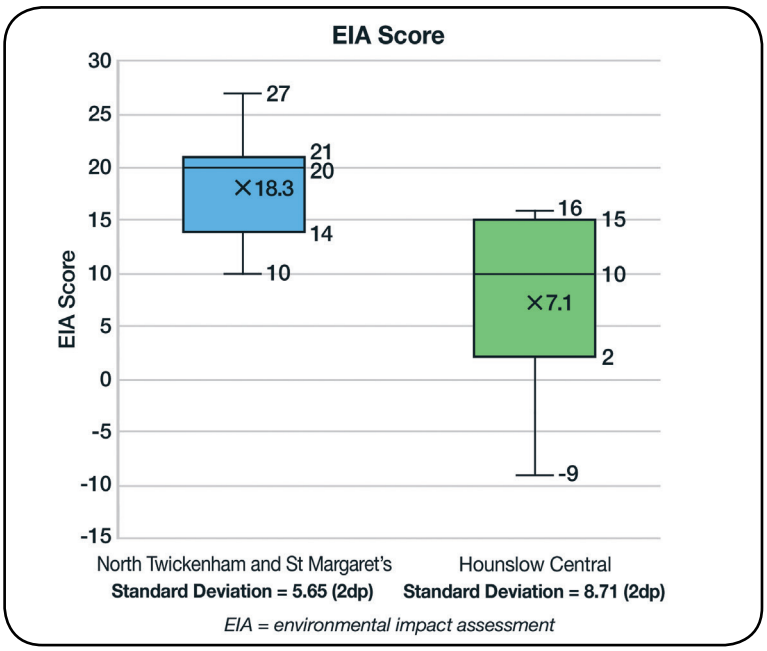


Figure 5a (**Page 3**) shows an example of a well-chosen data presentation technique. It's easy to compare between tree species and all labels are clear. Remember that marks are being awarded for clarity and appropriateness, not just for range of techniques.

Figure 5b shows how sometimes there is an overlap between presentation and analysis. In this example, the EIA (environmental quality scores) have been analysed and plotted so that the statistical data (median, inter-quartiles) forms part of the presentation.

Figure 5b A box plot allows descriptive statistics to be shown and so is a part of analysis



EIA = environmental impact assessment

Graphs can often be made more relevant when information is located onto a base-maps as well – in other words combing cartographical and graphical approaches.

Analysis is also an area where there is often an opportunity for improvement in coursework. When you have quantitative data its recommended that you follow a sequence that forms part of the analysis process. This will likely include:

a) An initial description of any main patterns and trends.

b) Further analysis and confirmation of the patterns and trends using data / information from the relevant tables, charts or cartographic evidence.

c) Identification of anomalies or exceptions which deviate from the main patterns and trends.

With a quantitative (numerical) set of results, the following checklist may be useful:

- *What is the range (or spread) of values within the data set?*
- *Where are most of the values concentrated (i.e. is there any clustering)?*
- *Are there any clear gaps between the concentrations?*
- *What is the shape of the distribution of the data values?*
- *Are there any extreme values (which may include anomalies and / or outliers)? How far separated are these from the normal range of data?*

Inferential statistics (Spearman's, Chi-squared, etc.) are also likely to be something you will want to consider. However, there are some precautions to think about:

1) *Check that you have enough data to perform the test(s) so that it is valid.*

2) *Choose the right test for the data that you have. Don't assume that one test will be better than another or get more marks. It is a question of fitness for purpose.*

3) *Don't perform a statistical test just for the sake of it, when it is for instance, obvious that there are differences between sites / locations. You should instead think about using a test when the other evidence is inconclusive.*

4) *Interpret the test carefully, referring to confidence levels. Remember the difference between correlation and causation.*

Examiner Comment: *There is much you can do with qualitative data in terms of analysis. Reports from the Awarding Bodies identified that there were missed opportunities here.*

Figure 6 Conditional formatting in Excel can show differences between scores. This example shows the results from a questionnaire about visitor information about a National Park. Conditional formatting (standard spreadsheet function) has been used to show differences in the scores, which are out of a maximum of 5.

Scores related to visitor's impression of Park Educational information	**4.25**	**4.75**	**5**	**4.75**	**4.75**
	Pre-Visit Information	Types of information on offer	Quality of information / literature	To what extent do you feel the you have increased your knowledge regarding the National Park?	To what extent do you feel you have increased your connection to the natural environment?

Annotations of photographs is an obvious example, but **Table 4** provides a range of ideas when you have to think about the analysis of text.

Table 4 Ways of coding text as part of qualitative analysis

Coding example	Description
Polarising	Read the text and highlight any positive or negative statements – these could be used as "soundbites" within the report or tallied to compare number of positive or negative statements.
Polar Scaling	Takes the polarising process a step further by assessing the strength of a positive or negative statement – similar to carrying out a bipolar survey. The overall strength of positivity or negativity can be compared in greater detail.
Theming	This is identifying a number of key themes in written text and then grouping these themes further into a smaller number of concepts. The number, or strength of comments in each theme may also be reviewed.
Categorising	The analysis of text to fit into groupings (e.g. environmental, social, economic and political impacts or longer-term vs. short-term, etc.) These categories could be used to sort responses before using one or more of the techniques described above.
Linkages	The complex nature of textual information means that it may be possible to "map" linkages between different concepts or themes, these links may be explicit in what text / respondents say, or implicit in how it is said, the way in which one-point flows into another.

Analysis of qualitative information can be more simplistic, including the use of "narratives" (see **References and Further Reading**), "Wordles" or even statements that summarise information. Here we have an example as to the reasons a customer chooses to visit a particular adventure tourism attraction. This information has been summarised from an extended interview:

> *This visitor has been coming to XXXX for around 10 years. They have used other places and providers but really value the activities that XXX is able to offer. The interview revealed that the staff at XXXX make the "fun" and "adventures" aspects of visits very real and are able to show how the park has invested considerably in visitor amenities and facilities.*
>
> *"We have a very strong relationship with the staff and feel very supported before and during the visit".*
>
> *"There is measurable excitement in the children as we approach the gates".*
>
> *"XXX represents excellent value for money as is very accessible making it a key factor in choosing to come."*
>
> *"There is always ample car parking and the toilet facilities are generally clear".*

4) Writing Conclusions and Evaluations

You are on the home stretch now! Your conclusion should take your overall aim, key question, or hypothesis, and provide an answer. A golden rule of conclusions is that they must draw on evidence presented as part of the project. You may find that the question is only partly answerable. You could say – 'in some parts of the region, there is acute deprivation,' and, later, 'whilst in other ways deprivation is more hidden and less obvious', for example, 'in XXXX'.

Examiner Comment: *Again, feedback from the Awarding Bodies identified several issues for some candidates and investigations:*

- *No summative conclusions.*
- *Conclusions that were too long and too vague.*
- *Conclusions that did not draw on the evidence presented.*
- *Evaluations limited to "problems" rather than how shortcoming might have impacted on the strength of individual conclusions.*

In many ways, you might find your conclusions are a bit "messy", in other words the results and evidence are inconclusive. That's fine - say how far you think a conclusion might hold and don't be afraid to use words such as partial, tentative or incomplete. Your conclusions may disagree with a model or concept that you introduced at the start of the investigation. Don't worry about any gap or difference. It maybe you who is "right" for this place, at this time, based on the evidence that you collected.

The following is an extract from a conclusion which challenges ideas and preconceptions. It also uses a reflective and thoughtful style which adds to its quality. In this instance, the project is about perceptions of crime:

> *When starting my investigation, my research let me to the view that the current government policy on affordable housing in S. London was not fit-for-purpose. Many of the affordable housing schemes had simply failed.*
>
> *But the primary evidence that has been collected, together with the in-depth analysis of secondary data has thrown-up an alternative and opposing perspective. That is, that the current government policy on affordable housing, is at least in part, both working and fit for purpose. In particular, the primary evidence based on questionnaires makes the case that perceptions of people are willing to accept that the government are providing safe homes for people. The majority of respondents also think that the government has adopted a policy of trying to give preferential treatment for local residents where there is a shortage of housing…*

An alternative approach is to think about ranking of conclusions, based on how strong the evidence supporting each one is in turn, for example: "Nevertheless, this investigation does suggest a number of possible conclusions. They are present in order, with the most secure, going to the least secure:

- That people in Norwich have a number of misconceptions regarding the actual geographical distribution of the risks of crimes.
- Secondary information about crime can be misleading.
- There is no clear correlation between deprivation and risk of crime at a spatial level."

You may have considered ethical dimensions earlier on in your project planning (see **References**), but this may form part of your evaluation as well. Think about how the ways in which you collected the data, because of ethical considerations may have impacted on conclusions and the evidence base. Critical evaluations are also important. Move away from simply seeing them as problems and limitations, but instead a set of considerations of how the conditions under which data was collected have influenced the reliability of results. You may find it useful to think about them using the ideas on **Page 6**:

Measurement error	Mistakes made when collecting the data, such as a student misreading a thermometer, or incorrect plant identification.
Operator error	Differences in the results collected by different people, such as different people giving different scores in an environmental quality survey.
Sampling error	Local differences meaning that one sample has slightly different results to another (e.g. measurements of infiltration can vary within a very small spatial area).

Remember to use the words reliability and accuracy carefully, which are quite 'slippery' concepts. From a technical point of view, they are not interchangeable. Good fieldwork design should allow for reliable results, but it is often very difficult to determine accuracy, i.e. whether you have actually found the right or true answer to what you intended to do.

Reliability	The consistency or reproducibility of a measurement. A measurement is said to have a high reliability if it produces consistent results under consistent conditions. True reliability cannot be calculated – it can only best estimated based on knowledge and understanding of the topic.
Accuracy	It is the degree of closeness of measurements of a quantity / population to that quantity's / population's actual (true / real) value. The farther a measurement is from its expected value, the less accurate it is.

You might also consider the idea of validity. This is the extent to which an investigation (or test) actually measures what it claims to measure. In other words, the extent to which a concept, conclusion or measurement is well-founded and corresponds accurately to real world geography.

Conclusions

Delivering a quality independent investigation requires thorough planning and an ability to "see it through". There are some strong and clear messages from the Awarding Bodies of where mistakes are typically made and how things can be improved so an understanding of these might be as important as pure grit and determination.

It is a requirement of the NEA to think about and review the ethical aspects of how undertaking your project may impact on people and / or the environment. You need to both identify and manage such impacts. This shouldn't really be an afterthought - in fact it should be embedded in a high quality data collection and design programme. It may also be considered as part of an earlier pilot survey.

The most common ethical dilemmas in human geography focus around participation, consent, and the safeguarding and confidentiality of personal information. In physical geography, the main ethical considerations are linked to consent and access to study sites and potential damage. This could include concerns over trampling, damage to plants and animals or possible pollution (including litter, contamination) of study sites. In most instances, careful planning should effectively reduce the impacts and effects to a minimal level.

Ethical considerations are important for several reasons:

- Protects rights of individuals and communities that research takes place in, as well as the environment in which the research is taking place in.
- Growing public demand for accountability (e.g. 2018 GDPR).
- Shows that you are serious about your investigation and want to do it properly, professionally and correctly.

Look at the references for more reading on coding and ethical considerations.

References and Further Reading

- Autumn 2018 Update from Awarding Organisations – A Level Geography 2016. Independent Investigation Report and Written Report. Download from the different Awarding Bodies, such as: https://filestore.aqa.org.uk/resources/geography/AQA-7037-NEA-UPDATE-AO.PDF.
- Sample size calculator https://www.qualtrics.com/blog/calculating-sample-size/. Others are available from Survey Money, for example: https://www.surveymonkey.com/mp/sample-size-calculator/. A slightly more sophisticated version can be found here: https://www.surveysystem.com/sscalc.htm, which calculates confidence interval.
- The Edexcel Fieldwork Planner and guide (in most part, useful for all Awarding Bodies) is here: https://qualifications.pearson.com/content/dam/pdf/A%20Level/Geography/2016/teaching-and-learning-materials/Fieldwork-Planner-and-Guide.pdf.
- More about geographical "narratives", coding and social and ethical considerations can be found in *Geo Factsheet 380* – Place Fieldwork 2.

Acknowledgements: *This* ***Geography Factsheet*** *was researched and written by* ***David Holmes,*** who *works as a Geography consultant and author, and is a former Geography teacher. He has a particular interest in technology and fieldwork. He can be contacted on david@david-holmes-geography.co.uk. This Factsheet was published in* ***April 2019*** *by* ***Curriculum Press****.* ***ISSN 1351-5136***