

# INCLUSIVE, ACCESSIBLE, ARCHAEOLOGY (HEFCE FDTL5)

Phase 3

# CONTROLLED TESTS: ARCHIVE REPORT

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# INTRODUCTION

This archive report provides a summary of the Phase 3 controlled testing for the 'Inclusive, Accessible, Archaeology' project, funded by the Higher Education Funding Council for England (HEFCE FDTL 5) for developments in teaching and learning. The project is directed by Professor Roberta Gilchrist of the Department of Archaeology at the University of Reading in partnership with the School of Conservation Sciences at Bournemouth University and in collaboration with the Research Group for Inclusive Environments (School of Construction Management) at Reading. The Council for British Archaeology (CBA) is involved in the dissemination of the project's results and the project also has the active support of the HE Academy Subject Centre for History, Classics and Archaeology, the Institute of Field Archaeologists (IFA), Oxford Archaeology, and English Heritage.

The purpose of the Phase 3 controlled testing was to test and refine the characterisation of archaeological field activities, and the physical and cognitive abilities required to perform these tasks, as identified in Phase 2 of the project (Embleton et al 2006). From these tests the pro forma of a self-evaluation tool kit would be developed for use by all students in identifying, and tracking the development of, their archaeological and transferable skills. This archive report provides a written record of the controlled testing.

## PROJECT SUMMARY

### GOALS

The project aims to address the dual issues of disability and transferable skills in the teaching of archaeological fieldwork. It will:

- Increase awareness of disability issues in archaeology;
- Improve the integration of disability in fieldwork teaching; and
- Improve all students' awareness of their development of transferable skills for the transition to employability through participating in archaeological fieldwork.

## PROJECT OUTCOMES

- The integration of disabled students into archaeological fieldwork and related activities according to, and consistent with, the mandatory legal requirements of disability legislation.
- A change of emphasis from 'disability' to 'ability': rather than excluding or categorising individuals, all students will be engaged actively in evaluating their own skills. This will be achieved by developing a generic self-evaluation tool kit suitable for use by all students being taught fieldwork in archaeology and other fieldwork related subjects.
- Dissemination of the results through published guidelines, websites, workshops and conference presentations carried out in association with the project's professional stakeholders (the Institute of Field Archaeologists, the Council for British Archaeology, English Heritage, and Oxford Archaeology).

## PROGRAMME OF WORK

- Phase 1 – Assessment (February – July 2005, 6 months):  
Evaluate through questionnaires the issues surrounding, and current practices relating to, disability and archaeological fieldwork.
- Phase 2 – Characterisation (August – December 2005, 5 months):  
Develop a generic method of assessing physical and cognitive abilities of disabled/non-disabled people to participate in archaeological fieldwork training.
- Phase 3 – Controlled Testing (January – June 2006, 6 months):  
Test and refine characterisation of archaeological field activities and environments through real-world tests in controlled laboratory conditions; produce pro forma of self-evaluation tool kit.
- Phase 4 – Field Trials (July – October 2006, 4 months):  
Assess suitability of controlled tests and generic method of evaluation through field trials on archaeological excavations.
- Phase 5a – Evaluation (November 2006 – January 2007, 3 months):  
Refine the project's deliverables.
- Phase 5b – Wider Dissemination (February – April 2007, 3 months):  
Wider dissemination of project results.

- Phase 6 – Continuation After Funding Ends (May 2007 on): Integrate awareness of disability into archaeological fieldwork in training, employment, and the development of transferable skills in conjunction with archaeology subject providers and professional bodies.

## MODELS OF DISABILITY

Disability has been described and understood through a number of different models which attempt to define the experience of being disabled.

### THE MEDICAL MODEL

This considers a disabled person as 'ill', a subject for treatment and cure. It does not address the social, economic and environmental experience of a disabled person.

### THE CHARITABLE MODEL

This sees a disabled person as a tragic individual. They are an object of pity that needs to be cared for and protected from the rigours of everyday life.

### THE SOCIAL MODEL

This shifts the emphasis of considering that there is something 'wrong' with the disabled person to the view that disabled people are often excluded from participating in everyday activities because of the physical, social, economic and attitudinal 'barriers' created by society.

This model is behind the spirit of the recent disability and access legislation (Disability and Discrimination Acts 1995 and 2005, Special Educational Needs and Disability Act 2001) and forms the basis for the ethos of inclusiveness.

In reality, it is unlikely that it will be possible to provide environments or develop activities where everyone can do everything, and this will certainly be the case with some tasks undertaken in archaeology. People, both disabled and non-disabled, will have different levels of ability to undertake tasks. For some, restrictions in their ability may preclude them from full participation. However, the criteria used to establish whether a person can take part in an activity should always be based on their individual abilities, not simply whether they are a 'disabled' or 'non-disabled' person.

Adopting the social model also requires us to examine the nature of the activity and determine if it is *how* the activity takes place that precludes involvement, and could the process be altered to facilitate greater inclusion? The fact that it has always been done in a particular way is not a satisfactory answer, especially if the procedure could be altered so that the number of people that can be included in the activity would be increased.

To determine the extent to which disabled and non-disabled people can participate effectively in the activities associated with archaeology, it is necessary to determine their individual abilities to undertake the typical tasks that comprise the 'archaeology experience'. The self-evaluation tool kit that the project is developing will, therefore, be for use by all disabled and non-disabled students. In using it, all students will be able to evaluate their own developing archaeological and transferable skills.

Such self-evaluation by all students will ensure that the opportunity of full participation and inclusion is based on an 'ability to do' which is the driving force behind most disability and access legislation.



# I METHODOLOGY

## DEVISING THE METHODOLOGY

The methodology relates directly to the report produced for Phase 2 of the project: *A Characterisation of Archaeological Field Techniques Assessed by Physical and Cognitive Demands* (Embleton et al 2006). This provides a detailed analysis of the physical and cognitive abilities required to perform each of a series of archaeological field tasks. Each task may require a number of different abilities to be used at the same time. It also provides details of the learning outcomes and the various skills (archaeological and transferable) that both the subject providers and the students themselves consider are acquired by participating in archaeological fieldwork training. Gaining these skills is an integral part of archaeological fieldwork training.

It should be emphasised that, in many ways, the characterisation document is a theoretical piece of work. It is based on observing a small number of able-bodied individuals performing certain tasks. This does not mean that individuals with particular disabilities may not be able to accomplish these tasks. The same task could be satisfactorily completed, and the subsequent learning outcomes achieved, with varying degrees of adjustment. It may be that in some cases no adjustment at all will be necessary. The theory inherent in this document needed to be tested under practical conditions with a variety of disabled and non-disabled subjects. This is what lay behind the third phase of the project. Also, a series of everyday tasks needed to be devised and tested to ensure that they replicated the actual archaeological activities. From these, the pro forma of the self-evaluation tool kit (that anyone could use at home) could be developed.

Using the details of the physical and cognitive abilities listed in the Phase 2 report, an extensive literature and internet search was made for tests that could measure the possession of the abilities listed there. Advice was also sought from Professor John Wann of the Department of Psychology at the University of Reading.

# THE DRAFT METHODOLOGY

The draft testing document was divided into three parts:

## PART I – SELF-EVALUATION OF ABILITIES

This was to be completed before participating in the controlled tests. It consisted of a series of questions about everyday activities designed to identify an individual's abilities in relation to particular archaeological tasks and transferable skills. Each question was divided into several parts. If an individual replied negatively to the first part of a question, the other parts would help to identify if the activity could be successfully done in another way.

## PART II – ABILITIES AND TASKS: PRE-TESTING CHECKLIST

This was completed before participating in the controlled tests. Through comparison with the questions successfully answered in Part I, the individual was given an idea of their 'potential' ability to participate in particular archaeological activities and their transferable skills.

## PART III – ABILITIES AND TASKS: POST-TESTING CHECKLIST

This was completed after participating in the controlled tests. It provides a detailed summary of an individual's 'actual' abilities, in comparison to their 'potential' abilities identified in Part II.

# USING THE METHODOLOGY

## TEST SUBJECTS

The draft documents were tested and developed with the assistance of volunteers. These were drawn from students at the University of Reading, local Archaeology groups and local disability groups. The volunteers comprised a variety of disabled subjects and some non-disabled subjects to act as a control.

The project team emphasised that previous experience of archaeological fieldwork was not necessary, but an interest in archaeology and fieldwork would be an advantage. This meant that the subjects had an interest in the project and its outcomes. Each volunteer was asked to complete a 'Participant Profile' form with the assistance of the project team members. This ensured that the 'individual' was not lost in the 'crowd', and that the project team members would be fully aware of the particular needs of each volunteer. These profiles also formed the basis of the individual Risk Assessments that were produced for each subject.

Prior to any testing taking place, each subject was fully briefed on the purpose and outcomes of the project. They also had the exact nature of each of the tests explained to them. If they were happy to continue, they were asked to sign a consent form. This procedure had been approved by the Ethics and Research Committee at the University of Reading. In line with the British Educational Research Council (BERA) Ethical Guidelines, this consent form ensured:

- The subjects would not be asked to do anything they did not feel comfortable with
- The subjects could rest whenever they wished
- The subjects could withdraw from the project at any time with no risk of any sanctions being taken against them
- The anonymity of the subjects was guaranteed at all times.

## THE METHOD

The subjects were asked to complete Part 1 of the draft document (self-evaluation of abilities). From this information, the project team then completed Part 2 of the draft document (pre-testing checklist). The subjects were invited to the University of Reading to take part in the actual tests which involved performing a set of archaeological fieldwork tasks. The project team observed how the subjects completed the tasks, as well as asking them relevant questions. From this, Part 3 of the draft document was completed by the project team.

### A. Part 1 Questionnaire:

This consisted of a series of questions about the ability to perform a number of everyday tasks that could be related to doing a particular archaeological activity, having a certain transferable skill or a physical or cognitive ability. For each numbered question there were two or three possible alternative questions that could be answered in declining order of difficulty (A, B, C or A, B). The subjects were instructed to attempt the 'A' question first and, if they answered 'yes', to move on to the next numbered question. If they answered 'no' to the 'A' question, they were instructed to move to the 'B' question and, if necessary, the 'C' question before moving on to the next numbered question (**Example 1**). To judge the ability to see colours and textures visual tests were included.

#### **Example 1 A sample question from the Part 1 Questionnaire**

	<b>Question</b>	<b>Y</b>	<b>N</b>
<b>A</b>	I can push a spade into the ground		<b>B</b>
<b>B</b>	I can push a sharp pole into the ground		<b>C</b>
<b>C</b>	I can push a garden trowel into the ground		

### B. Part 2 Pre-Testing Abilities

Each of the questions in the Part 1 Questionnaire related to one or more specific archaeological tasks, transferable skills or physical/cognitive ability. If a subject answered 'yes' at any point in a numbered question (A, B or C), they were deemed to be potentially able to do that activity. The archaeological tasks listed in the Part 2 document were those that the subject providers teach and assess in archaeological fieldwork training (Phillips and Gilchrist 2005) and the transferable skills those that they deem students gain through participating in archaeological fieldwork (Embleton et al 2006). To these were added the physical and cognitive abilities that the project's 'Characterisation of Archaeological Field Activities' (ibid) had suggested were necessary to participate in

archaeological fieldwork. The tasks, skills and abilities in the Part 2 document are listed in **Table 1**.

**Table 1 Archaeological tasks, transferable skills, and physical and cognitive abilities listed in the Part 2 document**

- Site Records (all activities):
  - Comprehending site records
  - Completing site records – descriptions, numerical data
  - Read and understand maps and plans accurately
- Excavation:
  - Cutting turf
  - Lifting turf
  - Excavation – pick axe, mattock and draw hoe
  - Excavation – trowelling
  - Excavation – brushing
  - Excavation – secateurs
  - Disposal of waste material – on a spade, by hand, in a wheelbarrow, in a bucket
  - Disposal of waste material – empty wheelbarrow, empty bucket
  - Dry sieving
  - Use a sprayer
  - Discern stratigraphy – tactile, vision, colour, texture
- Planning:
  - Lay a tape measure
  - Read a tape measure accurately
  - See area to be planned
  - Drawing – ability, use of graph paper
- Processing of Artefacts:
  - Handling finds – small-, medium-, large-sized
  - Washing finds – small-, medium-, large-sized
  - Sorting finds – small-, medium-, large-sized
  - Identifying finds – tactile, vision, colour, texture
  - Marking finds
- Environmental Sampling:
  - Take bulk samples
  - Wet sieving
  - Sorting samples – small-, medium-, large-sized
  - Sorting samples – tactile, vision, colour, texture
  - Mark sample trays/boxes
- Surveying:
  - Lay a tape measure
  - Read a tape measure accurately
  - Ranging poles – hold
  - Ranging poles – line up

- Instrument Survey:
  - Measuring staff – hold
  - Measuring staff – extend
  - Level/Total Station – set up tripod
  - Level/Total Station – attach instrument to tripod
  - Level/Total Station – see target and hairlines
  - Level/Total Station – manual focussing
  - Level – read measurements
  - Total Station – attach prism to staff
  - Total Station – read measurements on digital display
  - Total Station – audible signals
  - Prismatic compass – use
  - Optical square -use
- Surface Survey:
  - Field walking/survey – traverse
  - Field walking – identify material
  - Field walking – pick up material
  - Field survey – identify surface features
- Geophysical Survey:
  - Identify walking line
  - Gradiometry – use instrument
  - Gradiometry – audible signals
  - Resistivity – use instrument
- Carrying Equipment:
  - Carry equipment on back
  - Carry equipment in hands
- Physical Ability:
  - Squatting
  - Kneeling
  - sitting
  - Sitting with legs pulled up to chest
  - Sitting with legs to one side
  - Lying down
  - Strength – medium, high
  - Physical stamina – long, medium, short period
- Cognitive Ability:
  - Vision – colour, texture, physical details, physical features, printed details, close and distant
  - Hearing
  - Touch
  - Balance
  - Spatial awareness
  - Hand/eye co-ordination
  - Comprehension – written material, drawings, verbal information
  - Organisation/categorisation

- Short-, long-term memory
- Recognition
- Mental stamina – long, medium, short period
- Transferable Skills:
  - Communication – conveying, understanding information
  - Communication – at a distance
  - Independent working
  - Team working
  - Time management
  - Adapting to a new environment
  - Analysing qualitative data
  - Analysing quantitative data
  - Problem solving
  - Decision making
  - Social skills

### C. Part 3 Post-Testing Abilities:

The Part 3 document comprised exactly the same list as Part 2, as well as boxes for 'Able' and 'Unable'. The project team completed this part as the subjects attempted the various tasks. Notes were kept of any adjustments that had to be made as the tasks were undertaken.





## II THE SAMPLE OF PARTICIPANTS

Twenty participants were recruited for the Phase 3 test (**Table 2**).

**Table 2 Volunteers in the Phase 3 tests**

No	Name*	Age	Sex	Disability	Duration	Archaeological Experience
1	Julian	45-54	M	Heart Condition	6 years	Yes (FT student)
2	Charlotte	45-54	F	Visual Impairment	45 years	No
3	Carla	18-24	F	Dyscalculia IBS	12 years	Yes (PT student)
4	Andrew	18-24	M	Back Problems	4 years	Yes (PT student)
5	Daniel	18-24	M	Dyslexia	6 months	No
6	Joseph	55-64	M	Visual Impairment	35 years	No
7	John	18-24	M	Dyslexia	13 years	No
8	Angela	35-44	F	Dyslexia Large-sized	Recently	Yes
9	Anita	25-34	F	Scotopic Sensitivity Dyspraxia Asthma ME	6 months  14 years	No
10	Margaret	18-24	F	Dyslexia Dyspraxia	2 years	Yes (FT student)
11	Sean	18-24	M	Dyslexia Dyspraxia Minor Spina Bifida	2 years  14 years	No
12	Mark	55-64	M	Visual Impairment	60 years	No
13	James	35-44	M	Brain Tumour	38 years	No
14	Martin	55-64	M	Visual Impairment	30 years	No
15	Ben	65-74	M	Wheelchair	20 years	Yes
16	Kathy	18-24	F	ME	6 months	Yes (ex-student)
17	Karen	25-34	F	Blind Diabetes	4 years 20 years	No
18	Veronica	35-44	F	Mental Health Dyspraxia Fybromyalgia	15 years	Yes (PT student)
19	Steven	18-24	M	Non-Disabled	N/A	Yes (ex-student)
20	Geoff	18-24	M	Non-Disabled	N/A	Yes (FT student)

\* individual names have been changed to preserve anonymity



# III LIMITATIONS OF THE TESTS

## TASKS AND ABILITIES TESTED

The tests took place outside the Archaeology building at Reading in good weather conditions and consisted of two to four sessions of about two hours each. Within this context it was not possible to fully assess some of the abilities listed in the draft tool kit. These were mainly cognitive abilities and transferable skills (**Table 3**).

### **Table 3 Abilities not assessed in the controlled tests**

- Physical Abilities:
  - Physical stamina – long, medium, short period
- Cognitive Abilities:
  - Mental stamina – long, medium, short period
- Transferable Skills:
  - Communication
  - Independent working
  - Team working
  - Time management
  - Adapting to a new environment
  - Analysing qualitative data
  - Analysing quantitative data
  - Problem solving
  - Decision making
  - Social skills

Of these, the one most frequently referred to by the volunteers was physical stamina. Although the subjects could complete the archaeological tasks, many of them expressed concerns that they were uncertain whether they could continue doing particular tasks for an extended period. They were also critical of the ‘stamina’ question in the Part 1 document which only related to ‘light physical tasks’. Physical stamina is a dynamic factor which will vary with the activities an individual has been doing over both long and short periods and with changing environmental factors such as weather conditions. In relation to archaeological fieldwork, an individual’s stamina would probably be higher after two weeks of fieldwork than when they first went into the field. The cognitive abilities and transferable skills are also dynamic factors. These develop and can only be assessed over a period of time.

Some abilities could only be assessed to a limited extent; these were all cognitive abilities (**Table 4**).

## **Table 4 Abilities assessed to a limited extent in the controlled tests**

- Cognitive Abilities:
  - Spatial awareness
  - Hand/eye co-ordination
  - Short-, long-term memory
  - Recognition
  - Organisation/categorisation

These may well vary in a different context such as an archaeological excavation.

Another limitation related to the layout of the pro forma of the self-evaluation tool kit. The questions in Part 1 were 'graded' (A, B, C or A, B), but this grading was not reflected in Parts 2 and 3 which only recorded whether a subject was able to do a particular activity or not. In consequence, the pro forma could not reflect different levels of ability or track the development of abilities. In order to record different levels of ability, the analysis of the results in this report is split into two sections. The first section provides a statistical comparison of the data from Parts 2 and 3 of the draft tool kit considering whether the subjects were 'able' or 'unable' to complete particular tasks. A second section considers each subject on an individual basis and identifies which activities they may have problems with, as indicated in Part 1 where they answered B or C to a particular question, and compares this with their actual performance during the testing.

## **SUMMARY**

- The Part 2 document could give the subjects an idea of what their possible potential abilities are
- The Part 3 document, as completed during the controlled tests, demonstrated the abilities to do particular tasks that the individual subjects possessed, but it could not show that they would be able to do these under all conditions or for prolonged periods of time
- It was not possible to test all the potential abilities in the controlled tests, especially some of the cognitive abilities and transferable skills, these aspects could only be properly assessed over an extended period on an actual archaeological excavation
- The layout of the pro forma of the self-evaluation tool kit used for the controlled testing could not identify differing 'levels' of ability nor track the development of abilities.

# IV STATISTICAL COMPARISON OF THE PART 2 AND PART 3 DOCUMENTS

## A. METHOD

The Part 2 document as completed by the subjects lists the key archaeological tasks that they should be potentially 'able' or 'unable' to do as derived from the answers given to the Part 1 questionnaire. The Part 3 document corresponds to the same set of key archaeological tasks. The related answers 'able' or 'unable' were recorded as the 18 disabled participants were asked to perform each task. Having two identical sets of data, a comparison of the binary answers 'able' or 'unable' was carried out between the data obtained by anticipation in Part 2 and the data obtained in the controlled tests in Part 3.

The McNemar test was performed to compare the results between the Part 2 and Part 3 documents. This test is designed for non-parametric data when the 2 variables to compare (Task Ability in Part 2 and Task Ability in Part 3) are binary and related. This means that the answers obtained for each task in Part 2 and Part 3 come from the same individuals. In this test each task is considered as a variable. For two binary variables, four combinations of the categories (answers) are possible. The results for the task 'Completing site records - Description' are shown in **Example 2**.

### **Example 2 Comparison between the Part 2 and Part 3 documents using the McNemar test**

Part 2: Completing site records-Description	Part 3: Completing site records-Description	
	Able	Unable
Able	16	2
Unable	0	0

The number in each cell corresponds to the number of participants. There are 16 participants who were predicted to be able to 'Complete site records-Description' in Part 2 and who were able to achieve the same task when asked to perform it in the controlled testing (Part 3). A perfect prediction of 'Task Ability' would find all the participants in the diagonal top left/bottom right of the table where all the participants who were 'able' to do a specific task in Part 2, would also be 'able' to do so in Part 3. Similarly, all the participants who were 'unable' to do a specific task in Part 2 would also be 'unable' to do so in Part 3. The top right/bottom left diagonal cells include participants who gave a different response to the two variables. In this case, 2 participants who were

predicted to be able to achieve this task were unable to do so in controlled condition.

The McNemar test determines if the proportion of participants in the first category 'able' of one variable (Task Ability' in Part 2) equals the proportion of participants in the first category 'able' of another variable (Task Ability' in Part 3). The test assumes these proportions are equal, computes expected frequencies, and uses a Chi-square statistic to compare the expected to the observed frequencies. A small significance level ( $<.05$ ) indicates that the proportions are not equal.

## B. RESULTS

The binary comparison between the Part 2 and Part 3 documents only showed a significant difference between 'able' and 'unable' for one task:

'Carry equipment on back'.

This gave a p value of 0.063 at a 20% level of precision.

## C. DISCUSSION

Although the statistical comparison appears to show that the draft tool kit used in the tests worked extremely well, there is a serious limitation to the results. They are based on whether a participant was 'able' or 'unable' to do a particular task. Whether a subject needed adjustments or assistance to successfully complete a particular task is not reflected in this statistical analysis. This information can only be arrived at by considering each participant on an individual basis and investigating whether difficulties with particular tasks or abilities could be anticipated based on their replies to the questions in the Phase 1 document.

The full details of the results of statistical comparisons can be found in the Appendix to this report.

# V RESULTS OF THE INDIVIDUAL TESTS

## A. DETAILS OF INDIVIDUAL TESTS

\* Denotes an ability that was not assessed

\*\* Denotes an ability that could only be assessed to a limited extent

### 1. JULIAN

#### DETAILS OF DISABILITY

Heart Condition – Aortic Dissection Type B, non-surgical intervention. Regarded as a disability from a work point of view and retired due to ill-health in 2002. No mobility problems and blood pressure kept artificially low.

#### RESULTS

##### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Julian would be able to participate successfully in all the activities. On the questionnaire Julian had qualified some of his answers:

- Carrying equipment on back – ‘If a light load’
- \*Teamwork – ‘Most of the time’
- \*Adapting to new environments – ‘Usually’
- \*Problem solving – ‘A lot of the time’.

##### b. Post-Testing Abilities:

In the controlled tests it was found that Julian had difficulties with two activities:

- Carrying a heavy weight on his back
- His physical strength was judged to be ‘medium’, not ‘high’.

No adjustments were necessary for Julian to complete any of the other tasks, but he did comment that he was concerned about his physical stamina if doing fieldwork over an extended period.

c. Feedback Comments:

- Useful and instructive before going on fieldwork, a good introduction
- May be able to do more than initially thought, helps confidence
- Can see how questions relate to the tasks, but questionnaire a bit difficult to understand in places.

## 2. CHARLOTTE

### DETAILS OF DISABILITY

Visual Impairment – Nystagmus, registered partially sighted.

### RESULTS

a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Charlotte may have difficulties with the following activities:

- Reading and understanding maps and plans
- Cutting and lifting turf
- Using a pick axe
- Trowelling
- Using and emptying a wheelbarrow
- Seeing details on the ground in front of her
- Laying a tape measure
- Reading a tape measure
- Drawing ability
- Seeing the lines on graph paper
- Pushing a ranging pole into the ground
- Extending a measuring staff
- Erecting an instrument tripod
- Field survey/walking – traverse in a straight line
- Field survey – identifying surface features
- Carrying a heavy weight on her back
- Carrying equipment in her hands
- Strength 'medium'
- Balance
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- \*\*Long-term memory



- \*\*Short-term memory
- \*Communication – at a distance
- \*Adapting to a new environment
- \*Analysing numerical data
- \*Problem solving.

b. Post-Testing Abilities:

In the controlled tests Charlotte had difficulties with the following activities:

- She could read and understand maps, but not plans
- She could only lift light turfs
- She could use a pickaxe, but not raise it over her head
- She could use a wheelbarrow, but did not feel confident
- Emptying a wheelbarrow
- Problems in feeling fine textures
- She could see details on the ground and plan them when kneeling down
- Laying a tape measure
- Reading a tape measure
- Lining up ranging poles, thought she would be able to do it using a monocular
- Using a Total Station, seeing through the eyepiece
- Using a prismatic compass
- Field survey – identifying surface features
- She could carry light equipment in her hands and on her back
- Her physical strength was judged to be 'medium', not 'high'
- Vision – close and distant
- Balance
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- Comprehending drawings.

No adjustments were necessary for Charlotte to complete any of the other tasks, but she did require assistance in navigating the area in which the testing was carried out.

c. Feedback Comments:

- Could probably do more things if I had my lenses with me
- Everything explained as went along – reassuring
- Interesting – pushing somewhere have not been before, especially handling tools when have poor spatial awareness
- Feel relaxed in knowing that things can be adapted.

**Illus 1 Using a hand brush**



**Illus 2 Laying a tape measure**



### 3. CARLA

#### DETAILS OF DISABILITY

Dyscalculia – problems reading and writing numbers  
Irritable Bowl Syndrome.

#### RESULTS

##### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Carla may have difficulties with the following activities:

- Reading and understanding maps and plans
- Drawing ability
- Erecting an instrument tripod
- \*Analysing numerical data
- Comprehension of site drawings.

##### b. Post-Testing Abilities:

In the controlled tests Carla had difficulties with the following activities:

- Numerical data when completing site records
- She could use a pickaxe, but not raise it over her head
- Carrying a heavy weight on her back
- Squatting
- Her physical strength was judged to be 'medium', not 'high'
- \*\*Hand/eye co-ordination.

No adjustments were necessary for Carla to complete any of the other tasks.

##### c. Feedback Comments:

- Interesting and informative – insight into things before doing fieldwork
- Nice to know am helping and making a contribution
- Expect to have difficulty using technical equipment.

## 4. ANDREW

### DETAILS OF DISABILITY

Back Problems – slipped disc, affects lower back and causes sciatic pain. Back operation in 2005 and much better since then, having ongoing physiotherapy treatment.

### RESULTS

#### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Andrew may have difficulties with the following activities:

- Cutting and lifting turf
- Using a pick axe
- Excavation – brushing
- Using and emptying a wheelbarrow
- Drawing
- Using a magnetometer
- Carrying equipment in his hands
- Squatting
- Sitting with knees pulled up to chest
- \*\*Long term memory
- \*\*Recognition.

#### b. Post-Testing Abilities:

In the controlled tests Andrew had difficulties with the following activities:

- He could use a pickaxe, but not raise it over his head
- He could use a mattock, but not for a long period
- Drawing ability, was unable to look straight down at the centre of a drawing frame
- Carrying a heavy weight on his back
- Sitting with his knees pulled up to his chest.

Andrew was able to complete more tasks than he initially thought that he would be capable of doing. If allowed to get into a physical position in which he felt comfortable, he was able to excavate with all the light excavation tools and some of the heavier tools. Similarly, he had very little difficulty with the other activities, except being able to see the

centre of a drawing frame from directly above. He was not able to find a position from which he could do this activity comfortably.

c. Feedback Comments:

- Project a good idea
- Feel more comfortable about doing fieldwork now, was nervous before
- Need to take into account long-term- and after-effects
- Extended periods of doing a task not covered.

## 5. DANIEL

### DETAILS OF DISABILITY

Dyslexia – not chronic, spelling problems and may take longer to read things.

### RESULTS

After completing the Part 1 questionnaire, the results suggested that Daniel would be able to participate successfully in all the activities. The testing confirmed this and he had no problems with any of the tasks involved.

Feedback Comments:

Daniel offered no feedback comments to the project team.

## 6. JOSEPH

### DETAILS OF DISABILITY

Visual Impairment – retinal detachment, cataract; use a magnifier for small objects.

### RESULTS

#### a. Pre-Testing Abilities

After completing the Part 1 questionnaire, the results suggested that Joseph may have difficulties with the following activities:

- Comprehending site records
- Balance
- \*\*Long-term memory.

On the questionnaire Joseph had qualified several of his answers:

- 'Yes, in good light'
- 'Yes, if the print is large enough'
- 'Yes, if using a magnifier'
- 'Yes, if using a torch'.

For specific questions he made these comments:

- Seeing close and distant objects – 'I used to, but not sure because of Retina surgery, would like to try'
- Total Station, record readings from screen – 'Depends on the size of the numbers'
- Balance – 'Balance can be a problem, I have to watch steps especially going down in poor light or over an open hole'.

#### b. Post-Testing Abilities:

In the controlled tests Joseph had difficulties with the following activities:

- Reading and understanding maps and plans
- Using graph paper on a drawing board – he could see the graph paper, but not when it was overlain by drawing film
- Line up ranging poles – only to a distance of 6-7 metres
- Focussing a level
- Field survey, identifying surface features – only to a distance of 6-7 metres

- Distant vision.

No adjustments were necessary for Joseph to complete any of the other tasks, but he did require assistance in navigating the area in which the testing was carried out.

c. Feedback Comments:

- Flashes of sight when using optical equipment – cataract moving around (a good sign?), will see optician
- Could do a lot of the activities using my [special] lenses, but can use a prismatic compass perfectly with own eyes
- Can see graph paper, but not with drawing film overlay
- Frustrated – could have done these jobs before eye problems
- Negative – metal plate in wrist, may not be able to do Geophysics
- Understand the meaning of the questions [in Part 1] now.

**Illus 3 Using a sprayer**



**Illus 4 Dry sieving**



**Illus 5 Processing artefacts**





## 7. JOHN

### DETAILS OF DISABILITY

Dyslexia – not chronic, spelling problems and may take longer to read things.

### RESULTS

#### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that John may have difficulties with the following activities:

- Using a level and a Total Station
- \*\*Long term memory
- \*Social skills.

#### b. Post-Testing Abilities:

John had no difficulty completing any of the tasks.

#### c. Feedback Comments:

John offered no feedback comments to the project team.

## 8. ANGELA

### DETAILS OF DISABILITY

Dyslexia – problems with writing, spelling and punctuation; slower at reading; good memory and listening skills

Large-sized – may have problems kneeling and difficulty getting into position.

### RESULTS

#### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Angela may have difficulties with the following activities:

- Completing site records – descriptions and numerical data
- Field survey – identifying surface features

- Drawing ability
- Carrying a heavy weight on her back
- Squatting
- Kneeling
- Sitting with her knees pulled up to her chest
- Lying down
- Balance
- Communication – conveying information
- \*Decision making.

b. Post-Testing Abilities:

In the controlled tests Angela had difficulties with the following activities:

- Completing site records – descriptions and numerical data
- Carrying a heavy weight on her back
- She could squat, but only for a short period of time
- Sitting with her knees pulled up to her chest.

Because of her size, it took time for Angela to get into a physical position in which she felt comfortable.

c. Feedback Comments:

Angela offered no feedback comments to the project team.

## 9. ANITA

### DETAILS OF DISABILITY

Scotopic Sensitivity (Merles-Iren Syndrome) – written letters jump around if there is too much light

Dyspraxia – problems with organisation, planning, memory and co-ordination

Asthma and ME – do not cause many problems.

### RESULTS

a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Anita may have difficulties with the following activities:

- Comprehending site records

- Completing site records – descriptions and numerical data
- Field survey – identifying surface features
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- \*\*Short-term memory
- \*Time management
- \*Analysing quantitative data
- \*Problem solving
- \*Decision making

On the questionnaire Anita had qualified some of her answers:

- Completing site records, descriptions – ‘Yes, if memory not required’
- Field survey, identifying surface features – ‘Sometimes’
- Kneeling – ‘If change over’
- Problem solving – ‘Yes, but unusual solutions’.

b. Post-Testing Abilities:

In the controlled tests Anita had difficulties with the following activities:

- Slight difficulties with carrying a heavy weight on her back
- Her physical strength was judged to be ‘medium’, not ‘high’
- \*\*Spatial awareness.

No adjustments were necessary for Anita to complete any of the other tasks.

c. Feedback Comments:

- Felt comfortable when asking for clarification and when did things wrong
- Thoroughly thought out methodology, activities work and relate to archaeological tasks
- Some of the wording ambiguous.

**Illus 6 Cutting turf**



**Illus 7 Using a hand brush**



## 10. MARGARET

### DETAILS OF DISABILITY

Dyslexia – spelling problems and slow writer; reading and comprehension ability good

Dyspraxia – problems with spatial awareness and some 'clumsiness'.

### RESULTS

#### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Margaret may have difficulties with the following activities:

- Completing site records – descriptions
- Field survey/walking – traverse in a straight line
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- \*\*Short-term memory
- \*Decision making
- \*Social skills.

On the questionnaire Margaret had qualified one of her answers:

- Social skills – 'It depends on the situation, I am rather shy'.

#### b. Post-Testing Abilities:

In the controlled tests Margaret had difficulties with the following activities:

- She could use a pickaxe, but not raise it over her head
- \*\*Spatial awareness.

No adjustments were necessary for Margaret to complete any of the other tasks.

#### c. Feedback Comments:

Margaret offered no feedback comments to the project team.

## 11. SEAN

### DETAILS OF DISABILITY

Dyslexia – slow reading and writing, poor spelling, poor organisation skills

Dyspraxia – balance problems and poor hand/eye co-ordination

Minor Spina Bifida – has never been a problem.

### RESULTS

#### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Sean may have difficulties with the following activities:

- Completing site records – descriptions
- Using a pick axe
- Using a trowel
- Using a wheelbarrow
- Marking finds
- \*\*Spatial awareness
- \*\*Long-term memory
- \*Decision making.

#### b. Post-Testing Abilities:

In the controlled tests Sean had difficulties with the following activity:

- \*\*Short-term memory.

No adjustments were necessary for Sean to complete any of the other tasks.

#### c. Feedback Comments:

Sean offered no feedback comments to the project team.

## 12. MARK

### DETAILS OF DISABILITY

Visual Impairment – retinal detachment in both eyes, totally blind in left eye.

### RESULTS

#### a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Mark may have difficulties with the following activities:

- Drawing ability
- Spatial awareness
- \*\*Hand/eye co-ordination
- \*\*Long-term memory
- \*Social skills.

#### b. Post-Testing Abilities:

Mark had no difficulty completing any of the tasks.

#### c. Feedback Comments:

- Need more time to get used to the equipment – take in using tactile skills and hearing
- Need more contrast in colours on some equipment – strings and kneelers
- Eye-cups on optical equipment would help blank out excess light.

## 13. JAMES

### DETAILS OF DISABILITY

Brain tumour – neurosurgery 3 years ago, general nervousness, slow at communicating, need time to think things through.

### RESULTS

#### a. Pre-Testing Abilities

After completing the Part 1 questionnaire, the results suggested that James may have difficulties with the following activities:

- Balance
- \*\*Hand/eye co-ordination
- \*Adapting to a new environment.

#### b. Post-Testing Abilities:

James had no difficulty completing any of the tasks. Although no adjustments had to be made, he did require encouragement and support. The first session of testing was ended when the weather became hot and James felt uncomfortable and became nervous. This emphasises the effect that environmental conditions can have on some individuals.

#### c. Feedback Comments:

- Feeling can do more than expected
- Confidence coming back, less reliant on carers
- Finding own ability – need less support.



**Illus 8 Excavating with a trowel**



**Illus 9 Using a wheelbarrow**



## 14. MARTIN

### DETAILS OF DISABILITY

Visual Impairment – blind in one eye, tunnel vision in the other eye  
Diabetes.

### RESULTS

#### a. Pre-Testing Abilities

After completing the Part 1 questionnaire, the results suggested that Martin may have difficulties with the following activities:

- Completing site records – descriptions and numerical data
- Reading and understanding maps and plans
- Seeing the hairlines in a level and a Total Station and using an optical square
- Field survey/walking – traverse in a straight line
- Squatting
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- \*\*Short-term memory
- \*\*Long-term memory
- \*\*Recognition
- \*Communication – conveying and understanding information
- \*Analysing qualitative and quantitative data
- \*Problem solving.

On the questionnaire Martin had qualified one of his answers:

- Total Station, record readings from screen – ‘Subject to light’.

#### b. Post-Testing Abilities:

In the controlled tests Michael had difficulties with the following activities:

- Drawing – seeing the graph paper clearly
- Focussing a level and reading the measurements
- Focussing a Total Station and reading the measurements
- Using an optical square
- Field survey, identifying surface features
- Squatting
- \*\*Hand/eye co-ordination.

No adjustments were necessary for Martin to complete any of the other tasks, but he did require assistance in navigating the area in which the testing was carried out.

c. Feedback Comments:

- Understand how the questionnaire fits the archaeological tasks
- Fun, interesting, rewarding and enjoyable
- Not too academic, very practical
- Good instructions
- Felt safe, never at risk.

## 15. BEN

### DETAILS OF DISABILITY

Scoliosis and Osteo Arthritis – hip replacements, wheelchair user.

### RESULTS

a. Pre-Testing Abilities:

After completing the Part 1 questionnaire, the results suggested that Ben may have difficulties with the following activities:

- Cutting and lifting turf
- Using a pick axe
- Using and emptying a wheelbarrow
- Seeing details on the ground in front of him
- Laying a tape measure
- Handling small-sized finds
- Lining up ranging poles
- Seeing the hair lines in a level/Total Station
- Field survey/walking – traverse in a straight line
- Field walking – picking up artefacts
- Using a gradiometer
- Carrying equipment on his back
- Carrying equipment in his hands
- Squatting
- Sitting with knees pulled up to the chest
- Sit on the floor with legs out to one side
- Low strength
- Balance
- \*\*Spatial awareness

- \*\*Hand/eye co-ordination
- \*\*Short-term memory
- \*\*Long-term memory
- \*Time management
- \*Analysing numerical data.

b. Post-Testing Abilities:

In the controlled tests Ben had difficulties with the following activities:

- Able to cut turf with a half-moon, but not a spade
- He could use a pick axe, but not raise it over his head
- Using and emptying a wheelbarrow
- Field survey/walking, traverse – not over rough ground
- Using a gradiometer
- Carry a heavy rucksack on his back, but could carry things on his knees
- Sitting with knees pulled up to the chest.

Ben had the ability to do all the other tasks. Some of these he completed sitting in his wheelchair, such as using a mattock. This, in part, was due to his powerful upper body strength. He explained that as long as he could work to one side of where he was sitting this was possible, but there was a danger of over-balancing if leant out too far. Other tasks he was able to do outside the wheelchair. This included trowelling which he did kneeling quite comfortably on a mat. However, he did emphasise that he had difficulties with his physical stamina and ability to continue the same task for a period of time. This was due to pain and stiffness in his hips and lower back. The first session of testing was ended when he informed the project team of his growing tiredness and physical fatigue.

c. Feedback Comments:

Ben offered no feedback comments to the project team.

**Illus 10 Using a mattock**



**Illus 11 Excavating with a trowel**



## 16. KATHY

### DETAILS OF DISABILITY

ME – extreme physical fatigue from normal activity.

### RESULTS

#### a. Pre-Testing Abilities

After completing the Part 1 questionnaire, the results suggested that Kathy may have difficulties with the following activities:

- Using a pick axe
- Using and emptying a wheelbarrow
- Extend a measuring staff
- Using a gradiometer
- Carrying a heavy rucksack on her back
- Strength medium
- \*\*Long-term memory
- \*\*Recognition
- \*Decision making.

#### b. Post-Testing Abilities:

In the controlled tests Kathy had difficulties with the following activities:

- Carrying a heavy rucksack on her back
- Her strength was determined as 'medium'.

No adjustments were necessary for Kathy to complete any of the other tasks, but she did emphasise that she had potential difficulties with her physical stamina.

#### c. Feedback Comments:

Kathy offered no feedback comments to the project team.

## 17. KAREN

### DETAILS OF DISABILITY

Visual Impairment – registered blind

Diabetes – insulin-dependent.

### RESULTS

#### a. Pre-Testing Abilities

After completing the Part 1 questionnaire, the results suggested that Karen may have difficulties with the following activities:

- Comprehending site records
- Completing site records – descriptions
- Reading and understanding maps and plans
- Using a wheelbarrow
- Seeing details on the ground in front of her
- Seeing colours and texture when discerning stratigraphy, identifying finds and sorting environmental samples
- Laying a tape measure
- Reading a tape measure
- Drawing ability
- Seeing graph paper
- Sorting artefacts and environmental samples – vision
- Marking finds
- Lining up ranging poles
- Erecting an instrument tripod
- Attaching an instrument to a tripod
- Seeing through a level and a Total Station
- Seeing the hairlines in a level and a Total Station
- Reading the measurements from a Total Station's display
- Field survey/walking – traverse in a straight line
- Field survey – identifying surface features
- Carrying equipment in her hands
- Balance
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- \*\*Recognition
- \*Analysing numerical data
- \*Decision making.

## b. Post-Testing Abilities:

In the controlled tests Karen had difficulties with the following activities (note that a Total Station was not available when Karen participated in the testing):

- Comprehending site records
- Completing site records – descriptions and numerical data
- Reading maps and plans
- Using a pick axe – she was physically able to do this task but it was deemed to be unsafe for her to do so
- Seeing colours and texture when discerning stratigraphy, identifying finds and sorting environmental samples
- Laying a tape measure
- Reading a tape measure
- Drawing ability
- Seeing graph paper
- Marking finds and sample trays
- Line up ranging poles
- Level – set up tripod, attach to tripod, use and read measurements
- Use a prismatic compass and an optical square
- Field walking – traverse, identify and pick up material
- Field survey – traverse and identify surface features
- All aspects of vision
- Balance
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- Comprehension of written material and drawings.

The difficulties that Karen had related directly to her blindness, she also required assistance in navigating the area of the testing. However, she did exhibit extremely good tactile skills which helped her considerably when trowelling and analysing finds.

## c. Feedback Comments:

Karen offered no feedback comments to the project team.



## 18. VERONICA

### DETAILS OF DISABILITY

Mental Health problem – recurrent severe depression and paranoia

Dyspraxia – problems with co-ordination and directions

Fybromyalgia – joint pains and weakness.

### RESULTS

#### a. Pre-Testing Abilities

After completing the Part 1 questionnaire, the results suggested that Veronica may have difficulties with the following activities:

- Cutting turf
- Using and emptying a wheelbarrow
- Drawing ability
- Handling finds and environmental samples
- Marking finds and sample boxes
- Seeing the hairlines in a level/Total Station
- Field survey/walking – traverse in a straight line
- Field walking – picking up artefacts
- Using a gradiometer
- Carrying a heavy rucksack on her back
- Carrying equipment in her hands
- Squatting
- Kneeling
- Strength – medium
- Stamina – medium
- Balance
- \*\*Spatial awareness
- \*\*Hand/eye co-ordination
- \*\*Long-term memory
- \*\*Recognition
- \*Time management
- \*Adapting to a new environment
- \*Analysing numerical data
- \*Problem solving
- \*Social skills.

#### b. Post-Testing Abilities:

In the controlled tests Veronica had difficulties with the following activity:

- \*\*Short-term memory.

Veronica completed all the tasks with no difficulties. However, she commented that she would have problems sustaining some of the activities over an extended period. She also said that the particular day of the testing was a 'good day'. She felt that on a 'bad day' that she would be able to do very little.

#### c. Feedback Comments:

- Only limited options on questionnaire
- Project a good idea – look at abilities, not disabilities
- Good to be involved, but not singled out – put in with other students
- Everyone has good days and bad days, need to know own limitations.

## 19. STEVEN

Non-Disabled.

### RESULTS

#### a. Pre-Testing Abilities

After completing the Part 1 questionnaire, the results suggested that Steven may have difficulties with the following activities:

- \*\*Long-term memory

#### b. Post-Testing Abilities:

Steven had no difficulty completing any of the tasks.

#### c. Feedback Comments:

Steven offered no feedback comments to the project team.

## 20. GEOFF

Non-disabled.

### RESULTS

After completing the Part 1 questionnaire, the results suggested that Geoff would be able to participate successfully in all the activities. The testing confirmed this and he had no problems with any of the tasks involved.

Feedback Comments:

Geoff offered no feedback comments to the project team.

## B. DISCUSSION OF THE RESULTS

Taking the sample of participants as a whole, a comparison between the tasks they could potentially have difficulties with (Part 2) and what they actually had difficulties with (Part 3) is given in **Table 5**. The overall pattern is that the subjects had fewer difficulties completing the tasks than was anticipated. This could be due to two factors:

- The questions in the Part 1 document do not accurately relate to the actual archaeological activity
- The participants had underestimated, or were unaware of, their true abilities.

**Table 5 Anticipated difficulties with tasks and abilities as suggested in the Part 2 document compared with actual difficulties observed in the controlled testing (Part 3); numbers of occurrences for each task/ability**

### ARCHAEOLOGICAL TASKS

Task	Part 2	Part 3
Comprehending site records	3	1
Completing site records – descriptions	6	2
Completing site records – numerical data	3	3
Read and understand maps and plans accurately	4	3
Cutting turf	4	
Lifting turf	3	1
Excavation – pick axe	4	6
Excavation – mattock		1
Excavation – trowelling	2	
Excavation – brushing	1	
Use a wheelbarrow	7	2
Empty a wheelbarrow	5	2
Discern stratigraphy – vision	1	1
Discern stratigraphy – colour	1	1
Discern stratigraphy – texture	1	1
Discern stratigraphy – tactile		1
Lay a tape measure	3	2
Read a tape measure accurately	2	2
See details on the ground	3	1
Drawing – ability	7	2
Drawing – use graph paper	2	3
Handling finds – small-sized	1	
Sorting finds – small-sized	1	
Sorting finds – colour	1	1
Identifying finds – tactile		1
Identifying finds – colour	1	1

<b>Task</b>	<b>Part 2</b>	<b>Part 3</b>
Marking finds	2	1
Sorting environmental samples – small-sized material	1	
Sorting environmental samples – tactile		1
Sorting environmental samples – colour	1	1
Ranging poles – line up	2	3
Measuring staff – extend	2	
Level/Total Station – set up tripod	3	1
Level/Total Station – attach instrument to tripod	1	1
Level/Total Station – see target and hairlines	5	4
Level/Total Station – manual focussing		1
Total Station – read digital display	1	1
Prismatic compass – use	2	2
Optical square – use	2	2
Field walking/survey – traverse	6	2
Field walking – pick up material	2	1
Field survey – identify surface features	2	4
Gradiometry – use an instrument	4	1

## PHYSICAL ABILITIES

<b>Ability</b>	<b>Part 2</b>	<b>Part 3</b>
Carry equipment on back	6	8
Carry equipment in hands	5	1
Squatting	5	3
Kneeling	2	
Sitting with knees pulled up to chest	3	3
Sitting with legs to one side	1	
Lying down	1	
Strength	4	5

## COGNITIVE ABILITIES

<b>Ability</b>	<b>Part 2</b>	<b>Part 3</b>
Vision – colour	1	1
Vision – texture		1
Vision – physical details	3	1
Vision – physical features	2	4
Vision – printed details	2	3
Vision – close and distant	2	3
Balance	7	1
**Spatial awareness	9	4
**Hand/eye co-ordination	9	4
Comprehension – drawings	4	3
Comprehension – verbal information		1
**Short-term memory	5	2
**Long-term memory	10	
**Recognition	5	

## TRANSFERABLE SKILLS

Ability	Part 2	Part 3
*Communication – conveying information	2	
*Communication – understanding information	1	
*Communication – at a distance	1	
*Team working	1	
*Time management	3	
*Adapting to a new environment	4	
*Analysing qualitative data	1	
*Analysing quantitative data	7	
*Problem solving	5	
*Decision making	6	
*Social skills	4	

\* Denotes an ability that was not assessed

\*\* Denotes an ability that could only be assessed to a limited extent

The tasks/abilities that exhibit the highest differences between Part 2 (anticipated) and Part 3 (actual) are listed in **Table 6**.

**Table 6 Tasks/abilities with the greatest highest numerical differences between anticipated and actual difficulties**

- Archaeological Tasks:
  - Completing site records – descriptions
  - Using a wheelbarrow
  - Emptying a wheelbarrow
  - Drawing – ability
  - Field walking/survey – traverse
- Physical Abilities:
  - Carry equipment in hands
- Cognitive Abilities:
  - Balance
  - \*\*Spatial awareness
  - \*\*Hand/eye co-ordination
  - \*\*Short-term memory
  - \*\*Long-term memory
  - \*\*Recognition

\*\* Denotes an ability that could only be assessed to a limited extent

The tasks and abilities that show the highest differences between anticipated and actual difficulties, as listed in **Table 6**, can be used as an aid in refining the tool kit. This especially relates to the questions about everyday activities in the Part 1 document. In conjunction with feedback from the participants and the comments and advice of the project's evaluators, the Phase 3 controlled testing has helped to identify a number of factors which can help in informing the Phase 4 Field Trials and in formulating guidelines for good practice:

- The questions in the Phase 1 document that require adjustment or changes so that they relate directly to particular tasks and abilities and can be clearly understood by 'users'
- Adjustments that proved successful for particular individuals
- Areas where the coping mechanisms and/or nature of a particular disability can be used as an advantage.

Another aspect that is listed in **Table 6** is the Transferable Skills. Although it was not possible to assess these in the controlled tests, the answers given by several of the participants anticipated difficulties with some of these. This highlights another important factor that requires further investigation in the Phase 4 Field Trials.

In some cases it may have been that a participant under-estimated, or was unaware of, their true ability. This is a factor which cannot always be predicted, especially when a subject tackles a task, or is faced with a situation of, that they have not experienced before. This means that any self-evaluation method can never be perfectly accurate; there will always be a margin of error which cannot be compensated for. This is an aspect that must be taken into account when assessing the tool kit through testing.





## VI SUMMARY

- There was a general feeling amongst the participants that they had enjoyed the testing sessions; this was especially the case with subjects who had no previous archaeological experience.
- In most cases the subjects had less difficulty with some of the tasks than indicated by their answers to the Part 1 questionnaire.
- This success in completing tasks was mainly due to individual subjects finding ways to do the activities after being shown by the project team.
- Some examples of individual coping mechanisms were observed to be a benefit. This included the tactile skills of the visually impaired subjects and the upper body strength of the wheelchair user.
- Where individual subjects had difficulties with some of the tasks, this could be related directly to their particular disability.
- The Dyslexic subjects had very few problems with the tasks. It should be noted that of the current undergraduate Archaeology students with a declared disability, the majority have Dyslexia (Phillips and Gilchrist 2005).
- The two non-disabled subjects experienced no difficulties completing the tasks in the tests.
- The limitations of the testing came to light as it proceeded and many of these were commented on by the participants. The testing highlighted areas where adjustments or changes needed to be made to the pro forma of the self-evaluation tool kit (see below). Although a number of the subjects had experienced difficulties in understanding a few of the questions in the Part 1 document, there was a general consensus that they were able to understand the connection between the questions and the specific archaeological tasks.
- Within the limitations outlined above, the pro forma of the self-evaluation tool kit worked well in the controlled tests. The number and nature of the changes required was low and this was reflected in the feedback from the participants and in the various analyses included in this report.



# VII INFORMING PHASE 4 AND GUIDELINES FOR GOOD PRACTICE

## A. PHASE 4

Three major factors were identified in the controlled tests which will inform the Phase 4 Field Trials:

1. Some of the questions in the Part 1 document need to be re-worded to eliminate potential misunderstandings and ambiguities. The major questions concerned include:

- Comprehending site records
- Completing site records – descriptions
- Reading and understanding maps and plans were separated into two different questions
- Excavation - trowelling
- Excavation – clearing waste material by hand
- Using a wheelbarrow
- Drawing – ability
- Field walking/survey – traverse
- Carry equipment on back
- Physical stamina
- Spatial awareness
- Memory.

2. The 'Able/Unable' format of Parts 2 and 3 does not allow for the identification of differing levels of ability, nor can it be used to track changes or the development of abilities with subsequent fieldwork training and use of the tool kit. The format of these parts of the pro forma tool kit needs to be radically remodelled to facilitate these factors.

3. The project team must ensure that the abilities and skills that could not be adequately assessed in the Phase 3 tests are covered in the Phase 4 Field Trials. These include:

- Physical stamina
- Some of the cognitive abilities
- Transferable skills.

## B. GUIDELINES FOR GOOD PRACTICE

A number of factors were identified during the Phase 3 controlled tests which can help inform the 'Guidelines for Good Practice' which will be drawn up by the project as one of its deliverables:

1. Participants require time to get used to particular tasks and equipment.
2. Participants should be allowed to find and adopt the physical position which they find most comfortable for doing particular tasks.
3. Environmental factors, such as weather conditions, need to be taken into account as these may affect the performance of particular individuals.
4. Physical stamina and strength are dynamic factors that will vary with time and conditions.
5. Some participants may not be able to work every day as they may have 'good days' and 'bad days'. This can be part of a process of an individual discovering their own abilities and limitations.
6. It should be recognised that some of the coping mechanisms possessed by individuals may be a benefit when performing a particular archaeological task. These will only be discovered through active participation.
7. Three aspects of visually impaired participants need to be considered:
  - A particular task may be completed successfully if an individual uses any special lenses that they may possess
  - The attachment of eyecups to optical equipment (Level, Total Station) will help to blank out excess light when using these instruments
  - A strong colour contrast on some equipment, such as strings, may be required.
8. The project team either found it difficult, or impossible, to assess some of the cognitive abilities and transferable skills. This emphasises that these can only be properly assessed through 'discovery' and self-evaluation in the context of archaeological fieldwork training.
9. The varied abilities observed amongst a small group of volunteers in the controlled tests emphasises that participants have to be dealt with on an individual basis.

## NOTE

It should be emphasised that many of these guidelines will be applicable to all participants in archaeological fieldwork training, not just those with a declared disability.



## REFERENCES

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- Phillips, T. & Gilchrist, R. 2005, *Disability and Archaeological Fieldwork: Inclusive, Accessible, Archaeology Phase 1 Report*. University of Reading, Archaeology Department. Available at: [http://www.hca.heacademy/access-archaeology/inclusive\\_accessible](http://www.hca.heacademy/access-archaeology/inclusive_accessible)





# APPENDIX: RESULTS OF THE STATISTICAL COMPARISON BETWEEN THE PART 2 AND PART 3 DOCUMENTS

## 1. SITE RECORDS

### 1.1 Comprehending site records

Part 2: Comprehending site records	Part 3: Comprehending site records	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in comprehending site records

### 1.2 Completing site records – descriptions

Part 2: Completing site records – descriptions	Part 3: Completing site records – descriptions	
	Able	Unable
Able	18	2
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment + 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in completing site records – descriptions

### 1.3 Completing site records – numerical data

Part 2: Completing site records – numerical data	Part 3: Completing site records – numerical data	
	Able	Unable
Able	17	3
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 3) Dyslexia/Dyscalculia + 1 (of 5) Visual Impairment + 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in completing site records – numerical data

## 1.4 Read and understand maps and plans accurately

Part 2: Read and understand maps and plans accurately	Part 3: Read and understand maps and plans accurately	
	Able	Unable
Able	16	1
Unable	1	2

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 able: 1 (of 3) Dyslexia/Dyscalculia

Part 2 unable / Part 3 unable: 2 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in reading and understanding maps and plans accurately

## 2. EXCAVATION

### 2.1 Cutting turf

Part 2: Cutting turf	Part 3: Cutting turf	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in cutting turf

### 2.2 Lifting turf

Part 2: Lifting turf	Part 3: Lifting turf	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in lifting turf

### 2.3 Excavation – pick axe

Part 2: Excavation – pick axe	Part 3: Excavation – pick axe	
	Able	Unable
Able	14	1
Unable	5	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 able: 1 (of 3) Unseen Disability + 2 (of 2) Restricted Mobility + 2 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in excavating with a pick axe

## 2.4 Excavation – mattock

Part 2: Excavation – mattock	Part 3: Excavation – mattock	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in excavating with a mattock

## 2.5 Excavation – draw hoe

Part 2: Excavation – draw hoe	Part 3: Excavation – draw hoe	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in excavating with a draw hoe

## 2.6 Excavation – trowelling

Part 2: Excavation – trowelling	Part 3: Excavation – trowelling	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in trowelling

## 2.7 Excavation – brushing

Part 2: Excavation – brushing	Part 3: Excavation – brushing	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in brushing

## 2.8 Excavation – secateurs

Part 2: Excavation – secateurs	Part 3: Excavation – secateurs	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in using secateurs

## 2.9 Disposal of waste material – on a spade

Part 2: Disposal of waste material – on a spade	Part 3: Disposal of waste material – on a spade	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in disposing waste material with a spade

## 2.10 Disposal of waste material – by hand

Part 2: Disposal of waste material – by hand	Part 3: Disposal of waste material – by hand	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in disposing waste material by hand

## 2.11 Disposal of waste material – in a wheelbarrow

Part 2: Disposal of waste material – in a wheelbarrow	Part 3: Disposal of waste material – in a wheelbarrow	
	Able	Unable
Able	16	0
Unable	3	1

Part 2 able / Part 3 unable: 0

Part 2 unable / Part 3 able: 1 (of 3) Unseen Disability + 1 (of 5) Visual Impairment + 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 2) Restricted Mobility

McNemar test: there are no significant differences of ability between part 2 and part 3 in disposing waste material in a wheelbarrow

## 2.12 Disposal of waste material – in a bucket

Part 2: Disposal of waste material – in a bucket	Part 3: Disposal of waste material – in a bucket	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in disposing waste material in a bucket

### 2.2.13 Disposal of waste material – empty wheelbarrow

Part 2: Disposal of waste material – empty wheelbarrow	Part 3: Disposal of waste material – empty wheelbarrow	
	Able	Unable
Able	17	1
Unable	1	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 able: 1 (of 3) Unseen Disability

Part 2 unable / Part 3 unable: 1 (of 2) Restricted Mobility

McNemar test: there are no significant differences of ability between part 2 and part 3 in disposing waste material when emptying a wheelbarrow

### 2.14 Disposal of waste material – empty bucket

Part 2: Disposal of waste material – empty bucket	Part 3: Disposal of waste material – empty bucket	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in disposing waste material when emptying a bucket

### 2.15 Dry sieving

Part 2: Dry sieving	Part 3: Dry sieving	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in dry sieving

### 2.16 Use a sprayer

Part 2: Use a sprayer	Part 3: Use a sprayer	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in using a sprayer

## 2.17 Discern stratigraphy – tactile

Part 2: Discern stratigraphy – tactile	Part 3: Discern stratigraphy – tactile	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in discerning stratigraphy - tactile

## 2.18 Discern stratigraphy – vision

Part 2: Discern stratigraphy – vision	Part 3: Discern stratigraphy – vision	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in discerning stratigraphy - vision

## 2.19 Discern stratigraphy – colour

Part 2: Discern stratigraphy – colour	Part 3: Discern stratigraphy – colour	
	Able	Unable
Able	18	0
Unable	1	1

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in discerning stratigraphy - colour

## 2.20 Discern stratigraphy – texture

Part 2: Discern stratigraphy – texture	Part 3: Discern stratigraphy – texture	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in discerning stratigraphy – texture

### 3. PLANNING

#### 3.1 Lay a tape measure

Part 2: Lay a tape measure	Part 3: Lay a tape measure	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in laying a tape measure

#### 3.2 Read a tape measure accurately

Part 2: Read a tape measure accurately	Part 3: Read a tape measure accurately	
	Able	Unable
Able	18	0
Unable	1	1

Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment  
Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in reading a tape measure accurately

#### 3.3 See area to be planned

Part 2: See area to be planned	Part 3: See area to be planned	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in seeing area to be planned

#### 3.4 Drawing – ability

Part 2: Drawing – ability	Part 3: Drawing – ability	
	Able	Unable
Able	18	1
Unable	1	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in drawing - ability

### 3.5 Drawing – use graph paper

Part 2: Drawing – use graph paper	Part 3: Drawing – use graph paper	
	Able	Unable
Able	18	1
Unable	0	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in drawing – use graph paper

## 4. PROCESSING OF ARTEFACTS

### 4.1 Handling finds – small-sized

Part 2: Handling finds – small-sized	Part 3: Handling finds – small-sized	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in handling finds – small sized

### 4.2 Handling finds – medium/large-sized

Part 2: Handling finds – medium/large-sized	Part 3: Handling finds – medium/large-sized	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in handling finds –medium/large sized

### 4.3 Washing finds – small-sized

Part 2: Washing finds – small-sized	Part 3: Washing finds – small-sized	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in washing finds – small sized



#### 4.4 Washing finds – medium-sized

Part 2: Washing finds – medium-sized	Part 3: Washing finds – medium-sized	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in washing finds – medium sized

#### 4.5 Washing finds – large-sized

Part 2: Washing finds – large-sized	Part 3: Washing finds – large-sized	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in washing finds – large sized

#### 4.6 Sorting finds – small-sized

Part 2: Sorting finds – small-sized	Part 3: Sorting finds – small-sized	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting finds – small sized

#### 4.7 Sorting finds – medium-sized

Part 2: Sorting finds – medium-sized	Part 3: Sorting finds – medium-sized	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting finds – medium sized

#### 4.8 Sorting finds – large-sized

Part 2: Sorting finds – large-sized	Part 3: Sorting finds – large-sized	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting finds – large sized

#### 4.9 Identifying finds – tactile

Part 2: Identifying finds – tactile	Part 3: Identifying finds – tactile	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in identifying finds - tactile

#### 4.10 Identifying finds – colour

Part 2: Identifying finds – colour	Part 3: Identifying finds – colour	
	Able	Unable
Able	18	0
Unable	1	1

Part 2 able / Part 3 unable: 0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in identifying finds - colour

#### 4.11 Identifying finds – texture

Part 2: Identifying finds – texture	Part 3: Identifying finds – texture	
	Able	Unable
Able	18	0
Unable	1	1

Part 2 able / Part 3 unable: 0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in identifying finds - texture

#### 4.12 Identifying finds – vision

Part 2: Identifying finds – vision	Part 3: Identifying finds – vision	
	Able	Unable
Able	18	1
Unable	1	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
 Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in identifying finds - vision

#### 4.13 Marking finds

Part 2: Marking finds	Part 3: Marking finds	
	Able	Unable
Able	17	1
Unable	1	0

1 missing Multiple Disabilities participant result

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
 Part 2 unable / Part 3 able: 1 (of 4) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in marking finds

## 5. ENVIRONMENTAL SAMPLING

### 5.1 Take bulk samples

Part 2: Take bulk samples	Part 3: Take bulk samples	
	Able	Unable
Able	17	1
Unable	0	0

2 missing Multiple Disabilities participant results

Part 2 able / Part 3 unable: 1 (of 2) Restricted Mobility

McNemar test: there are no significant differences of ability between part 2 and part 3 in taking bulk samples

### 5.2 Wet sieving

Part 2: Wet sieving	Part 3: Wet sieving	
	Able	Unable
Able	17	0
Unable	1	0

2 missing Multiple Disabilities participant results

Part 2 unable / Part 3 able: 1 (of 3) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in wet sieving

### 5.3 Sorting samples – small-sized materiel

Part 2: Sorting samples – small-sized materiel	Part 3: Sorting samples – small-sized materiel	
	Able	Unable
Able	17	0
Unable	1	0

2 missing Multiple Disabilities participant results

Part 2 unable / Part 3 able: 1 (of 3) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting samples – small-sized materiel

#### 5.4 Sorting samples – medium-sized materiel

Part 2: Sorting samples – medium-sized materiel	Part 3: Sorting samples – medium-sized materiel	
	Able	Unable
Able	17	0
Unable	1	0

2 missing Multiple Disabilities participant results

Part 2 unable / Part 3 able: 1 (of 3) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting samples – medium-sized materiel

#### 5.5 Sorting samples – large-sized materiel

Part 2: Sorting samples – large-sized materiel	Part 3: Sorting samples – large-sized materiel	
	Able	Unable
Able	17	0
Unable	1	0

2 missing Multiple Disabilities participant results

Part 2 unable / Part 3 able: 1 (of 3) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting samples – large-sized materiel

#### 5.6 Sorting samples – tactile

Part 2: Sorting samples – tactile	Part 3: Sorting samples – tactile	
	Able	Unable
Able	18	0
Unable	0	0

2 missing Multiple Disabilities participant results

No significant differences of ability between part 2 and part 3 in sorting samples – tactile

#### 5.7 Sorting samples – colour

Part 2: Sorting samples – colour	Part 3: Sorting samples – colour	
	Able	Unable
Able	16	0
Unable	1	1

2 missing Multiple Disabilities participant results

Part 2 able / Part 3 unable: 0

Part 2 unable / Part 3 able: 1 (of 3) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting samples – colour

## 5.8 Sorting samples – texture

Part 2: Sorting samples – texture	Part 3: Sorting samples – texture	
	Able	Unable
Able	17	0
Unable	0	1

2 missing Multiple Disabilities participant results

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting samples – texture

## 5.9 Sorting samples – vision

Part 2: Sorting samples – vision	Part 3: Sorting samples – vision	
	Able	Unable
Able	16	1
Unable	1	0

2 missing Multiple Disabilities participant results

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 able: 1 (of 3) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sorting samples – vision

## 5.10 Marking sample trays/boxes

Part 2: Marking sample trays/boxes	Part 3: Marking sample trays/boxes	
	Able	Unable
Able	16	1
Unable	1	0

2 missing Multiple Disabilities participant results

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 able: 1 (of 3) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in marking sample – trays/boxes

## 6. SURVEYING

### 6.1 Lay a tape measure

Part 2: Lay a tape measure	Part 3: Lay a tape measure	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in laying a tape measure

### 6.2 Read a tape measure accurately

Part 2: Read a tape measure accurately	Part 3: Read a tape measure accurately	
	Able	Unable
Able	18	0
Unable	1	1

Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in reading a tape measure accurately

### 6.3 Ranging poles – hold

Part 2: Ranging poles – hold	Part 3: Ranging poles – hold	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in ranging poles – hold

### 6.4 Ranging poles – line up

Part 2: Ranging poles – line up	Part 3: Ranging poles – line up	
	Able	Unable
Able	17	1
Unable	1	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in ranging poles – line up

## 7. INSTRUMENT SURVEY

### 7.1 Measuring staff – hold

Part 2: Measuring staff – hold	Part 3: Measuring staff – hold	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in measuring staff – hold

### 7.2 Measuring staff – extend

Part 2: Measuring staff – extend	Part 3: Measuring staff – extend	
	Able	Unable
Able	20	0
Unable	0	0

No significant differences of ability between part 2 and part 3 in measuring staff – extend

### 7.3 Level – set up tripod

Part 2: Level – set up tripod	Part 3: Level – set up tripod	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in setting up level tripod

### 7.4 Level – attach to tripod

Part 2: Level – attach to tripod	Part 3: Level – attach to tripod	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in attaching level to tripod



### 7.5 Level – use

Part 2: Level – use	Part 3: Level – use	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in using level

### 7.6 Level – manual focussing

Part 2: Level – manual focussing	Part 3: Level – manual focussing	
	Able	Unable
Able	18	2
Unable	0	0

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in manual focussing

### 7.7 Level – read measurements

Part 2: Level – read measurements	Part 3: Level – read measurements	
	Able	Unable
Able	17	2
Unable	0	1

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in reading measurements - Level

### 7.8 Total Station – set up tripod

Part 2: Total Station – set up tripod	Part 3: Total Station – set up tripod	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in setting up Total Station tripod

### 7.9 Total Station – attach to tripod

Part 2: Total Station – attach to tripod	Part 3: Total Station – attach to tripod	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in attaching Total Station to tripod

### 7.10 Total Station – use

Part 2: Total Station – use	Part 3: Total Station – use	
	Able	Unable
Able	17	2
Unable	0	1

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in using Total Station

### 7.11 Total Station – manual focussing

Part 2: Total Station – manual focussing	Part 3: Total Station – manual focussing	
	Able	Unable
Able	18	2
Unable	0	0

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in manual focussing Total Station

### 7.12 Total Station – read measurements

Part 2: Total Station – read measurements	Part 3: Total Station – read measurements	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in Total Station – reading measurements

### 7.13 Total Station – record readings on screen

Part 2: Total Station – record readings on screen	Part 3: Total Station – record readings on screen	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in Total Station – recording readings on screen

### 7.14 Total Station – audible signals

Part 2: Total Station – audible signals	Part 3: Total Station – audible signals	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in Total Station – audible signals

### 7.15 Total Station – attach crystal to staff

Part 2: Total Station – attach Prism to staff	Part 3: Total Station – attach prism to staff	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in Total Station – attaching prism to staff

### 7.16 Prismatic compass – use

Part 2: Prismatic compass – use	Part 3: Prismatic compass – use	
	Able	Unable
Able	18	1
Unable	0	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in using prismatic compass - EDM

## 7.17 Optical square – use

Part 2: Optical square – use	Part 3: Optical square – use	
	Able	Unable
Able	18	1
Unable	0	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in using optical square – EDM

## 8. SURFACE SURVEY

### 8.1 Field walking – traverse

Part 2: Field walking – traverse	Part 3: Field walking – traverse	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in field walking - traverse

### 8.2 Field walking – identifying material

Part 2: Field walking – identifying material	Part 3: Field walking – identifying material	
	Able	Unable
Able	17	0
Unable	2	1

Part 2 unable / Part 3 able: 1 (of 2) Restricted Mobility + 1 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in field walking – identifying material

### 8.3 Field walking – pick up material

Part 2: Field walking – pick up material	Part 3: Field walking – pick up material	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in field walking – picking up material

#### 8.4 Field survey – traverse

Part 2: Field survey – traverse	Part 3: Field survey – traverse	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in field survey – traverse

#### 8.5 Field survey – identifying surface features

Part 2: Field survey – identifying surface features	Part 3: Field survey – identifying surface features	
	Able	Unable
Able	18	1
Unable	0	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in field survey – identifying surface features

## 9. GEOPHYSICAL SURVEY

### 9.1 Gradiometry – use an instrument

Part 2: Gradiometry – use an instrument	Part 3: Gradiometry – use an instrument	
	Able	Unable
Able	18	1
Unable	0	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
 Part 2 unable / Part 3 unable: 1 (of 2) Restricted Mobility

McNemar test: there are no significant differences of ability between part 2 and part 3 in using an instrument - Gradiometry

### 9.2 Gradiometry – identify walking line

Part 2: Gradiometry – identify walking line	Part 3: Gradiometry – identify walking line	
	Able	Unable
Able	17	0
Unable	2	1

Part 2 able / Part 3 unable: 0  
 Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment + 1 (of 2) Restricted Mobility  
 Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in identifying walking line - Gradiometry

### 9.3 Gradiometry – audible signals

Part 2: Gradiometry – audible signals	Part 3: Gradiometry – audible signals	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in perceiving audible signals - Gradiometry

## 9.4 Resistivity – use an instrument

Part 2: Resistivity – use an instrument	Part 3: Resistivity – use an instrument	
	Able	Unable
Able	18	1
Unable	1	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
 Part 2 unable / Part 3 able: 1 (of 3) Dyslexia/Dyscalculia

McNemar test: there are no significant differences of ability between part 2 and part 3 in using an instrument - Resistivity

## 9.5 Resistivity – identify walking line

Part 2: Resistivity – identify walking line	Part 3: Resistivity – identify walking line	
	Able	Unable
Able	17	0
Unable	2	1

Part 2 able / Part 3 unable: 0  
 Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment + 1 (of 2) Restricted Mobility  
 Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in identifying walking line - Resistivity

## 10. CARRYING EQUIPMENT

### 10.1 Carrying equipment on back

Part 2: Carrying equipment on back	Part 3: Carrying equipment on back	
	Able	Unable
Able	14	5
Unable	0	1

Part 2 able / Part 3 unable: 1 (of 3) Dyslexia/Dyscalculia + 2 (of 3) Unseen Disability + 1 (of 2) Restricted Mobility + 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 2) Restricted Mobility

McNemar test: there is a significant differences of ability between part 2 and part 3 in carrying equipment on back of p value = 0.063 at a 20% level of precision

### 10.2 Carrying equipment in hands

Part 2: Carrying equipment in hands	Part 3: Carrying equipment in hands	
	Able	Unable
Able	19	0
Unable	1	0

Part 2 able / Part 3 unable: 1 (of 2) Restricted Mobility

McNemar test: there are no significant differences of ability between part 2 and part 3 in carrying equipment in hands



## 11. PHYSICAL ABILITY

### 11.1 Squatting

Part 2: Squatting	Part 3: Squatting	
	Able	Unable
Able	12	1
Unable	5	2

Part 2 able / Part 3 unable: 1 (of 3) Dyslexia/Dyscalculia

Part 2 unable / Part 3 able: 2 (of 2) Restricted Mobility + 1 (of 5) Visual Impairment + 2 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment + 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in squatting

### 11.2 Kneeling

Part 2: Kneeling	Part 3: Kneeling	
	Able	Unable
Able	17	0
Unable	3	0

Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment + 2 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in kneeling

### 11.3 Sitting with knees pulled up to chest

Part 2: Sitting with knees pulled up to chest	Part 3: Sitting with knees pulled up to chest	
	Able	Unable
Able	15	0
Unable	2	3

Part 2 unable / Part 3 able: 2 (of 5) Visual Impairment

Part 2 unable / Part 3 unable: 2 (of 2) Restricted Mobility + 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sitting with knees pulled up to chest

### 11.4 Sitting

Part 2: Sitting	Part 3: Sitting	
	Able	Unable
Able	16	0
Unable	4	0

Part 2 unable / Part 3 able: 2 (of 5) Visual Impairment + 2 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sitting

### 11.5 Sitting with legs to one side

Part 2: Sitting with legs to one side	Part 3: Sitting with legs to one side	
	Able	Unable
Able	16	0
Unable	4	0

Part 2 able / Part 3 unable: 1 (of 2) Restricted Mobility + 2 (of 5) Visual Impairment + 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in sitting with legs to one side

### 11.6 Lying down

Part 2: Lying down	Part 3: Lying down	
	Able	Unable
Able	16	0
Unable	4	0

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment + 2 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in lying down

### 11.7 Strength – high

Part 2: Strength – high	Part 3: Strength – high	
	Able	Unable
Able	13	4
Unable	2	1

Part 2 able / Part 3 unable: 1 (of 3) Dyslexia/Dyscalculia + 2 (of 3) Unseen Disability + 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 able: 1 (of 2) Restricted Mobility + 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in strength - high

### 11.8 Strength – medium

Part 2: Strength – medium	Part 3: Strength – medium	
	Able	Unable
Able		
Unable		

No data

### 11.9 Physical stamina – long period

Part 2: Physical stamina – long period	Part 3: Physical stamina – long period	
	Able	Unable
Able		
Unable		

No data

### 11.10 Physical stamina – medium period

Part 2: Physical stamina – medium period	Part 3: Physical stamina – medium period	
	Able	Unable
Able		
Unable		

No data

### 11.11 Physical stamina – short period

Part 2: Physical stamina – short period	Part 3: Physical stamina – short period	
	Able	Unable
Able		
Unable		

No data

## 12. COGNITIVE ABILITY

### 12.1 Vision – colour

Part 2: Vision – colour	Part 3: Vision – colour	
	Able	Unable
Able	18	0
Unable	1	1

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities  
Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in vision – colour

### 12.2 Vision – texture

Part 2: Vision – texture	Part 3: Vision – texture	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in vision – texture

### 12.3 Vision – physical details

Part 2: Vision – physical details	Part 3: Vision – physical details	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in vision – physical details

### 12.4 Vision – physical features

Part 2: Vision – physical features	Part 3: Vision – physical features	
	Able	Unable
Able	18	1
Unable	0	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in vision – physical features

## 12.5 Vision – printed details

Part 2: Vision – printed details	Part 3: Vision – printed details	
	Able	Unable
Able	19	0
Unable	0	1

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in vision – printed details

## 12.6 Vision – close and distant

Part 2: Vision – close and distant	Part 3: Vision – close and distant	
	Able	Unable
Able	15	3
Unable	1	1

Part 2 able / Part 3 unable: 3 (of 5) Visual Impairment

Part 2 unable / Part 3 able: 1 (of 5) Multiple Disabilities

Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in vision – close and distant

## 12.7 Hearing

Part 2: Hearing	Part 3: Hearing	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in hearing

## 12.8 Touch

Part 2: Touch	Part 3: Touch	
	Able	Unable
Able	18	2
Unable	0	0

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in touch feeling

## 12.9 Balance

Part 2: Balance	Part 3: Balance	
	Able	Unable
Able	17	2
Unable	1	0

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment  
 Part 2 unable / Part 3 able: 1 (of 2) Restricted Mobility

McNemar test: there are no significant differences of ability between part 2 and part 3 in balance

## 12.10 Spatial awareness

Part 2: Spatial awareness	Part 3: Spatial awareness	
	Able	Unable
Able	17	3
Unable	0	0

Part 2 able / Part 3 unable: 2 (of 5) Visual Impairment + 1 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in spatial awareness

## 12.11 Hand/eye co-ordination

Part 2: Hand/eye co-ordination	Part 3: Hand/eye co-ordination	
	Able	Unable
Able	14	2
Unable	2	2

Part 2 able / Part 3 unable: 1 (of 3) Dyslexia/Dyscalculia + 1 (of 5) Visual Impairment  
 Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment + 1 (of 5) Multiple Disabilities  
 Part 2 unable / Part 3 unable: 2 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in hand/eye coordination

## 12.12 Comprehension – written material

Part 2: Comprehension – written material	Part 3: Comprehension – written material	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in comprehension – written material

### 12.13 Comprehension – drawings

Part 2: Comprehension – drawings	Part 3: Comprehension – drawings	
	Able	Unable
Able	17	1
Unable	1	1

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
 Part 2 unable / Part 3 able: 1 (of 3) Dyslexia/Dyscalculia  
 Part 2 unable / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in comprehension – drawings

### 12.14 Comprehension – verbal information

Part 2: Comprehension – verbal information	Part 3: Comprehension – verbal information	
	Able	Unable
Able	19	1
Unable	0	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in comprehension – verbal information

### 12.15 Organisation/categorisation

Part 2: Organisation/categorisation	Part 3: Organisation/categorisation	
	Able	Unable
Able	18	1
Unable	1	0

Part 2 able / Part 3 unable: 1 (of 5) Visual Impairment  
 Part 2 unable / Part 3 able: 1 (of 5) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in organisation/categorisation

### 12.16 Short-term memory

Part 2: Short-term memory	Part 3: Short-term memory	
	Able	Unable
Able	16	3
Unable	0	0

1 missing Visual Impairment participant results

Part 2 able / Part 3 unable: 1 (of 4) Visual Impairment + 2 (of 5) Multiple Disabilities

McNemar test: there are no significant differences of ability between part 2 and part 3 in short-term memory

### 12.17 Long-term memory

Part 2: Long-term memory	Part 3: Long-term memory	
	Able	Unable
Able	18	1
Unable	0	0

1 missing Visual Impairment participant results

Part 2 able / Part 3 unable: 1 (of 4) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in long-term memory

### 12.18 Recognition

Part 2: Recognition	Part 3: Recognition	
	Able	Unable
Able	18	1
Unable	0	0

1 missing Visual Impairment participant results

Part 2 able / Part 3 unable: 1 (of 4) Visual Impairment

McNemar test: there are no significant differences of ability between part 2 and part 3 in recognition

### 12.19 Mental stamina – long period

Part 2: Mental stamina – long period	Part 3: Mental stamina – long period	
	Able	Unable
Able		
Unable		

No data

### 12.20 Mental stamina – medium period

Part 2: Mental stamina – medium period	Part 3: Mental stamina – medium period	
	Able	Unable
Able		
Unable		

No data



### 12.21 Mental stamina – short period

Part 2: Mental stamina – short period	Part 3: Mental stamina – short period	
	Able	Unable
Able		
Unable		

No data

## 13. TRANSFERABLE SKILLS

### 13.1 Communication – conveying information

Part 2: Communication – conveying information	Part 3: Communication – conveying information	
	Able	Unable
Able		
Unable		

No data

### 13.2 Communication – understanding information

Part 2: Communication – understanding information	Part 3: Communication – understanding information	
	Able	Unable
Able		
Unable		

No data

### 13.3 Communication – at a distance

Part 2: Communication – at a distance	Part 3: Communication – at a distance	
	Able	Unable
Able		
Unable		

No data

### 13.4 Independent working

Part 2: Independent working	Part 3: Independent working	
	Able	Unable
Able		
Unable		

No data

### 13.5 Team working

Part 2: Team working	Part 3: Team working	
	Able	Unable
Able		
Unable		

No data

### 13.6 Time management

Part 2: Time management	Part 3: Time management	
	Able	Unable
Able		
Unable		

No data

### 13.7 Adapting to a new environment

Part 2: Adapting to a new environment	Part 3: Adapting to a new environment	
	Able	Unable
Able		
Unable		

No data

### 13.8 Analysing qualitative data

Part 2: Analysing qualitative data	Part 3: Analysing qualitative data	
	Able	Unable
Able		
Unable		

No data

### 13.9 Analysing quantitative data

Part 2:	Part 3: Analysing quantitative data	
	Able	Unable
Able		
Unable		

No data

### 13.10 Problem solving

Part 2: Analysing quantitative data	Part 3:	
	Able	Unable
Able		
Unable		

No data

### 13.11 Decision making

Part 2: Decision making	Part 3: Decision making	
	Able	Unable
Able		
Unable		

No data

### 13.12 Social skills

Part 2: Social skills	Part 3: Social skills	
	Able	Unable
Able		
Unable		

No data