APPENDIX I

DETAILS OF THE CHARACTERISATIONS

A. EXCAVATION

1. CUTTING AND LIFTING TURF

Hand/eye coordination -
Power grip – to hold spade
Range of movement in upper limbs – lift spade up to create momentum, lower spade with controlled movements to cut turf
Supination – movement in the forearm (elbow and wrist) to lift turf on spade
Pronation – movement in the forearm (elbow and wrist) to place turf in barrow or on ground
Flexion – fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Abduction - fingers, wrists, arms (elbow, shoulder)
Adduction - fingers, wrists, arms (elbow, shoulder)
Upper limb strength – to lift spade and turf
Lower limb strength – to maintain standing balance, use body weight to lift turf
Retraction & Protraction of upper limbs – move spade away from & towards body
Rotation – of wrist, arms, legs and back (including neck) to twist to lay turf on ground or place in barrow
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Spatial awareness
Stamina to repeat activity

2. USING A PICK

Hand/eye coordination -
Power grip – to hold pick
Range of movement in upper limbs – lift pick up above head to create momentum, lower with controlled movements to break up surface
Rotation – of wrist, arms, legs and back (including neck) to swing equipment above head
Flexion – fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Abduction - fingers, wrists, arms (elbow, shoulder)
Adduction - fingers, wrists, arms (elbow, shoulder)
Upper limb strength – to lift pick

Lower limb strength – to maintain standing balance
Retraction & Protraction of upper limbs – move pick towards body when working backwards
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Spatial awareness
Stamina to repeat activity
Two-handed activity for health and safety reasons – lifting a heavy implement above the head

3. USING A MATTOCK

Hand/eye coordination -
Power grip – to hold mattock
Range of movement in upper limbs – lift mattock up 50/60cm above ground level to create momentum, lower with controlled movements to break up surface, chop roots
Rotation – of wrist, arms, legs and back to move equipment
Flexion – fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Abduction - wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck to scan area of excavation
Upper limb strength – to lift mattock
Lower limb strength – to maintain standing balance

Retraction & Protraction of upper limbs – move mattock towards body when working backwards
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Spatial awareness
Stamina to repeat activity

4. USING A DRAW HOE

Hand/eye coordination
Power grip – to hold draw hoe
Range of movement in upper limbs
Flexion – fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Abduction - wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck to scan area of excavation
Upper limb strength – to drag draw hoe over surface of excavated area
Lower limb strength – to maintain standing balance/ sitting balance
Retraction & Protraction of upper limbs – move draw hoe away from & towards body
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Stamina to repeat activity

5. DISPOSAL OF WASTE MATERIAL

Hand/eye coordination
Power grip – to hold shovel
Range of movement in upper limbs
Supination – elbow and wrist (forearm movement) to lift waste material on to shovel
Pronation – elbow and wrist (forearm movement) to place waste material into barrow
Flexion – fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle, toes)
Abduction - wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength – to maintain standing balance
Retraction & Protraction of upper limbs – move shovel away from & towards body
Rotation – of wrist, arms, legs and back (including neck) to twist to put waste into barrow
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Spatial awareness
Stamina to repeat activity

6. BARROWING

a. Lifting barrow:

Hand/eye coordination
Power grip – holding on to handles
Range of movement in upper limb
Flexion – bend fingers, wrists, arms, back, legs
Extension – straightening fingers, wrists, arms, back, legs
Upper limb strength
Lower limb strength
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement – in fingers, wrist, arm, legs, back to support weight
Passive movement - fingers, wrist, arm, legs, back
Strength – lift barrow
Spatial awareness
Two handed activity

b. Walking with barrow:

Hand/eye coordination
Power grip – holding on to handles
Resistance
Flexion – bend fingers, arms, back, legs
Extension – straightening wrists, arms, back, legs
Upper limb strength
Lower limb strength
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Strength – lift barrow
Balance (if using barrow run)
Gait – walking ability
Spatial awareness
Two handed activity

c. Emptying barrow:

Hand/eye coordination
Power grip – holding on to handles
Flexion – bend fingers, wrists, arms, back, legs
Extension – straightening wrists, arms, back, legs
Upper limb strength
Lower limb strength
Retraction & protraction of arms – move arms away from & towards body
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Strength – lift barrow either above head to tip forward or with assistance to tip barrow to one side
Balance (if using barrow run)
Spatial awareness
Two handed activity
Communication – if emptying barrow in twos

7. TROWELLING

a. Kneeling to bend over area of excavation:

Sensation – feel sharp objects underneath knees/legs and hands
Flexion – bend wrists, arms, back (including neck), legs
Extension – straightening fingers, arms, back, legs
Rotation of neck to scan area of excavation
Upper limb strength – to support body when kneeling
Retraction & protraction of arms – move arms away from & towards body (when repositioning self)
Weight bearing - fingers, wrist, arm, legs (knees), back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Kneeling balance – maintain position whilst excavating, reposition kneeling pad
Spatial awareness

b. Excavating with a trowel (including use of secateurs & brush):

Hand/eye coordination
Visual acuity (contrast) – looking for artefacts & changes in texture & colour
Power grip – to hold trowel, secateurs & brush
Pincher grip – to use point of trowel or small brush, to open bag to preserve artefacts
Sensation – feel sharp objects underneath knees/legs and hands
Fine finger dexterity – to lift artefacts from test pit & place in bags, record data
Range of movement in upper limb
Resistance – feel location of objects in ground through use of trowel
Supination – wrist and elbow (forearm movement)
Pronation – wrist and elbow (forearm movement)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck to scan area of excavation
Upper limb strength
Lower limb strength
Opposition – fingers to open and close secateurs
Retraction & Protraction of upper limbs – move trowel or brush away from & towards body
Manipulation – fingers, handling artefacts
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor re: findings
Spatial awareness

c. Disposal of waste material:

Hand/eye coordination
Power grip – to hold trowel & shovel
Sensation – feel sharp objects underneath knees/legs and hands
Range of movement in upper limb
Supination – wrist and elbow (forearm movement)
Pronation – wrist and elbow (forearm movement)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck to scan area of excavation
Upper limb strength
Lower limb strength – to maintain kneeling balance
Retraction & Protraction of upper limbs – move trowel away from & towards body
Rotation – of wrist, arms, legs and back to twist to put waste into bucket or barrow
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back to support weight
Passive movement - fingers, wrist, arm, legs, back
Spatial awareness

8. DRY SIEVING

Hand/eye coordination
Visual acuity – looking for artefacts
Hand grip – to hold sieve
Sensation - feel sharp objects in sieve
Fine finger dexterity - to lift artefacts from sieve & place in bags, record data
Range of movement in upper limb – to move sieve from side to side
Resistance
Supination – wrist and elbow (forearm movement), picking up artefacts from sieve
Pronation – wrist and elbow (forearm movement), picking up artefacts from sieve
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Opposition - fingers
Manipulation – fingers
Rotation - fingers, wrist, arm and neck
Standing/sitting balance
Communication – with group members and supervisor
Spatial awareness
Two handed activity

9. USING A SPRAYER

Hand/eye coordination -
Power grip – to hold handle on top of sprayer and hose
Range of movement in upper limbs – to pump handle up and down, move hose from side to side
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength – to lift sprayer when full of water
Lower limb strength – to maintain standing balance
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Standing/sitting balance

10. COMPLETING SITE RECORDS

Retain information
Communicate with team
Hand/eye coordination
Visual acuity
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive ability

B. PLANNING

1. PREPARATION FOR PLANNING

Hand/eye coordination
Visual acuity
Power grip – to hold frame whilst positioning it on ground
Range of movement in upper limb
Resistance
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Upper limb strength
Lower limb strength
Retraction & Protraction of upper limbs
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness

2. DRAWING A PLAN

Hand/eye coordination
Visual acuity - contrast
Power grip (to hold board)
Pincher grip (to hold pencil)
Fine finger dexterity to draw
Range of movement in upper limb
Resistance
Supination – wrist and elbow (forearm movement)
Pronation – wrist and elbow (forearm movement)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Upper limb strength – to hold drawing board
Lower limb strength – to maintain standing balance
Opposition – fingers – to hold pencil
Retraction & Protraction of upper limbs
Weight bearing - fingers, wrist, arm, legs, back
Standing balance
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Cognitive and numerical ability - process detailed instructions re: using 1:20 scale, graph and permatrace paper to recreate test pit, recognise artefacts or unwanted material, changes in material (colour/texture)
Spatial awareness

3. TAKING OFFSETS

a. At ground level:

Hand/eye coordination
Visual acuity
Pincher grip
Fine finger dexterity
Range of movement in upper limb
Flexion – fingers, wrists, arms (elbow and shoulder), back, legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms (elbow and shoulder), back, legs (hip, knee, ankle, toes)
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck
Upper limb strength
Lower limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness
Cognitive and numerical ability

b. Above ground level:

Hand/eye coordination to line up tapes and to use plumb bob
Visual acuity to read measurements
Pincher grip
Fine finger dexterity
Range of movement in upper limb
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck
Upper limb strength
Lower limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Cognitive and numerical ability

c. Recording measurements on drawing board/notebook

Visual acuity
Retain information
Communicate with team
Hand/eye coordination
Pincher grip (to hold pencil), fine finger dexterity
Cognitive and numerical ability

4. TRIANGULATION

a. Measurements:

Hand/eye coordination to line up tapes
Visual acuity to read measurements
Pincher grip and fine finger dexterity
Range of movement in upper limb
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck
Upper limb strength
Lower limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness
Cognitive and numerical ability

b. Recording measurements and drawing up:

Visual acuity and hand/eye coordination
Retain information
Communicate with team, orally and aurally
Pincher grip (to hold pencil) and fine finger dexterity
Cognitive and numerical ability

5. SECTION DRAWING

Hand/eye coordination
Visual acuity
Pincher grip (to position string, insert nails, position line level & tape)
Fine finger dexterity
Range of movement in upper limb
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation - fingers
Weight bearing - legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness
Cognitive and numerical ability - process detailed instructions re: using 1:10 scale, graph and permatrace paper to recreate section, recognise artefacts or unwanted material, changes in material (colour/texture)

6. COMPLETING SITE RECORDS

Retain information
Communicate with team
Hand/eye coordination
Visual acuity
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive and numerical ability

C. PROCESSING OF ARTEFACTS

1. COLLECTION

Visual acuity to see artefacts and reference numbers
Hand/eye coordination to pick artefacts up from tray
Opposition – fingers to open and close bag
Manipulation – fingers, handling artefacts
Pincher grip (to hold pen to mark reference on bag)
Fine finger dexterity
Resistive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness

2. TREATMENT

Hand/eye coordination – to pick up artefacts
Sensation – feel sharp objects in bowl
Visual acuity (colour and contrast)– to identify colour, texture, shape of artefacts
Pincher grip (to hold artefacts and scrubbing brush whilst washing, drying and sorting)
Fine finger dexterity
Flexion – fingers, wrists, arms, legs, back to place/retrieve trays from ground level
Extension - fingers, wrists, arms, legs, back
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Supination – wrists, picking up artefacts from bowl
Pronation – wrists, picking up artefacts from bowl
Rotation and flexion of neck
Upper limb strength
Opposition - fingers
Manipulation - fingers
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Sitting/standing balance
Communication - with group members and supervisor
Cognitive ability – to recognise artefacts or unwanted material, sort out into identification trays and label
Spatial awareness
Rotation - fingers, wrist, arm

3. IDENTIFICATION AND MARKING

Hand/eye coordination
Visual acuity (colour and texture) – to identify colour, texture, shape of artefacts
Pincher grip (to hold artefacts and pen whilst marking with identification number)
Fine finger dexterity
Supination – wrist and elbow (forearm movement), picking up/placing artefacts from tray
Pronation – wrist and elbow (forearm movement), picking up/placing artefacts from tray
Opposition - fingers
Manipulation - fingers
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Sitting balance
Retain information
Communicate with team
Cognitive and numerical ability

4. COMPLETING SITE RECORDS

Retain information
Communicate with team
Hand/eye coordination
Visual acuity
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive and numerical ability

D. ENVIRONMENTAL SAMPLING

1. TAKING BULK SAMPLES

Refer to section A Excavation for methods of taking samples

2. FLOTATION AND WET SIEVING

Hand/eye coordination
Opposition – fingers to open and close sample bag
Upper limb strength - to empty sample into bucket and bucket into tank
Flexion – bend fingers, wrists, arms, back, legs
Extension – straightening wrists, arms, back, legs
Power grip – holding on to bucket
Range of movement in upper limb
Rotation of neck
Sensation – feel sharp objects in tank
Manual dexterity – squeeze sample and wash off dirt from artefacts
Lower limb strength
Retraction & protraction of arms – move arms away from & towards body
Weight bearing - legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Standing balance at tank
Visual acuity (contrast) - to recognise artefacts found in tank
Spatial awareness
Communication – with team members and supervisor
Cognitive ability – accurately measure amount of sample in bucket, identify finds

2. SORTING MATERIAL

Hand/eye coordination – to pick up artefacts
Sensation – feel sharp objects in bowl
Visual acuity (colour and contrast) – to identify colour, texture, shape of artefacts
Pincher grip - to hold artefacts
Fine finger dexterity
Flexion – fingers, wrists, arms, legs, back to place/retrieve trays
Extension - fingers, wrists, arms, legs, back
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Supination – wrist and elbow (forearm movement), picking up artefacts from tank and sieve
Pronation – wrist and elbow (forearm movement), picking up artefacts from tank and sieve
Upper limb strength
Opposition - fingers
Manipulation - fingers
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Sitting/standing balance
Communication - with group members and supervisor
Cognitive ability – to recognise artefacts or unwanted material, sort out into identification trays and label
Spatial awareness
Rotation - fingers, wrist, arm

3. COMPLETING SITE RECORDS

Visual acuity
Retain information
Communicate with team
Hand/eye coordination
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive and numerical ability

E. SURVEYING

1. LAYING A BASE LINE

a. Ranging Poles:

Hand/eye coordination
Visual acuity
Power grip
Range of movement in upper limb
Flexion – fingers, wrists, arms (elbow, shoulder), back, legs
Extension - fingers, wrists, arms (elbow, shoulder), back, legs
Abduction - fingers, wrists, arms (elbow, shoulder)
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength
Retraction & Protraction of upper limbs
Weight bearing - legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Standing/sitting balance
Communication - with group members and supervisor
Spatial awareness

b. Lay Measuring Tape:

Hand/eye coordination
Visual acuity
Power grip (to insert arrows)
Pincher grip (to hold tape)
Fine finger dexterity
Range of movement in upper limb
Resistance
Flexion – fingers, wrists, arms (elbow, shoulder), back (including neck), legs
Extension - fingers, wrists, arms (elbow, shoulder), back (including neck), legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness
Cognitive and numerical ability

c. Completing Site Records:

Visual acuity
Retain information
Communicate with team
Hand/eye coordination
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive and numerical ability

2. EXTENDING A BASE LINE AT 90°

Hand/eye coordination to lay second and third tapes
Visual acuity
Power grip (to insert arrows)
Pincher grip (to hold tape)
Fine finger dexterity
Range of movement in upper limb
Flexion – fingers, wrists, arms (elbow, shoulder), back (including neck), legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms (elbow, shoulder), back (including neck), legs (hip, knee, ankle, toes)
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness
Visual acuity
Cognitive and numerical ability
Retain information
Communicate with team, orally and aurally
Hand/eye coordination
Pincher grip (to hold pencil) and fine finger dexterity

3. LEVELLING

a. Set up and level tripod:

Hand/eye coordination - place line level on top of tripod and assess when level
Visual acuity to read line/spirit level
Power grip
Pincher grip
Range of movement in upper limb
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck
Upper limb strength
Lower limb strength
Retraction & Protraction of upper limbs
Manipulation - fingers
Weight bearing - legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Strength – lifting tripod off ground
Communication - with group members and supervisor, orally and aurally
Spatial awareness

b. Attach level on to tripod and adjust to ‘level’ instrument:

Hand/eye coordination
Visual acuity to read integral spirit level
Power grip to fix level on to tripod
Pincher grip
Fine finger dexterity to adjust knobs
Range of movement in upper limb
Supination - wrists
Pronation - wrists
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation – fingers
Standing/sitting balance
Communication - with group members and supervisor, orally and aurally
Spatial awareness

c. Attach plumb-bob to tripod:

Hand/eye coordination
Visual acuity
Pincher grip
Fine finger dexterity
Range of movement in upper limb
Supination - wrists
Pronation - wrists
Flexion – fingers, wrists, arms, back, legs (hip, knee, ankle, toes)
Extension - fingers, wrists, arms, back, legs (hip, knee, ankle, toes)
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation – fingers
Standing/sitting balance
Communication - with group members and supervisor, orally and aurally
Spatial awareness

d. Holding and extending a measuring staff:

Hand/eye coordination
Visual acuity to see hand signals from level operator
Power grip to hold on to measuring staff
Range of movement in upper limb to extend measuring staff
Resistance
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength
Retraction & Protraction of upper limbs
Weight bearing - legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Standing/sitting balance
Communication - with group members and supervisor
Spatial awareness

e. Level operator – direct and focus on measuring staff:

Hand/eye coordination
Visual acuity to check spirit level
Fine finger dexterity to focus level using dials
Range of movement in upper limb (hand signals)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Retraction & Protraction of upper limbs
Manipulation - fingers
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Standing/sitting balance
Communication - with group members and supervisor
Spatial awareness

f. Read and record measurements:

Visual acuity
Retain information
Communicate with team
Hand/eye coordination
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive and numerical skills

4. USING A GEODIMETER - ELECTRONIC DISTANCE METER (EDM)

a. Un/packing equipment:

Hand/eye coordination
Power grip – gripping on to individual items to lift items & place on ground
Pincher grip – grip straps on tripod, pick small pieces of equipment up
Flexion – bend fingers, wrists, arms, back, legs
Extension – straightening wrists, arms, back, legs
Upper limb strength
Lower limb strength
Retraction & protraction of arms – move arms away from & towards body
Weight bearing - fingers, wrist, arm, legs, back
Rotation - fingers, wrist, arm, legs, back (including neck)
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Strength – lift equipment
Cognition – observe Health & Safety whilst on site
Spatial awareness

Refer to Levelling for setting up tripod and mounting EDM to tripod.

b. Attaching battery:

Hand/eye coordination
Visual acuity
Pincher grip
Fine finger dexterity
Range of movement in upper limb
Supination – wrist and elbow (movement in forearm)
Pronation – wrist and elbow (movement in forearm)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation – fingers
Communication - with group members and supervisor, orally and aurally
Spatial awareness

c. Levelling the EDM:

Hand/eye coordination
Visual acuity to read spirit/bubble level and information on LCD display
Pincher grip
Fine finger dexterity to adjust dials
Range of movement in upper limb
Supination – wrist and elbow (movement in forearm)
Pronation – wrist and elbow (movement in forearm)
Flexion – fingers, wrists, arms, back (including neck), legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck
Upper limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation – fingers
Standing balance
Communication - with group members and supervisor, orally and aurally
Cognitive and numerical ability

d. Adjust settings (using dials on base of EDM):

Hand/eye coordination
Visual acuity
Pincher grip
Fine finger dexterity to adjust dials
Range of movement in upper limb
Supination – wrist and elbow (movement in forearm)
Pronation – wrist and elbow (movement in forearm)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Rotation of neck
Upper limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation – fingers
Standing balance
Communication - with group members and supervisor, orally and aurally
Cognitive and numerical ability

e. Inputting data:

Hand/eye coordination using measuring tape and inputting data
Visual acuity to read instructions and information on LCD display
Fine finger dexterity to press buttons
Range of movement in upper limb
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms
Weight bearing - legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Standing/sitting balance
Retraction & Protraction of upper limbs
Manipulation – fingers
Standing/sitting balance
Communication - with group members and supervisor, orally and aurally
Cognitive and numerical ability

f. Attach reflecting crystal to, and hold, measuring staff:

Hand/eye coordination
Visual acuity to read spirit/bubble level on top of reflecting crystal
Power grip to extend (if required) and hold on to measuring staff
Pincher grip
Fine finger dexterity
Range of movement in upper limb
Supination – wrist and elbow (movement in forearm)
Pronation – wrist and elbow (movement in forearm)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation – fingers
Standing/sitting balance
Communication - with group members and supervisor, orally and aurally
Spatial awareness

g. Taking readings:

Hand/eye coordination
Visual acuity to see readings
Fine finger dexterity for fine adjustment (turn dial on lens)
Range of movement in upper limb (hand signals)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Retraction & Protraction of upper limbs
Manipulation - fingers
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Standing/sitting balance
Communication - with group members and supervisor
Spatial awareness
Cognitive and numerical ability

h. Carrying equipment:

Power grip – to hold equipment
Pincher grip – to hold equipment
Range of movement in upper limb
Supination – wrist and elbow (forearm movement)
Pronation – wrist and elbow (forearm movement)
Flexion – fingers, wrists, arms, back, legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Spatial awareness

5. USING A PRISMATIC COMPASS

a. Hold compass level to eye, line up with object using ‘cross hairs’:

Hand/eye coordination
Visual acuity
Pincher grip to hold compass
Range of movement in upper limb
Flexion – fingers, wrists, arms
Extension - fingers, wrists, arms
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Retraction & Protraction of upper limbs
Standing/sitting balance
Spatial awareness

b. Read and record measurements:

Visual acuity
Retain information
Communicate with team
Hand/eye coordination
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive and numerical ability

6. USING AN OPTICAL SQUARE

a. Hold level and steady to eye, line up with object in front:

Hand/eye coordination
Visual acuity
Pincher grip to hold optical square
Range of movement in upper limb
Flexion – fingers, wrists, arms
Extension - fingers, wrists, arms
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Standing/sitting balance
Retraction & Protraction of upper limbs
Spatial awareness

b. Direct assistants to line up with central image:

Hand/eye coordination
Visual acuity
Pincher grip to hold prismatic square
Range of movement in upper limb (hand signals)
Flexion – fingers, wrists, arms
Extension - fingers, wrists, arms
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Retraction & Protraction of upper limbs
Standing/sitting balance
Communication - with group members and supervisor
Spatial awareness

c. Read and record measurements:

Visual acuity
Retain information
Communicate with team
Hand/eye coordination
Pincher grip (to hold pencil)
Fine finger dexterity

F. SURFACE SURVEY

1. FIELD WALKING

Visual acuity to see artefacts on surface
Hand/eye coordination to pick artefacts up
Gait – walking ability/balance
Weight bearing
Flexion – arms, back, legs
Extension - arms, back, legs
Rotation of neck to scan area
Lower limb strength
Opposition – fingers to pick up artefacts, open and close bag
Manipulation – fingers, handling artefacts
Pincher grip (to hold pen to mark reference on bag)
Fine finger dexterity
Resistive movement - fingers, wrist, arm, legs, back
Communication - with group members (gang) re: findings
Spatial awareness – to judge distance from colleagues (5m, 10m, 15m 20m etc)
Cognitive and numerical ability

2. FIELD SURVEY

Visual acuity to see above surface features i.e. buildings, earthworks
Gait – walking ability/balance
Weight bearing
Communication - with group members re: features
Spatial awareness

3. RECORD READINGS (IN NOTEBOOK)

Visual acuity
Retain information
Communicate with team
Hand/eye coordination
Pincher grip (to hold pencil)
Fine finger dexterity
Cognitive and numerical ability

G. GEOPHYSICS

1. MAGNETOMETRY

a. Laying/moving surveying lines:

Hand/eye coordination
Visual acuity
Power grip (to insert arrows)
Pincher grip (to hold lines)
Fine finger dexterity
Range of movement in upper limb
Resistance
Flexion – fingers, wrists, arms, back (including neck), legs
Extension - fingers, wrists, arms, back, legs
Abduction - fingers, wrists, arms
Adduction - fingers, wrists, arms
Upper limb strength
Lower limb strength
Opposition - fingers
Retraction & Protraction of upper limbs
Manipulation - fingers
Weight bearing - fingers, wrist, arm, legs, back
Resistive movement - fingers, wrist, arm, legs, back
Passive movement - fingers, wrist, arm, legs, back
Communication - with group members and supervisor
Spatial awareness

b. Using the Magnetometer:

Gait – walking ability
Walking balance (over uneven ground)
Weight bearing
Visual acuity – to see/avoid trip hazards, to see indicators on surveying lines
Hearing – to detect audible indicator from magnetometer
Flexion – arms, back, legs
Extension - arms, back, legs
Lower limb strength
Upper limb strength – to carry magnetometer
Power grip – to hold magnetometer
Communication – with team member to realign surveying lines
Hand/eye coordination to realign lines
Spatial awareness – maintain uniformity of actions i.e. carry equipment at same height through grid

2. RESISTIVITY

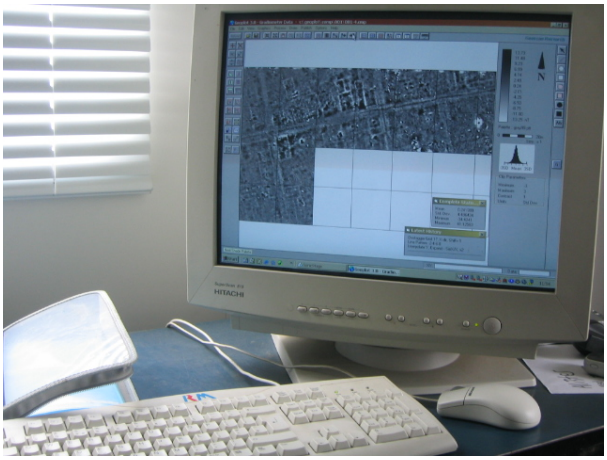
a. Laying/moving surveying lines:

Refer to details under Magnetometry

b. Measuring variation in resistance:

Gait – walking ability
Walking balance (over uneven ground)
Weight bearing
Visual acuity – to see/avoid trip hazards i.e. electrical cable attached to equipment, to see indicators on surveying lines, read meter
Flexion – fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle)
Extension – fingers, wrists, arms (elbow, shoulder), back, legs (hip, knee, ankle)
Lower limb strength
Upper limb strength – to carry equipment
Power grip – to hold equipment
Fine finger dexterity – to use touch sensitive controls on equipment
Communication – with team member to realign surveying lines
Hand/eye coordination - to realign lines, to position equipment when walking
Spatial awareness

3. RECORD READINGS (ON PC)



Visual acuity
Retain information – method of downloading data
Communicate with team
Hand/eye coordination
Fine finger dexterity – to operate controls on equipment, connect cables, use keyboard and mouse
Cognition – to interpret data

APPENDIX II

SUMMARY TABLES OF THE CHARACTERISATIONS