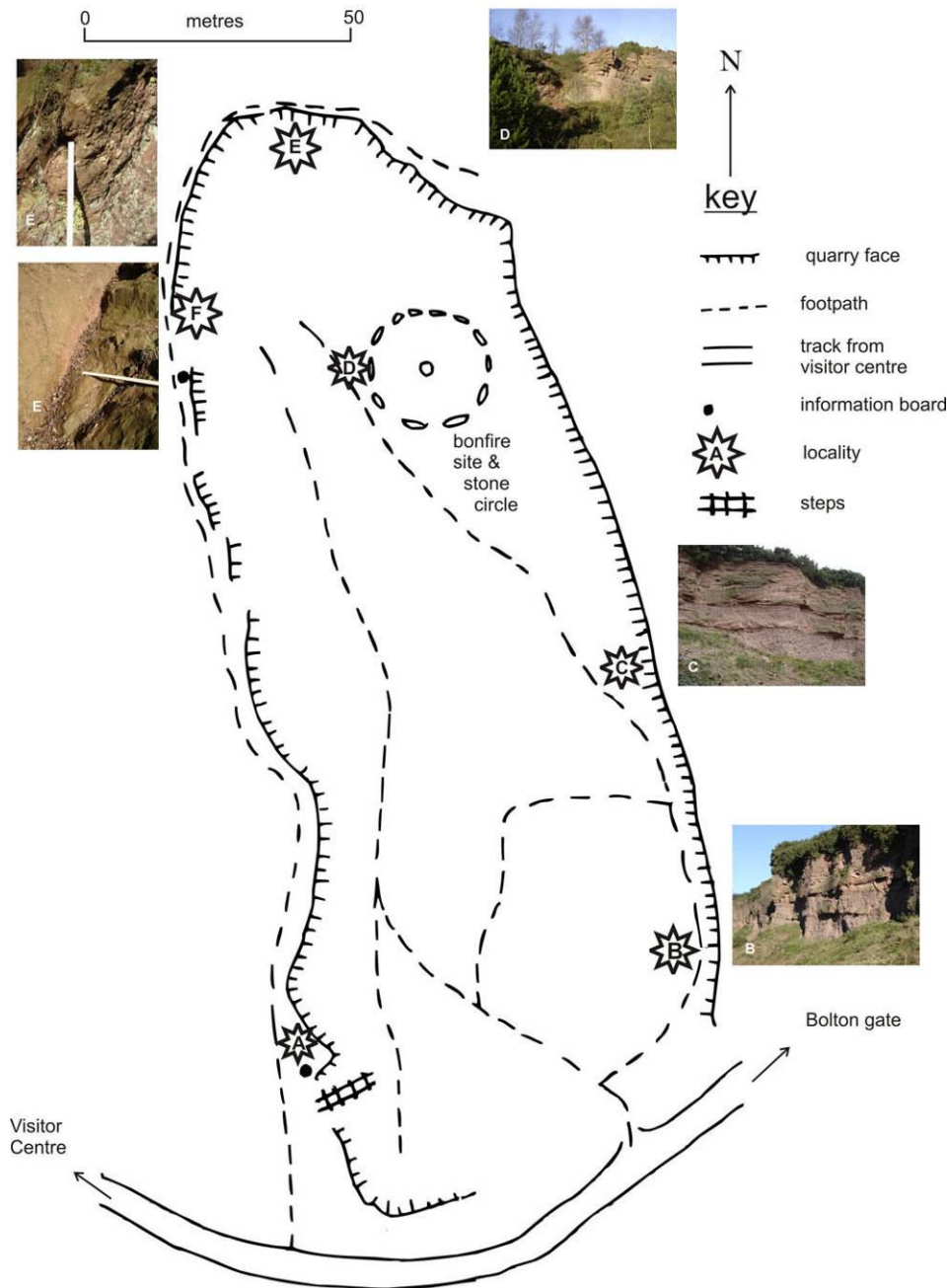



PARK HALL, HULME QUARRIES: "PLAY CANYON"

FIGURE 1 Park Hall "Play Canyon" Locality map.

Park Hall "Play Canyon"- locality map



 Pupils should have clipboards and copies of the appropriate worksheets. Suggestions of pre-prepared demonstrations are also made for group leaders at some sites. For a KS4 group there are six localities which should be visited in the alphabetic sequence A>B>C>D>E>F. The suggested sequence begins with a field locality which gives an introduction to the Play Canyon. This is followed by five field localities where different KS4 specific activities can be carried out. The localities are shown on **Figure 1**.

LOCALITY A: QUARRY FACES FROM A VIEW POINT NEAR TO THE ENGLISH NATURE INFORMATION BOARD

5 minutes

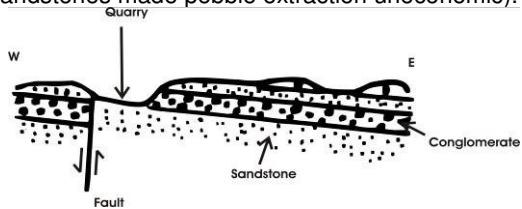
☛ Walk 50 metres along the track eastwards from the Visitor Centre. Take a footpath northwards to the information board. Stand on the footpath looking east into the quarry. Originally the quarry was mainly worked for the pebble beds, which were used as aggregate (gravel). The quarry was abandoned in the 1970s. The main reason why quarrying ceased was that it was uneconomic to work the pebble beds where faulting had dropped the pebble beds to a lower level. There are a number of reasons for visiting this locality: the viewpoint gives an introduction to the quarry and allows the pupils to see the scale of the quarry. Another reason is to allow the teacher to point out the route that the pupils will follow during their field trip around the quarry.



Figure1. View Eastwards from Site A

Possible questions/tasks	Possible answers (words in brackets indicate need or opportunity for further teaching)
Q1 Describe the shape of the quarry.	Roughly rectangular shape. Shallow/longer and wider than it is deep.
Q2 As you are looking eastwards to the opposite quarry face in which direction does the longest length of the quarry run?	Runs from north to south.
Q3 Can you suggest what was extracted from the quarry? How can you tell this?	Sedimentary rock – based on the evidence of the layering seen in the quarry face. Sand &/or pebbles/ gravel - based on the evidence of the piles of sand with some pebbles in the quarry north of the view point. (Most of the sand in these piles is the material that was not used).

PARK HALL COUNTRY PARK: KS4 EARTH-SCIENCE ON-SITE EXERCISES

<p>Q4 The quarry was worked to extract pebble/gravel. Can you suggest reason(s) why quarrying stopped and the quarry was abandoned?</p>	<p>Be prepared to accept a range of reasonable suggestions. (e.g. too expensive to quarry/ pebbles ran out/ objections about noise pollution/ destruction of landscape/ environmental problems/ no market for pebbles/ too dangerous) (The main reason why gravel extraction ceased is that faulting has dropped the pebble layers to a level where the cost of removing the overlying sandstones made pebble extraction uneconomic).</p> 
<p>Q5 Point out the route pupils are going to follow round the southern rim of the quarry and then along a footpath onto the floor of the quarry. Explain that they will take a closer look at the rocks along the eastern & northern edges of the quarry. Explain they will be looking for (a) evidence to show how the rocks formed and b) reasons why the quarry was abandoned.</p>	

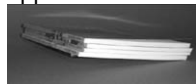
LOCALITY B: QUARRY FACE AT THE SOUTH EAST MARGIN OF THE QUARRY 15 minutes



Take the party along the track to wards Boltongate and enter the quarry by the SE corner. Take the path below the eastern wall. Stand on the track below the face, looking east at the quarry face. See **Figure 3**.

Figure3. Site B

PARK HALL COUNTRY PARK: KS4 EARTH-SCIENCE ON-SITE EXERCISES

Possible questions/tasks	Possible answers (words in brackets indicate need or opportunity for further teaching)
Q1 The rocks in this quarry face show layers. How many layers can you see here?	At least 4 layers
Q2 Describe the layering in the rocks in the quarry face.	Horizontal, varied thicknesses/some thin, some thick beds (The layers are called beds; layers are separated by bedding planes)
Q3 Observe the rocks in the different beds. What differences do you see?	Some beds contain more pebbles Rocks show different colours Two different rock types (The two sedimentary rocks are sandstone , which is finer grained & a darker red colour and conglomerate , which is coarser/pebbly & lighter in colour)
Q4 Relate to what we saw in the class demonstration to the layers in the quarry. How could these layers have been deposited?	Deposited by water.
Q5 Would these beds have been formed as horizontal beds?	Yes (roughly) (Principle of Original Horizontality) (The beds appear to be horizontal but they are tilted to the east by about 5 degrees. Demonstrate by holding up a tilted book and ask pupils to look at the appearance of the book from different directions) 
Q6 Now relate what we saw in the class demonstration to the rocks in the quarry face. Which beds were formed first (or laid down first) and are therefore the oldest in this quarry?	Lower beds formed first (Principle of Superposition)
Q7 Can you see any cracks across the layers?	Yes (The cracks are called joints or fractures)
Q8 Can you suggest how the fractures might have formed?	Most fractures probably formed during earth movements (uplift) (Take other suggestions e.g. quarry blasting)
T1 Estimate the height of the quarry here (Clue the average height of a teacher is 1.7m)	Estimated height = 3.5 to 4 metres