

Strawberry Wood Culvert



A key stage 1 and 2 resource pack for teachers



**Benenden Amenity and
Countryside Society**



How to use the resource

The Strawberry Wood Culvert resource pack contains information about a culvert, an archaeological feature in Strawberry Wood, set in the High Weald Area of Outstanding Natural Beauty (AONB).

This resource is useful for all teachers, whether you are thinking about classroom activities or taking a trip out to Strawberry Wood to visit the culvert.

This resource is aimed at helping you:

- Find out about the High Weald AONB
- Learn about the culvert and why it was originally built
- Run practical activities about archaeology and woodlands linked to the National Curriculum
- Plan a class visit to Strawberry Wood, including health and safety information.

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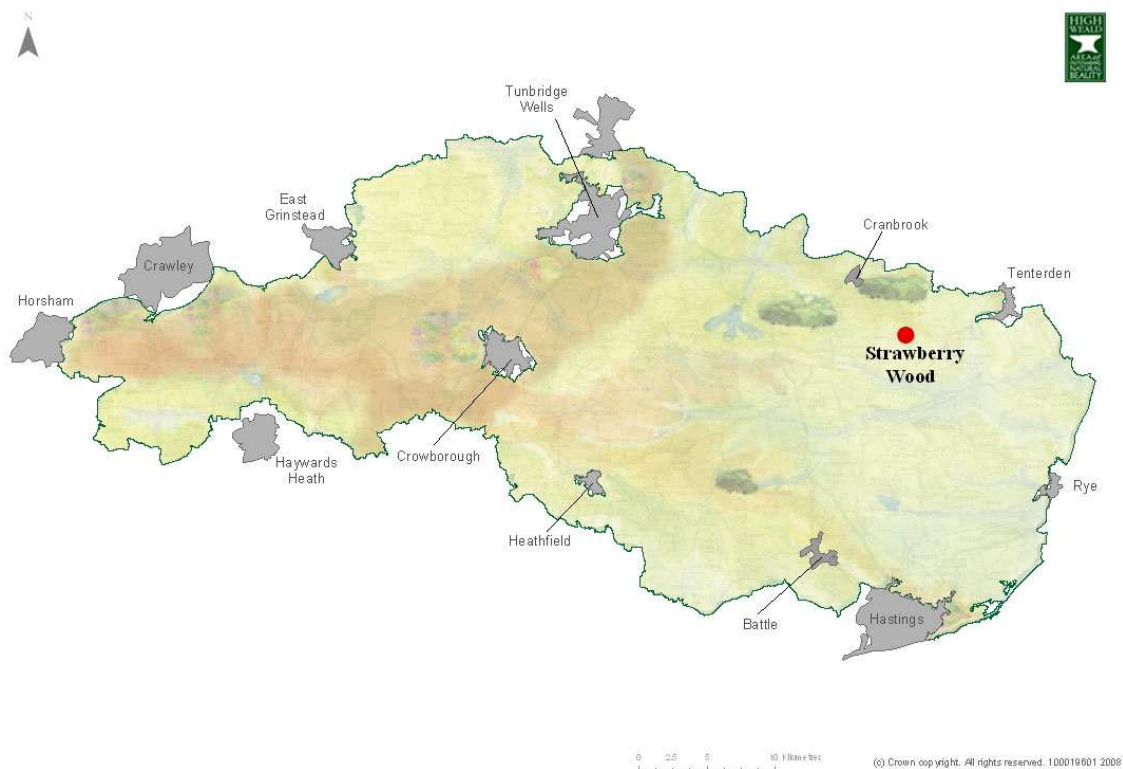
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The High Weald AONB

The High Weald was designated an Area of Outstanding Natural Beauty in 1983. 5 key components make up the landscape's 'Natural Beauty'; rolling hills, studded with sandstone outcrops and cut by streams to form steep-sided ravines (called gills); small irregular-shaped fields and patches of heathland; abundant woodlands; scattered farmsteads and sunken lanes and paths. Together these features support a wide variety of wildlife, some of which is rare.

Strawberry Wood in Benenden

Strawberry Wood is an example of a High Weald woodland. It is ancient woodland and designated as a Local Wildlife Site (LWS). There are many tree species, but sweet chestnut and hornbeam are especially abundant. It is a coppiced wood which creates a good habitat because it is very beneficial for wildlife and plants.



Culvert location within the High Weald AONB

Strawberry Wood is just one special feature of Benenden. To find out more about the village you can go to www.benendenvillage.org.uk.

High Weald Landscape Trail

Part of the High Weald Landscape Trail goes through Strawberry Wood. Following this trail is a wonderful way to explore this nationally important countryside and take in magnificent views of the High Weald. The trail covers 145 kilometres (90 miles) of the High Weald, however the route can be enjoyed in short sections. For more information about the walks that make up the High Weald Landscape Trail please visit www.highweald.org. There are many special places on the route such as woodlands, orchards and historic gardens including Borde Hill (www.bordehill.co.uk), Wakehurst Place (www.nationaltrust.org.uk/main/w-wakehurstplace), Standen House and Gardens (www.nationaltrust.org.uk/main/w-standen) and Groombridge Gardens (www.groombridge.co.uk)

Strawberry Wood Culvert

The culvert is a structure of historic importance. It is a fantastic ancient manmade stone structure. It was deteriorating following damage from floodwater. It was restored in August 2009 by skilled craftsmen using locally sourced stone. Over centuries this stone culvert fell into ruin and came close to complete collapse. The stone structure bridges a gill (valley) stream in order to transport heavy goods by cart. We know this because it is such an impressive structure built with more than just a footbridge in mind and with a lot of effort. Its purpose was to carry very heavy loads, suggesting an industrial use – but what were the loads?

There is a short DVD on the restoration of the Strawberry Wood Culvert available from the Kent High Weald Partnership. Please call the office on 01580 212972 if you are interested.

What was the culvert used for?

Even after archaeological investigation we are not sure when it was built. The substantial nature of the culvert, built to withstand heavy traffic, points to its use as a transport link for wagons carrying bulky, heavy raw materials and finished products. There is evidence supporting the idea that it was used in both the Iron Industry (16th and 17th centuries) or the Cloth Industry (mid 15th and 17th centuries).

Please see page 8 to see the evidence that has helped us draw these conclusions.



Strawberry Wood Culvert before it was restored



Strawberry Wood Culvert after it was restored

The Iron Industry in the High Weald

The Wealden geology of sands and clays yielded the iron ore, as well as the stone and brick to build the furnaces; the woodland provided the charcoal fuel; and the numerous small streams and valleys ensured water power for the bellows and hammers of the forges and furnaces. For two periods - in the first two centuries of the Roman occupation, and during Tudor and early-Stuart times - the Weald was the main iron-producing region in Britain. Julius Caesar first drew attention to iron being produced in the coastal parts of Britain. Archaeologists have found evidence of iron working from the late Iron Age at sites near Crowhurst and Sedlescombe in the south-eastern High Weald.

When the Romans invaded in AD 43, they found a well-established local tradition of iron making, using small, clay bloomery furnaces. With growing markets generated by the building of towns, villas and farms, the Romans encouraged this native industry. Sites from the period have been found all over the eastern part of the High Weald.

The 'Classis Britannica', or British Fleet, an imperial supply organisation as well as a navy, took a strategic role in iron production. It managed several large smelting sites in the area around Hastings, such as one at Beauport Park, near Battle. This may have produced as much as 30,000 tonnes of iron over 150 years, and a substantial bathhouse was built there for some of the workforce.

Towards the end of the medieval period, waterpower began to be used for forging iron, heralding the introduction, in 1496, of the blast furnace. Introduced from northern France, and operated by skilled, immigrant workers, the blast furnace was a much larger, and more permanent structure than the bloomery; and instead of a few kilos of iron being made, daily output was nearer a tonne.

More ore and charcoal were required, and the need to operate the bellows by waterpower, instead of by hand, meant that ponds had to be created to store the water. In addition, the higher temperatures in the furnace meant that a different type of iron was being produced. A second process - the forge, with its own pond and supply of charcoal - was needed to refine the iron.

By the mid-16th century large numbers of people were employed in digging ore, cutting wood and transporting both raw materials and products.

Most furnaces made 'sows', or lengths, of iron for refining, but from the 1540s a small number began to make cast-iron cannon, a product that grew to be a profitable, and sometimes illegal, export. Improvements in house design led to the building of chimneys, and the need for iron fire-backs to protect the brickwork. Many Wealden farmhouses contain examples of these decorative and functional plates. In several Wealden churches there are examples of iron memorials.

As competition from imported iron increased, the Wealden ironmasters began to concentrate increasingly on gun founding, and examples can be found all over the world, wherever Britain fought or traded. Eventually, the onset of the Industrial Revolution took heavy industry north to the coalfields, and the last furnace in the Weald, at Ashburnham, closed in 1813. So, where are the remains of iron production? Building stone was too valuable in the Weald to be left unused, so the works were dismantled, and the woods grew back over the former sites. Only the telltale waste, called slag, from the smelting process, and some of the hammer and furnace ponds are left to remind us of a once-great Wealden industry.



A Roman iron worker



Blacksmith

The Cloth Industry in the High Weald

Cloth was important in Benenden in the 16th century, when it dominated the local economy – there were over 50 cloth workhouses in the parish. The wealthy clothiers coordinated the work of weavers, shearmen, fullers and other cloth workers. The roads were busy transporting wool and cloth in stages of production. The culvert is on a route to where watermills once stood on the streams at Dingledden. Were these fulling mills, where wooden hammers beat the cloths to remove oils? Was the culvert built by the clothiers?

Cloth was made from wool often brought from Romney Marsh. It came by pack horse in large canvas sacks. It was stored up in the attic of the cloth workers house, was sorted according to fineness and cleaned to remove the oils in the wool. The wool was dyed using natural dyes such as madder for red and greenwood for yellow and then yarn was produced from it to give to the weavers. It was woven on broadlooms which took two people to operate.

The finishing touches were done in the fulling mill, where fullers earth degreased the wool and hammers pounded the cloth to make it all smooth. The fullers earth further absorbed oils and other contaminants from the fibres. The last stage was for the fullled cloth to be dried under tension on tenterframes. Each clothier had one of these close to where they lived. Once dry the cloth was brushed with teasels to get rid of loose threads.

For more information on the Cloth Industry in the High Weald, Cranbrook Museum would certainly be worth a visit. To find out opening times or to organise a visit, contact the Museum on 01580 712475 or go to www.cranbrookmuseum.org.



A wool worker

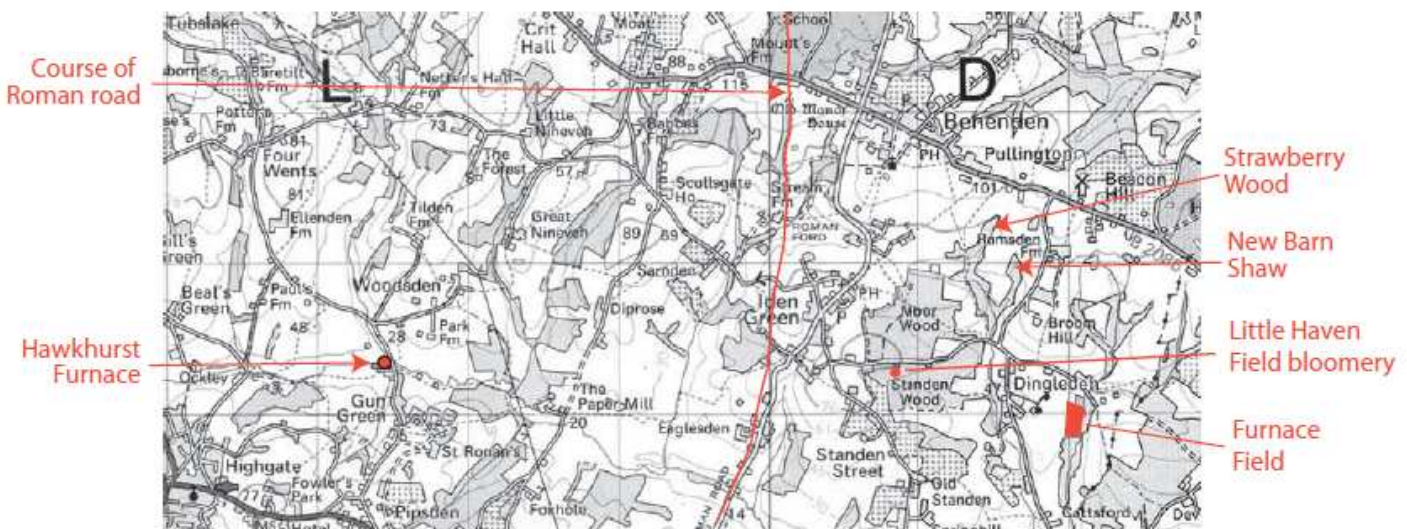
Looking at the Evidence

What evidence is there for thinking the culvert was used to carry heavy loads across it?

- The substantial nature of the culvert, its size and structure, built to withstand heavy traffic
- Strengthened tracks were discovered leading down to the culvert from both sides of the stream. These tracks would be required in order to prevent wagons sinking into the soft woodland floor.

What evidence is there for thinking that the culvert was used in the Iron Industry?

- 3 pieces of cindery slag were found in the stream running through Strawberry Wood. This was bloomery furnace slag and tap slag. Slag is the cinder that comes out of the furnace and looks like lumps of melted rock (picture)
- A pond bay (water used to operate bellows in iron production)
- A number of earthworks features to the north of the culvert were found and thought to be banks, trackways and quarry pits, where iron extraction could have occurred.
- A bloomery site was discovered 900m southwest at Little Haven Field
- Furnace Field fieldname was discovered 1 km to the south east.
- Hawkhurst Furnace which is first referred to in 1644 and may still have been in operation in 1717 is about 4 km west of the wood.
- The Hastings to Rochester Roman road runs through Benenden about 1 km from the wood.
- New Barn Shaw contained a quarry in the Wadhurst clay and considerable quantities of iron ore were found in the stream below it.



Source: Wealden Iron Research Group

Map of the area showing the relative position of significant features

What evidence is there for thinking that the culvert was used in the Cloth Industry?

- This was the dominating factor in the local economy between the mid 15th and mid 17th centuries
- Place names such as Frame Farm, Weavers Lane and several 'Tenter Field' names are known from the parish
- Over 50 cloth workhouses recorded in the parish
- A pond bay (water used to power the large fulling hammers)
- During the weaving process, the woven cloth was sent away to fulling mills to be cleaned, and was then returned wet to the clothier to be dried on tenter- frames – this wet cloth would have been considerably heavier.
- The culvert lay on the direct route between Benenden and possible mill sites in the valleys to the south, notably Dingledden.



Wood Anemone, *Anemone nemorosa*

Wood anemones flower in Strawberry Wood. They are one of the earliest spring flowers, and an indicator of ancient woodland.

Woodland Management

As demand for wood increased during the cloth and the iron industry there would have been coppicing in Strawberry Wood. This is a technique that was developed to ensure a sustainable source of wood.

Trees were cut down low to the ground in such a way that the stems grow back afterwards. The trees are cut every 10-15 years. The harvested wood was used for building houses and ships, and was also made into charcoal and used during the iron industry and the cloth industry.

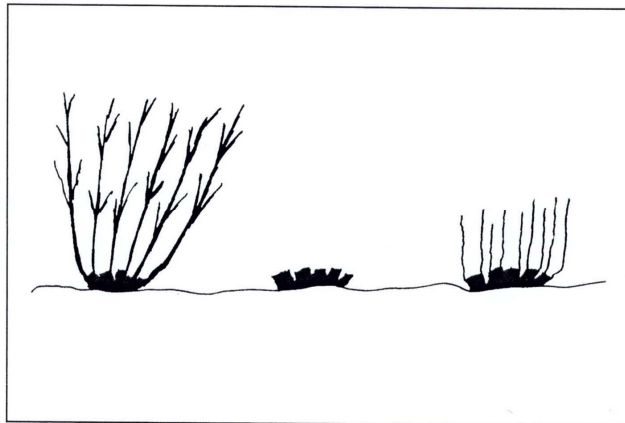
Wood was a valuable resource in the past. In the medieval times farmers needed the acorns and beechmast to feed their pigs on to fatten them up. The farmer 'drove' his pigs from the Downs and the coastal plains to the woods and every year would use the same route. This route became sunken and you can still see sunken lanes today. They are a feature of the High Weald landscape.

For more information on woods:

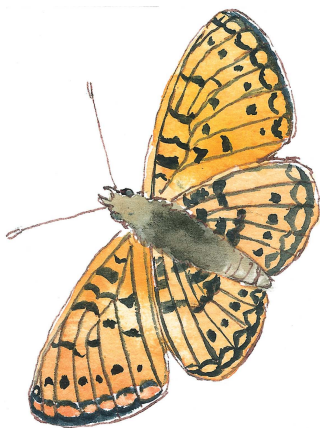
www.woodland-trust.org.uk

www.british-trees.com

www.treecouncil.org.uk



The Coppicing cycle



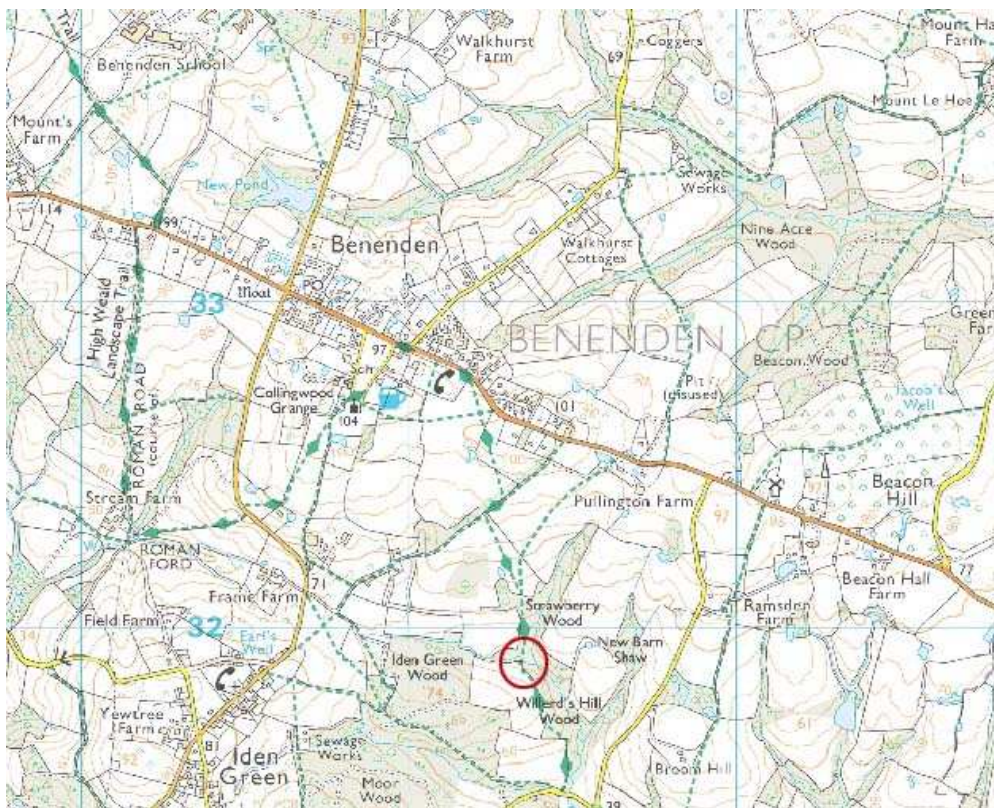
Getting to Strawberry Wood Culvert

You can walk from Benenden village to the culvert. There is a Welly Walk route starting and finishing at the Benenden Primary School and this takes you to the Culvert.

The route can be found at <http://www.highweald.org/uploads/BenendenWWlowres.pdf>

Alternatively you can get there by car using the following directions, though parking is slightly restricted.

To drive there from Benenden, head towards Rolvenden on the B2066. Turn right down Ramsden Lane signposted to Dingleden and towards Laurels Nursery, opposite a farm advertising chickens for sale. At the bottom of the lane is a grass triangle. Turn right down Woodcock Lane and cross over the stream, and you will see a way-marker on the right hand side. The culvert can be reached via the footpath (High Weald Landscape Trail) which leads up from Woodcock Lane



Map of Benenden - the Culvert is circled on the map

Countryside Code

Before you get to Strawberry Wood please make sure that all pupils are aware of the Countryside Code.

- Be safe – plan ahead and follow any signs
- Leave gates and property as you find them
- Protect plants and animals, and take your litter home
- Keep dogs under close control
- Consider other people

There is a template for a Risk Assessment on page 16 to help you plan a visit with your class. You will need to fill this in depending on your own requirements and conditions.

Activities – links to National Curriculum

The following page provides activities that you can do before or during a visit to Strawberry Wood.

Pre-visit activities

Activity		Links to National Curriculum							
No.	Description	English	Art& Design	Maths	Citizenship	Geography	History	ICT	Science
1	Meet historical characters in the High Weald					x	x	x	
2	Being a Detective					x	x		
3	What is it like to be an archaeologist? The potato game	x		x			x		x
4	The photo identification game						x	x	

At Strawberry Wood

Activity		Links to National Curriculum							
No.	Description	English	Art& Design	Maths	Citizenship	Geography	History	ICT	Science
5	Meet a Tree				x				x
6	Noises in the Wood			x	x	x			x
7	Eggbox hunt	x			x	x			
8	Find Your tree		x		x				x
9	Look, remember, find	x	x		x				
10	Estimate the age of a tree			x	x		x		x

For more information on outdoor activities for children:

- Sharing Nature with Children II by Joseph Cornell ISBN 1-883220-87-4
- Talking to the Earth by Gordon MacLellan ISBN 1-898307-43-1
- Gatton Park Education Wildlifeclub pack (www.visitgatton.org.uk)
- www.treeforall.org.uk
- www.britarch.ac.uk/yac
- www.english-heritage.org.uk

Activity 1 – Meet historical characters in the High Weald

Equipment needed: Access to the internet and screen to watch film clips, go to the learning zone at www.highweald.org. If you are a High Weald Hero school you should have the DVD at school.

In preparation for going to see the culvert or to learn more about the High Weald it is possible to watch 8 lively historical accounts from characters telling their stories about the High Weald.

The historical characters include:

- Jacob – a Coppice worker in Strawberry Wood in the 16th century
- Tarneq – a Mesolithic hunter from 8,000 BC
- Maxmillius – a Roman soldier from the 2nd Century AD
- Edmund – an Anglo-Saxon Drover
- Hugh – a Commoner of Ashdown Forest from the Medieval period
- Edith – a Farmer from the Medieval period
- Jane – a Tudor Iron Master's wife
- Ruby – a Hop picker between the wars

Activity 2 – Being a detective

Equipment needed: Print the maps available in this pack (pages 18-20) enough for children to look at in pairs.

Using the maps and information included in this pack, talk through the possible uses of the culvert and how old it is, look for the evidence on the maps. You could also use the maps to compare how land use has changed over the years.

Activity 3 - What is it like to be an archaeologist? The potato game

Equipment needed: Potatoes (or other fruits and vegetables), pencils and paper, ruler, tape measure.

Archaeologists studied the culvert and the area around it to find out how old it was and what it was used for.

When archaeologists record their finds using illustration it is vital to look very closely at the features visible on the objects. It is important to look at colours, textures and materials.

The 'potato game' is designed to get children looking at everyday objects that are usually taken for granted and spotting small features that make them unique.

Split your group into pairs, and give each pair a potato to describe. Each group should also be given a ruler, tape measure, pencil and paper. Ask them to look at any marks or features on the potato that make it stand out. Does it have a bruise on it? Are there any knobbly bits? How big is it? Are there marks on the surface of the potato in an unusual pattern? Each pair should write a description of their potato, and sketch it. When each pair has completed their drawings and description, collect in all of the potatoes into a pile.

Make sure that they are well mixed up! The group leader or assistant should then ask each pair in turn to read out their description and show their drawings. The group leader should pick out each described potato from the pile in turn. Each pair should be able to identify their own potato confidently if they have observed it closely, and they will be able to tell if the group leader has picked the right potato to match their description!

With younger children, you may wish to start by giving each pair a different vegetable to describe, before moving onto the game in which all pairs have a potato!

Activity 4 - The photo identification game

Equipment needed: Print out and cut out pictures from www.britarch.ac.uk/yac/YAYA_01_Looking_games.pdf, enough to use in groups. Digital camera to take your own photos.

Photographs are taken of each surface of an object when recording it archaeologically. These images often show an object from an unusual angle, making it difficult to work out what the object actually is!

The 'photo identification' game challenges children to work out what everyday objects are from photographs taken from an unusual angle.

Look at the photographs of everyday objects from different angles. The challenge is to match up the images of the same object. Can you work out what they are?

Extension idea: Using a digital camera and white board, challenge children to take archaeological photos of objects from the classroom (i.e. showing each different surface). What makes a good archaeological photo?

Activity 5 - Meet a tree

Equipment needed: blindfolds (enough for half the class)

Split the children into pairs. One child in each pair is blindfolded and their sighted partner leads them to a nearby tree. They must then get to know the tree using only their senses of touch and smell. After a minute they are led back to the starting point, where the blindfold is removed and they are asked to guess which tree they have just visited. Afterwards the teacher can discuss with the children how the bark, branches and shapes of trees all vary.

Activity 6 - Noises in the wood

No equipment needed

Get the children to stand in a circle. With their hands up and eyes closed, the children stand silently for a minute listening to the sounds of the wood. Every time they hear a different sound they raise one finger. Afterwards you can ask the children all the different sounds that they could hear.

Activity 7 - Eggbox hunt

Equipment needed: Eggboxes with the following labels inside: smooth, rough, prickly, hard, soft, and tickly.

In this game children are asked to collect six small items in egg boxes as they walk through the wood. Each item they select must match at least one adjective from a list that includes: smooth, rough, prickly, hard, soft, and tickly. Please remember not to pick up any rubbish or any plants that will damage the wonderful woodland.

Activity 8 - Find your tree

Equipment needed: Feltip pens

Did you know that every person has their own tree when they visit a woodland? Here's how to discover that tree. On your body there are signs that are special only to you. With a felt tip pen draw along the main lines of the palm of one hand. Now go and find the tree that has the same pattern. Look very carefully, the pattern may be in the branches, in the bark, or in the leaves. Once children have found their tree this is a great opportunity for further exploration. You could then find out the age of the tree (see Estimate the age of the tree activity)

Activity 9 - Look, remember, find...

Equipment needed: 2 handkerchiefs, 10 objects gathered from the area around where you will be playing the game eg. Leaves, seeds, rocks, twigs etc

Place the objects on one handkerchief and cover with the other. Gather the children round the handkerchiefs and take off the top one for 25 seconds then replace. Give the children 5 minutes to try and find as many things as they can remember. Bring the group back together and pull out, one at a time, each object from underneath the handkerchief. Say what it is and an interesting fact about it. Ask the children if they have found that object or something similar.

Activity 10 - Estimate the age of a tree

Equipment needed: tape measure, paper and pencil

Choose a tree and note down the age the children estimate it to be by looking at it. Using a tape measure, measure the circumference of the tree in centimetres 1.5m from the ground. A tree increases its girth by approximately 2.5cm per year. Calculate the number of years of growth by dividing the circumference by 2.5. The children could try to find a tree that is the same age as themselves, their parents or grandparents. They could also try to find trees planted at the same time as historical events, for example the Titanic sinking (1912) or World War Two (1939—1945).

Acknowledgements

This teachers resource pack was produced by Kent High Weald Partnership (KHWP). For more information on environmental conservation work and events that KHWP run please visit www.khwp.org.uk.

Thanks are due to:

Heritage Lottery Fund and Tunbridge Wells Borough Council who funded the project

Benenden Amenity and Countryside Society

John Brander and his team of specialist stone masons who restored Strawberry Wood culvert

Kent County Council (Heritage Conservation Group), Archaeologist South-East (University College London) and Wealden Iron Research Group (WIRG) who carried out archaeological surveys and research

Local residents and historians who contributed time and information to the project.

Kent High Weald Partnership Risk Assessment Template for a school visit to Strawberry Wood

Name of Assessor:	Date of activity:	Other information:
Location: Strawberry Wood, Iden Green, Benenden	Date of R.A./Site visit:	Nearest Emergency Hospital: Kent and Sussex, TW Tel: 01892 526111
Grid Reference: TQ813318		Benenden Hospital: GoddardsGreen Road 01580 240333
		First Aider:

Generic Risk Assessments

Brush cutting		Use of Marquees	
Chainsaws and tree work		Public rights of way work	
Drivall		Road verge work	
Fencing		Transportation of people and equipment	
Fires		Working with hand tools	
hedge laying		Weather	X
General site safety	X	Disc Golf	

Hazard	Risk	Who might be harmed	Likelihood of risk taking into account the proposed actions	Proposed action
Uneven Ground	Slips, Trips and Falls	Children and Staff	Low	Warn participants of danger during talk at start of day.
Weils Disease	Illness	Children and Staff	Low	Advise on hand washing before eating. Alcohol Gel on site
Working with Young People	Welfare of young people	Young people	Low	Children under 16 years must be accompanied by an adult. No adult will be left alone with a child, unless they are the guardian.
Dog faeces	Toxocara canis	Children and staff	Low	Remove faeces from vicinity prior to event. Handwashing available
Litter	Injury to self or others	Children and staff	Low	Remove litter from vicinity prior to event

Weather Rain, wind, sun	Hypothermia, sunstroke, exposure	Children and Staff	Low	Ensure participants are dressed appropriately for the weather conditions. A decision will be made on the day to change the contents of the trip or cancel if the weather conditions are too severe e.g. high winds or torrential rain.
Brambles and nettles and Barbed wire	Cuts, thorns, and allergic reactions	Children and Staff	Low	Identify hazardous plants to participants and warn of potential risks. Warn participants of brambles flicking behind them or catching clothes, look out for each other. Warn of barbed wire at beginning of the day and keep participants aware along route especially for children as barbed wire is often at their head height
Over-hanging or falling branches or trees	Injury to eyes and face from whips or crushing injuries from larger branches / trees	Children and Staff	Low	Check route for hazardous trees before the event and avoid. Contact PROW team to report dangerous trees on route Cancel activity if it is windy. Warn participants of small branches flicking behind them, look out for each other.

METHOD STATEMENT

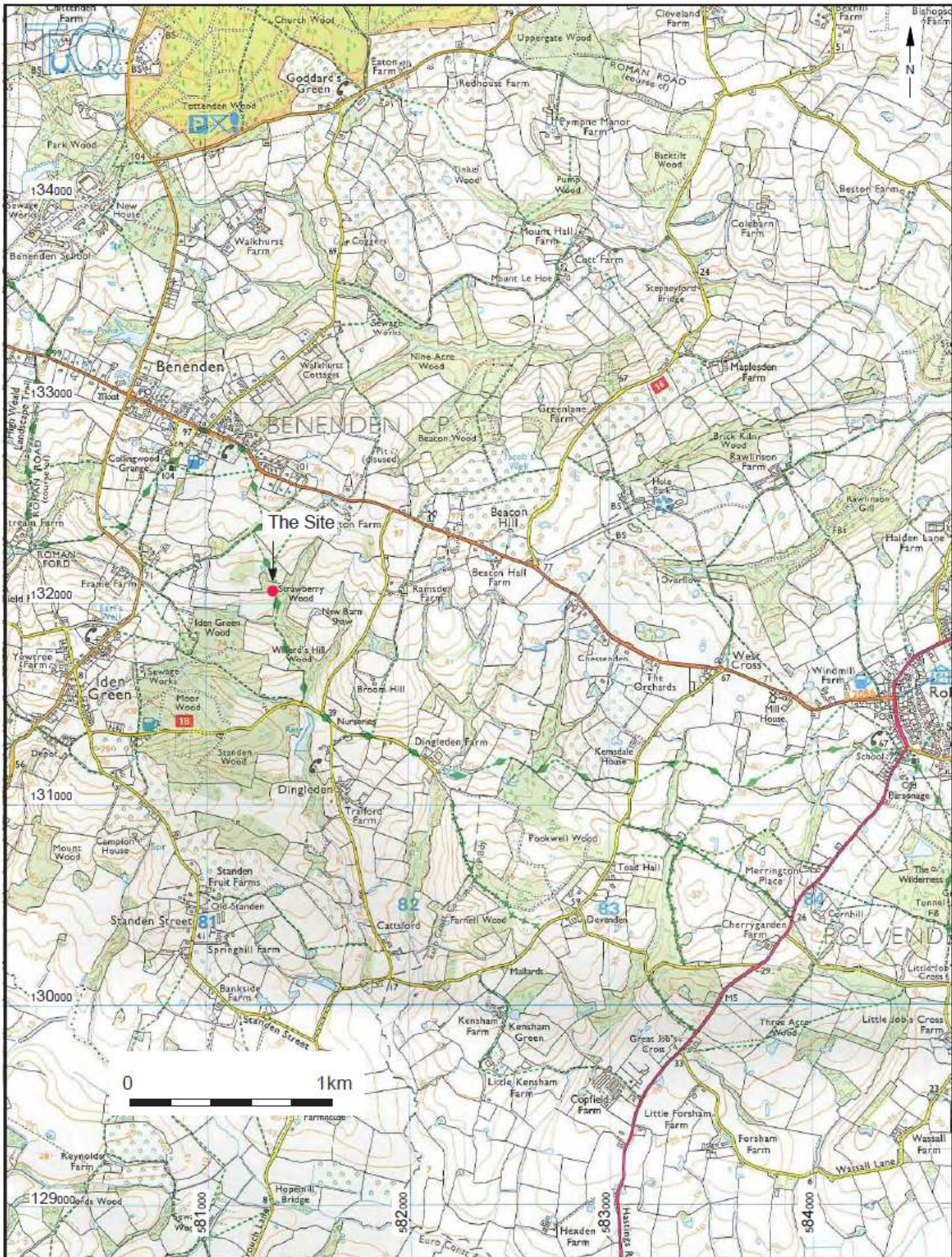
First Aider will be available at all times

Hand washing will be provided

A health and safety talk will be given at the start of the sessions

Under 16's must be accompanied by an adult or indemnity forms on hand

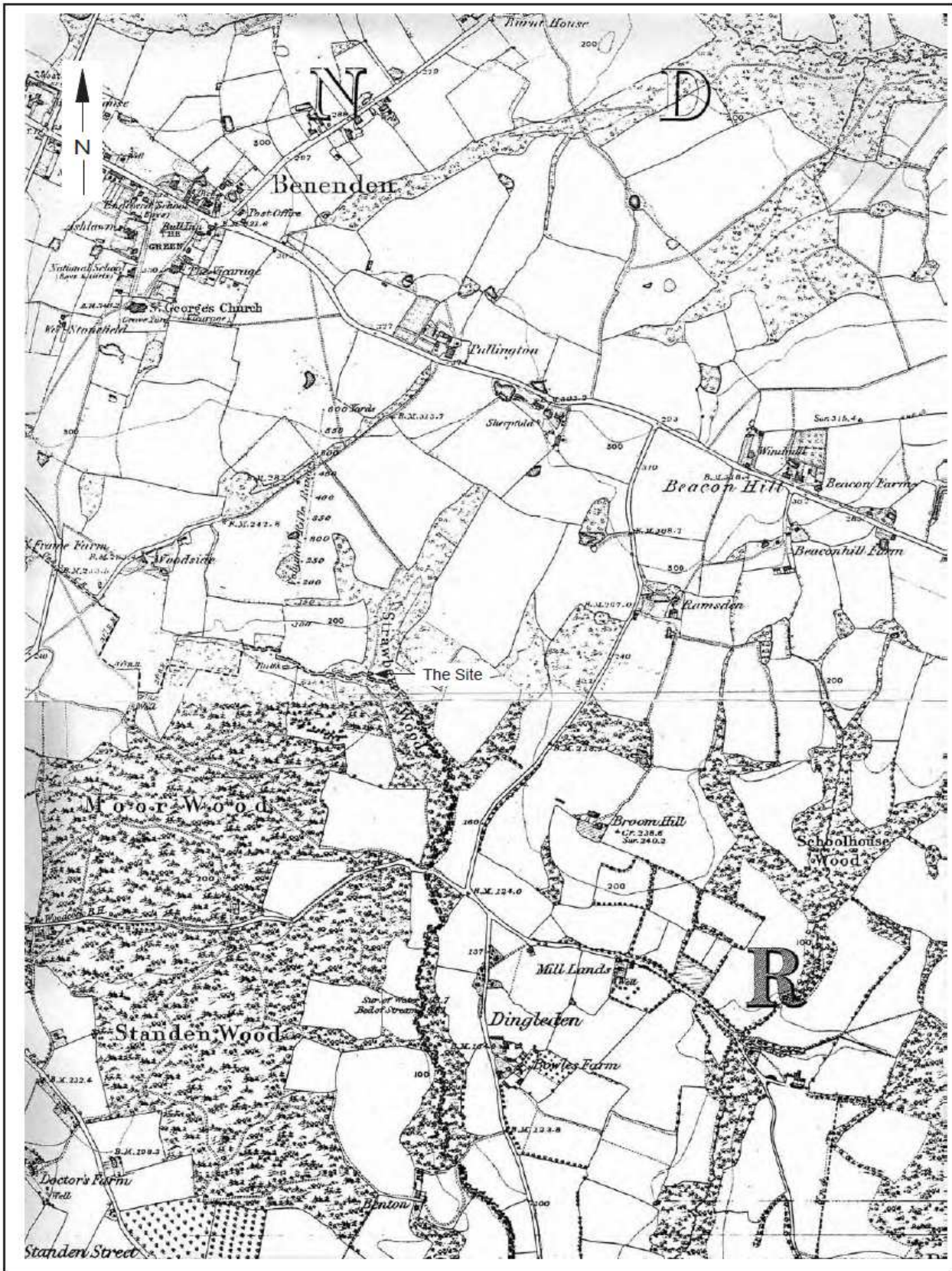
(1) OS map of Benenden 1997



© Archaeology South-East		Strawberry Wood	Fig. 1
Project Ref: 3731	May 2009	Site Location Plan	
Report Ref: 2009074	Drawn by: LD		

Reproduced from the Ordnance Survey's 1:25000 map of 1997 with permission of the Controller of Her Majesty's Stationary Office. Crown Copyright. Licence No. AL 503 10 A

(2) OS map of Benenden 1877



© Archaeology South-East			Strawberry Wood Culvert, Benenden	Fig. 5
Ref: 2767	March 2007	Drawn by: JLR	OS 6 inch sheets 71.SW and 79.NW, 1st ed. 1876/77	

