



# Sutton Bank National Park Centre, Thirsk

Archaeological Watching Brief Report



LS Archaeology

Site	Sutton Bank National Park Centre, Thirsk, YO7 2EX	
Site Code	SB19	
County	North Yorkshire	
Location	National Grid Reference	SE 51592 83057
	Easting and Northing	X 451592 Y483057
	Latitude Longitude	54.240616 -1.2098747
Planning Reference	1. NYM/2018/0076/R3 2. NYM/2018/0552/R3	
Development	Sutton Bank Visitor's Centre:  1. Alterations and single storey extensions to the Visitor Centre, including the installation of solar PV together with modifications to existing car parking areas, creation of additional car parking areas, proposed paths, and the erection of a dark skies viewing/bird hide building.  2. Construction of a 2.8km long cycle trail with associated bridge and fencing together with a pump track at Sutton Bank National Park Centre.	
Text and Images	D. Signorelli (Text) L. Signorelli (Text, Images) F. Lawson-Jones (Editing)	
Specialist Contributors	J. Rackham (Environmental Archaeology Consultancy) J. Prudhoe (Illustrator)	
Date of Issue	December 2020	
Client	North York Moors National Park Authority	
<p><b>Summary</b></p> <p>An archaeological watching brief took place in and around the vicinity of the Sutton Bank National Park Centre between the months of May and June 2020. LS Archaeology was commissioned by the North York Moors National Park Authority to undertake the archaeological works associated with this watching brief. The watching brief involved the monitoring of groundworks associated with new leisure amenities and their associated infrastructure.</p> <p>The archaeological watching brief comprised a combined study area of approximately 10,780m<sup>2</sup>.</p> <p>One archaeological feature [Feature [4]] was observed during the watching brief; an elongated oval pit dug into the natural geology and filled with fire damaged sandstone with humified peat crumb. Dating evidence in the form of charcoal was encountered during the environmental assessment of the fill. C14 dating yielded a date of 3890+/-30BP (Beta-569347), giving a calibrated age of 2469-2291 BC (at 95.4% probability), the Late Neolithic. This Late Neolithic feature has been tentatively interpreted as a small burnt mound feature, with one possible function being that of a sweat house.</p>		

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# Introduction

This report summarises the results of a recent archaeological watching brief which took place in and around the vicinity of Sutton Bank National Park Centre, Thirsk, North Yorkshire (Figure 1).

The monitoring was undertaken during a phased development which involved the construction of various amenities designed to enhance the visitor experience within this area of the North York Moors National Park.

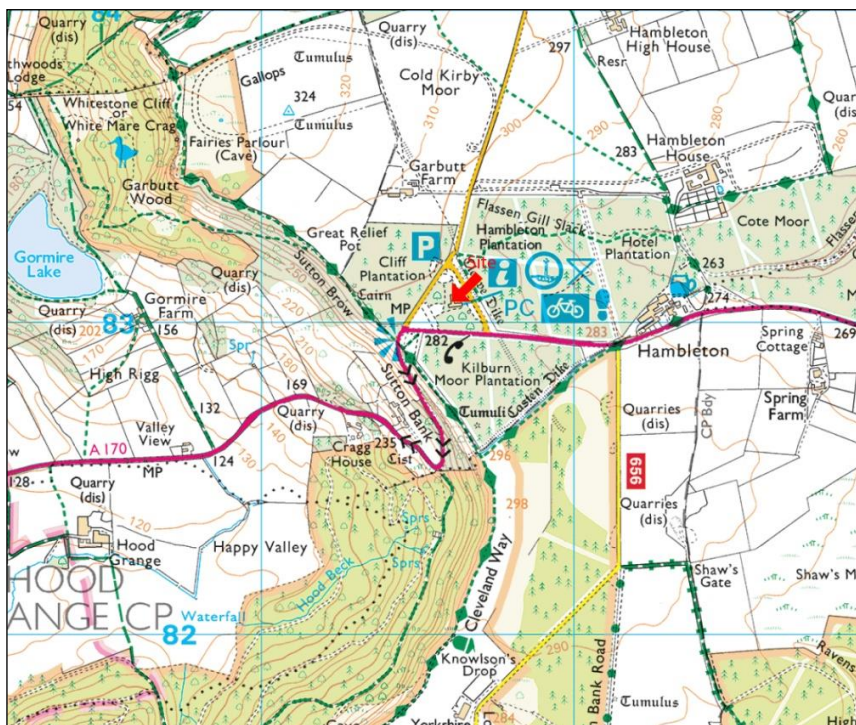


Figure 1: Location of the site indicated in red.

The new amenities comprised of a 2.8km cycle track with associated bridge and fencing, together with a pump track situated on land to the east of the Sutton Bank National Park Centre. Modifications to the existing car parking areas, creation of additional car parking areas, proposed paths and the erection of a dark skies viewing/bird hide building also took place.

The watching brief was undertaken in stages between May and June of 2020.

## Associated Reports

- LS Archaeology. (2020); Sutton Bank Cycle Track and Dark Sky Pavilion Development, Thirsk.
- North York Moors National Park Authority. (2018); *Heritage Statement: Sutton Bank/Hambleton Plantation Cycle Trial and Pump Track*.
- Cass Associates. (2018); *Heritage Statement: Sutton Bank Visitor Centre*.

## Planning

Pre-planning discourse took place between the North York Moors National Park Authority and Historic England regarding the development and its proximity to the Scheduled Monument Cleave Dyke (Appendix 1). After consideration, Historic England had no objection to the application on heritage grounds.

Planning permission has been granted by the North York Moors National Park Authority, under Regulation 3 (Town and Country Planning General Regulations 1992) for both applications:

Application 1. NYM/2018/0076/R3 (car park, visitor centre one story extension, pathways and associated dark sky/bird viewing structures).

Application 2. NYM/2018/0552/R3 (cycle track, cycle/footpath bridge system and pump track).

Both applications were approved (Application 1. 04/03/19 Condition 11 and Application 2. 13/02/19 Condition 4) with an attached archaeological condition.

*No development shall take place on site until the applicant has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority.*

## Aims and Objectives

The broad aims of the evaluation are:

- To ensure that the watching brief, post-excavation works, and archive are all carried out and fulfilled in accordance with guidance as stated in: ClfA, (2014); Standard and Guidance for an Archaeological Watching Brief.

### Site-Specific Aims:

- Ensure that the development groundwork's do not adversely affect any known or unknown archaeological deposits.
- To investigate if there are any further archaeological remains (prehistoric) present that may relate to the nationally significant Scheduled Monument nearby: The Cleave Dyke system (Historic England List Entry Number: 1012745).

## Geology and Topography

The topography of the site is relatively high for the county of North Yorkshire, with Sutton Bank (SE 51592 83057) being located at an elevation of approximately 300 metres AOD. The site is comprised of an existing Visitor's Centre and associated facilities, including car and coach parking, toilets and outdoor recreational areas. These facilities are situated within a natural moorland setting of bushes, trees and grassy areas.

The geology in this area of upland plateau consists of: Lower Calcareous Grit Formation (British Geology Survey). The superficial deposits in this area are thin and currently derive mostly of forest floor detritus and vegetation.

The topographical location of the landscape being at the edge of a plateau would be desirable for human occupation/activity, particularly for the ability to view to the west, towards the lowlands.

The geology is firm with bedrock close to the surface and has very limited superficial deposits. This makes it more suitable for pastoral than arable farming.

## Archaeological Summary

Sutton Bank Visitor Centre is sited on the iconic cliffs that look across the Vale of Mowbray and York. The Visitor’s Centre is situated within a well-known prehistoric landscape, with Bronze Age burial mounds scattered to the west and north among the arable fields and the Late Bronze Age Cleave Dyke system (NHLE: 1012745) aligned parallel to Sutton Brow.

The southern aspect of the promontory, known as Roulston Scar (NHLE: 1015502), is the site of one of the most important prehistoric monuments in the region; a large hillfort, thought to date to the Middle Iron Age. A few miles to the north, at Boltby Scar (NHLE: 1013086), lies another promontory hillfort and associated round barrows, this being of a similar date as Roulston.

Cooper Cross (NHLE: 1010348) is a wayside cross dating to the 9th-15th century, used to define the location of medieval route ways. Its base is all that remains, and it is located on the A170, grass road verge, adjacent to the entrance to the Sutton Bank Visitor’s Centre.

During October 1322, the Battle of Old Byland was fought at the site of Sutton Bank, during which the Scots won a significant victory against an Edward II army.

Intervention Details	Results	Relevance
Watching Brief at Sutton Bank, North Yorkshire (M. Waughman, 1999)	During an archaeological watching brief an isolated pit was observed that contained charcoal. The pit was thought to be possibly prehistoric.	Isolated archaeological features could be present in the western areas under watching brief.
Land to the West of Sutton Bank Centre. Watching Brief Report (LS Archaeology; 2015)	An archaeological watching brief took place during groundworks to establish a new children's play area. No archaeological features present.	No archaeological features were observed during these works however isolated features may be present.
Sutton Bank Car Park Modifications and Extension Watching Brief Report (LS Archaeology; 2019)	No archaeological features were observed during these groundworks. Features present consisted of water and sewage service structures and the remnants of a 20th century footpath; these features were associated with the Sutton Bank Visitor’s Centre. The stratigraphy of all three car-parking areas was consistent with the natural being present at approximately 0.45m BGL.	

Table 1: Prior Local Archaeological Interventions and Relevance to the site



# Methodology and Mitigation

## WATCHING BRIEF

The archaeological watching brief comprised of a combined study area of approximately 10,780m<sup>2</sup> (Figure 2).

Six distinct areas required monitoring:

1. The Cycle Track
2. Pump Track
3. Cycle Bridge and Pedestrian Underpass
4. New Car Park and Existing Car Park Extension
5. Dark Sky Pavilion and Associated Footpaths
6. Visitor Centre Extension

The methodologies applied to each area are outlined in the table below (Table 2).



Figure 2: Plan of the development with watching brief areas indicated in cyan.

Area of Monitoring	Groundworks	Depths (mm)	Archaeological Potential	Watching Brief Methodology
<b>Cycle Track</b>	Trees and vegetation were stripped in preparation for the cycle path to be laid.	Ground reduction to accommodate a 40mm rolled limestone surface. Required depth was approximately 238mm.	Approximately 140m of the new cycle track passes close to a section of the eastern perimeter of the Cleave Dyke Scheduled Monument (Appendix 1).  Associated prehistoric features were possible within this area.	The total length of the trial was 2,800m of which 150m of start/finish was 6m in width, the remainder of the trial being 3m in width. The watching brief monitored the whole area required for the construction of the cycle track with a focus on the 140m of cycle trackway close to the Cleave Dyke.  <b>The depths required for the track did not exceed beyond a level that exposed archaeological deposits or natural.</b>
<b>Pump Track</b>	The pump track consisted of runs, with landscaped bumps of earth made from subsoil excavated during the ground reduction.	Minimal depths <100mm were expected for this area. It was possible that an existing slope on the site would require cutting to a deeper depth >200mm.	This site is located within proximity to the Cleave Dyke; being sited approximately 70m to the north-east.  Prehistoric features were possible within this area.	An area of approximately 60m by 35m was stripped. During this procedure it was established that major ground levelling would not be required. Areas were built up rather than reduced. The groundworks that required recording were eight soakaway areas. Test pits A-H were excavated by machine to enable potential deposits to be observed.  <b>No archaeological deposits were encountered, the geology was recorded.</b>
<b>Cycle Bridge and Pedestrian Underpass</b>	A small shipping container of approximately 6.06m length, 2.44m width and 2.6m height was positioned to enable walkers to proceed along a footpath. Further landscaping will enable the cyclist to bike over the top of the bridge.	Excavation depth accommodated a 30mm compacted Type 1 hardcore.	This site is within proximity of the Cleave Dyke, approximately 50m to the north-east.  Prehistoric features were possible within this area.	The ground excavation to a depth of 30mm- 40mm was monitored.  The area was monitored during the watching brief whilst the ground was reduced using a toothless bucket excavator in spits of 0.1m to a maximum depth of 0.8m.  <b>No archaeological deposits were observed, the geology was recorded.</b>

Area of Monitoring	Groundworks	Depths (mm)	Archaeological Potential	Watching Brief Methodology
<b>Dark Sky Pavilion and Associated Footpaths</b>	Pathways and hardstanding were prepared for the access and positioning of a new dark sky viewing pavilion (5.4m x 7.6m).	Approximately 238mm.	A recent archaeological watching brief carried out in this area in 2018 (LS Archaeology) yielded no archaeological deposits.  However, prehistoric features could be present within this area. An isolated pit of an unknown age was observed by Waughman in 1999 (Table 1).	The access paths were cleared of forest debris to a level which was within the depth of organic detritus. The site of the Dark Sky Pavilion was stripped in spits down to the natural geology, observed at 0.6m.  <b>No archaeological deposits were observed, the geology was recorded.</b>
<b>New Car Park</b>	Excavation of New Car Park area using a mechanical excavator with a toothless bucket.	600mm to meet frost susceptibility requirements (External Works and Drainage Details Sheet 1 Alan Wood and Partners).		Monitoring of the ground excavation to a depth of 600mm in preparation for a permeable surface was undertaken.  <b>The stripping in this area revealed an archaeological ovate shaped deposit, Feature [4].</b>
<b>Visitor Centre Extension</b>	Hardstanding ground was to be broken to accommodate foundations/utilities required for the new one storey extension.	Depth TBC.		Archaeological monitoring was not required of this area as construction plans were changed and the development did not go ahead during this phase of works.  <b>If works commence later, LS Archaeology will return to fulfil this part of the monitoring programme.</b>

Table 2: Watching Brief Methodology by Area

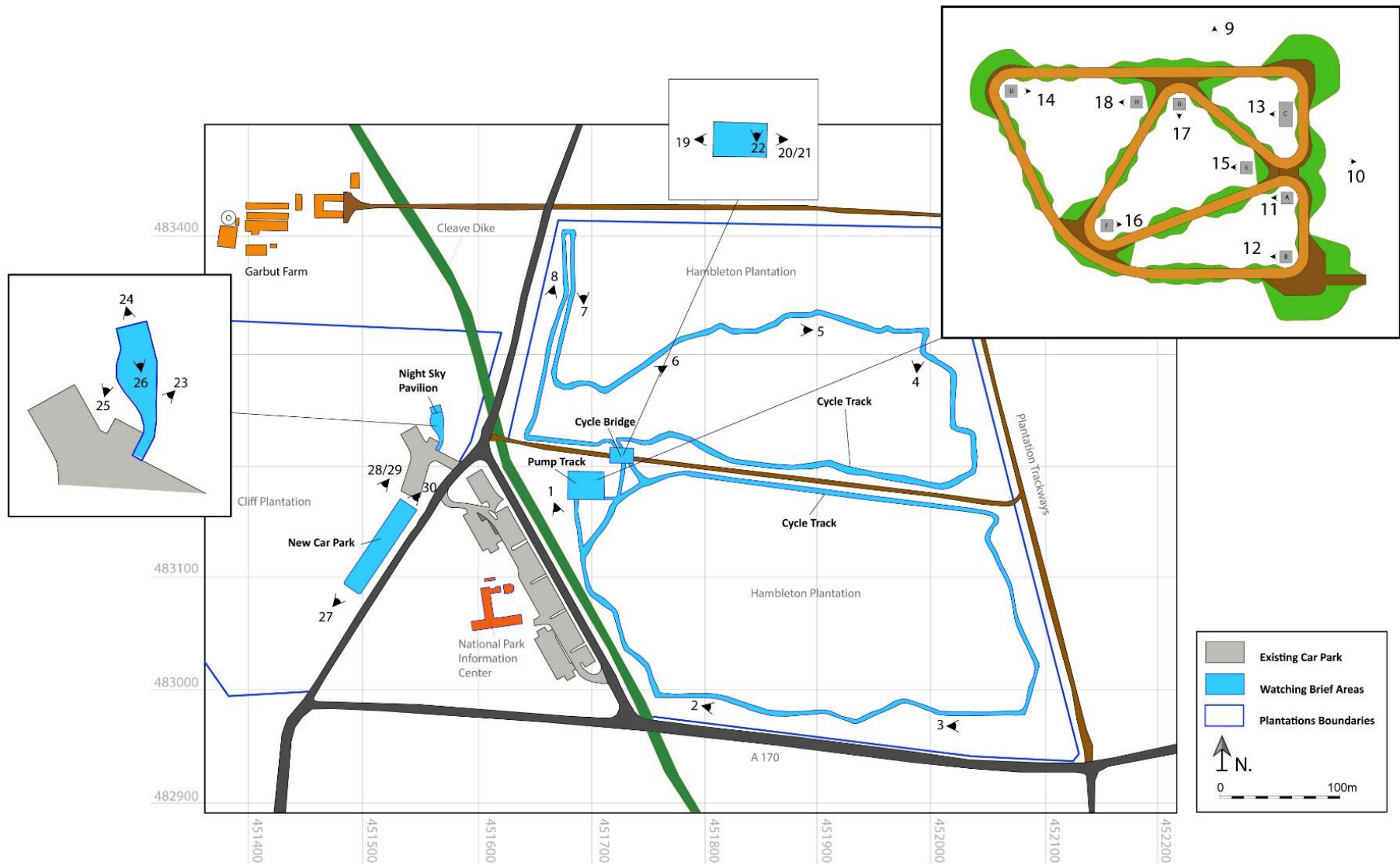


Figure 3: Plan of the development site indicating photographic points. (Photograph indicator numbers correlate with the images below- photographs 1-30).

## Ground Reduction Specifics

An archaeologist monitored all groundworks associated with the five developments. An AHWI RT400 Mulcher machine cut all the vegetation within the area impacted by the Cycle Track, Pump Track, Cycle Bridge Pedestrian Underpass and the New Car Park Area. A mini digger fitted with a toothless bucket was used to excavate the ground to the required depths for the drainage pits within the Pump Track area and the Cycle Bridge. The New Car Park and Night Sky Pavilion areas were excavated using a 12T 360<sup>0</sup> excavator fitted with a toothless bucket. The ground was dug in spits of 0.1m and this afforded time for the archaeologist to scrutinize or spot any potential deposits and retain any finds. Archaeological mitigation works involved appropriate investigation of all potential archaeological features including a detailed photographic record (Figure 3).

## Cycle Track

The cycle track measured 2300m in length and 3m in width and comprised of a study area of approximately 6900m<sup>2</sup>. Being located within the Hambleton Plantation, a dense conifer woodland located to the east of the Visitor's Centre. Sloping eastwards, some of the track follows the route of the existing cycle track and new areas were incorporated to form two circular routes (Figure 3). An AHWI RT400 Mulcher machine was used to cut the woodland vegetation to clear the cycle route. No below ground archaeological horizons were encountered due to the required level existing within the detritus layer, as left by the mulching machine. No above ground features were observed either. The ground surface consisted of a mixture of decaying leaf litter and wood mixed with a very dark brown sandy silt material (Context 9). Natural was not observed.



Photograph 1: Cycle Track facing south-east.



Photograph 2: Cycle Track facing east.



Photograph 3: Cycle Track facing east.



Photograph 4: Cycle Track facing north.





Photograph 5: Cycle Track facing west.



Photograph 6: Cycle Track facing south-west.



Photograph 7: Cycle Track facing north.



Photograph 8: Cycle Track facing south.

## Pump Track

The Pump Track was sited within a large rectangular area measuring 60m in length and 35m in width, that comprised a study area of approximately 2100m<sup>2</sup>. It was located at the start of the new cycle track, and to the east of the Cleave Dyke, within the conifer Hambleton Plantation on a relatively flat part of the wood (Figure 3). As with the cycle track, the vegetation within the Pump Track area was cut using a mulching AHWI RT400 Mulcher machine. The exposed ground surface consisted of a decaying mixture of leaf and wood mixed with a very dark brown sandy silt material (Context 7). No below ground archaeological horizons were encountered since the Pump Track did not require the removal of topsoil. No above ground features were observed.

In order to provide drainage to the track, eight soakaway pits were excavated (A-H), all measuring 2m by 2m, aside for pit C which measured 2m by 4m (Figure 4). All pits were initially excavated to a depth of 0.4m where the natural (Context 8), a yellowish sandy silt deposit mixed with fragmented angular sandstone, was observed. No archaeological evidence was observed whilst monitoring the excavation of these pits.

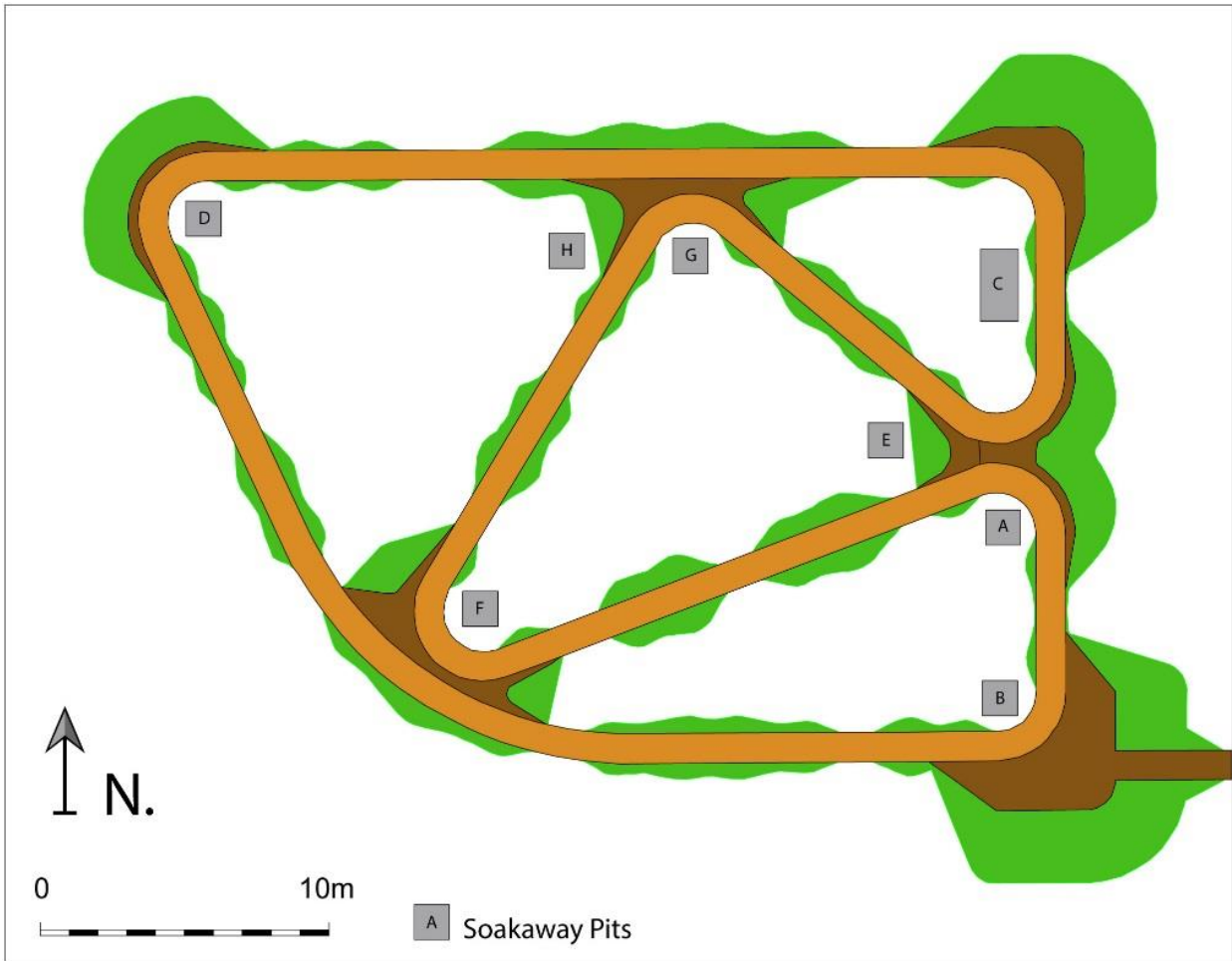


Figure 4: Locations of the test pits A-H (soakaway locations) within the Pump Track development.



Photograph 9: Pump Track facing south.



Photograph 10: Pump Track facing west.





**Photograph 11: Test Pit A facing east.**



**Photograph 12: Test Pit B facing east.**



**Photograph 13: Test Pit C facing east.**



**Photograph 14: Test Pit D facing west.**



**Photograph 15: Test Pit E facing east.**



**Photograph 16: Test Pit F facing west.**





Photograph 17: Test Pit G facing north.



Photograph 18: Test Pit H facing east.

### Cycle Bridge Pedestrian Underpass

The Cycle Pedestrian Underpass comprised of a study area of approximately 60m<sup>2</sup> and was located to the immediate north-east side of the Pump Track, on the east to west plantation trackway (Figure 3). The vegetation within this area consisted of small, sparse conifer trees and undergrowth.

The foundation trench measured 20m in length and 3m in width and was excavated with a 360<sup>0</sup> mechanical excavator fitted with a toothless bucket, to a maximum depth of 0.8m. The removal of the ground surface/topsoil (a mixture of decaying leaf and wood mixed with a very dark brown sandy silt (Context 1)) measured 0.2m in depth. This revealed the presence of a natural deposit (Context 2) comprised of dark yellowish silty sand material mixed with angular sandstone fragments. No below ground archaeological horizon was identified within the area impacted by the footings of the cycle and pedestrian bridge. No features were encountered at ground level.



Photograph 19: Cycle Bridge trench facing east.



Photograph 20: Cycle Bridge trench facing west.



Photograph 21: Cycle Bridge trench facing west.



Photograph 22: Cycle Bridge geology facing north.

### Dark Sky Pavilion and Associated Footpaths

The area impacted by the Dark Sky Pavilion and associated footpath was approximately 263m<sup>2</sup> and was located to the immediate north of the overflow carpark (Figure 3). It was set within a former conifer plantation that through time was left to grow as a deciduous wood with native representation.

The vegetation was hand cleared by Park operators, and the ground layer along the footpath which mostly consisted of decaying leaf litter and wood, was partially removed by a mechanical excavator fitted with a toothless bucket (Context 10). The area impacted by the Night Sky Observatory building was approximately 43m<sup>2</sup>. Measuring 7.8m in width and 5.5m in length, it was excavated to a depth of 0.6m. The natural (Context 11) was a brown yellowish silty sand material mixed with angular sandstone fragments and was originally encountered at a depth of 0.25m immediately below the ground layer. During the watching brief no below or above ground archaeological features were encountered.



Photograph 23: Footpath facing south-west.



Photograph 24: Dark Sky Pavilion facing south.





Photograph 25: Dark Sky Pavilion facing north



Photograph 26: Dark Sky Pavilion facing north.

### New Car Park

This area is located to the west of the Information Centre, adjacent to the west side of the link road (which connects the A 170 to the Cleveland Road) and to the immediate south of the overflow car park (Figure 3). The area designated for the New Car Park occupied Cliff Plantation coniferous forest. This site measured 85m in length and 17m in width, with a total study area of approximately 1450m<sup>2</sup>. The ground layer consisted of decaying leaf litter and wood (Context 5).

The stripping of the ground surface exposed a natural deposit made of a mixture of yellowish-brown sandy silt mixed with angular sandstone blocks and gravel (Context 6). Cutting through this deposit was a singular ovate feature located towards the northern end of the site [Feature 4].



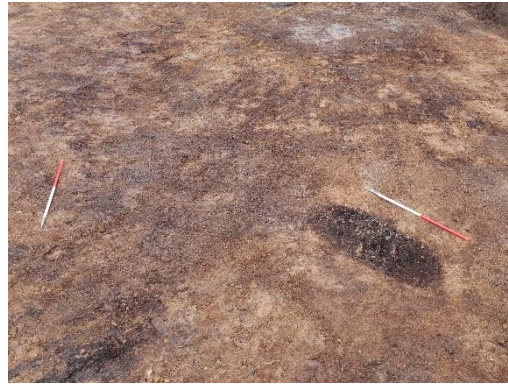
Photograph 27: Car Park area facing north-east.



Photograph 28: Car Park area facing south-west.



Photograph 29: Car Park area stripped facing south-west.



Photograph 30: Car Park area with Feature [4] facing south-west.

## Recording

An electronic standard single context recording system was used to keep a documented record of all archaeology encountered. Features were drawn in sections to a 1:10 scale and plan to a 1:20 scale on an archive stable *permatrace*. All archaeological features and sections were digitally photographed and planned.

Where possible, all archaeological features as a minimum would be sample excavated to the following criteria: ditches 5%; pits 50%; post-holes 100%; burials 100%; linear structures (walls etc.) 5%. All archaeological finds will be collected. Later finds will be noted, but not collected. One feature, Pit Feature [4], was encountered and James Rackham of the Environmental Archaeology Consultancy was consulted with regard to sampling. It was advised that one large 20 litre sample would be taken for assessment (Sample 1).

The Bulk soil samples were taken from this sealed deposit in order to:

- a. Clarify the date of the feature
- b. Assess the survival of paleo-environmental ecofacts
- c. Identify the survival of industrial residues

## Post-Excavation Analysis

On completion of work, all records, photographs and samples were processed, suitably stored and catalogued, in accordance with the *Institute for Archaeologists* guidance (2008) and the *First Aid For Finds* manual (Watkinson and Neal, 2001).

No finds were encountered during the archaeological monitoring.

## Results

The deposits encountered during the archaeological watching brief consisted of eleven contexts (Table 3; Appendix 2). The ground layer/topsoil contexts (1, 5, 7, 9 and 10) consisted mostly of decaying leaf litter and wood mixed with a very dark brown sandy silt, observed to a depth of 0.2m.

The natural observed was a yellowish-brown sandy silt mixed with angular sandstone blocks and gravel Context (2, 6, 8 and 11). It was consistent throughout the watching brief areas except for the cycle track where the ground surface was not removed. The natural was in some areas excavated to a depth of 0.6m BGL (Table 3).

Area	Context No.	Feature No.	Description	Type	Identified As
Cycle Bridge	1	1	Topsoil	Deposit	Woodland detritus within the bridge area.
Cycle Bridge	2	2	Natural	Deposit	Natural sandy silt deposit within the bridge area.
New Car Park	3	4	Fill	Fill	Fill of an ovate feature [4].
New Car Park	4	4	Ovate feature	Cut	Cut for an ovate feature [4].
New Car Park	5	5	Topsoil	Layer	Woodland detritus within the carpark area.
New Car Park	6	6	Natural	Deposit	Natural sandy silt deposit within the carpark area.
Pump Track	7	7	Topsoil	Layer	Woodland detritus within the pump track area.
Pump Track	8	8	Natural	Deposit	Natural sandy silt deposit within the pump track area.
Cycle Track	9	9	Topsoil	Deposit	Woodland detritus within the cycle track area.
Dark Sky Pavilion	10	10	Topsoil	Deposit	Woodland detritus within the cycle track area.
Dark Sky Pavilion	11	11	Natural	Deposit	Natural sandy silt deposit within the pump track area.

**Table 3: Context Index**

No below ground archaeological horizons or above ground features were encountered within the watching brief areas, except for the New Car Park, where a single ovate pit was discovered (Feature [4]).



## Feature [4]

Located towards the north-west corner of the New Car Park, Feature [4] was an ovate pit measuring 1.38m in length, 0.58m in width and 0.22m in depth. It was filled by a single deposit (Context 3). Context (3) was a very stony black gritty fill, mixed with a black sandy silt material. The fill was predominantly made of fragments of burned sandstone mixed with a black sandy silt material and remains of charcoal. Although no dating material was present, the sample (Sample 1) of the fill contained charcoal which was C14 assessed and yielded a Late Neolithic calibrated age of 2469-2291BC. Feature [4] was 100% excavated in order to retrieve any possible artefacts. Unfortunately, none were present.



Figure 5: Location of Feature [4] within the New Car Park.

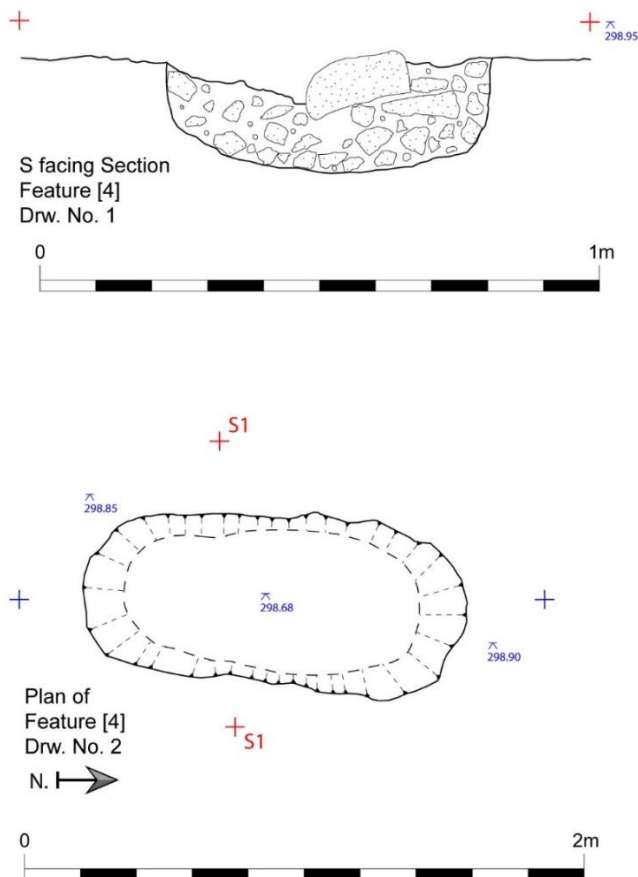


Figure 6: Section and Plan of Feature [4]



Photograph 31: Feature [4] half sectioned.

# Discussion

The Neolithic period spans 1500 years from c. 4000 to c. 2500 B.C. The presence of a Late Neolithic feature within the North York Moors National Park is of great interest, although is not entirely unexpected. The North York Moors have permanent and transient evidence of Neolithic activity, as seen in the rock art, cup & ring sculptures, and large amounts of discarded Neolithic tools located within its boundaries.

The fertile soils found in the limestone belt of the Tabular Hills, which are located to the immediate south and east of the NYMNP, supported the gradual divergence away from hunting and gathering towards a more settled lifestyle. This lifestyle change was enabled by the management and cultivation of domestic fauna and flora. To facilitate this trapping and planting, woodlands were cleared. Evidence to support this trend is observed in the archaeological record where long barrows and bowl barrows, (permanent monuments to the dead) and Neolithic tool spot finds are present (Figure 7).

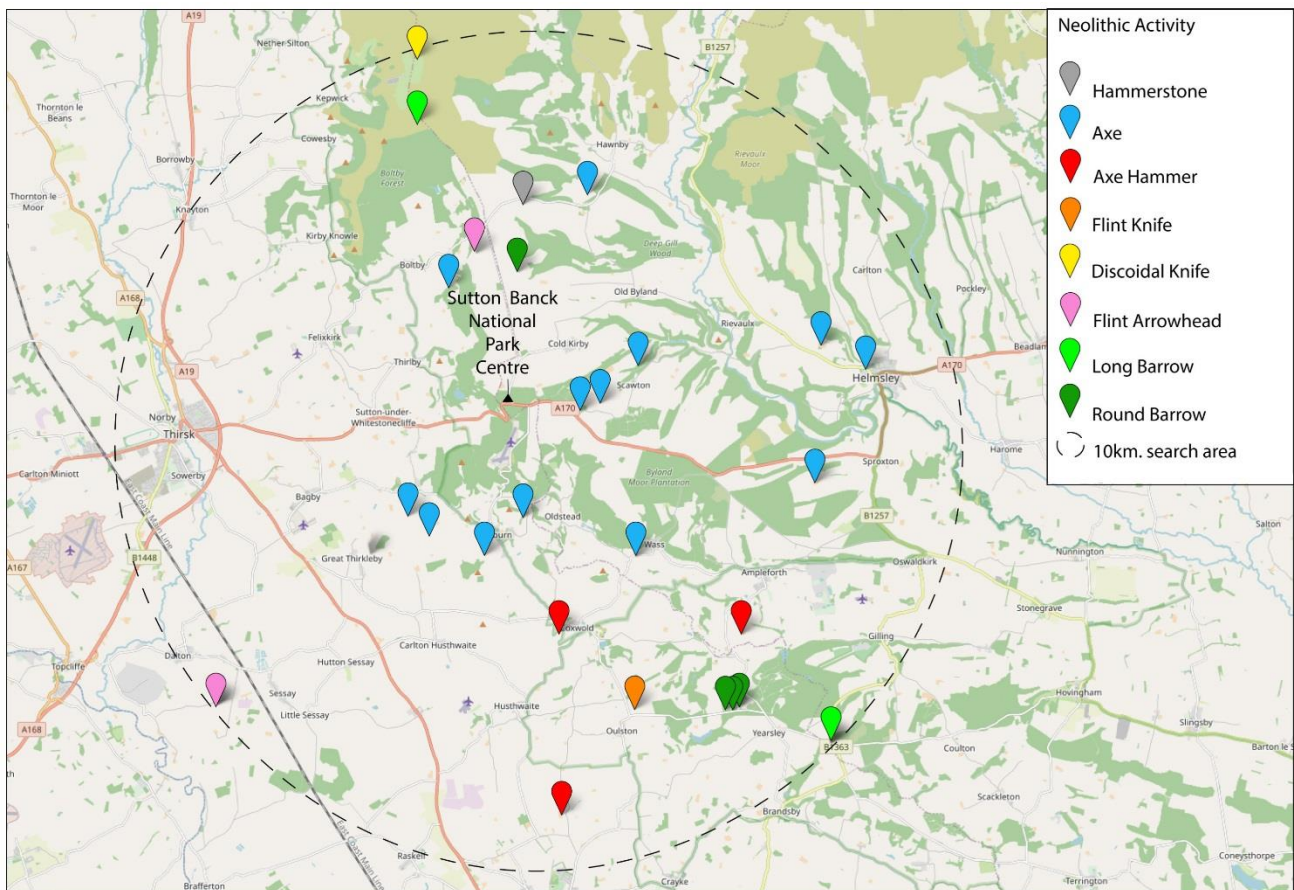


Figure 7: 10km radius search for Sutton Bank Information Centre (results from Archiuk).

In assessing the proximity of other Neolithic evidence in relation to the location of Feature [4], a radius of 10km was searched (Figure, 7). The radius search revealed transient activity as observed in the range of spot finds tools. These included tools such as hammerstones, axes, hammer axes, flint and discoidal knives. Permanent evidence of settled activity is seen 10-12km to the south-east by way of later Neolithic/Bronze Age bowl barrows at Yearsley Moor (NHLE: 1013450) and an early to middle Neolithic long barrow at Grimston (NHLE: 1013603). 9km to the north-east is another early



to middle Neolithic long barrow located at Kepwich (NHLE: 1008574) and a Late Neolithic/Early Bronze Age bowl barrow near Old Byland, sited 3.7km to the north-east.

The Late Neolithic burnt pit Feature [4] that is dated to 2469-2291 BC sits within this local activity, however its function based upon the evidence found is not definitive. There were no other features present suggestive of a permanent settlement. A pit of unknown date was observed during the 1999 watching brief (Waughman, 1999) at the same location. Waughman noted that the grey fill of this pit indicated a prehistoric age and that charcoal was present, however no dating evidence was found within the fill so therefore it is inconclusive if this pit is contemporary with Feature [4].

Feature [4] was a shallow pit 1.38m long and elongated ovate in shape, rather than circular. The environmental assessment of the fill found within Feature [4] concluded that there was no evidence of biological matter that could be associated with cooking (Rackham; Appendix 3). Neither were there bone fragments within the fill. The burnt sandstone would have been too friable for use as pot boilers therefore a cooking or industrial function is not likely.

Given its location close to the edge of an upland plateau, a possible function of the pit may have been that of a beacon. The pit was aligned north/south with the longer edge of the fire more visible (depending on vegetation present) to the east or west than to the north or south. The western aspect faces over the edge of the plateau towards the lower Vale of Mowbray. The use of the feature as a beacon does not however account for fire cracked sandstone within the fill, unless there was a purpose for the inclusion of stone such as enhancing the burning of the fuel. Another possible interpretation that does acknowledge the importance of fire cracked stone, is that of a small burnt mound.

Burnt pits or mounds can date from the Neolithic period, although most occur during the Bronze Age. These features are of considerable interest due to their elusive function and recent research has been undertaken within an Irish and Scottish context (Brown, 2016 and Hawkes, 2018). These studies work towards forming a typological assessment of burnt mound features based upon size, structure fabric, location and associated features. Similar characteristics between burnt mounds do exist, such as being in locations which were not settled (or not suitable for settlement), being at a walking distance from a settled area, having proximity to water (although not in all cases).



Figure 8: A reconstruction image of a sweat house based upon the evidence from Feature [4] and ethnoarchaeological data, Jon Prudhoe, 2020.

Functions could include cooking and sweat houses (Hawkes, 2018).

The lack of cooking related evidence found within the fill of Feature [4] could suggest a function such as a sweat house. The pit was elongated and hearth shaped, suitable for multiple individuals to have direct access to the fire. The shape also enables there to be two heads at the hearth- one in the case of Feature [4] could be sat facing north, the other facing south. The location of the pit also compares well to some criteria for sweat houses/burnt mounds. It is within walking distance to areas of settled activity (long barrows and bowl barrows within proximity), however there was no water source close by. Nevertheless, sweat houses could be temporary and water could be brought to the site or be present in the form of rain or snow.

## Conclusion

The watching brief undertaken in and around Sutton Bank National Park Visitors Centre yielded one archaeological feature: a Late Neolithic Pit. To encounter an isolated feature of such an age is of great interest and some ideas regarding its possible function are offered within the discussion. The discussion draws upon evidence as readily available at the current time however Feature [4] will no doubt, overtime, spark further consideration of its function and how this is connected to the wider Late Neolithic local narrative.

LS Archaeology would like to thank the NYMNP Authority for commissioning them to undertake the work. Thanks go to Nick Mason for his time supplying associated reports and for his input into the creation of the reconstruction drawing. Also, to James Rackham and his team for their environmental assessment. Finally, to Jon Prudhoe for his artistic and interpretive skills deployed in the creation of the reconstruction drawing. Hopefully, the image can be used to enhance visitor awareness of the antiquity of the site at the Sutton Bank National Park Centre.

## Archive

This watching brief produced no physical archive. A digital copy of this report will be deposited with the North York Moors National Park Archaeologist and uploaded to OASIS (Online Access to the Index of archaeological Investigations) for subsequent inclusion on the Archaeology Data Service LS Archaeology grey literature records page:

<https://archaeologydataservice.ac.uk/archives/view/greylit/browse.cfm?unit=LS%20Archaeology>

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## Web Resources

[mapapps.bgs.ac.uk/geologyofbritain/home.html](http://mapapps.bgs.ac.uk/geologyofbritain/home.html)

[www.heritagegateway.org.uk/Gateway/](http://www.heritagegateway.org.uk/Gateway/)

[historicengland.org.uk/listing/the-list/](http://historicengland.org.uk/listing/the-list/)

<https://eprints.soton.ac.uk/396786/1/Burnt%2520Mound%2520PPS%2520Paper%2520v14%2520with%2520Figs.pdf>

[https://www.theposthole.org/sites/theposthole.org/files/downloads/posthole\\_26\\_187.pdf](https://www.theposthole.org/sites/theposthole.org/files/downloads/posthole_26_187.pdf)



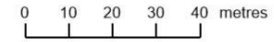
# Appendix 1: Cleave Dyke in proximity of the Cycle Track



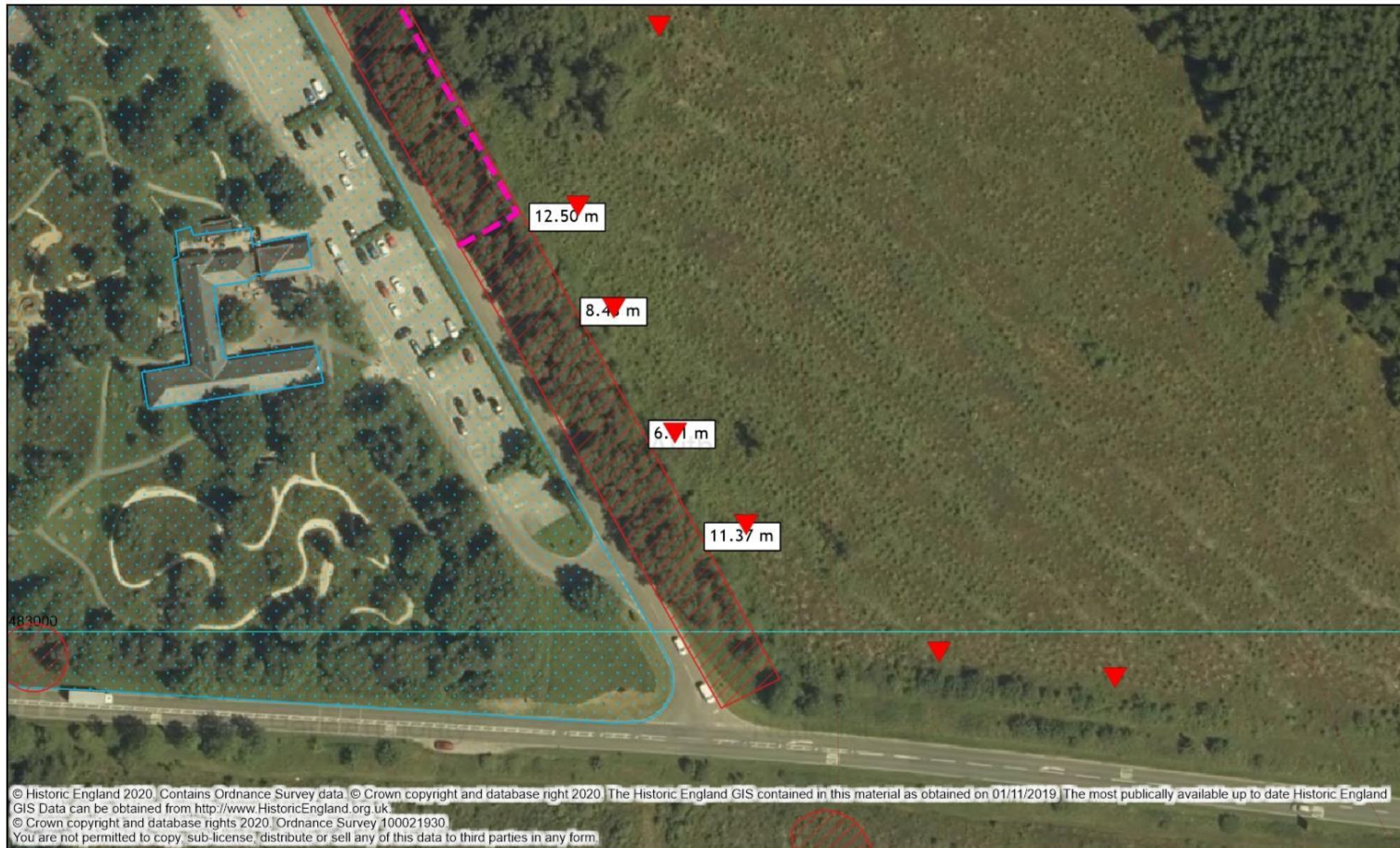
North York Moors National Park Authority  
The Old Vicarage  
Bondgate  
Helmsley YO62 5BP  
01439 772700

## Rights of Way Location Plan

Printed: 30 January 2020  
By: Simon Bassindale



Scale: 1:1250



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## Appendix 2: Context Data

Context	Area	Type	Shape	Profile	Length cm	Width cm	Depth cm	Description	Period
1	Bridge	Deposit	Deposit	Undulating	900	300	20	Very dark brown (7.5YR2.5/2) friable Sandy silty loam. Identified as an organic deposit / topsoil in woodland area. Mixed with substantial amount of tree roots and decayed vegetation. Above (2). Same as (5) and (7) and (9)	
2	Bridge	Deposit	Deposit	Flat	900	300	60	Yellowish (10YR5/6) firm sandy silt. Natural deposit made of silty sand mixed with fragments of sandstone rocks. Roots activity present in the form of irregular shape pattern (grey silty sand and iron pan edges). Sealed by (1). Same as (6) and (8)	
3	Car park	Pit fill	Ovate	U-shaped	138	58	22	Very stony black (7.5YR5/1) gritty fill, mixed with a black sandy silt material. The fill is predominantly made of sandstone burned fragments mixed with a black sandy silt material and remains of charcoal. No dating material present. Soil sample N°1. Sealed by (1), fill of [4]	
4	Car park	Pit cut	Ovate	U-shaped	138	58	22	Ovate shape in plan with edges cutting the natural at nearly vertical angle. The base is shallow concaved. The pit has been excavated on a north to south alignment and is located at the northern edge of the site. Sealed by (4), cuts (6)	
5	Car park	Deposit	Deposit	Irregular	0	0	20	Very dark brown (7.5YR2.5/2) gritty sandy silty loam organic deposit / topsoil in woodland area. Mixed with substantial amount of tree roots and decayed vegetation. Same as (1) and (9). Above (6)	



Context	Area	Type	Shape	Profile	Length cm	Width cm	Depth cm	Description	Period
6	Car park	Deposit	Deposit	Flat	0	0	40	Natural deposit made of a yellowish (10YR5/6) sandy silt mixed with fragments of sandstone rocks. Roots activity present in the form of irregular shape pattern (grey silty sand and iron pan edges). Sealed by (5)	
7	Pump track	Deposit	Deposit	Irregular	200	200	20	Very dark brown (7.5YR2.5/2) gritty sandy silty loam deposit / topsoil in woodland area. Mixed with substantial amount of tree roots and decayed vegetation. Same as (1), (5) and (9). Above (8)	
8	Pump track	Deposit	Deposit	No Value	200	200	80	Natural deposit made of a yellowish (10YR5/6) sandy silt mixed with fragments of sandstone rocks. Roots activity present in the form of irregular shape pattern (grey silty sand and iron pan edges). Sealed by (7)	
9	Bike track	Deposit	Deposit	Irregular	0	0	0	Very organic deposit / topsoil in woodland area. Mixed with substantial amount of tree roots and decayed vegetation. Not excavated only recorded in plan. Same as (1), (5) and (7)	
10	Dark Sky Pavilion	Deposit	Deposit	Irregular	780	550	20	Very dark brown (7.5YR2.5/2) gritty sandy silty loam deposit / topsoil in woodland area. Mixed with substantial amount of tree roots and decayed vegetation. Same as (1), (5), (7) and (9). Above (11)	
11	Dark Sky Pavilion	Deposit	Deposit	Flat	780	550	40	Natural deposit made of a yellowish (10YR5/6) sandy silt mixed with fragments of sandstone rocks. Roots activity present in the form of irregular shape pattern (grey silty sand and iron pan edges). Sealed by (10)	

## Appendix 3: Environmental Archaeology Report, J.Rackham

### Sutton Bank, Thirsk SB20. Environmental Archaeology Report

#### *Introduction*

One sample was taken from the excavations conducted by LS Archaeology at Sutton Bank, Thirsk (Table 1). The sample was taken from an ovate feature filled with dark soil containing an abundance of fractured sandstone. The sample was submitted to the Environmental Archaeology Consultancy for processing and assessment for the potential recovery of archaeological and biological materials including charred plant remains for information on crop-husbandry and processing and other human activities at the site. The site lies on sandstones of the Lower Calcareous Grit Formation ([mapapps.bgs.ac.uk/geologyofbritain/home.html](http://mapapps.bgs.ac.uk/geologyofbritain/home.html)).

**Table 1.** Sutton Bank - SB20. Sample collected for environmental study

sample no.	context no.	samp. vol (l).	sample weight (kg)	context type	Spot date
1	3	20	28	Oval feature	Undated

#### *Methods*

The soil sample was processed in the following manner. Sample volume and weight was measured prior to processing. The sample was washed in a 'Siraf' tank (Williams 1973) using a flotation sieve with a 0.5mm mesh and an internal wet sieve of 1.0mm mesh for the residue. The flots and residue of the sample were dried and the dried residue refloated for the efficient recovery of charred material. The dry volumes of the flots were measured, and the volume and weight of the dried residue recorded.

The residue was sorted by eye, and environmental and archaeological finds picked out, noted on the assessment sheet and bagged independently. A magnet was run through the residue in order to recover magnetised material such as hammerscale and prill but none was present. The residue was then discarded although stone greater than 7mm was retained. The dry flots were divided into fractions using a stack of sieves for ease of assessment and scanned using a stereo-binocular microscope, with a magnification of up to x40. The presence and frequency of charcoal fragments larger and smaller than 2mm was recorded, the larger pieces being potentially identifiable and thus suitable for analysis, but no other charred plant remains were present. Other biological evidence in the flots was also noted, including un-charred plant material, wood, worn capsules and rootlets, but no bone or snails were present. The item frequency of the recovered environmental remains was scored using a scale (see Table 2). The flots were then bagged. The flots and finds from the sorted residue constitute the material archive of the sample.

The individual components of the sample were then identified and the results are summarised below in Table 2.

## Results

The sample washed down to a residue of fractured calcareous sandstone much of which appears to have been firecracked and considerably 'softened' as a result of heating. The cracked stone fraction of the residue exceeding 0.7cm in size weighed a total of 12.335kg (44% by weight of the unprocessed sample) and much of the smaller debris may also derive from this cracked/heated stone (i.e. 48% of the unprocessed sample by weight).

There were no archaeological finds apart from the fire-cracked stone, a little 'baked' earth and charcoal, so the date of the feature is not known. A small sample of charcoal was therefore submitted for radiocarbon dating and has returned a date of 3890+/-30BP (Beta-569347) giving a calibrated age of 2469-2291 BC (at 95.4% probability), the late Neolithic.

The sample flots are largely composed of fibrous root matter and compacted humified peat crumb, with a proportion (less than 5%) being charcoal. No charred plant remains other than this charcoal has been noted.

**Table 2: Sutton Bank – SWB20.** Archaeological finds from the samples

sam p.	co nt.	vol in l.	residue vol .in ml.	fire-cracked stone wt kg.	magn. comp. g.	flot vol. ml	char -coal \$/*	char'd grain *	char'd chaff *	char'd seed *	other
1	3	20	11000	12.3	-	32 5	3/5	-	-	-	Baked earth? -8.8g

\$ - frequency of >2mm/<2mm fragments of charcoal

\* frequency of items: 1=1-10; 2= 11-100; 3=101-250; 4=251-500; 5=500-1000; 6+>1000

## Discussion

The most significant aspect of the deposit is the relatively large quantity of fire-cracked and burnt calcareous sandstone. This stone appears to be the local Calcareous Grit Formation that the British Geological Survey records at the site. The deposit has the character of 'burnt mound' debris or possibly fractured hearth stones. The charcoal concentration in the deposit is very low, less than 50ml in twenty litres, and the sample has produced no evidence of 'domestic' waste such as charred grain or burnt bone that might point to 'occupation'.

Although the sample was originally described as a 'black sandy silt' with abundant stones (site context description) the presence of humified peat crumb in the sample suggests a buildup of peat in the feature after its functional use suggesting locally wet conditions at that time.

With the radiocarbon results yielding a late Neolithic date the feature could be associated with early 'burnt mound' type deposits. The quantity of burnt stone, at 12.3kg, appears rather high for hearth stones although they could represent 'pot boilers' used in a domestic context for heating water or cooking, the relative lack of charcoal and any food remains such as charred grain or hazelnut does not point to a domestic context.



## **Acknowledgements**

I should like to thank Trude Maynard and Angela Bain for the sample processing and sorting.

## **Bibliography**

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September 2020 (revised Oct 1<sup>st</sup>)

Environmental Archaeology Consultancy, 25 Main Street, South Rauceby, Sleaford, Lincolnshire  
NG34 8QG



**Beta Analytic**  
TESTING LABORATORY

**Beta Analytic Inc**  
4985 SW 74 Court  
Miami, Florida 33155  
Tel: 305-667-5167  
Fax: 305-663-0964  
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

## REPORT OF RADIOCARBON DATING ANALYSES

James Rackham

Report Date: October 01, 2020

Environmental Archaeology Consultancy

Material Received: September 23, 2020

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
		Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 569347	SB20 3, < 1 >	3890 +/- 30 BP	IRMS δ13C: -24.4 o/oo
	(95.4%) 2469 - 2291 cal BC	(4418 - 4240 cal BP)	
	Submitter Material: Charcoal Pretreatment: (charred material) acid/alkali/acid Analyzed Material: Charred material Analysis Service: AMS-Standard delivery Percent Modern Carbon: 61.62 +/- 0.23 pMC Fraction Modern Carbon: 0.6162 +/- 0.0023 D14C: -383.85 +/- 2.30 o/oo Δ14C: -389.04 +/- 2.30 o/oo (1950:2020) Measured Radiocarbon Age: (without d13C correction): 3880 +/- 30 BP Calibration: BetaCal3.21: HPD method: INTCAL13		

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.



LS Archaeology