

The Moorland Collieries of North Yorkshire



Rudland Rigg, lower Colliery, (Google Earth, 2002)

As the North York Moors National Park is about to enter a new phase of major mineral and gas extraction, the following article is an attempt to collate and add to previous works of an industry largely forgotten within the archives. Information regarding many of these Collieries is limited and at times contradictory. Any further suggestions and corrections would be gratefully received. It is hoped that at least some of these sites could be protected for future generations and that further investigations will create a greater, more informed and detailed picture of a lost industry.

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1. Background

As far back as the early 1200's there were national concerns about deforestation in the United Kingdom. Most medieval populations and industries needed basic supplies of wood fuel for brewing and dyeing, glass-making, for making lime plaster, building houses, constructing mills, factories, carts and ships, for heating homes and domestic cooking.

In a relentless process, many mature trees were cut down to meet these needs, and often the clear-felled land was converted to pasture or fields. With increasing demand and prices, wood stocks began to run short.

The brewers of London complained in 1578 that wood could not be obtained to serve their brewery fires "without ruin and great decay." They were using 20,000 wagon loads of firewood a year between them. In one salt-producing town, Droitwich in Cheshire, there were 360 wood-burning furnaces for evaporating brine to produce salt alone.

By the early 17th century it became clear something needed to be done. A Royal proclamation in 1615 was set to change the Country and drive our populations towards a fossil fuelled carbon future.

The measures were designed to encourage the substitution of coal for wood wherever possible, though many wealthy landowners continued the practices until their timber supplies ran out, coal therefore became a valuable commodity and one to be exploited.

The mining of coal locally appears to have begun somewhere around the year 1640 and was set to continue in some form or another for the next 250 years. It is difficult for many to imagine that the Moors of today were home to such an industry or that significant coal deposits even exist in the area. Most believe that the mounds seen on their Sunday walks are actually remnants of the ironstone mining industry so well publicised, or who view the dumps and filled shafts as shallow bell pits, but coal was mined on the moors and in the dales and on a considerable scale.

The Jurassic Coals of the North York Moors area were primarily used for burning lime in kilns for agricultural purposes in order to neutralise the poor, acid rich, moorland soils. Many surplus supplies were sold to locals for fuel and for a period, local coal fired the calcining kilns at Rosedale. Though there is little historic information with regards many of these Collieries, significant contributions to research have been undertaken by Owen, Gill, Hartley, and unfunded local interest groups such as The Cleveland Mining History Society.

1. Geology

The Mid-Jurassic moors coals of the Ravenscar Group; formerly the Estuarine Series mainly comprise of thin bands, similar in composition to the Carboniferous coal measures seen in the Yorkshire coalfield, particularly those of the Shafton seams (Wandless & Slater, 1938).

The mined coals are located within the Cloughton and Saltwick Formations. The primary target for the miners was a seam/s that sits 16 to 32m below the Scarborough Formation, formerly the Grey Limestone, and within the Gristhorpe member. Coal was also extracted from two seams which reside in the lower Saltwick, 3 and 20m above the Dogger, however these seams were never worked to the same extents.

	Formation/ member	Thickness (maximum in metres)	Lithology	Depositional environment
Osgodby	Oxford Clay			
	Hackness Rock	2	fine-grained, poorly sorted sandy limestone and calcareous sandstone; berthierine ooids well developed towards top	fully marine, shallow water
	Langdale	15	fine- to medium-grained sandstone and siltstone; scattered berthierine ooids; thin clay partings	pro-delta
	Redcliff Rock	11.5	fine-grained sandstone with beds of sandstone and limestone containing abundant berthierine ooids; occasional calcareous concretions	offshore shelf, and shallow water marginal marine
Scalby	Cayton Clay	3	grey, shaly, silty and sandy clay	deepening marine basin
	Cornbrash	1	limestones and sandy marl; ooidal in part	shallow water marine
	Long Nab	52+	clay and silt with thin, laterally extensive sheets of fine sandstone; channel sandstones	meandering channels and alluvial marshes and floodbasins/plains
	Moor Grit	8	cross-bedded, often richly carbonaceous, sandstone, overlain by rippled sandstone with mudflake conglomerate	braided river-channel complex
Scarborough	Bogmire Gill	2.5	sandstone, silty and calcareous shale, impure limestone and ironstone; often heavily bioturbated; very variable	shallow brackish-marine and marine; nearshore and open shelf; wave-dominated, sandy shoreface
	White Nab Ironstone	1.3		
	Ravenscar Shale	8.2		
	Spindle Thorne Lst	3.7		
	Hundale Sandstone	4		
	Hundale Shale	2.6		
Cloughton	Helwath Beck	7.6		
	Gristhorpe	30	Main coal horizon 16 – 32 m below Scarborough	
	Lebberston	9	cross-bedded sandstone and shale; ooidal limestone	shallow marine to coastal; beach and lagoon
	Sycarham	50	'coal measure facies' as Saltwick Formation below	dominantly freshwater fluvio-deltaic
	Eller Beck	8	medium- to fine-grained, sometimes ripple-marked sandstone, overlying shale with subordinate ironstone	very shallow marine
	Saltwick	57	rhythmic units of argillaceous sandstone, siltstone, shale and low-grade coal; channel sandstones; plant debris ('coal measure facies')	non-marine with some tidal influence; river channel and overbank
	Dogger	12	sideritic sandstone, berthierine oolite, bioclastic limestone, laminated shale; pebble beds	shallow marine
	Blea Wyke Sandstone			

Fig 1 Modified from Cox B.M. & Sumbler M.G. GCR Conservation Series (2002) showing general locations of the Coal seams.

The Moors coal seams range in thickness from 0.14m to 0.57m (Rayner and Hemmingway, 1974); the thickest found at that time were situated around Blakey Moor (Fox-Strangways et al., 1885).

There appears to be no specific pattern to the coals thickness, although the thickest seams worked appear to lie to the north of the belt of the Ravenscar group.

The most significant seam mined away from the central moors is found at Birdforth Quarry near Thirsk and ranges from 0.6m to around 1m, this appear to show that generally congregations formed around the edges of the subsiding Yorkshire Basin (Rayner and Hemmingway, 1974).

Subsequent studies using open source British Geological Survey Borehole Viewer (BGS, 2012), show that unexploited thicker seams exist; one of 2.80m is shown in the bore section at Sadler House Farm, Goathland, at a depth of 8m. There are many other logs indicating locale and seam thicknesses, at Ankness the bore section shows a 0.3m seam at a depth of 54.4m. Further afield a bore at Belman Bank Gate, Guisborough indicates 2 seams, one 0.25m at a depth of 2.95m and a further at 14.33m which is 0.53m thick, these are no doubt of the lower series. There are numerous other bore logs, several at Rudland and many in locales where tracking and interpolation of the seam would allow a clearer picture as to the full extents of the coal.

Studies of the local geology have been undertaken by many including the 'Father of English Geology' William Smith who undertook studies on the coast at Gripe Howe near Hawsker.

Smith's work in the moors was rediscovered and works published in 1975 by J.E.Hemmingway and J.S.Owen. In the publication it appears Smith visited the north-east in 1813 and examined several coal pits in the central moorlands and reported on their economic value, he also viewed bore sections and suggested methods for working the strata.

Table 1 Lop Hall Section (Fox-Strangways *et al.*, 1885)

		Ft.	In.
Grey Limestone Series	Soft encrinital sandstone	2	0
	Sandy ferruginous shale	4	0
	Hard silicious and ferruginous sandstone, with <i>Gryphaea</i>	8	0
Shaly sandstone		10	0
Blue and white shale		3	0
Soft carbonaceous shale		5	6
Fireclay		3	0
Sandy shale		2	6
Soft, brown micaceous sandstone		14	0
Grey shale		5	0
Bluish-grey sandy shale		4	2
Flaggy sandstone		4	6
Coal Seam	Coal 7½ ins.		
	Shale 5½ "	1	7
	Coal 6 "		
Underclay		1	3
Shaly sandstone with vertical <i>Equisetites</i>		1	6
Sandy shale		3	0
Sandstone		2	6
Shale with jet or pipecoal		15	0

One of the earliest and most comprehensive studies was made by C. Fox-Strangways, C. Reid and G. Barrow in 1885 'Memoirs of the Geological Survey, England and Wales, The Geology of Eskdale and Rosedale'. Several sections were identified, particularly one at Lop Hall (Table 1) above Danby Station.

The environment at the time of coal formation consisted of lower deltaic flood plains colonised by a diverse flora(up to 260 plant species have been identified), such as *Equisetum* (horsetails), the main component of the coals, other species such as ferns, conifers, cycads , tree ferns and 15 types of *Ginkgo* have been observed. Plants readily colonized the area which resulted in many meandering channels. Such species may be seen in famous preservation sites such as Cloughton Wyke, Hayburn Wyke and at Whitby. It is suggested that the climate was humid sub-tropical and seasonal. The thin coals were deposited on these flood plains in shallow marshes (Powell, 2005).

There has been little done in the way of research regarding these seams, one small sample was analysed against the Tan Hill and Warren House seams by (Wandless & Slater, 1938).

Recent analysis as part of my work at the University of Hull was conducted using acid digestion, followed by elemental composition analysis and X-ray diffraction techniques and was undertaken on samples from two sites, Trough House and Reeking Gill. The results of Wandless and Slater's analysis indicated that this bright coal contained a large percentage of ash, around 15%, which was confirmed after discussions with the tenant farmer at Piethorn Farm above Helmsley, he also remarked that after attempting to burn some of the coal on his land 'there was more bloody ash than heat '.

Wandless and Slater's results also showed that the coal was surprisingly low in iron content, when burned it was non-coking and left a powdery pink residue. The coal also showed high levels of silica and very high alumina content compared to the Yorkshire coalfield measures. Water samples and ICP-MS analysis from locations at Clitherbeck, Rosedale Head, West Gill and Trough Gill confirm this and also showed levels of Aluminium many times higher than background or at other Ironstone mine releases.

Table 2 Acid digestion results (mg/kg) (Thomas, 2012)

	Al	Ca	Fe	K	Mg	Na	S 181.975	Si	Zn
Reeking Gill	193.90	323.34	132.46	93.15	70.01	356.34	244.52	35.12	4.32
Trough House	165.20	308.03	61.51	72.87	75.14	346.77	178.44	18.78	4.41

3. Collieries timeline and mine locations

Local Collieries were well in production pre 1700; the following contains all relevant information within the various literatures in date order. There are however several collieries where there appears no reference and many of which, where only a reference appears and little else.

Table 3 Timeline from collated documentation

Date	Colliery	Reference publication	Original reference
1648	Gilling East	PDMHS Vol17, No.6 (Gill, 2010)	NYCRO ZQG (F)
1715	Ankness	Ryedale Historian (Whitaker, 1969)	Feversham Docs.
1746	Castleton	Cleveland HistoryNo.7 (Owen, 1969)	Downe Archive
1749	Clitherbeck	As above	Danby Coals Mem 1768
1768	Rosedale Head, Lealholme	As above	As above
	Blakey, Little Blakey	As above	As above
	Hermit Waith, Sledshoe	As above	As above
1770	Lower Rudland	Cleveland History No.10 (Owen, 1970)	Feversham Docs.
1770's	Bumper Pits/Ladhill Gill		1850's O.S. Map
1776	Danby Head	Cleveland History No.7	Downe Archive
1780	Swinikal(Swinacle) Upper Rudland	PDMHS Vol 17, No.6	NYCRO ZEW IV
1781	Carr Cote Weather Cote (Wether Cote)	PDMHS Vol 17, No. 6	NYCRO ZEW IV
1782	Harland Drift	Ryedale Historian	Feversham Docs.
1791	Birdforth	PDMHS Vol17 No.6	NYRO ZDS IV Frame 1325
1790's	Newburgh Park	PDMHS Vol17 No.6	Glynn Wynn Lease
Circa 1800	Cloughton Wyke, Rigg Hall Goathland		Knox 1855 Downe Archive
Circa 1800	Armathwath Pit/ Baysdale Head	PDMHS Vol17, No.6	Sale Basedale Abbey
1806	High Moor	Cleveland History No.7	Downe Archive
Circa 1810	Nape How/Gnipe How May Beck	Hemingway and Owen,1974	William Smith 1813 Young and Bird 1822
1811	Fryup	Cleveland History No.7	Downe Archive
1813	Boroby/Borrowby	Hemingway and Owen,1974	William Smith 1813
1842	Snilesworth	PDMHS Vol 17, No.6	Mining Journal
1875	Glaisdale		Phillips, 1875
1885	Wintergill, Westerdale Hamer, Hazel Head/Collier Gill Piethorn, Oakley Walls		Strangways, 1885
1886	Swinestone Cliff		Strangways, 1886
1888	Commondale	Cleveland History No.7	George Barrow
1900	Rigg Road Rosedale	Ryedale Historian	Mr Charles Green
1914-1918	Rosedale	Cleveland History No.10	Manager Rosedale Ironstone mine Powell, 2005
Unknown	Boars Gill		
Unknown	Birk Wath, Hartoft End Julian Park, Boars Gill		

General area map

Of the estimated near 2000 shaft sites and adits, most are confined to the central areas of isolated moorland within the North York Moors National Parks boundary. Gaining access to some requires at times, a lengthy walk over difficult terrain; others are situated on Estate Land, where the owners and gamekeepers can appear unfriendly. A good hike though on a sunny day is rewarding, as most are off the tourist routes and in areas of outstanding scenery.

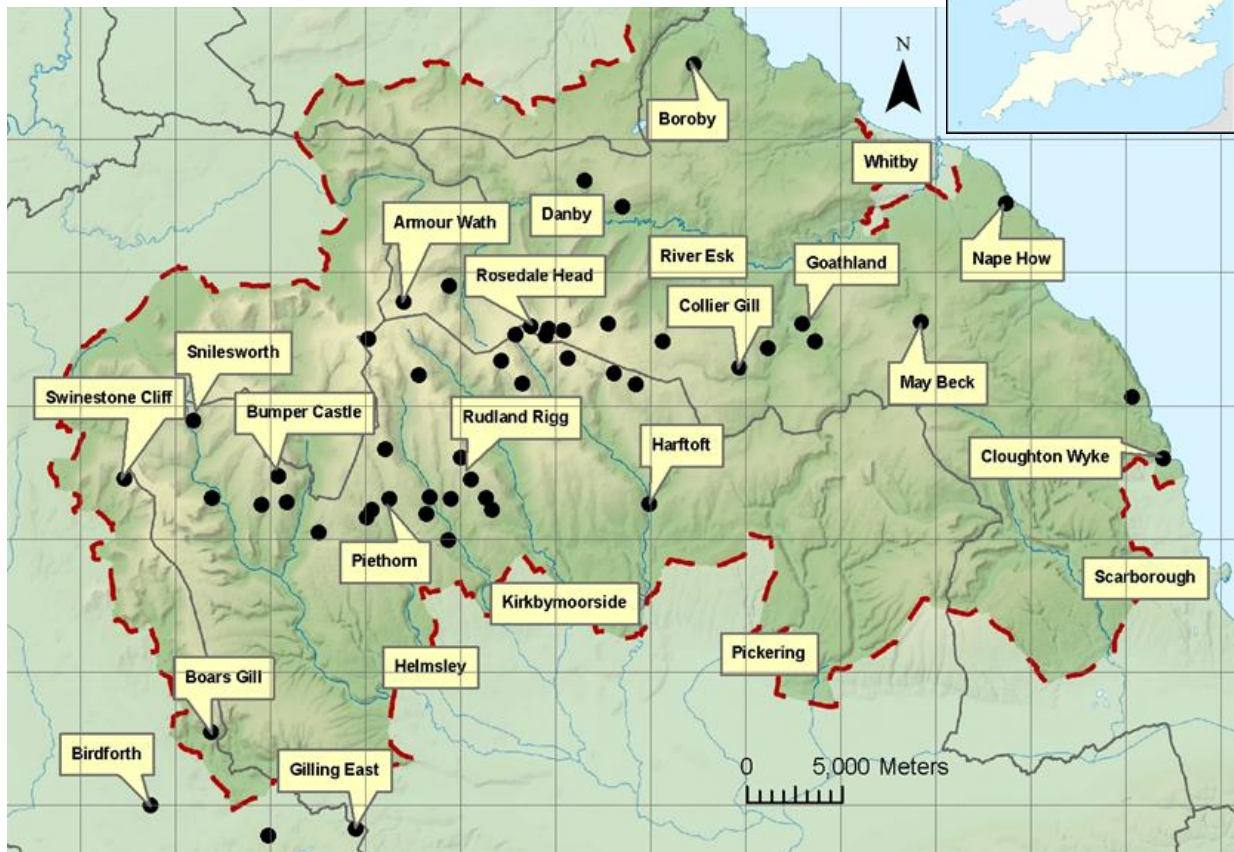
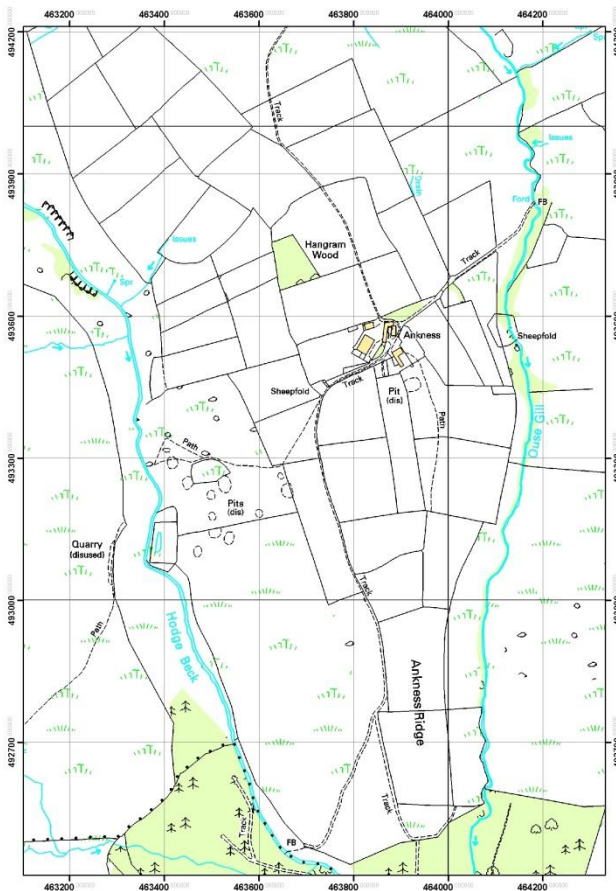


Fig 2 North York Moors National Park Colliery site locations

Gilling East (X 459505, Y 475755)

The earliest reference to coal mining appears in May 1648 with a mention of coal on the moors between Yearsley and Gilling. An agreement between Viscount Fairfax of Gilling Castle and Henry Hodgson, leases the area to Hodgson for one year "*his Lordship's colemines upon Gillinge or Yearsley moore*" (Gill, 2010). The rental was for £50 and was spilt into Quarterly payments and Hodgson agreed to give Viscount Fairfax "*five waine loads of coles*". Fairfax in return would give Hodgson timber to the value of eight pounds, no doubt for props and shaft packing. Today neither exact location nor presence of mining activity remains (NYCRO ZQG (F)).

Ankness (X463410, Y493188)



"The earliest records of coal mining in the moors dates from 1715 when Thomas Duncombe of Helmsley Castle agreed to Demise, Grant, Farm and Lett to a Fadmoor yeoman named Matthew Foord. The document states that "All those veines of coal now opened in a certaine plais called Ankness lying at the lower end of Bransdale.....with the liberty of sinkage three new shafts or pitts upon the said Moore to the said veines adjoyning and also full and free liberty for ways, passage, ingress, egress, progress for with men, open Corfs, Wains ,Carts and all manner of Carriages for Digging, Searching Soughing, Getting, Laying, Baring, Leasing, Draining for Carrying, Selling, Disposing and Conveying of the said Coals from time to time and at the free will and pleasure of the said Mathew Ford his Executors Administrators and Assigns at all times during the term hereafter granted ... from the five and twentieth day of December now instant for and during the full end and Term of three years.

Fig 3 Ankness (Edina, 2012)

Yielding and paying therefore yearly and every year during the said Term unto the said Thomas Duncomb his heirs and assigns the annual or yearly rent of one hundred pounds lawfull money of Great Britain at or upon the feast day of the Annunciation of the Blessed Virgin Mary St. John Baptist St. Michael the archangel and the Nativity of our blessed Saviour commonly called Christmas Day in every of the said years by equal portions and also yielding and paying to the said Thomas Duncomb his heirs and assigns yearly and every year during the continuance of this Demise 40 chaldrons of Coals at the Coal Mines head at such time and times in the year and in such quantities that the said Thomas Duncomb pleases" (Whitaker, 1969)(NYCRO ZEW IV 13/1 – 16/12/1715).

Therefore Foord was to pay Thomas Duncombe £100 pounds per year for the three year period and was entitled to collect his 100 tons of coal from the mine head whenever and in whatever quantity he required up to said 100 tons.

The document also makes it clear that the pits were already opened at Ankness and that the veins/seams had already been worked, we could therefore assume that mining had started before 1700 in the area. The previous workings at Ankness however, remain a mystery.

1780 James Gowlan and William Normington acquires Ankness Colliery from Christopher Slingsby Duncombe

1786 Ankness was rented by Luke and William Normington

1787 From, The Abstract to the Survey of the Collieries for 1787 also the Variable and Mean thickness of the seam of each Place separately, by D. Seaton.

"Measured 7th of Sepr 1787 – Coal wrought there 1920 Yards after the rate of £48 6s. 8d. per Acre (the drift. Thickness of the Seam being 17½, 17, 16½, 16, 15½, 15, 13, 12½, 12 and 10 inches. Mean thickness 14½ inches) Due to C. S. Duncombe Esq. by Luke and William Normington the sum of £19 3s. 6d." (Owen, 1970)

1791 Alterations to colliery rents Normingtons are paid 3s. 0d. or 2s. 11d. per Score Curves

1792, Ankness Colliery "Very bad roads to these pits are in other respects well managed. Normingtons say that Ellergate Bank (above Sleightholmdale) if it was well mended, they would make the remainder of the road themselves and could get as many coals as would serve half the Country." (NYCRO ZEW IV 13/1 –Memorandum-1792)

1793 "Normingtons are working northward for a new pit and when there is a fine Seam near 2 feet thick - raised this Coal 1/7 that is from £70 to £80 per Acre".



Fig 4 Ankness 2012 (Google Earth, 2012)

Castleton Coals, Clitherbeck and the Low Moor Collieries

(X471557, Y509835)

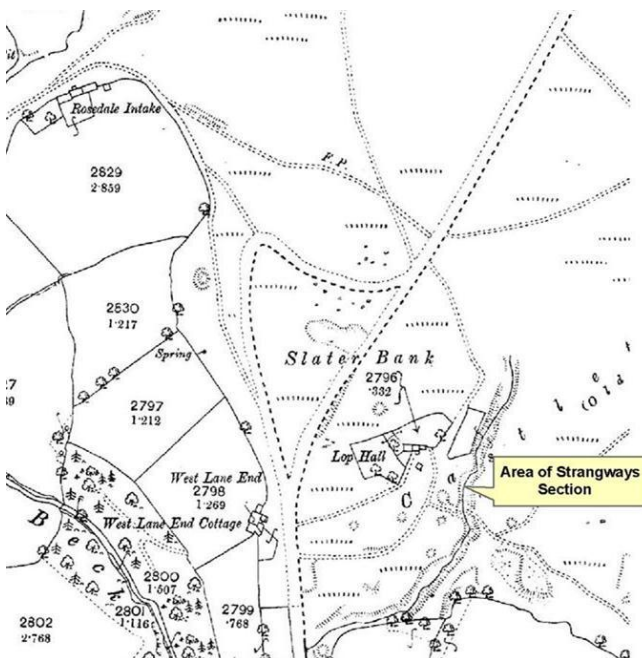


"These mines were situated around the upper reaches of Clither Beck, on the edge of Danby Low Moor, and centred on the farmhouse known as Doubting Castle. It was always the principal colliery in the parish and clearly the subject of the 1768 Danby Coals Memorandum". (Owen, 1969)

A reference appears from the 1850's to an attempted use of "Castleton Coals" to fire the pans at Loftus alum works during the slump of 1746-7.

The first coals in the area were probably extracted from Rosedale intake or Sowerby Bogs, close to the Lop Hall geological section described by Strangways, this area was most definitely worked given the heaps of shale, but no evidence is found within the literature as to a specific date.

Fig 5 Castleton Pits east and Doubting Castle (Edina, 2012)



The area around Danby was worked on a large scale and the area is littered with the remains of shaft sites and drifts. Workings are found to the east and west of Clither Beck, at Poverty Hill and down the Esk valley at Oakley Walls.

1797 Lease by Lord Downe to Michael Smith.
1784 Lord Downe buys Smith out for £1000 after the 'Battle of Clither Beck'
1784 -1812 New tenants Merry and Buckley
1812 Tenants Nicholson and Thornton
1815 Tenants Petch and Thornton
1827- 1844 Thornton becomes sole tenant

Fig 6 Estimated location of Strangways geological section

Little is known after these dates but the H.M.Mine Inspectors Report records a colliery at Poverty Hill in 1880 held by Brunton and Walker.

Rosedale Head (X 467936, Y 501734)

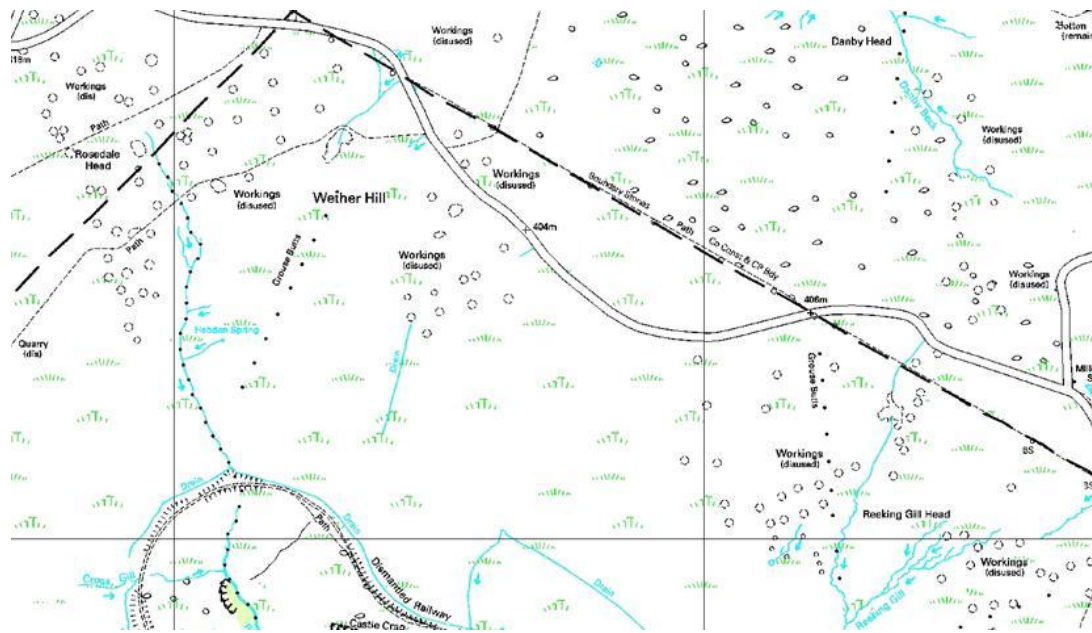


Fig 7 Rosedale Head and Reeking Gill (Edina, 2012)

Initial reference comes from the Danby Coals Memorandum 1768.

From the Downe Archive, Owen writes that *"We first learn of mining activity in this area of the parish in 1776, when George Sidebottom and Robert Watson, who had previously mined at Rosedale Head, were negotiating with Lord Downe for the right to sink a pit at Danby Head"*.

There remains a large collection of shaft sites in this area and the remnants of a drainage level. A further 50 shafts are located in an area known as Reeking Gill to the south east; it seems fair to assume that Sidebottom and Watson had been mining for a considerable time and with a sizeable workforce.



Fig 8 Rosedale Head (Google Earth, 2012)

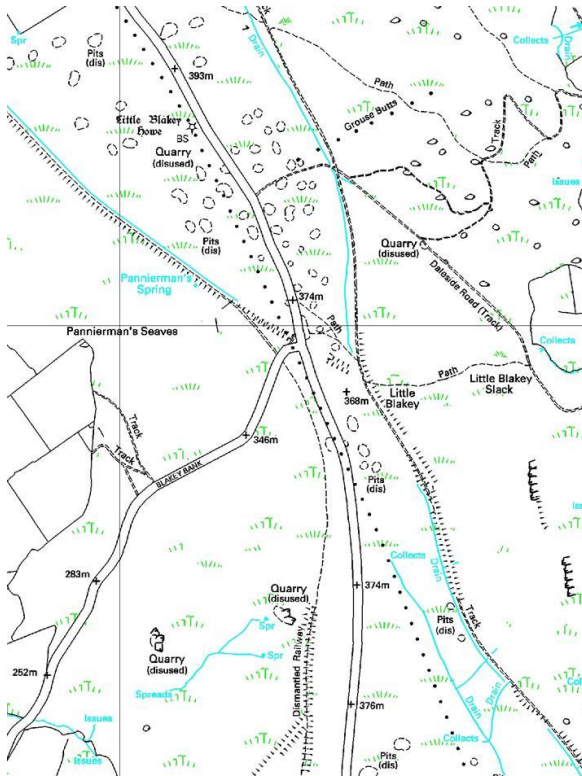
Lealholme

From the Danby Coals Memorandum L.D. 1768 a reference that says only that a colliery exists in this location, but nothing further, it is potentially the site of mining activity at Oakley Walls situated around 1.7km from Lealholme.

Hermit Waith (Unknown location)

One reference as above and the name Hermit Waith has more than likely changed.

Little Blakey (X 468275, Y 499186)



Again one reference in 1768 from the Coals Memorandum and nothing else, the site shows the remnants of many working and it may be that the site at Little Blakey was amalgamated with the larger North Blakey Colliery from this date onwards (NYCRO ZEW IV 13/1 – 14/11/1780).



Fig 9 Pits along Blakey Ridge (Thomas, 2012)

Fig 10 Little Blakey south of Lion Inn Blakey Ridge (Edina, 2012)

Sledshoe (X 468715, Y 497525)

1768 The Colliery again first appears in the Danby Coals Memorandum

1791D.Seatons Memorandum, "Situate about two miles South of Blakey, was a Colliery and some Coal is said to be left here. John Ryley is an old Collier and has Money; he offers to take, open and work it".

1792 "Sled Shoe Colliery - Lime Coals has been got here and Ryley expected was some left. Has got a few this Summer and being of soft mucky quality, Farmers don't wish to buy them unless such a Time as last Summer when no others are to be had."

1793 "These are good Lime Coals and lays well for Sale, but are a thin Seam and cost a deal getting, therefore have raised them 1/10 above the Customary mode, that instead of £23 6s. 8d; is £25 1s.0 Od. per Acre"

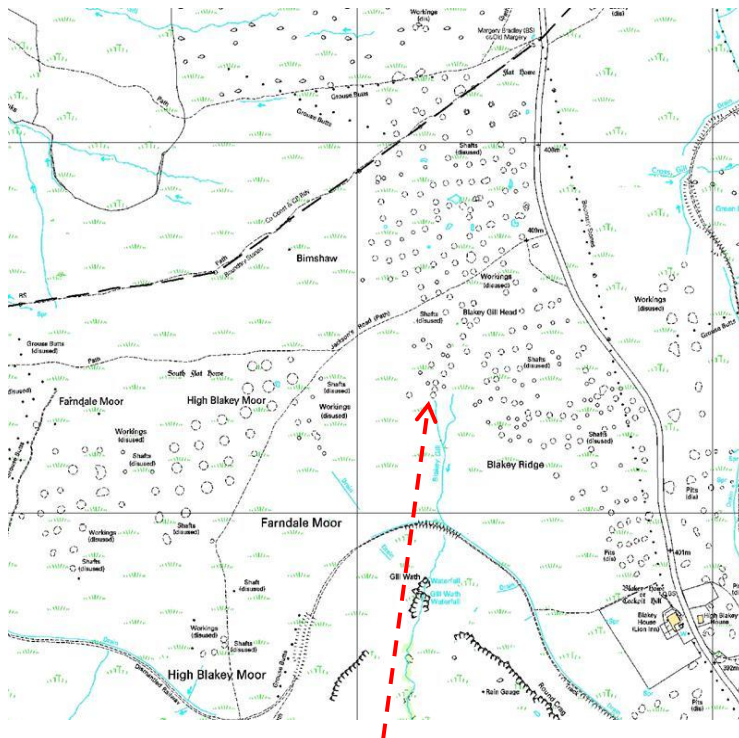
1795-96 The Colliery had closed "work being shut up" (NYCRO ZEW IV 13/1 -1796).

Blakey (X 467160, Y 500355) large site north and west of the Lion Inn

1768 Danby Coals Memorandum

1780 The farm of Great Blakey and Little Blakey collieries were let to John Featherstone

1787 Survey of Collieries "Measured 6th of Sepr 1787 - Coal wrought there 3462 Yards after the rate of £43 6s. 8d. Per Acre; (the diff't. thicknesses of the Seam Being 15½, 15, 14½, 14, 13, 12½, 10 and 7½ Inches -Mean thickness 13 Inches). Due to C. S. Duncombe Esq. by John Featherstone the sum of £30 19s. 11d."



1791 "The Seam here very near done, though a few Lime Coals may yet be got."

"I requested Featherstone to try for Coals on the soft Moor West of Blakey, where I have heard some of the Colliers say there was some left, but the Work was very bad on account of the Red Rock laying right upon the Coal and through which it rained down so that the Men were continually wet. Featherstone says will put down a pit and try to work it."

Someone had therefore been working the pits at Farndale head pre 1791 and Featherstone was going to attempt to re-mine in the area.



1793 "this but a soft bad Coal, having been left or not thought worth working in Foord's" (the Ford who had first worked the pits at Anckness in 1715, he may have come across the same inferior strata) he continues, "time, are bad Sale, but Featherstone takes them chiefly to his own Lime Kilns; but as they are got at a low price, have advanced them 1/5 which instead of £52 1s. 8d. makes them £62 1s. 9d. per Acre". (Owen, 1969)

Fig 11 Drainage level at Blakey (North) Colliery (Edina, 2012) (Google Earth, 2012)

Featherstone was using the coal to burn his own lime, other Colliers were possibly doing the same, to use on their own land or to sell on at a profit and potentially why the rent was increased.

There few references to Blakey after 1796, but by 1788 Featherstone, had been working a further Colliery at High Moor, more than likely Danby head from the records, and a certain Sarah Featherstone was still paying the rent in 1812. Featherstone himself worked with a new partner Mathew Ryley until 1801. He seems to have been quite the entrepreneur.

Lower Rudland and Upper Rudland (X 465407, Y 494621)

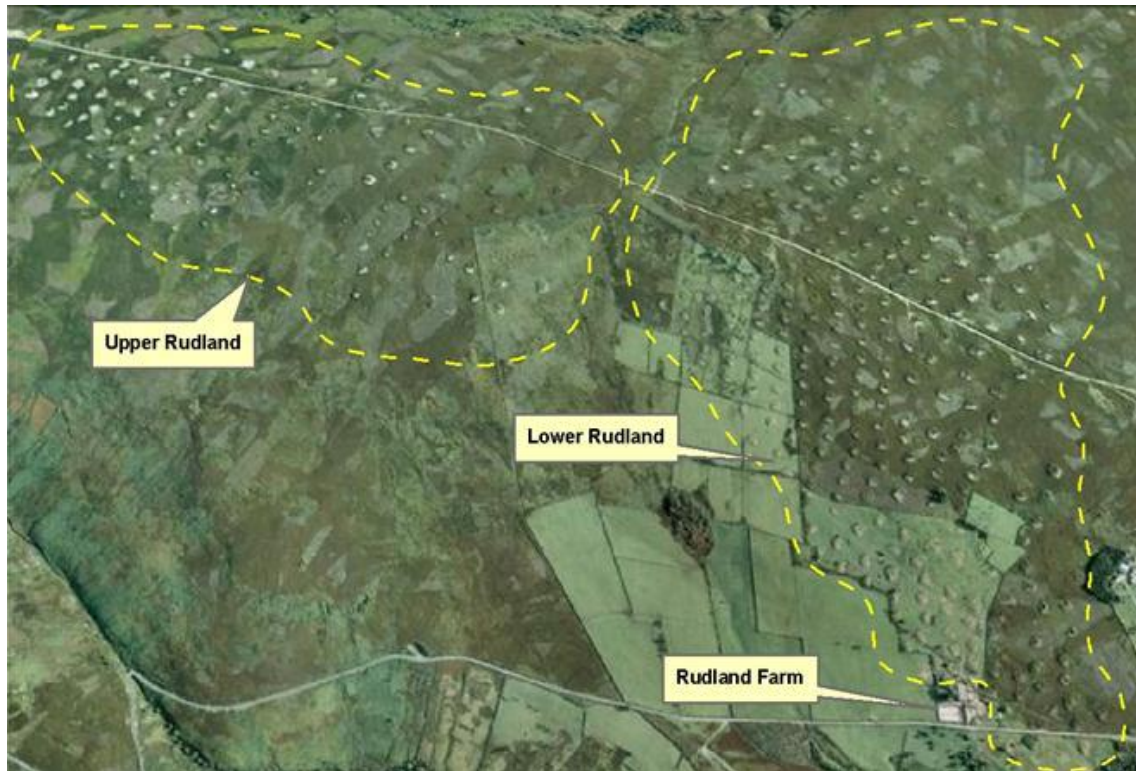


Fig 12 Upper and Lower Rudland Collieries (Google Earth, 2012)

Once again it is difficult to say exactly where mining started at Lower Rudland given the numerous shafts that were dug in the years following 1770. The Colliery remains the largest of its kind in the moors containing several hundred shafts.

"Memorandum that WILLIAM STURDY hath taken to farm of Thomas Duncombe Esq. a Coal Work at the lower end of the Moor called Rudland Colliery after the Rate of £100 in acre where the Seam of Coal admits of Thirty Inches in Thickness and in proportion more or less according to the thickness of the Seam or Bed of Coal and the said William Sturdy is to have liberty upon the same Rigg terminating at West Gill Head to pursue the Seam of Coal as far up the Moor as he thinks proper".

The memorandum ends,

"In Witness hereof the said William Sturdy hath hereunto set his Hand this First Day of August 1770."(NYCRO ZEW series)

Mr Duncombe was also to have unlimited supplies of coal at a minimal cost of 2s. 4d. a Chaldron, this figure is many times lower than the colliers were paying for their mining rights (4s.0d. per corve) and Duncombe was actually still receiving free coal.

West Gill head is situated around 3km to the north east of the lower colliery so it appears that Sturdy was given the rights to work the whole area of Rigg from the offset. The two Collieries were combined in 1780 (Gill, 2010).

The Survey of Collieries 1787 showed that at this time Rudland measured 6980 Yards but the reference is not specific to the Lower colliery and could well include some upper workings.

This measurement is well over three times that of Ankness and was at the time by far the largest in Bransdale. It was measured on the 5th September 1787 as follows:

“Coal wrought there 6980 Yards after the rate of £23 6s. 8d. per Acre (the diff’t thicknesses of Seam being 10, 9½, 9, 8, 7, 5½, 5 and 4 Inches. Mean thickness 7 inches) due to C.S. Duncombe Esq. by William Sturdy £33 13s. 0d.”

1790 More pits were opened up at Upper Rudland, the older pits being known as lower Rudland (Whitaker, 1969).

1791 Alterations to rents, *“Sturdy’s seam is very even, regular and productive”*. Modifications to rents were made from this date onwards based on actual seam thickness, steering away from the previous £40 per acre based on a 12 inch seam or £100 per acre for a thirty inch seam. However it was noted that considerations based on how difficult the coal was to mine and the coals quality also needed to be taken into account. Previous prices paid to Duncombe, per corve, show the discrepancies at Collieries.

Table 4 Corve payments

	Price per corve
Rush, Wethercote	5s. 6d.
Baldwin, Rudland	4s. 6d.
Sturdy, Rudland	4s. 0d. to 3s. 4d.
Normingtons, Ankness	3s.0d. to 2s. 11d.

1791 Sturdy objects to pay for road damage caused by regular traffic to and from his Colliery.

Also in the same year under Upper and Lower Rudland and indicating more road damage

“Are situate near the Turnpike Road and Teams lead away the Coals all the Winter Season, which is the means of a great expense to the Inhabitants of Farndale, Gillamoor and Fadmoor to keep their Roads leading to these Collieries in Repair. I think it is very reasonable that Sturdy and Baldwin should be rated and pay a composition to the Highways for those places in proportion to their Rents”.

1793 Rudland (Sturdy’s)

“the Seam here lays even and regular, and produces a deal more Coal than some others of the same thickness - lays so fair for Sale that the Coals are sure to go either summer or Winter - I advanced the Rent of those 1/6 above the customary Rule that is from £26 13s. 4d. to £31 2s. 2d. per Acre. Pit

No.10. is not wholly wrought owing to its having a hard top for which Sturdy craved an allowance – this I objected for the same reason as Baldwin's. This did not satisfy Sturdy, said he believed Mr Duncombe did not want to be paid for Ground not wrought.

This I believed too, but when they encompass the ground with their pits and there is Coal, they ought to be made pay for the Ground and then they may get it or not at their option otherwise they would run over and waste half of it as they have formerly done at Blakey."

Had Sturdy or the Baldwin's previously been working the pits at Blakey? It appears Baldwin now worked the Upper Colliery, after renting Swinacle.

1793 Upper Rudland

"This Seam has hitherto laid very unregular; are pretty good Coal and well situated for Sale, have raised those 1/7 that is from £26 13s. 4d. to £30 9s. 5d. per Acre. There are several of the Boards in the two pits measured and which are not wrought, Baldwin wanted them deducted as they were bad to work and the Men would not get them without an extra price and as such had put down another pit. This is nothing to Mr Duncombe, no deduction ought to be made unless the Coal go quite out; to have an Allowance is to leave so much of the Ground between pit and pit unmeasured and to do which their saying the Coals are bad to get is not a sufficient Reason - supposing the Ground left unmeasured they would or might go afterwards and get these coal and pay nothing for them, and paying no Rent they could afford to pay more for getting".

1793 A further Colliery appears at Rudland leased to John Bulmer.

"A Drain made and a few Coals got here, this below Sturdy's at Rudland and will loose several hundred Acres of Coal. These when got to the Moor has to be the best Coal got in the Lordship as they lay a deal deeper than Rudland (Sturdy's) there is no fear of Coals being wanted in Mr. Duncombe's Estate."

1799 Further road damage and watercourse damage, Sturdy's son gives road contractors abusive language.

From 1799 onwards the only references to the area come from the Kirkby Moorside Court Leet when in 1821 James Lund of Harland was fined for leaving two pits open. Further offences of leaving open pits were reported in 1823, a Thomas Abbey and again in 1829 along with George Moon, William Moon, Joseph Jackson and Henry Baldwin. Further fines were given to the same Henry Baldwin in 1854 and 1856 for leaving coal pits in a dangerous state, it is presumed that this was son of the original Henry Baldwin of Upper Rudland. It would seem fit to assume that the coal was still being worked in some form or another but not on the previous scales.

Coal was finally worked on a part-time basis at Rudland between the early 1900's and 1914, by two brothers Charles and Jack Green, their pits were located at (X 465690, Y 494678).

The brothers sold coal to burn lime at Mell Bank Quarry and their sister sold surplus supplies to locals in Gillamoor and Fadmoor, after 1914 the lime kiln closed down and no further coal was mined in the area (Hayes, 1960's).

Danby Head 1 (X 469500, Y 501689) 2 (X 468734, Y502167)

Toms Day Pit (X 469640, Y 502037)



Fig 13 Danby Head Collieries (Google Earth, 2012)

The first references to these Collieries appear in 1776 (see previous Rosedale Head)

1788 John Featherstone lease

1812 Sarah Featherstone lease

The 1841 Census Returns documentation mentions 11 miners at Danby Head, however it is difficult to ascertain at which location. One would assume though, that at least one of the collieries here was still operational. Tom's Day Pit, no references have been found indicating who Tom was, but he may have been the Thomas Abbey who rented 'High Moor Colliery' in 1811.

Swinacle/Swinikal (X 464503, Y 493124)

1780 Rented by Henry Baldwin and James Craven "*£100 per acre of coals wrought at 30 inches*"

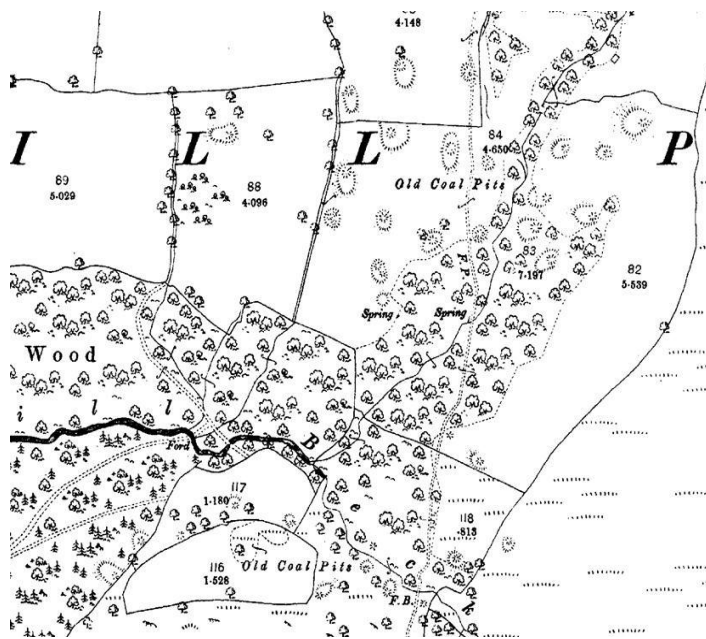
"Measured 5th of Sepr 1787 - Coal wrought there 4302 Yards after the rate of £15 per Acre (the diff't thicknesses of the Seam being 6, 5½, 5, 4½, 4, 3½ and 3 inches – Mean thickness 4½ Inches) due to C.S.Duncombe Esq. by Henry Baldwin the sum of £13 6s. 7¼d".

A slim seam to say the least, demand and prices at the time must have been high. Craven appears to have left the partnership in 1787

1788 Thickness unknown, "*Yards 3028 after the rate of £16 6s. 7d. due by Henry Baldwin £13 4s. 3d*".

Baldwin gives up the Colliery in 1788 but continues mining at Rudland and also at Blakey. James Craven is listed as a coal miner in the Lasingham parish registers between 1782 and 1811.

Carr Cote (X 457561, Y 491330)



Isaac Holmes leases the Colliery in 1781

"Rent due £40 per acre wrought when the seam is 12 inches thick".

Output from 1786 to 1790 indicates that the mine was producing little.

1786 *"Mean thickness 5½ inches rent £2 5s. 3d."*

1788 *"Rent £0 7s. 9d."*

1789 *"Yards 240 rent rate per acre £ 18 3s. 3d. rent due £0 9s. 1d."*

Fig 15 Carr Cote, historic map 1892 (Edina, 2012)

1790 *"Mean thickness 5½ inches, Yards 296 rate per acre £ 18 3s. 3d. rent due £1 1s. 2d."*

Holmes died in 1789 and his wife took over the Colliery.

In 1791 we read that the *"Widow Holmes has given up"*. It would seem that Ms Holmes had worked the colliery for some time previously with her dear departed Husband. There are around 33 shaft sites at the location.

Weather Cote (X 455885, Y 492920)



Fig 16 Wether Cote/Weather Cote Colliery (Google Earth, 2012)

1781 The Colliery was initially leased to Benjamin Barroclough and John Rush who was a coal miner from Bransdale.

Rent again was the arbitrary amount of £40 per acre where the seam was 12 inches. (PDMHS, 2010)

“Measured 31st of August 1787 - Coal wrought there 1552 Yards after the rate of £20 per Acre, (the diff. thicknesses of the Seam being 8, 7, 6, 5 and 4 Inches - Mean thickness 6 Inches) due to C. S. Duncombe Esq. by John Rush the sum of £6 8s. 3d. Also coal wrought by B. Barroclough, measured £3 13s. 2d. 25th of March 1787 - due by John Rush the sum £10 1s. 5½d.”

1787 The Colliery was taken over by William Peacock and William Dunning, followed by John Rush. It appears that Peacock and Dunning gave up soon after taking on the lease.

When taking over the lease from Barroclough, a valuation of the colliery was made payable by Rush.

Table 5 Valuation of Wether Cote Colliery

	£	s.	d.
Low Pit sinking 9 yards (one third wrought)	1	4	0
High Pit (but not workable)	2	4	0
One pair of bellows	1	1	0
Two ropes		10	0
5 corves at 5. 6d.	1	7	6
3 corves worn		7	6
One Bushel		6	0
2 pair of Clotches		4	0
2 pair of turngear and 4 landing boards		8	0
Water level	3	0	0
5 shovels at 2s. 6d.		12	6
10 picks at 1s. 6d.		15	0
4 hammers at 1s. 4d.		5	4
One anvil and 4 chains 1s. 8d.		3	8
	12	8	6
NB The price settled for the water level I think too little and therefore settle with Barroclough two pounds more	2	0	0
Balance due to Barroclough for building the house	5	5	11¼
Due to Barroclough by J. Rush	19	14	5¼

1793 *“this a tolerable Lime Coal and cannot be done without or else it makes ugly work in their Intakes - Rush says there is a Seam 8 inches on the Moor near where Peter Wilkes and Roger Ware lives and which would be equally as convenient for Bilsdale, Rievaulx, Carlton and even Helmsley; raised this 1/10”.*

It seems likely that Wether Cote was worked as a single Colliery in one phase between 1782 and 1795 (Gill, 2010).

Harland (X 466373, Y 493144) Drift at (X 466663, Y 492535)

A Feversham Memorandum of 1782 states that Anthony Stonehouse and Thomas Ward agree to lease *"a colliery call'd Harland which is said Thomas Ward hath drifted in and is now fit for working"*. The Colliery had already therefore been worked pre 1782 and a requirement of the lease was to *"keep the drain in sufficient repair"*.

The Memorandum continues with the proviso that 'Stonehouse and Ward are to have *"Birk, i.e. Birch and Eller, Alder, wood for props according to the agreement of the other Collieries belonging to Charles Slingsby Duncombe"*' (Whitaker, 1969).

No doubt all the pits were using props but that this is a specific reference to a drifted mine, though there were many others. Ward gave up the Colliery in 1786 and new tenants Thomas Hill and Michael Lund took over the lease in 1800. From a Seaton report in 1800 it appears things were not going well.

"something wrought here, but scarce worth measuring thought they ought to pay some small account rent therefore say Thomas Hill and Michael Lund"

1786 *"Thickness 6 inches, rent £ 2 6s. 9d."*

1800 *"Rent £3 0s. 0d."*

1801 *"Thickness 5½, 4480 Yrds £24 0s.0d. Per Acre Rent £ 22 4s. 8d."*



Fig 17 Collapsed adit at Harland (Thomas, 2012)



Fig 18 Harland Colliery

Records of the Colliery disappear in 1801, the drift at Harland, although long collapsed still exists today.

Birdforth (X 448685, Y 477005)

According to Strangways (1886), the coal at Birdforth was only found locally over an area of around a quarter of a mile. *"The colliery began to sink pits in the summer of 1791....an old pit was found by Mr Horner 12 yards deep the Coal seam in it 14 inches... a pitt called Barugh far pitt was sunk by Mr Horner 29 yards deep"* (Gill, 2010).

Due to the amount of water and cost of pumping using an engine, Horner had given up at the site by 1796 and it was taken over by the landowner Lord Downe.



Between February and April 1798 various attempts were made in the area to dig new shafts, in the hope that following the rising strata may lead to a more productive mine. The colliery was finally closed by Lord Downe as a result of pit collapses and overall expense. Further detailed reading can be found in *The Moor Coal of North Yorkshire: The Thirsk Area* (Owen, 1970) and *The North Yorkshire Moors Coalfields* (Gill, 2010).

Fig 19 Site of Birdforth Colliery 2003 (Twigg, 2003)

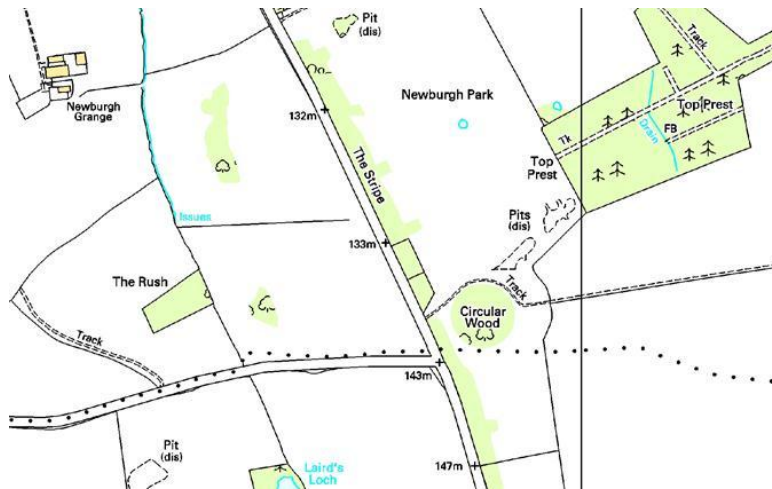
Notes regarding Birdforth Colliery. 8th Nov. 1990 (John Butler, Cleveland Mining Heritage Society)

On the morning of the above date Dr S.R. Eyre and I went to view this site along with Mr Philip Ogden, who once owned the land on which some of the mines were located. Mr Ogden showed us an iron coal-pick, and a clay tobacco pipe-bowl, which he had found on the site some years ago. We then walked along the raised stone track, which lead to the supposed site of the pump-house.

Mr Ogden pointed out a post in the hedge-back, which he said was the point where a hedge once ran into the field, when he removed the hedge some years ago, he found the outline of a small building, (foundations) on a level part, at the end of the track, under the hedge, at a corner of these "foundations" was a flat stone, under which he found clay pipe stems, and a clay tobacco pipe bowl. Further along the hedge he found the coal-pick.

Mr Ogden next showed us where he thought the main coal-workings were sited, he said, in that location the land was black and heavy, whilst the rest of the field was light and rather sandy. We were told of a mine-shaft location, in a hedge-back, which could still be identified when Mr. Ogden moved to the farm in 1938 or 39. We discussed a set of buildings, which were approximately half way up the hill on the road-side, which Mr Ogden thought had been stables connected with the mine-workings, however, Dr. Eyre suggested they could be much later, in fact dating from the 1870s, as they were not shown on the OS. These buildings, at the time of our discussion had been demolished for some time. I looked into them prior to their demolition, they were long and low, and could indeed have been stables. I do not remember the type of brick with which they were built, however, I feel sure they were hand-made, and maybe even 2", perhaps a re-use of second-hand material? Mr Ogden had the clay pipe bowl dated, he was told it was late C18. Perhaps the small building, under the floor of which it was found had been some kind of workman's hut? John Butler

Newburgh Park (X 454887, Y 475413)



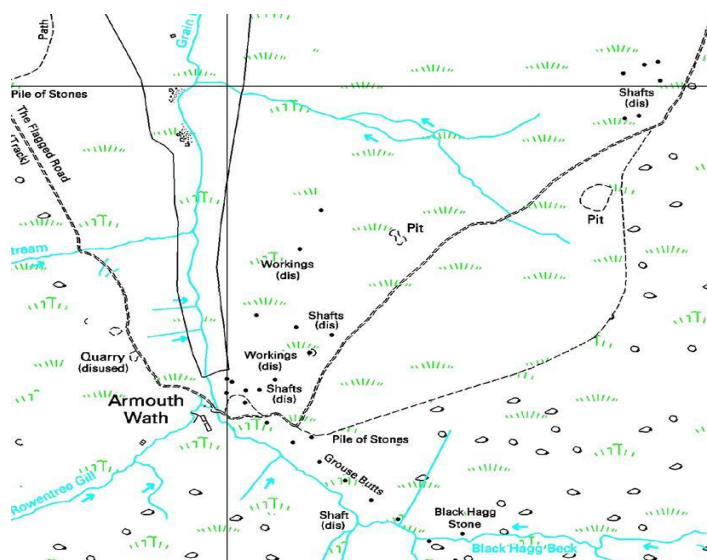
There are 6 shafts known at the site and the worked seam here varied in thickness from around 10 to 14 inches, the colliery was operational from the late 1700's. It appears, as many to have been worked sporadically and was finally leased for a year to Glynn Wynn of Lincolns Inn Fields in October 1804. (Gill, 2010)

Fig 20 Birdforth Colliery (Edina, 2012)

Table 6 Section of the 'Engine Pit' (Strangways, 1892)

	Ft.	Ins.
Soil	6	0
Blue metal	4	6
Soft blue metal	30	0
Soft grey metal with catheads	1	0
Course strong grey post	7	0
Coal	1	4
	49	10

Armouth Wath/Baysdale Head (X 462053, Y 503476)



From the York Courant (Gill, 2010).

1803 "BASEDALE ABBEY. To be sold by auction...upwards of 3000 acres and...a COALMINE supposed very considerable, at a small distance from the navigable River Tees, near its influx to the Ocean."

Winch, 1821 states that "a pit further onto the moor and alongside Black Hagg Beck was 106½ feet deep with a 47 foot borehole from the bottom."

Fig 21 Armouth Wath/Baysdale Head Colliery

C-Fox Strangways suggested in 1885 that the pit boring did not find any coal. Hemingway and Hayes added that *“A certain reticence by the promoters of the project in the divulgence of information expensively obtained is however possible.”*

Strangways reproduced Winch’s section and indicates that coal was not found in the boring.

Table 7 Fox-Strangways (1885), reproduction of Winch’s original section

	No. 2 Sinking	Ft.	Ins.
Walling from surface		10	6
Freestone, post and metals – here summarized		75	0
Here coal was expected			
White freestone		21	0
Boring from bottom of the pit			
White freestone mixed with blue whin		12	0
Rag stone		20	0
Alum Shale		15	0

Hemingway and Hayes believed that the site was indeed that of a *“substantial and well organised venture”* given the remnants of buildings at site and the proximity to the Ingleby Coal Road and the Flagged Road which are pannier-men’s tracks. They stated that it *“could have no other purpose but coal transport from Baysdale Head.”*



Gill however suggests that given the lack of coal found in borings and small number of pits, *“it suggests to the contrary”* and was probably a short lived venture lasting no more than ten years. It does seem fair to assume that the time and efforts involved at such an isolated spot were probably not done out of sheer guile. Further research of the site is therefore needed in order to clarify any theories.

Fig 22 Collapsed buildings at Armouth Wath (Twigg, 2008)

The exact date of the earliest workings is unknown, although the colliery was obviously operational in some form pre 1803. A further reference to Armour Wath (Commondale) or Armathwath Pit comes from an original manuscript by Mr James Bell Walker (J Hartley, Clitherbecks Colliers).



James Buckley had been a miner at Armathwath Pit before going on to mine at Danby. George Barrow, geologist, writing in 1888 states that there is a seam in Comondale *“usually 15 inches thick, 4 inches of shale occurring about the middle of it.”*

Fig 23 Main site (Google Earth, 2012)



The shafts are broken into two distinct areas one containing around 15 to the northeast and a group of around 18 situated at the central Armouth Wath site. The remains of an adit or dried out sough still remain today and it also likely that drifts were cut into the valley sides.

Fig 24 Remains of adit or possible dried out sough (Twigg, 2008)

May Beck (X 489260, Y 502427)

Around the year 1810 a six inch seam was being worked somewhere near May Beck (Young and Bird, 1822) James Wilson the landowner had driven a borehole to 222 feet he had noted a seam at 74 feet of four inches and a further five inch seam at 127 feet

1855. See Cloughton Wyke (Knox, 1855)

1875 The Geology of Yorkshire (Philips, 1875).

Phillips comments that the seam below the Grey Limestone (Scarborough Formation) has been found *“worth the expense of working”, “The upper seam is the most regular, it has been worked at Cloughton Wyke, Maybecks, Goadland, Glaizedale, Danby, Shunnor Hoe, Blakehoe, Rudland, Coxwold, Newborough Park, Colton &c. That this and the lower seam may be opened in new places is highly probable; and such attempts may be productive of some local advantage; but they should be guided by geological induction and not abandoned to ignorance and empiricism”*

There is no other information regarding the location, the area is now covered in Forestry plantation for the most part, however the locality may be worth further investigation.

Nape How/ Gnipe Howe (X 493720, Y 508665)

One of the most detailed descriptions of a coal level come from the renowned geologist William Smith.

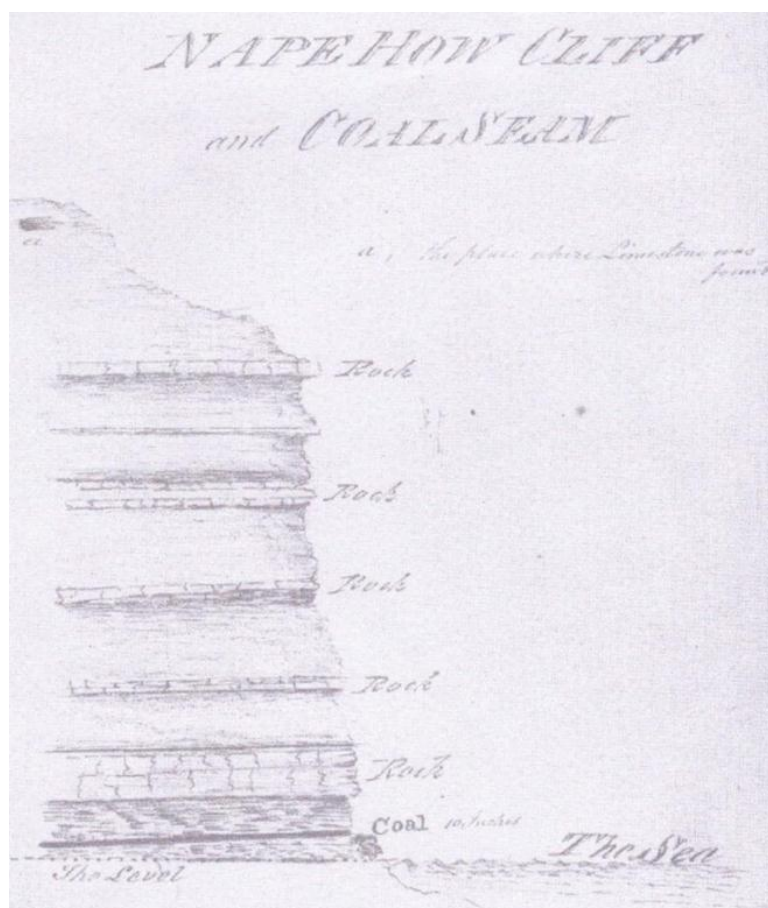
Saturday 18th December 1813 From William Smiths original account (Hemingway and Owen, 1975)

“The Coal at Nape How which has been partially worked for some years for the purpose of burning lime is but very thin, nor does it appear from my view of the situation or for the information of the Person who works it, very likely to be productive of any considerable rental. Under the circumstances, of the most awkward approach to the mouth of the level, at the foot of a most dangerous cliff, and passable only at Ebb Tide, I should think the Expenses must be nearly equal the profits. This little Colliery is however capable of Improvement if the Coal should prove thicker on driving the level further into the Hill. The level was begun a few years since by a neighbouring Farmer who has annually produced his coal here for burning Lime. The works are carried on in the summer only on account of the dangerous path by which the Coals are brought up the Cliff upon Asses and also from the roughness of the Tides in the Winter which cover part of the Track and which sometimes flow to the mouth of the Level.



Fig 25 Nape How/Gnipe Howe, Hawsker (Google Earth, 2012)

As the outburst of the Coal is not many feet above the Water the Level was begun as low as possible to meet the Vein of Coal, as it dips into the Hill. The Level is now driven about 60 yards in from the face of the Cliff. It was at the beginning about 5 Yards under the Coal and is at the extremity about 3 Yards beneath it, and hence it is ascertained that the Coal dips about 1 foot in 10 Yards.



Nothing but the facility of discharging at the mouth of the Level, the rubbish which the excavation made for the Coal cannot contain, could ever make such a thin Seam of Coal as this pay for working. The Headways or Branches at right angles to the Level, for getting the Coal, have been driven to the extent of 50 or 60 Yards each way and the Coal (I am informed) in both ways becomes thinner. It seems therefore that a further extension of the Level till it meets the Coal and then driving it further in the Coal is all that can be done until the coal is proved to be thicker.

Fig 26 William Smith's Plate and explanation from Nape How/Gnipe Howe (Hemingway and Owen, 1975)

"Should the seam prove better further into the Hill, as there is some reason to expect, then a Pit might be sunk to it and the Coal easily raised to the Surface by a Water Engine of the most simple construction, and which is well calculated for this situation. About 30 feet higher than the top of the Cliff and in the Field over this Coal I discovered some beds of Stone which will burn to a brown Lime."

The adit is just visible and it is unclear when workings in the area finished, but the pack horse route down the cliffs, over an ancient landslip is still there and is locally known as 'Jackass Trod'.

Boroby/Borrowby (X 477285, Y 515966)

References regarding the coal here again come from William Smith's report, after a topographic survey in Larpool, Smith spent Wed the 22nd Dec 1813 in Whitby before travelling by the sands to Lord Mulgrave's Alum works and on to Boroby (Borrowby). Smith's correlation with that at Clither Beck was unfortunately incorrect and the Horizon is of that seen at Nape How/Gnipe Howe, seventy five metres below the Danby seam (Hemingway and Owen, 1974).

" The success of these works (those at Danby)has encouraged others to make several Experiments for Coal in the Vicinity, and these Experiments having in some degree led to a knowledge of what may be expected in the Estates adjoining I have annexed a section of the Strata perforated in one of the deepest of these borings.

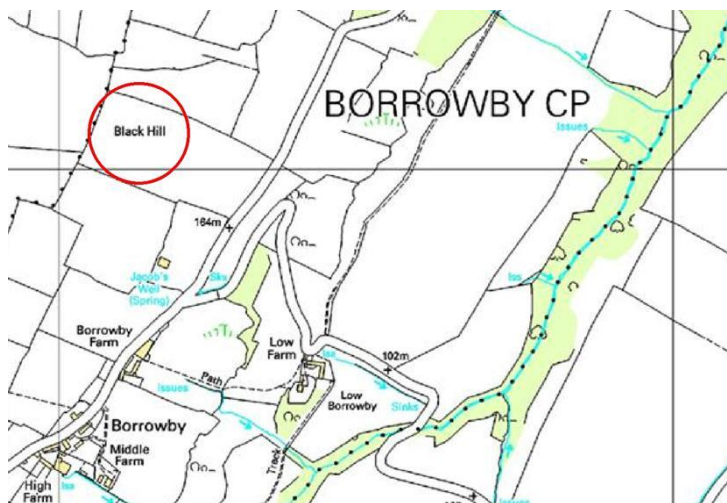
This Experiment was made by Mr. Stevenson Thomas in a low part of a Moor about one Mile East of the Danby Works and North of a vast Tract of Moors which belongs to Mr. Peters. By comparing the account of Strata here penetrated with those which are exhibited in the Cliffs where the Coal is found by the Seaside the borings appear to be very accurately registered and on the account I think a correct Section of the Strata lying under those Moors is intitled to a place among the records of the Peter's Estate, for it too frequently happens that succeeding owners are led to repetition of Expense arising from imperfect accounts of what had previously been done or from false reports of the Colliers having been bribed etc."

He continues that he suspects there will be a great deal of water in the strata and that the expense of pumping, using a steam engine would not be worth the cost. He further suggests that a water level draining the coal may make a colliery profitable. He recommends that Mr. Peters and Lord Mulgrave work together on the venture, as Lord Mulgrave would profit little due to the nature of the strata and his Estate boundaries.

"As the Strata are the same on one side of this Hill as on the other, and a similar Vale extends up to the Moors on the Peter's Estate and a similar Outburst of Coal is found in that Valley, there is good reason to expect that a similar Colliery may be sometime established which will be equally profitable, and even during its slow progress to perfection it may be very useful to the Tenants, and consequently will contribute largely to the Improvement of the Estate. If Coal be worked by a level from the outburst of the seam beneath a Rock in a small wood between upper and lower Borrowby."

Smith continues to explain if the outcrop is surveyed the Pit depth can be ascertained and an accurate valuation of the Collieries' value worked out.

"When the Outbursts are found the depth of the Pit required on high Ground might be accurately ascertained by the spirit Level and if a Water Level were previously driven into the Hill to ascertain the dip and course of the Stratum of Coal the Expense of the Level and Pit might be pretty well estimated. Each Acre of the high Land (if the Coal proves as thick as at Danby) will produce 2000 Tons of Coal which sells at the Pit at 8 shill: per Ton. I expect every Acre of Moors at high Land adjoining contains the same Coal as at Danby."



There are no further references to Borrowby, and no colliery appears on the site, however it is possible trials may have occurred at "Black Hill" and this is a likely location for the outcrop.

Fig 27 Black Hill, Borrowby (Edina, 2012)

High Moor Colliery (Unknown) Trough House (X 470456, Y 501964) and West Gill (X 470676, Y 500500)

After Sarah Featherstone being at 'High Moor' in 1812 a second Colliery seems to have appeared in the vicinity. (See also Hamer 2)

From the Downe Archive a Colliery known as 'High Moor' is listed in 1806 and was let to a William Shepherd and Co. at a rate of £20 per annum, in 1811 the Colliery was let to Thomas Abbey at a rate of 50 guineas. His rent was abated in 1830 to £46 after he complained that road up keep was prohibiting his works and that his workforce had begun emigrating to the Americas. Abbey continued to lease the colliery at this figure until at least 1844.

From the records the colliery was employing as many miners as at Clitherbeck, around 40 men in 1851 and coal was still being mined at Fryup in 1862. It is difficult to ascertain the exact location of High Moor or Fryup with accuracy, both Thomas Abbey's and Sarah Featherstone's works were generalised as 'Fryup Colliery' in the 1811 archive. There are several works in the area some at Trough House and others at West Gill Head.

The works at Trough House are considerable and Abbey was sinking a new pit in this area in 1820. The only other reference to this location came from a Mr J. Wetherill who recalled that his father was employed to drive a gin pony at the Trough House Pits in 1841 at the age of 9 (Owen, 1969).

The tailings heaps at Trough House still contain large coal fragments and the mounds themselves are of a considerable size to those seen at other Collieries; shafts at this location were therefore potentially deeper than those elsewhere and hence the need for a gin.

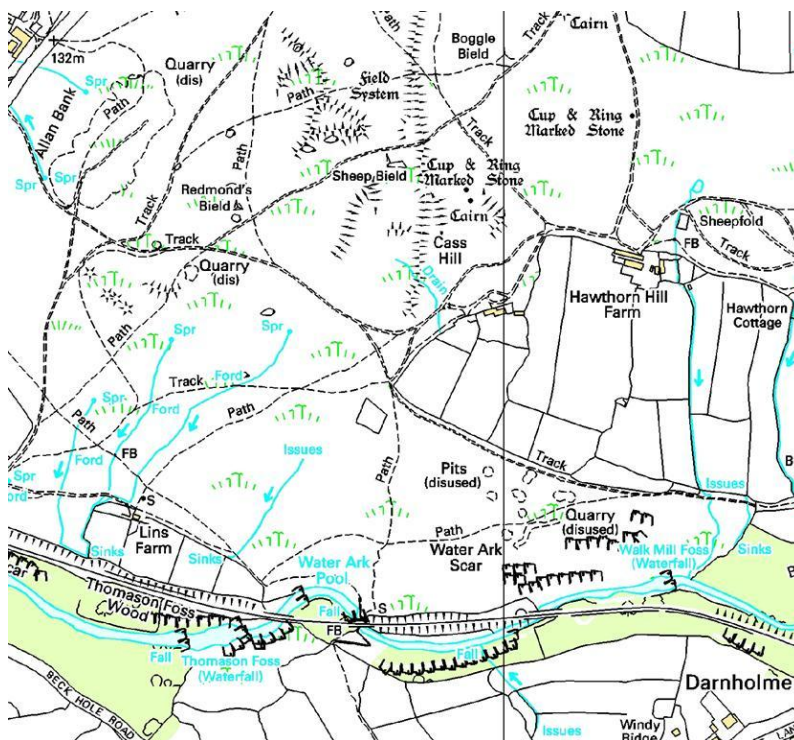


Fig 28 Trough House (Google Earth, 2012)

Goathland (X 483016, Y 502336) Goathland Mill (X 483662, Y 501378)

Dates for the earliest workings are again unclear, but a mention of John Thornton is made in 1815 when he was joint lease holder at Clitherbeck colliery, it states that he had previously been a miner at Goathland before moving to Danby, the Colliery probably existed around 1800.

Joseph Berwick recorded that *"There was a coal mine working below Goathland Mill and is thicker than anywhere else being 18 – 20 inches, much of which is inferior. Originally it was worked to supply domestic purposes and also for burning lime, but the railways brought in better and cheaper coal"* (Wainwright, 2005).



The adit was explored in 1928 and was around three feet six inches high. It was supposedly sealed off by the local hunt to keep foxes out in the 1940's.

A further mention appears around 1846 which indicates that it had been worked for some years (Ord's History of Cleveland). The final reference to Goathland comes from C- Fox Strangways in 1885 and gives a location in Eller Beck at Walk Mill Force where pits have been sunk; other characteristic workings appear near Allen Tofts where a two feet seam was worked.

Fig 29 Goathland and Allan Tofts (Edina, 2012)

Snilesworth (X 450986, Y 497226)

In 1842 a mining Journal submitted the following notice:

"VALUABLE DISCOVERY OF COAL IN YORKSHIRE. A seam of very fine coal has recently been discovered in Smilesworth Vale about five miles east of Osmotherley, in Yorkshire, much superior to any coal obtained from previous workings in that part of the country, but the place being almost inaccessible by roads, the inhabitants of that sequestered vale will be the only people at present who will be benefited by the discovery".

In the general area and again from Strangways (1886 Northallerton and Thirsk), *"several old coal pits along Stonymoor Sike, the northern branch of the Rye near Coal Ridge; an adit has been made to the coal here and fragments of it are seen in the road going to Skelbeast Crag."*

Wintergill (X 475662, Y 501398)

The initial reference comes via Phillips 1875 he indicates a Colliery at Glaizedale; however it seems more likely that this is the same site Strangways calls Wintergill. There are several shafts marked on the 1850's historic map, situated close to a series of enclosures.

Westerdale (Possibly X 464433, Y 504290)

Only known reference comes from Strangways 1885. There are numerous shafts to the northerly edge of the Blakey Colliery that border Westerdale Moor; it is possible that this was the location and not that of a separate Colliery. The only outliers are a group of 6 or so pits upon Stockdale Moor which resides with in the Westerdale boundary.

Hamer 1(X 474264, Y 499135) Hamer 2 (X 473086, Y 499692)



Fig 30 Hamer 1 Colliery (Google Earth, Street View, 2012)

Hamer 1 consists of around 40 large shaft sites, only a brief reference is found in Fox-Strangways, but the Colliery appears of a significant size, equally that of Trough House, Rosedale Head and others. The site is still well preserved and one of the most easily accessible by road.

Hamer 2 to the west is located in an area also known as 'High Moor' and 'Glaisdale Moor' and contains around the same number of shafts, though many are not marked on the base maps. It is more than possible that these two locations were actually those called Glaizedale by Phillips 1875 and possibly the 'High Moor' collieries of either Sarah Featherstone or Thomas Abbey.

One other document points to this area as being one of the 'High Moor's' a letter from Thomas Abbey dated 1820 indicates that "*The place in question sloping so much to the south and so near North Dale head*". Geographically this is indeed the location. They may have been two separate Collieries both called 'High Moor' and in close proximity. The same are marked as Lampton Pits on first edition Ordnance Survey.

Hazel Head/Collier Gill (X 479715, Y 499996)

A single reference appears in Strangways (1885), to a colliery at Hazel Head, the site would appear to be that of Collier Gill to the north west of this location where there are a series of around 10 shafts. Coal was also worked to the east at Julian Park although no reference appears.

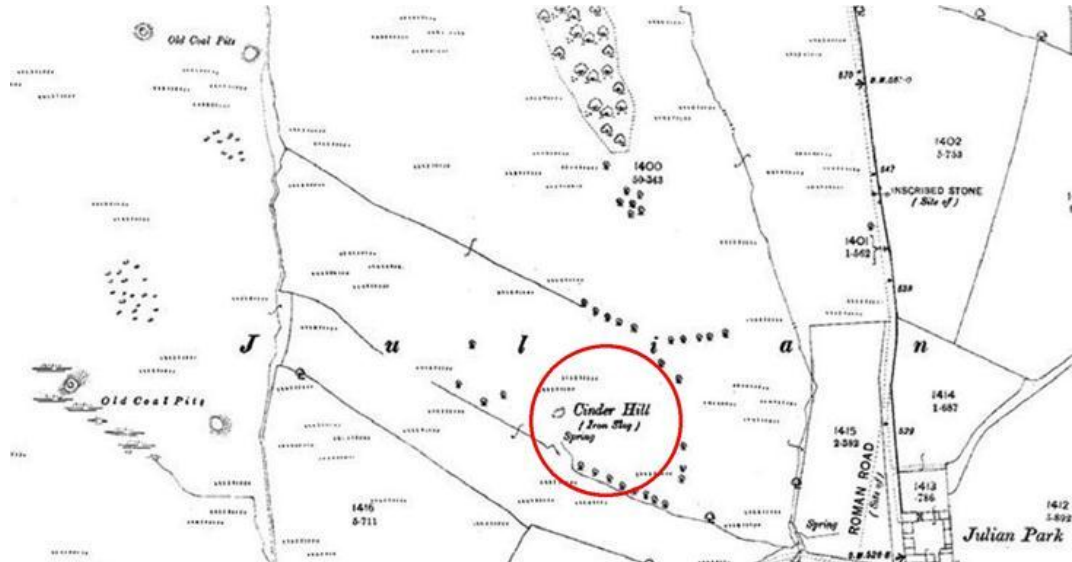


Fig 31 Coal Pits, 'Cinder Hill' and Roman Road at Julian Park, historic map, 1892 (Edina, 2012)



The Site at Julian Park is no doubt that of a Bloomery and is also close to a Roman Road. There are many 'Cinder Hills' situated across the Moors, which are linked to early Iron workings. There are examples of Cinder Hills at;

(Pockley Moor X 461280, Y 493108)

(Mitchell Hagg X 463239, Y 492295)

(Hawnby X 451956, Y 493132)

Fig 32 'Cinder Hill' at Pockley Moor (Google Earth, 2012)

Bumper Pits, Sike House and Ladhill Gill (X 454545, Y 492820)

Coal was mined extensively in Ladhill Gill, at the Bumper Pits Coalfield and at Sike House to the north of the main site. It is likely that these sites were in production well before those at Wethercote and Carr Cote, the colliery probably dates to around the 1770's.



The only reference to site comes from Strangways (1886 Northallerton and Thirsk).

" In the inlier of these beds to the north of Hawnby the coal, which is 10 inches thick, outcrops about 50 feet below the Grey Limestone Series on either side of Ladhill beck."

Fig 33 Collieries east and west of Ladhill Gill (Google Earth, 2012)

Piethorn and Hazel Green (X 460340, Y 492540)

Strangways 1885 in discussions with regards Oolitic Limestone Kilns mentions numerous coal pits situated around Old Kiln and Piethorn, he remarks *"From information, the coal here is in two beds 11 inches and 4 inches thick respectively, and about 60 feet below the Grey Limestone.*

At Harland to the south west of Farndale, this coal has been largely worked. It is here only 8 inches thick, but is better for house purposes than that at Piethorn". Strangways also indicates that the coal can be seen in *"Bogmire Gill just below Hazel Green, north of which its course may be fairly well made."*

Yet again the miners were actively targeting the seam in the Gristhorpe Member. There are somewhere in the region of 120 shafts at the site and it seems surprising that there is little historical information with regards such a large Colliery. There are also a number of shafts situated in the forestry plantation to the west at Collis Ridge (X 460092, Y 492126).

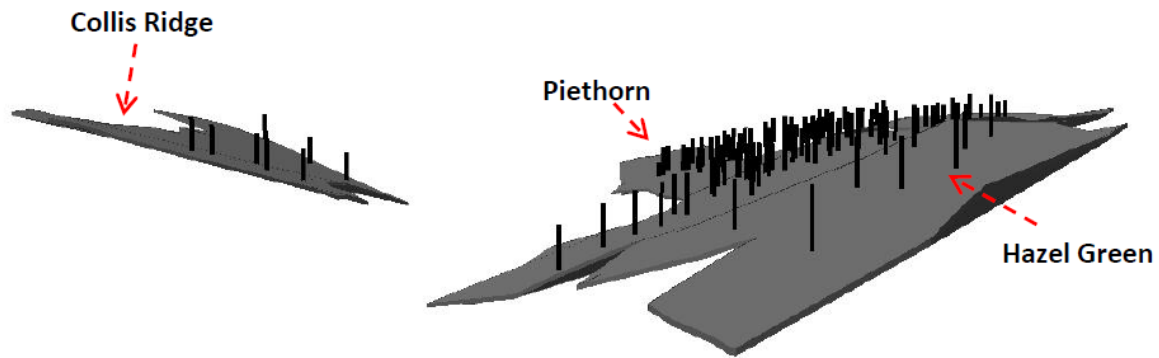


Fig 34 3d Arc GIS Model of worked coal seam at Bogmire Gill, looking north, based on shaft depths of 9m (Thomas, 2012)

Cloughton Wyke (X 501991, Y495255) Rigg Hall (X 500370, Y 498482)

Coal was worked at several locations along the coast between Cloughton and Ravenscar. The most complete account comes from Knox, 1855 and his discussions of Cloughton Wyke and Stainton Dale;

“Northward of the north bluff point of this wyke, a thin seam of gritty coal rises above the surface at Salt-pans Wyke; but more extensively in the higher position at the rise of Thwait-hill Cliff, about 100 feet from the top, and fifty from the bottom.

This coal seam was in our time worked and followed in its course horizontally under-ground, from the face of the cliff; up the incline of which it was hoisted in tubs, and used for burning limestone; but being inferior, and only six to nine inches thick, the working of it ceased all along the line of these cliffs; for toward the end of the last century, this seam was also wrought at the top of Stainton-dale cliff, near Rig-hall, where it runs out at the top of the cliff. The day will however come, when our now despised coal will be held in greater estimation.”

Therefore an adit was positioned somewhere along the cliff face, early maps show the location of a windlass to the northeast of the site, the seam appears to be similar in thickness to many others worked further inland, at Rudland for example and these sites date again to the late 1700's.



Within the text a reference to *“This imperfect coal”*, comes from Dr Buckland, no doubt he of Kirkdale cave fame *“belongs to the inferior region of the oolitic formation”* Knox continues;

Fig 35 Salt-pans Cloughton Wyke (Google Earth, 2012)

“Two seams of this kind of coal run through these moorland hills, several strata of rocks intervening, and it is true, as Messrs Young and Bird state, that the Cloughton-cliff coal is the highest.

These seams of coals lie in an east and west direction; for the Rudland colliery lies twenty four miles west, in a straight line from the Cloughton-cliff coal. The Colliery at Castleton is seventeen, that at Danby fifteen, and the May-beck seam is five miles west from the coal in Hawsgarth-cliff.; The seams at Danby, Blakey and Rudland are said to be respectively seventeen, twelve and nine inches thick being thicker than the seams in these cliffs or at May-beck.”

Hartoft End, Lasingham (X 474959, Y 492832)

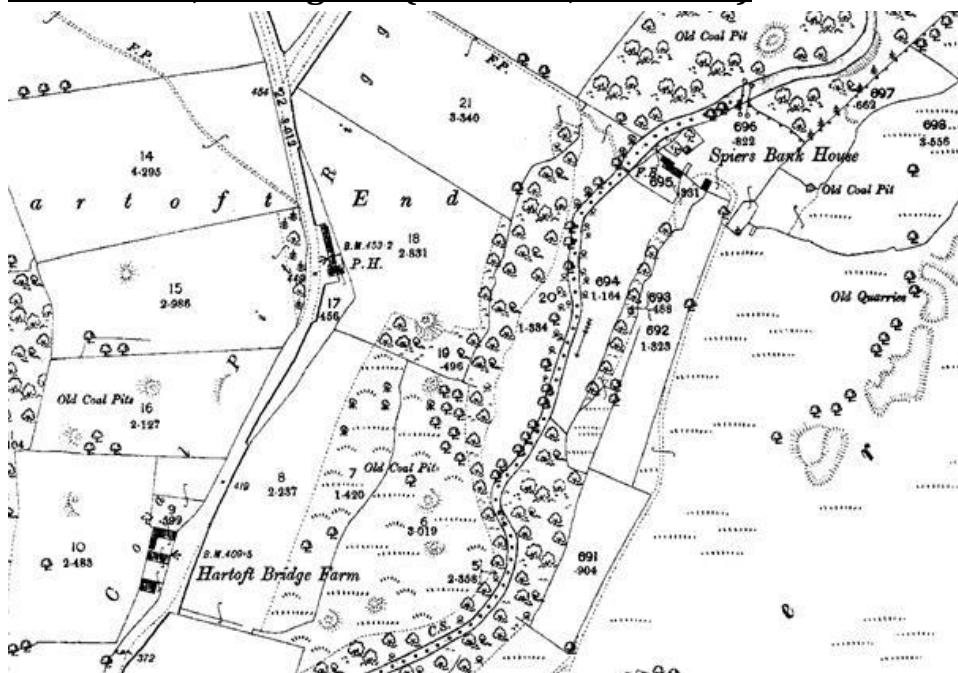


Fig 36 Hartoft End, historic 1892 (Edina, 2012)

As with many other sites on the Moors no references have been found to the ten or so shafts that are situated around Coal Pitt Rigg.

Other Locations

One or two pits occur in sporadic locations such as Farndale Moor (X 462837, Y499635) Wetherhouse Moor (X 455415, Y 494319), Cockayne Head (X 460152, Y 501517), Botany Bay (X 461065, Y 495717), Pit Hill Pennyholme Wath (X 464390, Y 490948) and Birk Wath Pits (X 472788, Y 502336).

Further shafts have been noted at Boars Gill (X 451873, Y 480836), where *“Black mudstone and coal is found in spoil from and old ‘bell pit’ indicating coal of a workable thickness”* (Powell, 2005).

Coal is also observed in *“the boring on Osmotherley Moor and in the hollow to the north-east of Nether Silton, there being several old adits in the lower part of Swinestone Cliff Plantation.”* (Strangways, 1886). (X 447322, Y 494162)

4. Workings and mining practices

i. Background to terms used

Air Gates – Generally wooden frames used to control the flow of air through the mine

Banksman – Operated at the pit head and also kept the accounts, probably the counts of corves.

Barrowgate – The main transport route to the shafts, 90 degrees to the bords

Black Damp - Carbon dioxide gas

Bord - The series of workings set out in a simple matrix between shafts

Bushel /Buschel – 10 gallons or 5 Pecks, around 5 corfes

Chaldron –36 Bushels around 100 long tons

Clotches /clips – A means of attaching the corve to the hauling rope

Corves, Curves, Corfs, Corfes – Basket or Box in which the coal was transported through the workings and to the surface. Baskets were commonly used at mines around Newcastle in the same period, but it seems there may have been different practices in the Moors.

Fire Damp – Explosive gases i.e. methane

Gin – Winching mechanism generally driven by a horse or pony.

Hundredweight – 1cwt, around 45kg, 20cwt to the ton

Landing Boards/Bords – Boards at the head of the shaft potentially used as a cover and in order to stop debris falling back down the shaft. Possibly used as a hinged mechanism in order for the safe working of the miners below.

Peck – A measure of 2 gallons, the corves generally held 5 or 6 pecks. Coal was generally sold by volume in the early years and not by weight.

Pillars – Strip of coal left between boards used to minimise roof collapse within the workings

Sled – Wooden sled with steel runners used to transport coal in corves through the workings.

Sough, Under level, Lowce – Drainage level under the workings, these were most important for all mines. Water levels were dug at a great cost both financially, and in increased efforts. Some were equipped with pumps and generally ran into the nearest stream. Lowce, local dialect meaning ‘freed from servitude’

Windlass – Manual winching mechanism. One double handled above the pit head or single unit’s one either side of the shaft

ii. Shafts, windlass', gins, corves and sleds

From the Danby Coals Memorandum of 1768 we gain the earliest insight into the mine workings and systems involved at Clitherbeck.

"The depth of the pit is about 50 yards; pits are sunk by the day; the dimensions six feet wide and eight feet long".

The mention of shaft depths and widths here are specific to the Clitherbeck mines and the large stones or 'Coverers' still exist at the site today.



Fig 37 Coverers over shaft at Clitherbeck (Twigg, 2012)

The shafts were descended in the 1990's by members of The North York Moors Caving Club (formerly Scarborough Caving Club) and were found to be just less than 40m deep; they contained no water and collapses at either end. The shafts are generally in good order and lined with stone in a walled manner for the most part, although some of the linings have broken away and lie in the shaft bottoms.

Recent excursions have found the base of the shafts filled with water that flows through on a south easterly course.

It is perhaps possible that these shafts only hold streams in high flow conditions and excavations in dry conditions may lead into further workings. Dye testing these subterranean streams will no doubt show the level exits and resurgences.

Many of the shafts in other locations appear to be sunk to depths of around 7 – 9m. The tools inventory and materials bought by John Rush (Harland) stated “*low pit sinking 9 Yrds*”, although following a seam would undoubtedly lead to changes in shaft depths. Information with regards others such as Birdforth give depths of around 12m, calculations from the borings at Newburgh 16m, and shafts at Black Beck, Armouth Wath, achieved depths of around 35m. Discussions with interested gamekeepers have identified areas where some of these are merely covered with timbers and may still remain open; descents of such would vastly increase overall knowledge of colliery workings.

Shaft widths at Clitherbeck appear somewhere near rectangular around 2.4m by 2m most likely designed in order for corves to be raised and lowered in pairs, simultaneously, by horse gin.

“The coals are drawn by horses with a gin, not by men with a rowler (windlass), a cart or basket holds 6pks (pecks) and weighs 10½ stones”.

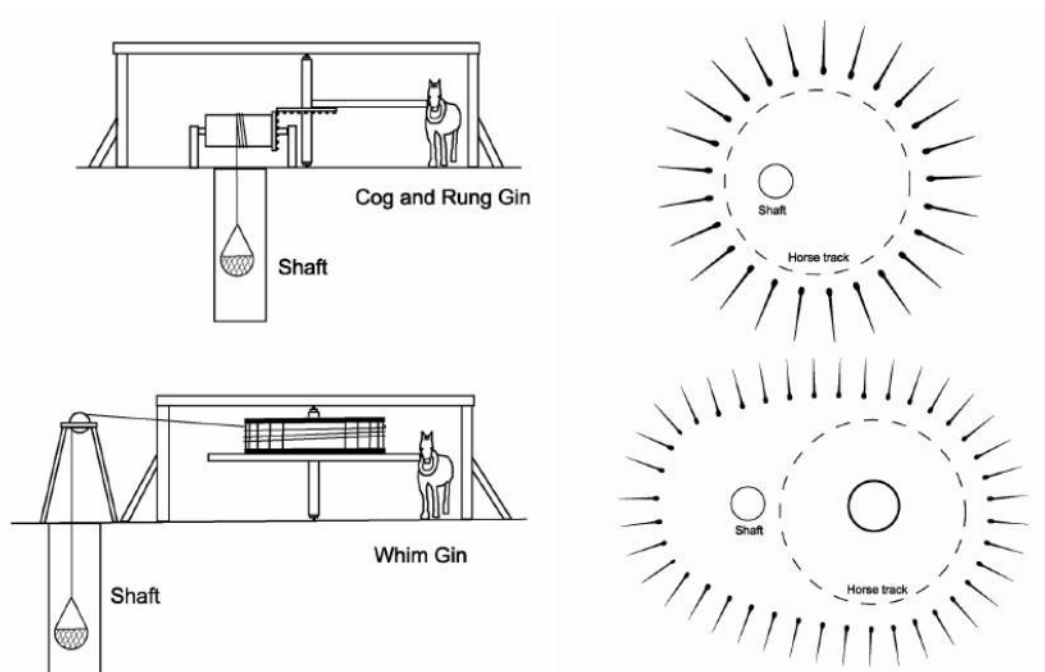


Fig 38 Characteristic features left after Cog and Run and Whim Gin practices (Friends of Middleton Park, 2012)

It is unclear from any of the references as to the specific type of Horse Gins being used at collieries. Further Archaeological works in the coalfields are necessary to clarify methods, as no physical evidence remains. Both Cog and Rung and Whim Gins were used in the mining Industry from the 15th Century and the more complex Cog and Rung were the only type used in Newcastle around 1724, the method was widely practiced until the late 18th Century, however some mines steered clear of such complex systems, which were liable to mechanical failure. Both methods historically leave tell tail signatures in the ground around shaft sites and surely evidence still exists at some of the Moors Collieries.

Shafts at Rudland appear to have been significantly smaller, in the region of 2m by 1m enough to fit one corve and were also built in a less time consuming and complex manners as those at Danby.

The best indication of the workings in general comes from an interview by Raymond Hayes. Mr Jack Green had worked his own pits at Rudland in the early 1900's. He states *"They went down seven yards to a twelve inch seam of oolitic coal. The shaft was 6ft wide by 3ft 6inches a wooden frame held up the sides, which were soft lias shales. Heather was packed between the sides and the frame to prevent frost damage"*.

Mr Green continues to describe the corves themselves and the way in which they were used.

"The coal was extracted in large lumps and loaded into a carrier called a corf, a strongly made wooden box on sled type runners. About 3ft long by 2 ft. deep and 1ft 9 inches wide, it had stout metal handles, to which a wire cable was attached.

When full it weighed about 1 cwt it was man hauled to the foot of the shaft, a wire cable let down from above was fastened to the handles, and it was slowly hauled to the surface by means of a simple winch consisting of a wooden roller on a metal rod turned by a washing machine type handle. Some pits had horse gins for this purpose.

Two men formed a team, Charlie and his brother, sometimes helped by their father who taught them the trade. The top of the pit-shaft was protected by double trap doors with a hole in the centre for the wire cable. Access was by means of a wooden ladder fixed to the timber packing"

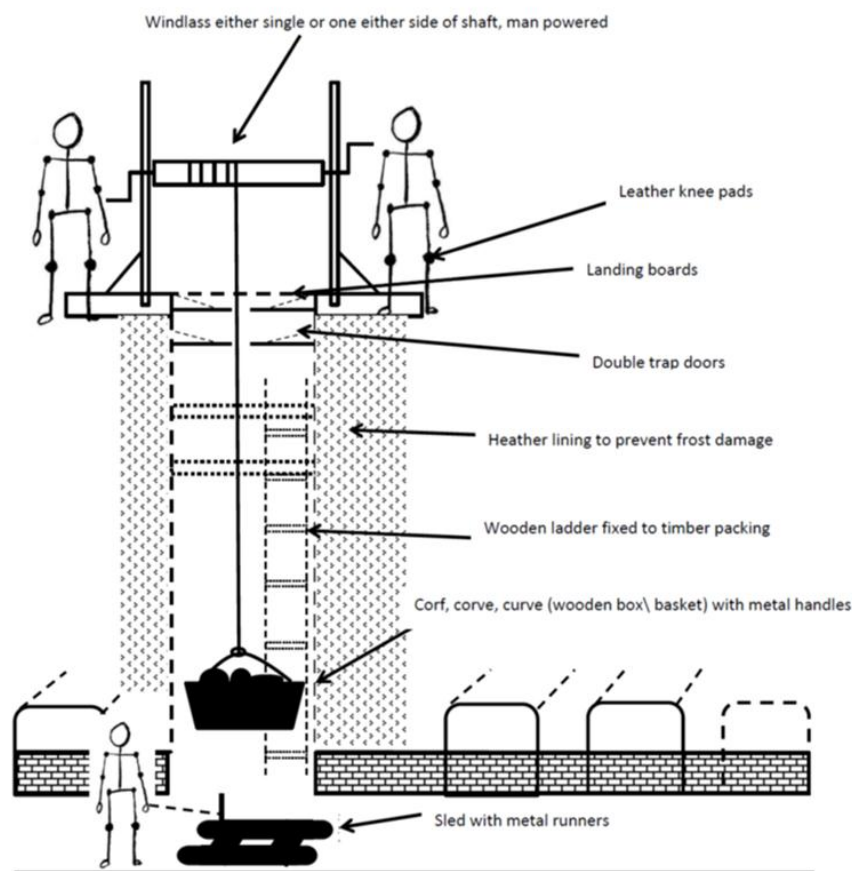


Fig 39 Shaft and workings (Thomas, 2012)

From Mr Green's account it appears that coal in the corfs was transported through the workings and to the base of the shaft on a type of sled with metal runners. Sleds have been used for hundreds of years in coal mines; however few are left as evidence, at least on the surface. The description Mr Green gives appears to be that of similar examples found in Coleorton Leicestershire dated to between 1450 and 1600 or at Shiremoor Colliery in 1730; it would seem that the practice continued well into the 20th Century in the area, and still continues today in many developing countries.

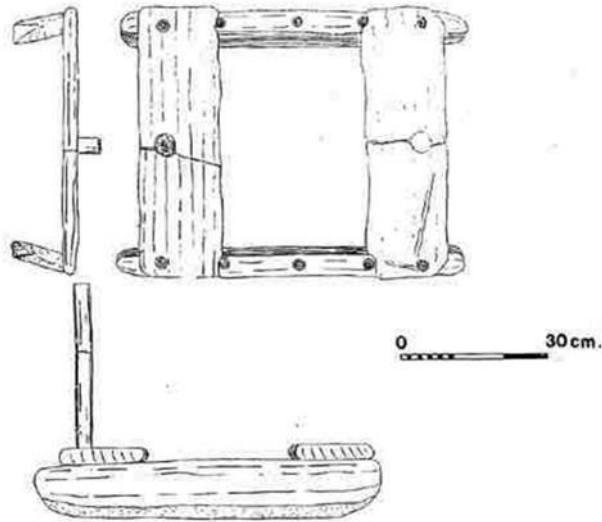


Fig 39 Corf Sledge (Leicestershire Heritage Online, 2012)

There are also references to show that different types of corfs were being used at different collieries. For example at Clitherbeck “, a cart or basket holds 6 pecks” (J Owen) and “corfe or basket holds 5 pecks” (J Hartley) and Mr J Green at Rudland “corf, a strongly made wooden box holding 1cwt”. Other pits in the northern coalfields were definitely using baskets with metal handles, as no evidence in the Moors remains it is no doubt possible both methods were being adopted.



Fig 40 The practice today in Yangtze, China (George Steinmetz, National Geographic, 2011)



Fig 41 Coal Corve (Beamish, 2009)

iii. Workings, Bord and Pillars

Further in the account of Mr Green (Rudland) he describes the workings themselves:

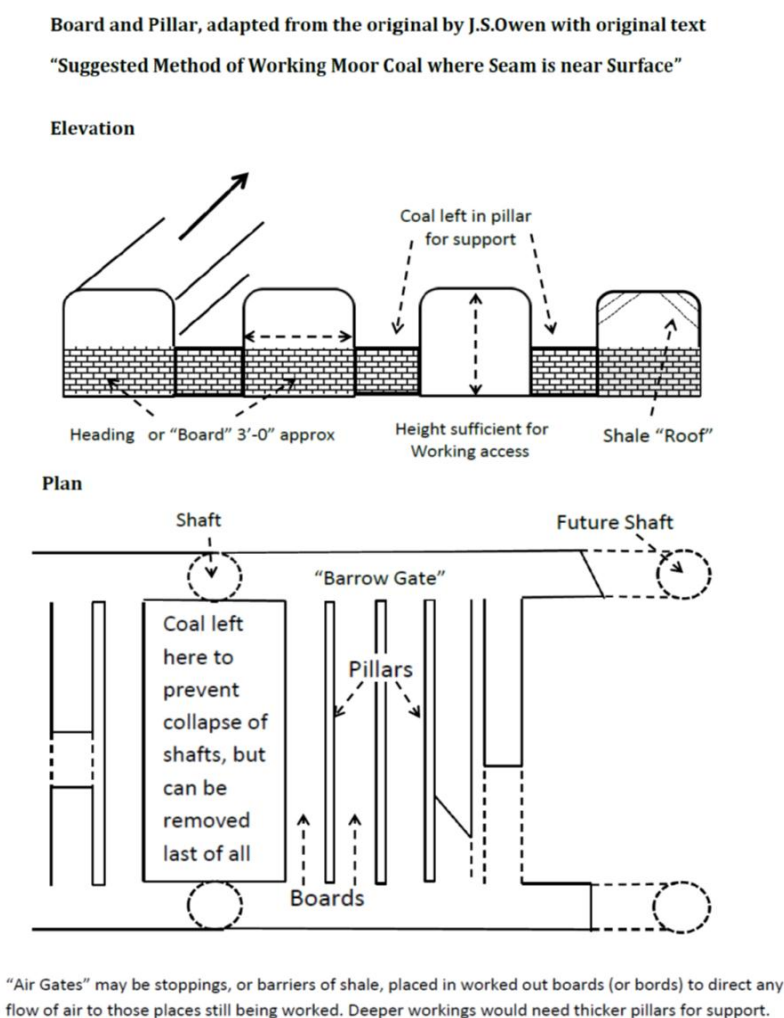
“The Coal seam dipped from east to west, and was followed by driving shallow drifts as much as 15 – 18 Yrds in each direction. These were timbered and propped, 4- 6ft in width but only just over 3 ft. high. The roof was bad in places, and falls of loose shale or sandstone occurred, especially near old workings. The coal was mined with a short pick; it was hard, hot work in cramped conditions, and leather kneepads had to be worn. There was a constant risk of foul air. If the wind was westerly it was dangerous to go down, there would be a sulphurous smell, and if the light, a candle stuck in a clay ball, went out, that was the signal to retreat”.

From Clitherbeck there are similarities in descriptions, *“the roof supported by wooden props” “The pits very subject to Black Damp but not Fire Damp”*. It appears wall and roof props were used in all mines and that there were constant problems with the build-up of Carbon Dioxide gas, but the sulphurous smell detected at Rudland appears more reminiscent of Hydrogen Sulphide, a much more dangerous and potentially lethal gas. It seems as though mine ventilation sat low on the agenda at most mines although there are discussions of ‘Air gates’ in a 1780s, Feversham Memorandum. Air was being channelled within the workings and away from areas which had been exploited.

“Keeping the Air Gates Boards and Barrow Gates sufficiently open and clean till the whole is measured off”

Owen’s 1969 interpretation of the workings are the clearest picture we have to date, with time and funding, geophysical surveys and excavations of such collieries will no doubt confirm his theories.

“The described method of working leaves much to be desired, and my belief is that the meaning of the expression “the workings are double from one pit to another” simply is that each pair of shafts were connected underground by two parallel passages which became ‘main road’, and which were sufficient height and width to permit movement of corves from the workings to either shaft, and which were separated by about 5 yards thickness of unworked coal.”



The ‘bords’ or working passages which produced the coal would then be driven from one side only of each such ‘main road’, thereby keeping their dangerous shale ‘roof’ as strong as possible.”

It appears that not all collieries were worked in a definitive manner and dependant on the local geological situation adaptations were made to working practices. From the Wethercote Colliery *“The lessor was to leave two yards for the pillars unwrought at the opening of every bord to support the roof of the ending or Barrowgate, and also leave one yard in every five yards between the bords to support the roof.”* (Gill, 2010)

Fig 42 Adaptation of Owen’s original (Thomas, 2012)

iv. Water levels, drainage, Soughs and Lowces'

The earliest reference to drainage comes from the Feversham documents at Ankness 1715

"Soughing and draining" followed by the Dandy Coals Memorandum 1768 *"The water is voided by a sough"*. Initial Sough's were more than likely basic drainage channels cut into the base of the original adits as they were cut into exposed hillside seams. Latterly full levels specifically designed for drainage were used directly under the workings and followed the matrix of shafts, draining the coal from the working face back through the older worked areas. Water levels are found at most Collieries however two of the best and referenced examples appear at Clitherbeck and Rudland.

The most detailed discussion and survey of mine drainage comes from 'The Battle of Clitherbeck' indicating the importance of such drainage levels. From Owens 1969 and following accounts:

"Smith was already scheming to purchase the western intake before he took the 1779 lease, aiming to sink pits on his own land and drain them by means of a channel cut under the Common into Clither Beck. Since he was the sole leasee of mining rights under the Common, nobody could prevent him from doing this. The competition thus created by Smith's own colliery would seriously reduce the rent Lord Downe could expect from his next tenant, particularly if, as was likely, Smith allowed Lord Downe's mines to deteriorate towards the end of his lease."

In 1775, a year before the expiry of the lease, Smith began to construct a 120 yard drain, allowing Lord Downe's pits to fall in in the meantime. He then offered the derisive rent of £20 per annum for colliery and Lord Downe could get no more than £40 from his next leasee, one John Proud. The "Battle of Clither Beck" now commenced, which was not to be finally terminated until eight years later (1784). Proud was merely a man of straw, Lord Downe meeting the mining and legal expenses amounting to £100 or more. Lord Downe's legal advisers were none too sure of the success of a lawsuit brought against Smith and advised him to force Smith into taking legal action himself, as plaintiff. Accordingly, Proud sank a pit across Smith's drain, thus preventing him from drawing the water off his mines. This action cost Lord Downe no less than £94 (several pits had to be sunk before Smith's drain was located); yet further testimony to the scale of operations at Danby and the importance the landlords attached to them. Smith retaliated vigorously, bringing in "a set of Adventurers...from another country" who "...went with pick axes and swore they would lose their lives rather than be beat". With their help he cut a short drain to turn water from his pits into Proud's and set about constructing a new drain for himself across another freehold intake, owned by Joseph Champion who was apparently in league with him, beyond the east bank of the stream and meeting the Clither Beck further downstream. In the end, he brought an action against Lord Downe. We do not know the result of the two trials held at York, but it seems that Smith gave up his drain through Champion's intake and constructed yet another through the south east corner of his land and directly into Clither Beck."

The only permanent solution lay in Lord Downe buying Smith out and this he did in 1784, paying £1000 for the property. Since he was able to re-let the colliery immediately afterwards for £140 per annum, Downe appears to have made a good bargain and this may suggest that he had had the best of the "Battle". Lord Downe had now had enough of leases and determined to let the colliery on an "at will" tenancy, which would enable him to dismiss any awkward customers".

A Further Downe Records Survey includes a plan of the 'Battleground' and an explanation of the sheet by Mr William Lawson indicating the complexity of the situation.

"Dear Sir,

Inclosed i send you a plan which i hope will explain the manner Smith and Campion have contrived to work their Collieries in order to take the Water which will effectually answer their purpose unless my Lady Downes prevent them. I have by this days Post wrote to Mr. Stokes, after you have made yourself Master of the Plan you will perhaps write to him and send it. 1234 is where Smith's Colliers have crossed the Common into Joseph Campion's Freehold under the ground so the water gets away. I think Mr. Proud should again stop their water at 1234 by sinking a pit across their drain as he did at 5. Their action is brought against Mr. proud for sinking across their drain which is underground at 5 so if he blocks them up at 1234 it's just the same as he has done at 5".



Fig 43 Georeferenced drainage form original by William Lawson

'The Pit Hole Lowce' this is the largest and probably least known of all water levels in the Moors. Today the Lowce still has a large flow rate, even in dry conditions at around 30Litres per second. The original drain was an adit nearly 2m in diameter, length unknown, although the level probably now drains all the lower and upper Collieries at Rudland, a distance of around 3km. The adit appears to have been constructed around the same time the first pits were dug at lower Rudland, in 1770 and is situated south west of the last pit at lower Rudland. The level was being used as a water source for human consumption for many years and formed part of a complex of Water Races across the Moors (McLean, 2005) it was still supplying local villages in times of drought until the 1950s. Given the levels of Aluminium sampled at similar Collieries, the same would certainly not happen today, concentrations being several times that of drinking water standards.

Local sources give interesting descriptions relating to the adit. On occasions the level blocks with solidified ochres or to give the local phrase 'it ockers up'. Eventually the pressure of water increases to such an extent that the plug is forced out. Local bailiffs have observed trees being covered with coloured ochres to a height of 7m; they also indicate that the local beck runs orange for several days following the event.



Fig 44 The Pit Hole Lowce resurgence (Thomas, 2012)

v. Transportation

There is little hard evidence with regards transportation of coal away from the mines. Many tracks are marked on the historical maps, some with names that suggest the practices adopted. Pannermans Causeway and Pannermans Lane (Clither Beck) and Pannermans Seaves (Little Blakey) may indicate that the coal was being transported via Packhorse in Pannier Sacks as had been for generations with regards local Moorland Peat. It has been suggested that these were Chapman or Galloway ponies, breeds that were well adapted for the rough moorland ground. Most of the Coal mined at Clither Beck seems to have been transported over the moors to Staithes and Loftus, where teams of thirty or forty would ponies would wait in turn at the Pit Head (J.Hartley).

At the Rudland Collieries, locals seeking fuel must have adopted similar techniques. Larger amounts of coal were hauled away in wagons by teams of horses causing the local highways and waterways to become ruined and adding to William Sturdy's rental costs, problems of this nature appear to have reoccurred throughout the history of the Rudland Colliery.

“The Colliery being so near the Country where a deal or the Coals are consumed, the Farmers in General lead them away during the Winter Season and which injures the Roads thro which they pass very much which is Farndale, Fadmoor, Gillamoore and Kirkbymoorside, but the last being a large Township and very capable to repair their own Roads it did not appear reasonable that any allowance should be made to them, and the other Townships being small, particularly Fadmoor, and who has the longest and the worst Road to repair, being also in the Session and without any probability (at present) of getting out, though a great deal of work have been done and deal of money expended the last year - I thought it right to rate Rudland Colliery to the Highways, but being situate in Farndale Township and who were this year only 10d. per pound without statute duty and Fadmoor 3s. 0d. and work with Teams each 12 Days and work by Hand each 30 Days - I rated Rudland 10d. as per Farndale only and then said to them you shall not have the whole; Fadmoor shall have 20s. 0d. and Gillamoore a fair proportion and which we may calculate as under Rudland £80 a Year rated like Farndale only at 10d. £3 6s. 8d.

Table 8 Highway repair costs

	£	s.	d.
They say Farndale, least injured	0	12	6
Fadmoor , most do	2	0	0
Gillamoore	0	14	2
	3	6	8

The present occupier Wm Sturdy objects to pay to either of the last Townships, alleging it is neither law nor Justice to be rated in a Township where not situate, Yet he does not object to pay to Farndale. Question. Ought not Mr. Duncombe or his Agent in Circumstances like the above to say (the Colliery not having been rated before) that Farndale shall not have the whole but the Townships most injured shall have a part.” (Owen, 1970)

vi. Quantities extracted

Extensive works have been carried out with regards rates per acre, rentals and estimations of tonnages produced at the collieries by M.C. Gill, my own tonnage calculations, around one third those of Gill’s, are based on standard methodologies where;

- a) Thickness of seam Ft. = inches X 0.08333
- b) Area of seam Ft² = Yards² X 9
- c) Volume of seam Ft³ = (a X b)

Metric Ton calculations are based on Metric Ton = 1000kg = 2204.6lb Coal (standardized)

Volume = 2204.6 / 52 = 42.4 cubic feet per Metric Ton.

Of the information available from Gill’s works with anomalous values omitted, collieries are listed in highest productivity to lowest productivity, although all values are based on available archive information only.

Rudland

Colliery	Date	Seam Thickness inches	Feet of seam	Square yards measured	Square feet	Cubic feet	Metric tons
Rudland	1787	7	0.58	6980	62820	36645	864
	1788	8	0.67	9196	82764	55176	1301
	1789	8	0.67	10742	96678	64452	1520
	1790	8	0.67	11798	106182	70788	1670
	1792	8	0.67	9368	84312	56208	1326
	1793	8	0.67	13080	117720	78480	1851
	1794	8.5	0.71	16464	148176	104958	2475
	1795	8.75	0.73	17304	155736	113557	2678
	1796	8.75	0.73	13024	117216	85470	2016
	1797	8.75	0.73	10820	97380	71006	1675
	1798	8.5	0.71	10072	90648	64209	1514
	1799	8.5	0.71	14284	128556	91060	2148
	1800	8.5	0.71	17568	158112	111996	2641
	1801	9.5	0.79	13624	122616	97071	2289
Total Production							25969

The Colliery had an average production of around 1800 Tons per year. A list of miners for the Parish of Lavingham shows that between 1782 and 1847 there were 49 miners living in Farndale and the surrounding area. The mine at Rudland was worked throughout the year unlike many of the other Collieries that operated on a seasonal basis. The winter season however had a negative effect on the miners, and no doubt their families, at Rudland from 1792 the Memorandum continues that *“Sturdy says he can’t get men; the Collier’s say there is good reason for it and which is, that at the approach of Winter when the Lime burning is over, he pulls down their Wages which causes a deal of them to go a seek work elsewhere.”*

Total production from the combined Rudland Collieries by 1801 was in excess of 35,000 Tons based on known figures.

Blakey

Colliery	Date	Seam Thickness inches	Feet of seam	Square yards measured	Square feet	Cubic feet	Metric tons
Blakey	1787	13	1.08	3462	31158	33754	796
	1788	12.5	1.04	5351	48159	50165	1183
	1789	13.5	1.12	3208	28872	32481	766
	1790	14	1.17	2688	24192	28224	666
	1791	14	1.17	1791	16119	18805	444
	1792	16	1.33	65	585	780	18
	1793	15.5	1.29	2216	19944	25761	608
	1794	13	1.08	2116	19044	20631	487
	1795	13	1.08	2128	19152	20748	489
	1796	13	1.08	2072	18648	20202	476
	1797	12	1.00	2720	24480	24480	577
	1798	13.5	1.12	2268	20412	22963	542
	1799	13	1.08	3776	33984	36816	868
	1800	13	1.08	3228	29052	31473	742
	1801	15	1.25	3936	35424	44280	1044
Total Production							9707

Upper Rudland

Colliery	Date	Seam Thickness inches	Feet of seam	Square yards measured	Square feet	Cubic feet	Metric tons
Upper Rudland	1790	6.5	0.54	4352	39168	21216	500
	1791	7	0.58	3888	34992	20412	481
	1792	7.5	0.62	3504	31536	19710	465
	1793	8	0.67	2720	24480	16320	385
	1794	8.5	0.71	3000	27000	19125	451
	1795	8.5	0.71	2480	22320	15810	373
	1796	8.5	0.71	1764	15876	11245	265
	1797	8.5	0.71	2568	23112	16371	386
	1798	7.5	0.62	2854	25686	16054	379
	1799	7.5	0.62	2820	25380	15862	374
	1800	7.5	0.62	3304	29736	18585	438
	1801	6.5	0.54	3321	29889	16190	382
Total Production							4880

Rudland Farm

Colliery	Date	Seam Thickness inches	Feet of seam	Square yards measured	Square feet	Cubic feet	Metric tons
Rudland Farm	1794	8	0.67	3344	30096	20064	473
	1795	8.5	0.71	2980	26820	18997	448
	1796	8	0.67	6880	61920	41280	974
	1797	8	0.67	5380	48420	32280	761
	1798	7.5	0.62	4942	44478	27799	656
	1799	6	0.50	4520	40680	20340	480
	1800	6	0.50	3216	28944	14472	341
	1801	6	0.50	4204	37836	18918	446
Total Production							4579

Ankness

Ankness	1787	14.5	1.21	1920	17280	20880	492
	1788	15	1.25	560	5040	6300	149
	1789	17.5	1.46	1276	11484	16747	395
	1790	19	1.58	1188	10692	16929	399
	1791	20	1.67	1848	16632	27720	654
	1792	20	1.67	1472	13248	22080	521
	1793	21	1.75	1184	10656	18648	440
	1794	21	1.75	155	1395	2441	58
	1795	14	1.17	960	8640	10080	238
	1799	14	1.17	456	4104	4788	113
Total Production							3458

Sledshoe

Colliery	Date	Seam Thickness inches	Feet of seam	Square yards measured	Square feet	Cubic feet	Metric tons
Sledshoe	1792	7.5	0.62	1108	9972	6232	147
	1793	7	0.58	2492	22428	13083	309
	1794	7.5	0.62	1600	14400	9000	212
	1795	7.5	0.62	1900	17100	10687	252
	1787	6	0.50	1552	13968	6984	165
	1788	6	0.50	1270	11430	5715	135
	1789	5.5	0.46	1564	14076	6451	152
	1791	6	0.50	2604	23436	11718	276
	1792	6	0.50	96	864	432	10
	1794	7	0.58	2718	24462	14269	337
	1795	7	0.58	1616	14544	8484	200
Total Production							2195

Both Harland Head (estimated total 436Tons in 1801) and Carr Cote (23 Tons in 1789) appear to have been much less productive. Extraction rates from Collieries such as Clither Beck, Trough House, Rosedale Head and many of the others are unknown.

5. Colliers

The most in-depth notes with regards the colliers themselves, comes from Joan Hartley's, *The Clitherbecks Colliers*, two particular stories stand out. The original transcript by James Bell Walker gives us an enticing glimpse into the character of the miners.

William Miller was the last coal miner at Clitherbecks

"Many years ago, when passing along the moor via Clitherbecks I came upon some small coal heaps unexpectedly. Near at hand was a hut, and looking in I saw a stout man laid at full length, to whom I spoke. He told me his name, and explained the three heaps were of different qualities. There wasn't a cart load in the whole lot, but he told me a good tale and how he talked! "I formerly" he said "paid £3 a week in wages". Yes, he did £1 for himself and £2 for his boys. Then he proudly showed me his clock – a piece of cleared ground with a stick in the middle for gnomon, and short pieces for marking the hours. From coalmining he proceeded to talk of his shop at Dale End. "I stock 120 different kinds of articles" he said. "I also make a preparation for the cure of 'housemaid's knee". Lord Downe apparently allowed him to work coal for free, although Miller, possibly in jest, said that he hoped soon to get some rent."

Allan Thornton, mine lessee at Clitherbecks

"Allan Thornton was a jovial person and it is said of him that one pit proved so lucrative that after it was worked he always raised his hat when he went past it! He was always pleased as he stood by the pit mouth when the cage was drawn up for the day, to hear the men emerging from the gloomy cavern singing hymns. Like many of the miners he was a Methodist, and he gave a Bible to the Dale End Chapel for the use of the pulpit. He also presented some fossil remains found 60 feet below the surface, to the Whitby Museum. He retired to Whitby, living in his own house in St Hilda's Terrace, and died in 1867 aged 67. His name is commemorated on his parents' tombstone in Danby churchyard."

Hartley continues to tell us more about the life Thornton had;

"Allan Thornton the Lessee at lived at Clitherbecks Farm, and his marriage had more than its share of tragedy. First his wife Martha died in 1839 aged 38. Of their seven children Hannah died in her first year and Horatio the last child died in May 1839, at the age of 3 months, and only a few weeks before his mother. Martha left her Husband with 11 year old Fanny, Jane 10, John 8, Eliza Ann 6 and Allan 18 months, their Father eventually married again."

It seems apparent that Women and Children did probably work in the Collieries as at Carr Cote and the Widow Holmes and William Miller's 'boys', however there is no documented evidence. The Mines Act of 1842 finally put an end to these practices and prohibited Women, Girls' and Boys' under 10 from being employed subsurface.

It appears certain that the Country's long history of Coal mining is finally coming to an end, with the imminent closure of the final Pits. The future of our Countries Coal is now dependent upon scientific advances in deep extraction technologies and environmentally clean systems.

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