

THE INDUSTRIAL ARCHAEOLOGY OF LECKHAMPTON HILL

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Introduction

The industrial history of Leckhampton Hill has been well documented in the book *Old Leckhampton (Quarries-Railways-Riots-Devils Chimney)* by David Bick, a member and former chairman of GSIA (1). Pages 69 and 70 of the second edition of *Old Leckhampton* published in 1994 consider the "remnants" and it is the purpose of this note to elaborate on that information. It is therefore an attempt to put on record the locations and brief details of the main surviving sites of industrial archaeological interest in the area generally referred to as Leckhampton Hill and Charlton Kings Common. It should not be considered as exhaustive and it is likely to be expanded in the light of comments made by others with an interest in the area's rich industrial heritage. The area is owned by Cheltenham Borough Council and in 2001 they commissioned a Management Plan (2) to be drawn up for the area. A set of detailed representations were made by GSIA to Nortoft Partnerships Ltd, the consultants employed by the Council to prepare the plan. A review of industrial archaeology of the area formed an essential part of the preparation of the submission made by GSIA and a summary of the findings of the survey is given here.

The Sites

The majority of the sites given here relate to the limestone quarries and the tramroads and inclines that served them. Also of particular interest are the remains of the limekilns erected in 1924 and the line of the standard gauge railway system that was built to convey the lime off the hill from the kilns. Section A covers the quarries and Sections B and C deal with the inclines and tramroads, respectively. The 1924 line kilns and other sites are dealt with in sections D and E. The section letter and number in that section provide the key to the location of that site on the maps (Figures 1 and 2). We are fortunate that many of the sites were photographed in the early part of the twentieth century and a number of these historical photographs have been reproduced in the books by Bick (1) and Household (3). Much of the historical information given here is based on *Old Leckhampton* (1). All dimensions should be considered as approximate and subject to re-evaluation.

In 2002 when the Management Plan (2) was drawn up many of the smaller quarries were not known by any particular name. For convenience, the group providing the specialist geological input into the Plan have proposed appropriate names for these quarries and these names are used here as indicated by (**). The naming and numbering system used for the inclines is that given in *Old Leckhampton* (1). There have been a number of accounts of the geology of Leckhampton Hill from the nineteenth century to the present day (4-6). The new Management Plan for the area (2) includes a section which gives an up to date account of the geology of the area using the latest classification scheme as well as references to earlier accounts. However, an extremely simplified classification scheme based on the old nomenclature is used here for the different types of stone. The site is covered by sheets 26.15, 26.16, 34.3 and 34.4 of the Gloucestershire series of 1:2500 O.S. maps (7).

A. QUARRIES

A1. & A.2 Ancient Quarries on the Western Edge (SO 94601828 to SO 94541770)

A 600 m (660 yd) cliff face runs southwards on the western side of Leckhampton Hill exposing the Ragstones (closely bedded limestones which tend to contain a lot of fossils) and below them the Upper Freestone. The exposures are typically about 10 m (33 ft) high. It is expected that some of this cliff would have been quarried before the major quarries referred to below were opened up. Quarrying on the hill dates back at least 4 centuries. There is a reference in 1617 that "Mr Norwood takes benefit of a moste large quarry ... of excellent freestone" (1). A map that forms part of the sales particulars for the Leckhampton Estate in 1841 refers to the cliff as "The Rocks" (8). Two stretches of the cliff face have recently been given names as separate quarries. They are :-

A1. Firsbrake Quarry ** (centre SO 94531780)

South of Ferncliff Quarry

A2. Ferncliff Quarry ** (centre SO 94611805)

South of Trye's Quarry

A3. Trye's Quarry (centre SO 94681834)

This was Charles Brandon Trye's first quarry when he took over the Leckhampton Estate at the end of the 18th century. It covers about 0.2 hectares (0.5 acres) and exposes the upper freestone and was served by the Devil's Chimney incline (B1). Here is one area where it seems likely that there could have been underground workings as at Whittington four miles away.

A4. Dead Man's Quarry (SO 94691836 to SO 94751848)

This is the largest of the quarries that supplied freestone and lies to the south-west of the 1924 limekilns. It was here that some of the best building stone was found. The length of the quarry face is about 130 m (145 yd). It exposes the Lower Freestone and up through the Oolitic Marl, Upper Freestone and the Ragstones. In about 1904 tramroad No. 6 (B6) connected this quarry to the Focal Point of the railways. In the developments during the 1920s limestone was taken from Dead Man's Quarry down a short incline to a 2 foot gauge railway which took the stone to the top of the four limekilns built by 1924.

A5. Brownstone Quarry (centre SO 95101830)

This covered the greatest area of any of quarries but it was a relatively shallow quarry used primarily for the Ragstones which lay on the surface. This type of material was popular for walling in Cheltenham and a small number of buildings. The total area worked over the years extended over more than 10 hectares (25 acres). It was served by a network of tramroads which are shown on the OS maps 34.3 and 34.4 (7). The quarry has now been filled in and there are no visible remains for the most part. However the eastern face of the quarry (SO 95221848 to SO 95231810) remains exposed at a height of about 2 m (6 ft). It can be viewed very conveniently as the path from the car park at SO 95051790 to Charlton Kings Common runs alongside it for more than a quarter of a mile.

A6. Salterley (Wagon) Quarry (centre SO 94611770)

This is a very good exposure of the Lower Freestone. It is unclear when it started operation. There is no firm evidence that it was ever connected to the tramroad system. The fact that transport was restricted to wagons may be the reason for its alternative name. At some stage it was closed down for a time. The quarry was then put back into use in the early 20th century when Foden steam lorries were used to take stone to the Depot on Leckhampton Road. The quarry floor now covers about 2 acres (0.8 ha) and is used as a car park. A number of bore holes about 2 inch

in diameter are visible on the main quarry face. It is believed that these result from samples taken by a student conducting a survey in the 1970s.

A7. Lower Limekilns Quarry ** (centre SO 94901855)

This appears to have been a relatively small quarry. However, the area was much developed in 1922-24 when the limekilns (D1) were built here and the winding drum and associated equipment for the Standard Gauge Incline (D2) were installed.

A8. Middle Limekilns Quarry ** (centre SO 94921852)

This was a relatively small quarry above Limekilns Quarry and to the west of the Top Incline (B4). It gave access to the Lower Freestone.

A9. Upper Limekilns Quarry ** (SO 94801847 to SO 95001847)

The highest of the three quarries, it lies above Middle Limekilns Quarry and just to the west of the Top Incline (B4). It exposes the Upper Freestone and the quarry face is about 200 m (220 yd) in length.

A10. Incline Quarry ** (centre SO 95021865)

This gravel/scree pit lies to the east of the Standard Gauge Incline (D2) and provided in 1922-24 a lot of the material used to construct the massive embankment that forms the upper section of the incline. It covers about 0.3 hectares (0.7 acres). At the south-western end of the quarry there is a series of three terraces rising from the quarry floor at (SO 95001863). They are clearly shown in the photograph taken in c.1923 which appears on page 33 of (1). Temporary light railway tracks were employed on the terraces during the construction period for transporting the stone to the site of the new embankment.

A11. Daisybank Quarry ** (centre SO 95201873)

This is a large gravel/scree pit covering about 0.6 hectares (1.5 acres). It lies to the east of Incline Quarry.

A12 & A13 Ancient Quarries on Charlton Kings Common

A12 Charlton Kings Crag ** (SO 95371855-SO 95771846)

These quarries take the form of a series of crags in the northern edge of the top of the hill. They expose predominantly the Ragstones. The OS maps (7) show a number of gravel pits in the area below on the steep slopes.

A13. Charlton Kings Quarry ** (centre SO 95281867)

This large quarry exposes both the Lower and Upper Freestones. It lies just to the east of the main footpath up the hill from Daisybank Road at Fir Cottage.

Note: ** indicates a quarry name that has been proposed in the 2002 Management Plan (2).

B. TRAMROAD INCLINES

The inclines were worked by gravity such that a laden tram descending would pull up an empty one. A winding drum fitted with a brake was used to control the operation. The tramroads were probably all 3ft 6in (1.07 m) rail gauge and the individual rails were approximately 1 yard (0.91 m) long. The rails were plateways, that is L-section rails (tramplates) where the vertical flange guided the flangeless wheels of the trams. An account of the various types of tramplate used on the hill has been given by Bick (9). The basic details of each incline are summarised in Table 1. The word 'jenny' was sometimes used for an incline as in 'Top Jenny'.

B1. No. 1 Devils Chimney Incline (Trye's First Incline)

Built c.1800, this was the earliest of the seven inclines identified by Bick. It was constructed by Charles Brandon Trye who had recently acquired the Leckhampton Estate. It is likely that its construction isolated from the cliff face a pillar of rock that was subsequently fashioned into what is known today as the "Devil's Chimney" (SO 94641840). It would appear that initially the incline ran the whole way down to the main Leckhampton Road a distance of 270 m (300 yd). By 1810 the incline was intersected at SO 94611847 by the newly constructed tramroad on the 230 m (750 ft) contour level running southwards from the top of Middle Incline (B3) so that the lower section of the first incline could be abandoned. No part of the incline is shown on the Leckhampton Parish Map of 1835 (10) and only the first 30 m (33 yd) of its upper section are visible today as later quarrying has removed it beyond the Devil's Chimney. However, the tramroad and its position relative to the Devil's Chimney may be clearly seen in illustrations by George Dinsdale (1822) and Henry Lamb (c.1830) which are reproduced in (1). The top of the incline was at SO 94661838 and was served by several branch tramroads laid out in the quarry behind (Trye's Quarry). These branches extended to about SO 94681834. The length of the upper section was 100 m (110 yd) and descended about 30 m (100 ft).

B2. No. 2 Bottom Incline

Bottom and Middle inclines were both built in 1810 to give the new Gloucester and Cheltenham Railway access to Leckhampton Quarries. The overall length of Bottom Incline was 260 m (285 yd) with a vertical rise of 42 m (140 ft). It started alongside Leckhampton Road at SO 94881938 and there was a single track up to approximately half way (SO 94861926) where it split into a double track up to the winding drum at the summit (SO 94821913). The timber uprights that supported the horizontal winding drum still survive. They are both about 3 m (10 ft) high and fabricated from 8 in (200 mm) square section beams. The dimensions of the rest of the winding gear have been estimated from the photograph on page 21 of (1). The frame was 3.3 m (11 ft) high and had an internal width of 3 m (10 ft). The horizontal axle drum was 1.4 m (4 ft 6 in) in diameter and 2.7 m (9 ft) long. The horizontal axle was 2.5 m (8 ft) above the ground.

This incline has the largest collection of stone sleeper blocks visible today. They are mainly sandstone but some limestone ones have been identified. The main group of 12 blocks is at about half way (SO 94851919). There are examples of blocks with both one and two fixing holes. The incline went out of use in 1924 when the Standard Gauge Incline (D2) became operational.

B3. No. 3 Middle Incline

Middle Incline was built in 1810 and ran from its foot just south of Tramroad Cottage (SO 94921881) up to the winding drum (SO 94911859) on the 230m (750 ft) contour near the Focal Point of the railways. As with Bottom Incline (B2) the top half was double track and the lower half was single track. The crossover occurred at SO 94911871. The incline is noticeably steeper in the upper section compared to the single track section. The overall vertical rise was 65 m (215 ft) over a track length of 230 m (250 yd). Originally, the drum probably had a horizontal axle but it was later replaced by a vertical axle drum. This incline also went out of use in 1924 when the Standard Gauge Incline (D2) became operational.

B4. No. 4 Top Incline

Top Incline was built in 1830 as an extension to the line formed by the Bottom and Middle Inclines some twenty years earlier. The new incline gave access to the top of the hill and in particular access to the extensive Brownstone Quarry (A5) on the summit. Its foot was near the

Focal Point of the railways at (SO 94931856) and it climbed in a south-easterly direction for a distance of 120 m (130 yd). The vertical rise was 60 m (200 ft). The site of the winding drum (SO 95001848) is marked by some large blocks of masonry set into the ground at the summit. Unlike Bottom and Middle Inclines, Top Incline was double track throughout its length. It had a vertical axle winding drum from the outset at each end. The incline went out of use in 1922.

B5. No. 5 Unnamed Incline

This short incline was only in use between c.1830 and c.1850. It gave access to an area of freestone working from the tramroad along the 230 m (750 ft) contour (C3). It has now been completely quarried out. The approximate locations of the foot and summit are SO 94781858 and SO 94751851, respectively with a length of 75 m (80 yd) (10).

B6. No. 6 Dead Man's Incline

This incline formed part of a tramroad built about 1904 from the Focal Point of the railways (C2) up to Dead Man's Quarry (A4). The foot of the incline was at SO 94781855 and the winding drum was at SO 94731847. The length of the incline was 100 m (110 yd) and the vertical rise was 36 m (120 ft). A level stretch of tramroad of about 120 m (130 yd) in length connected the foot of the incline to the Focal Point of the Railways. The line operated until about 1920.

B7. No. 7 Unnamed Incline

This was probably the last incline to be constructed when it was built about 1920. It gave access to the area of freestone working that had been served by No. 5 incline almost a century earlier but it was only in use until 1922. It was 90 m (98 yd) in length with a vertical rise of 25 m (80 ft). The foot of the incline was at SO 94901857 and the summit at SO 94821853. The incline took on a new lease of life in 1923 to 1924 when it was used to transport stone for infilling the embankment for the Standard Gauge Incline (D2).

C. MAIN TRAMROADS (OTHER THAN INCLINES)

C1 Connecting Link Between Bottom and Middle Inclines

At the summit of Bottom Incline the double track reverted to single track for the link to Middle Incline. The tramroad crossed Leckhampton Road at SO 94861894 and continued along the southern side of Daisybank Road in a very shallow cutting until it turned south at Tramway Cottage to the foot of Middle Incline (B3). A passing loop 32 m (35 yd) long was provided at Tramway Cottage immediately before the foot of the incline. A few isolated stone sleeper blocks are visible in the section between the winding drum and the road. It is believed that a number of sleeper blocks were visible in the shallow cutting alongside Daisybank Road (SO 94921888) some 30 to 40 years ago and it is likely that they are still there underneath a covering of soil.

C2. Focal Point of the Railways

This is the name given by Bick to the area where several of the tramroads and inclines met (SO 94911858). It is also the summit of the Standard Gauge Incline that was constructed between 1922 and 1924. The area has recently been given the name Lower Limekilns Quarry (A7).

C3. South from the Focal Point of the Railways

The approximate line of this tramroad may be followed today along the 230 m (750 ft) contour. The full extent of the line is not clear and there has been a suggestion that it extended as far south as Salterley Quarry (A6). It is believed to have been constructed about 1810 and it intersected

with Trye's Incline (B1) which made the lower section of that incline redundant. A pair of sleeper blocks are visible at SO 94721855.

C4. To Brownstone Quarry

This line (built c. 1830) ran eastward for a distance of approximately 80 m (88 yd) from the top of the Top Incline (SO 95001848) to the point (SO 95081848) where the tramroad turned south-eastwards. Stone sleeper blocks are known to exist at SO 95041848 on this stretch of tramroad from the GSIA excavation carried out in 1973 (1). They are made of sandstone suggesting that they may have been obtained from the Forest of Dean. However, the blocks are now fully covered by soil and turf. The main line of the tramroad passes through a small cutting to enter the former Brownstone Quarry at SO 95101844. The various lines across Brownstone quarries at different times are shown on the OS maps (7) and Figures 1 and 2. A short branch tramroad ran eastward from SO95081848 and from it sprang several very short sidings in cuttings which are visible today in the area centred on SO 95101847.

D. DEVELOPMENTS IN THE 1920s

An ambitious scheme was proposed in 1922 in which four large limekilns were to be built near the Focal Point of the railways and the lime produced would be transported off the hill on a standard gauge railway. A key factor in the venture was the availability of a cheap Government loan as part of a scheme for easing unemployment after World War I. By September 1924 the limekilns and one and a quarter miles of railway track including the long incline had been completed. However, for technical and other reasons the project was not a success and all production stopped about two years later and the plant sold in August 1927 (11).

D1. The four 1924 Limekilns (SO 94871854 - SO 94891855)

Today only the concrete bases remain of the four steel limekilns that were erected in 1924. They were 23.5m (77 ft) high and were manufactured by the firm of Priest of Middlesborough. They were fired using producer gas that was made in the kilns from coal. The nominal combined output of lime for the four kilns was 300 tons per day but this was never reached. The design was new and did not work very well and failed to produce lime of a consistent quality.

D2. 1924 Standard Gauge Incline

This was a standard gauge railway connecting the works on the hill with the depot at Southfield Farm. The line then continued to join the Great Western Railway at Charlton Kings. In total, the line was a mile and a quarter long (2 km) of which the incline accounted for about half. A three rail system was employed with a passing section at the mid point (SO 95251900) below the overbridge (now removed) at Daisybank Road. The system was not completely self acting and required electric haulage. The horizontal winding drum was located in a pit at SO 94911856 immediately to the west of the Electrical Plant House (D3). The pit has now been completely filled in. The remains of a few wooden sleepers are just visible near the top of the incline.

The site of the overbridge on Daisybank Road is a convenient point for viewing the upper section of the incline which was the steepest part (1 in 6). Today this section forms one of the most popular paths onto the hill from the car park at Daisybank Road (SO 94981885). The foot of the incline was at SO 95421945, not far from the Depot. The total length of the incline was 1025 m (1120 yd) with an overall assent of 100 m (325 ft). The construction of the incline embankment was a massive undertaking and material was brought from above using the No. 7 incline. Other material was obtained from the large pit to the east of the incline which has been recently named Incline Quarry (A10).

D3. The Electrical Plant House (in ruins) (SO 94921855)

This small stone building to the north east of the limekilns has suffered badly from vandalism in recent years and only parts of the walls now survive. The building housed two transformers, switch gear and various electric motors.

D4. The 2 ft Narrow Gauge Railway

Limestone for the 1924 limekilns was conveyed from near the top of Incline No. 6 (SO 94731847) by a 2 ft gauge "Jubilee track" railway which ran on a ledge which can be traced in part today. At the far end the trucks were pushed across a bridge which connected the cliff face to the kilns and the stone was then tipped from the trucks into the kilns. The change in level along the route may have required a small incline to have been built but it is not clear where this was. In 2002 some lengths of rail which may have been used on this railway were lying near the Electrical Plant House (D3). A similar piece of rail is in use as a fence post near the top of the lane (E3) (SO 94901859). It is 22 in (63 mm) high with a flat bottom which matches the description given in the sale particulars (11).

E. OTHER SITES

E1. Tramway Cottage (SO 94921885)

The original cottage was built on the same site as the present cottage by John Henry Dale of Daisybank House in 1897 in a former gravel pit at the foot of Middle Incline. Dale had acquired Leckhampton Hill and its quarries in 1894 and the cottage was for his quarry foreman. He attempted from the outset to restrict public access to the hill and this led to massive public protests. The cottage was destroyed in the Leckhampton Hill Riot on July 15 1902 but had been rebuilt by Good Friday 1906.

E2. Limekilns

A limekiln is shown on the 1901 OS map (Glos. 26.16) at the location SO 95351878 which is 90 m (100 yd) north-east of Charlton Kings Quarry (A13). The 1921 map shows "Old Limekiln" at the same site which is near the intersection of several footpaths. There are no obvious visible remains today. Bick (1) refers to both a limekiln to the west of the winding drum for Middle Incline and to the name "Limekiln Bottom" which may indicate the former presence of a limekiln near the site of Tramway Cottage (E1). Again there are no visible remains at these sites.

E3. Lane down to Main Road (Leckhampton Hill) (SO 94891859) - (SO 94821887)

This old lane with stone walls in part leads down to the main road from the Focal Point of the railways (C2).

E4. Former Cottages at the Foot of Bottom Incline (SO 94871938)

The site of the cottages to the west of the line of the tramway shown on page 19 of (1) can be identified from traces of masonry from the rear walls of cottages which are visible in an earth bank.

E5. Tramroad Depot (SO 94831945)

Built about 1810. This is where the quarry tramroad system connected to the Gloucester and Cheltenham Railway. It lies on the western side of Leckhampton Road and it is now the Leckhampton Industrial Estate. Here were limekilns, workshops, stables and stone cutting and dressing plant. Some of the original buildings may have survived but this requires further investigation. In 1923 the depot was transferred to Southfield Farm (SO 95631945).

E6. Examples of Building Stone: Ewlyn Road (SO 94602084)

A garden wall in Ewlyn Road near the Norwood Arms public house displays several styles of building stone available from the quarries. The garden is that of the house at the southern corner of Leckhampton and Ewlyn Roads and it was here that John Weaver, a quarry manager, lived in the early part of the twentieth century.

Concluding Remarks

GSIA has had a long standing interest in Leckhampton Hill. The present review has been of considerable use when the Society was formulating its proposals regarding the future management of the industrial archaeology of the area. It is intended that these proposals will form the basis of an article in the next issue of the Annual Journal. Furthermore, it is very much hoped that the next few Journals will carry reports that the necessary works are actually being carried out.

References

- (1) Bick, David, *Old Leckhampton (Quarries-Railways-Riots-Devils Chimney)*, 2nd Edition, Runpast Publishing, Cheltenham, 1994.
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- (7) OS Maps, 1:2500, Gloucestershire Series 26.15, 26.16, 34.3 and 34.4. (Three editions - approximate dates 1880,1900 and 1921).
- (8) GC, RX 184.1, Particulars and Plan of Leckhampton Court Estate and Quarries and Rocks of Leckhampton Hill, 1841.
- (9) Bick, David, Tramples of the Gloucester and Cheltenham Railway, *Industrial Archaeology*, Vol. 3, No. 3, pp. 201-208 & plate on p.198, August 1966.
- (10) Gloucestershire Record Office, P198a VE 1/1, Leckhampton Parish Map, William Croome, 1835.
- (11) Sale Particulars (August 4th 1927), David Bick, Personal Communication 2002.

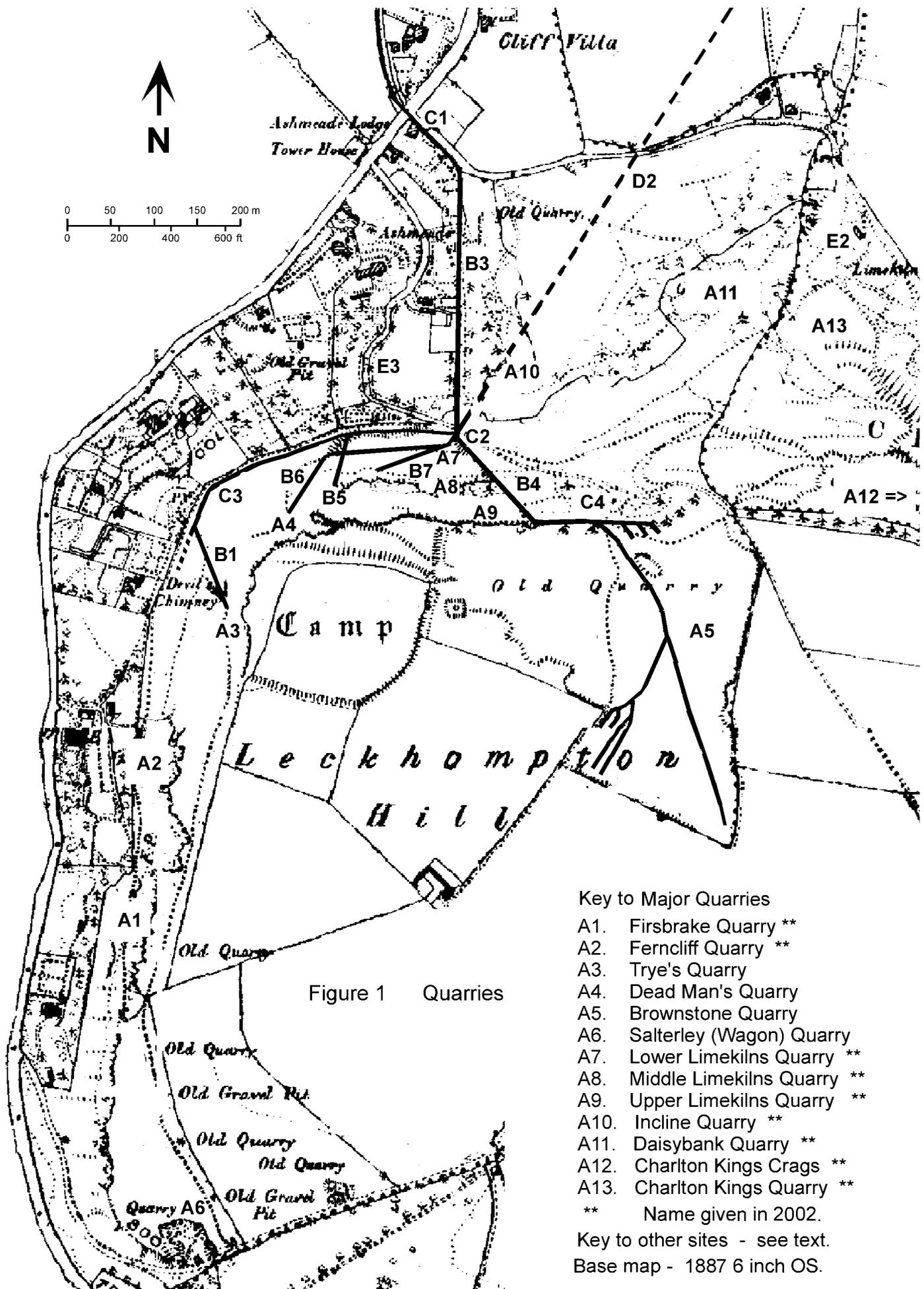
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The Tramroad Inclines: Approximate Dimensions and Dates of Operation

Bick Ref. No.	Name of Incline	Running Length m (yd)	Vertical Rise m (ft)	Gradient	Built	Abandoned
1	Devil's Chimney Or Trye's	100 (110)	30 (100)	1 in 3.3	c.1795	c.1830
2	Bottom	260 (285)	42 (140)	1 in 6	1810	1924
3	Middle	230 (250)	65 (215)	1 in 3.5	1810	1924
4	Top	120 (130)	60 (200)	1 in 2	c.1830	1924
5	Unnamed	75 (80)	-	-	c.1830	c.1850
6	Dead Man's	100 (110)	36 (120)	1 in 2.8	c.1904	c.1920
7	Unnamed	90 (98)	25 (80)	1 in 3.6	c.1920	1922

This table is based on that on page 28 of Bick (1). Where possible the dimensions quoted have been verified as part of the present survey.



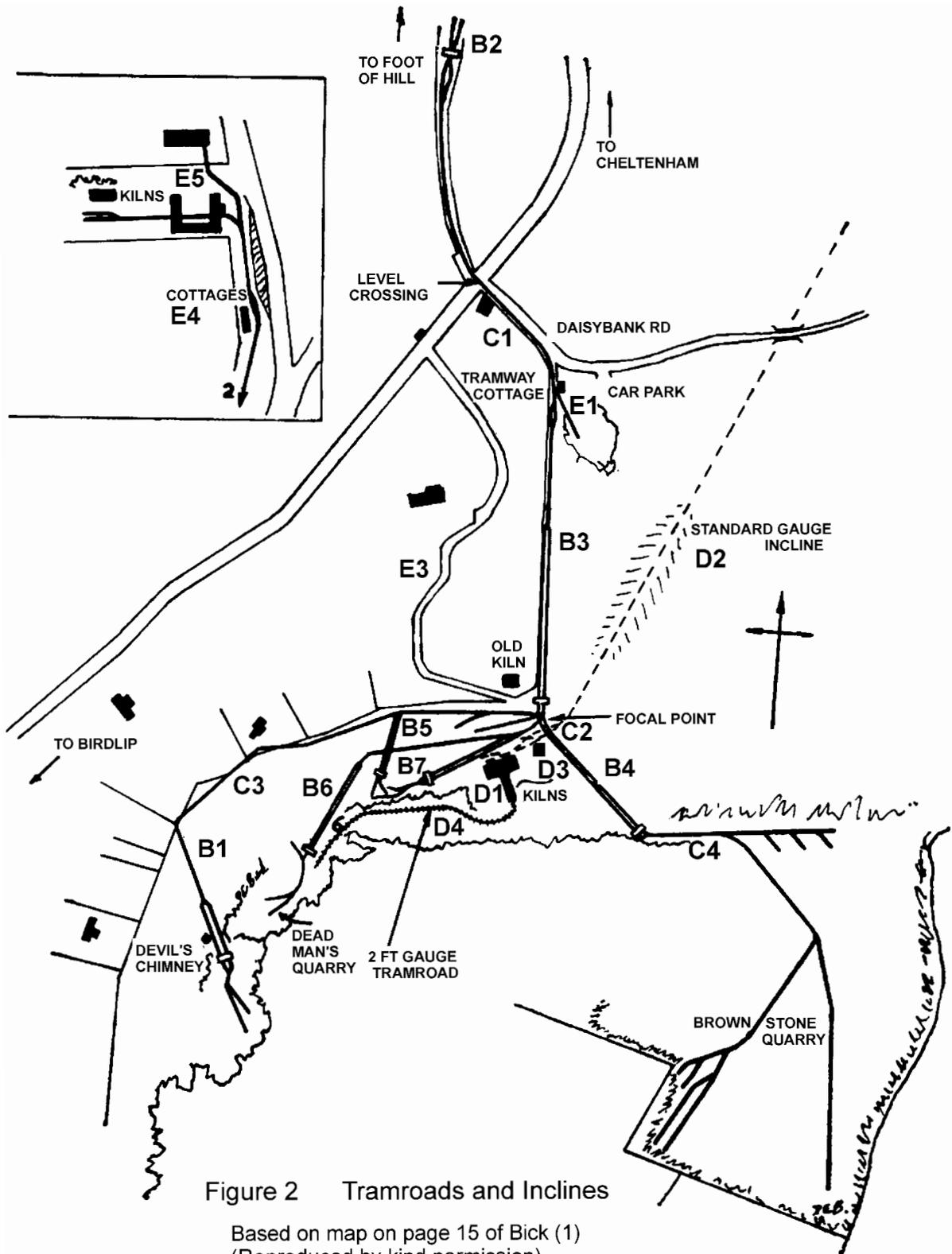


Figure 2 Tramroads and Inclines

Based on map on page 15 of Bick (1)
 (Reproduced by kind permission)



Plate 1 The Focal Point of the Railways (C2) in 1924 Showing the Four Limekilns (D1) Under Construction (looking north-east).

The Electrical Plant House (D3) is to the Left of the Kilns.

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