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The rise and fall of the Surrey Iron Railway, 1802–46

DORIAN GERHOLD

This article uses newly discovered evidence from the end of the life of the Surrey Iron Railway to reconstruct the company's financial history. This evidence also provides the date of the opening of the line and new information about its users and its closure. One of the conclusions is that the railway was reasonably successful at first, until the Croydon Canal took much of its traffic. Thereafter it could pay its way but was not able to contemplate improvements or, eventually, to maintain the track properly.

Introduction

The Surrey Iron Railway (SIR) was the first railway company established by statute and the first railway authorised by Parliament independently of a canal, as well as being very nearly the first public railway independent of a canal (public in the sense of being available for use by anyone on payment of a toll).[1] Its history is well known in broad outline, but the company's own records have not survived and there are many gaps in the story.[2] This article uses newly discovered evidence to describe the financial history of the company, to explain why it declined and to provide new information about the use made of the railway and its final years.

The evidence given to parliamentary committees on railway bills has long been one of the most important sources for railway history. But legislation was not needed only to establish a transport undertaking; it might also be required to dissolve it, as in the case of the SIR. The SIR's closure and dissolution was contested by some of those still using the line, and evidence was taken in 1846 from those concerned on both sides. The transcript survives in a volume in the Parliamentary Archives, which has been the main source for this article.[3]

The railway

The SIR from Wandsworth to Croydon (fig 1) began as a proposal for a canal, serving industries along the river Wandle, one of the most heavily industrialised rivers for its length in the country.[4] Constructing a canal was found to be impossible without taking water from the mills on the Wandle, so a railway was planned instead. There was also to be a large dock at Wandsworth, separated from the Thames by a lock so that loading and unloading could take place whatever the state of the tide. Although independent of a canal, the railway was essentially a link with the river Thames. The petition for the bill was presented on 27 February 1801, and Royal Assent was given on 21 May 1801.[5]

William Jessop, who had been active in the planning stages, was formally appointed as the company's engineer on 4 June, and the work proceeded quickly. According to Abraham Rees, the dock at Wandsworth (fig 2) was opened on 9 January 1802, at which date the line of railway was said to be formed nearly all the way to Croydon and 'the undertakers waited only for the approach of open weather to lay down the iron'. Rees added that the line was opened as far as the hamlet of Garratt, in the south of Wandsworth parish, in October 1802. The evidence of 1846 sheds light on this: it indicates that the first tolls were paid on 21

[1] The latter honour appears to belong to the Lake Lock Rail Road, near Wakefield, first recorded in 1798 (Goodchild 1977, 4), though both Malcolm (1805, **1**, 23) and Stevenson (1813, 553) thought the SIR was the first.

[2] The best account is McGow 2001, but see also Bayliss 1985, Lee 1944 and *The Engineer*, 5 January 1900, 7–8.

[3] PA: Ev.

[4] See Malcolm 1805, **1**, 6–8; McGow 2005.

[5] Bayliss 1985, 4–7.

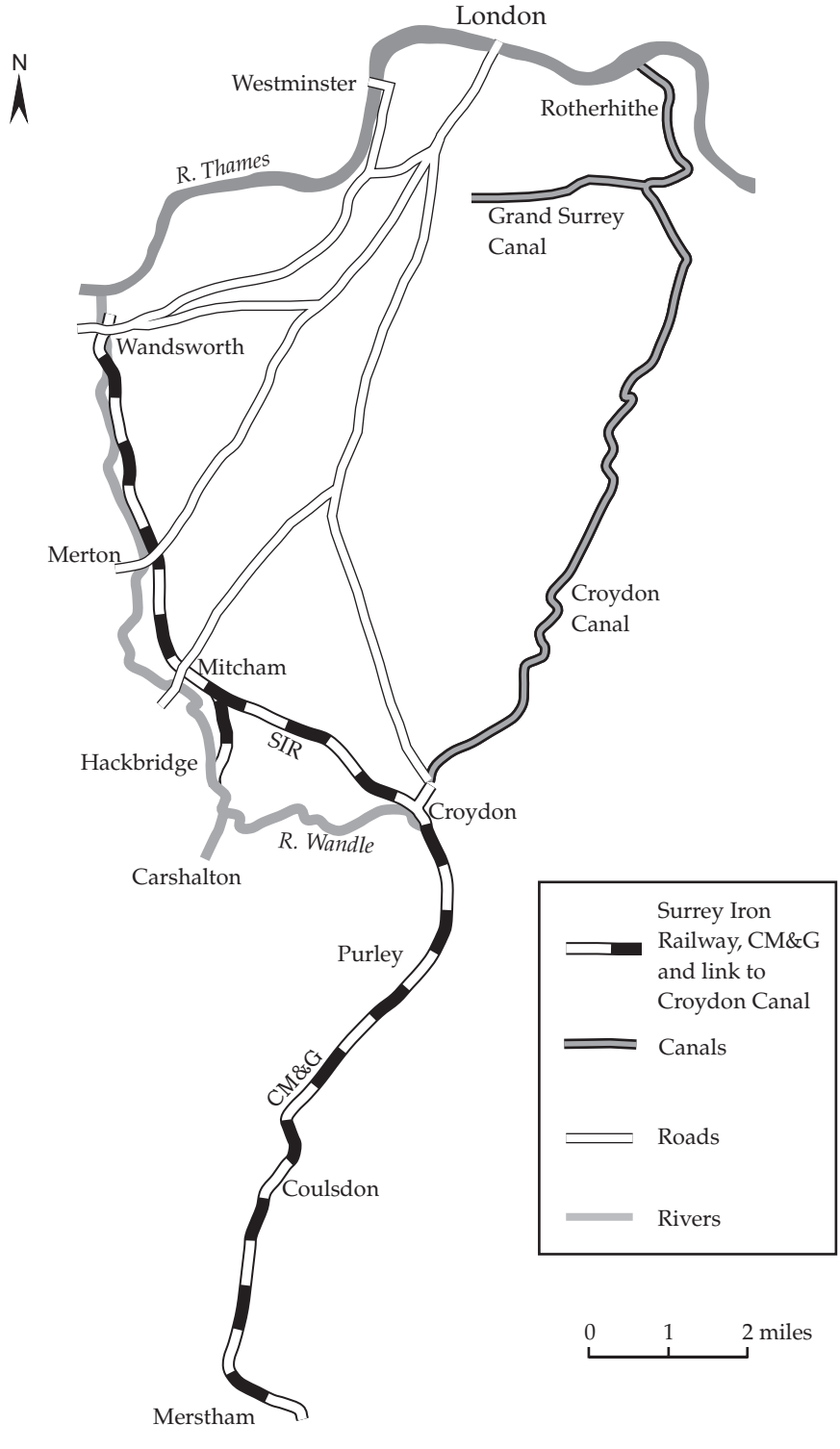

Fig 1 Map of the Surrey Iron Railway and the Croydon, Merstham & Godstone Iron Railway. The Croydon Canal and the main roads from the Wandle valley to London are also shown.

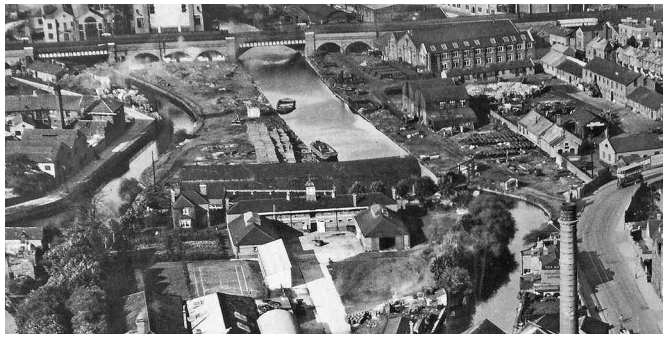

Fig 2 The Surrey Iron Railway's dock, seen from the air in about 1930, looking north. Ram Street, which came into existence as the Surrey Iron Railway's track-bed, is on the right, the dock is in the centre (about a third of it was beyond the railway bridge), the river Wandle is on the left, the Richmond Railway is in the background and Young's Brewery (which built a canal from the dock into its own works) is in the foreground. (Author's collection)

September (table 2).[6] This is confirmed by a recently discovered letter by 'A manufacturer' in *The Star* newspaper of 29 September 1802, stating that 'The Surrey iron railway is now at work from Wandsworth to Garrat. On Thursday last [23 September] I saw one small horse draw three waggons, containing thirty-three quarters of linseed [5.5–7.8 tons], *up* the road; and this before the iron has taken the polish it will receive from work.'[7] It was also stated in 1846 that the railway opened at 'the latter end of 1802' and that it was 'partly opened for trade in 1802'.[8] The formal opening was on 26 July 1803, perhaps marking the completion of the line to Croydon, or at least of one of the two tracks. In March 1805 Beaumont Charles Luttly, the company's clerk, stated 'that the whole road is laid, but that part wants gravelling'.[9]

The line started beside the dock at Wandsworth and proceeded via Colliers Wood and Mitcham to Pitlake in Croydon. There was a branch from Mitcham to Hackbridge, and shorter branches to some of the industrial sites, including George Shepley's warehouse at Wandsworth, Upper Mills at Wandsworth, the oil mill at Earlsfield, Mr Child's Merton Corn Mills and George Shepley's oil mill at Hackbridge. At least in Child's and Shepley's cases, the branches were owned by them rather than by the railway company.[10] The total length, including the Hackbridge branch, but not lesser branches, was about 9¼ miles. The only engineering works, apart from the dock, were two wooden bridges over the Wandle at Wandsworth, and the gradient nowhere exceeded 1 in 144. The line was double-track throughout. Where it followed a road it ran beside the road on railway-owned land rather than on it, except where this was impossible, as in a small part of Garratt Lane in Wandsworth.[11] But some parts of the track-bed became public roads after the railway closed, including, in Wandsworth, Buckhold Road (now moved) and Ram Street.

The rails were of cast iron, 3 feet 2 inches long, 5 inches wide and one inch thick, and rested on stone blocks usually about 16 inches square and 9 inches high (fig 3).[12] Iron rails had begun to oust wooden ones only in 1787. They cost more, but were far cheaper to maintain and allowed horses to draw larger loads. The design used by the SIR, known as

6 This casts doubt on whether the dock was really opened on 9 January 1802.

7 *The Star*, 29 September 1802, col 3c. The letter was located by Peter McGow. For the weight of linseed, see PA: Ev, 22 June, 16, 51.

8 PA: Ev, 20 June, 5, 10.

9 McGow 2001, 26; PA: HL/PO/CO/1/50, 24. Luttly was the son of the company's first clerk, William Bedcott Luttly, whom he succeeded in 1832 (PA: Ev, 20 June, 5).

10 McGow 2001, 14, 67, 123; NRO: SOX 342, map; Malcolm 1805, **1**, 24; PA: Ev, 20 June, 85.

11 WHerS: Wandsworth tithe map, 1838.

12 Lee 1944, 29; Bayliss 1985, 17.

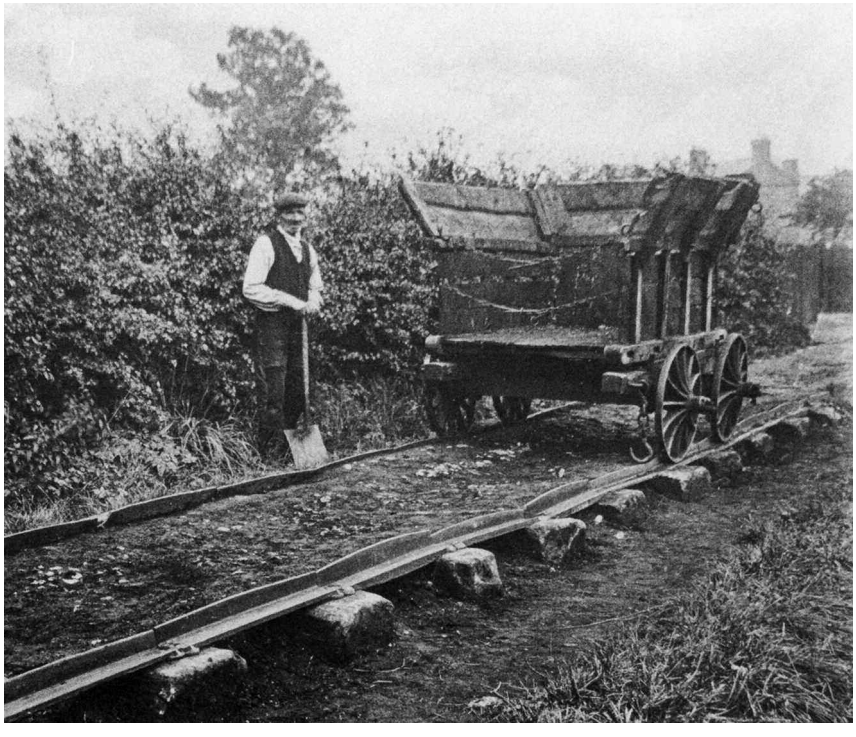

Fig 3 A waggon on the Little Eaton Gangway near Derby. This was built in 1795 by Benjamin Outram, later engineer of the Croydon, Merstham & Godstone Iron Railway, and gives the best idea of what the Surrey Iron Railway was like, with short rails, flanges on the rails to hold the rolling stock in place and stone sleeper blocks. (DRO: D 658)

the plate rail and intended for carrying wheels without flanges, was far more popular at this time than the edge rail, which was I-shaped and designed to carry flanged wheels, but the Stockton and Darlington Railway was to demonstrate once and for all in 1825 the superiority of edge rails over plate rails, and of wrought iron rails over cast iron ones.[13]

The vexed question of the gauge of the track, variously stated as from 3 feet 6 inches to over 5 feet, was resolved by excavation at Merstham in 1967. This showed that the distance between the outer faces of the rail flanges, which is how the gauge would be measured today, was 4 feet 2 inches, a typical gauge of the period.[14] The gauge was indeed 4 feet 2 inches, as specified in 1846 by William Chatting, superintendent of the SIR in 1845–6. The gauge of 3 feet 6 inches stated in 1846 by Luttly can perhaps be understood as the distance between the stone sleeper blocks, though the 1967 excavation suggests this was more like 3 feet 3 inches.[15] The track-bed was formed of chalk and flints, pounded, watered and rolled, with a 'sprinkling' of gravel on top.[16] The waggons used were 5 to 8 feet long, with wheels 2 inches wide and about 30 inches in diameter, but their form probably varied, as the waggons were owned by users of the line rather than the company.[17]

By 1802 the SIR was being envisaged as part of a line from London to Portsmouth – highly useful at a time of war with France. A railway from Croydon to Reigate, as the next step, was agreed at a meeting in 1802, authorised in 1803 and opened as far as Jolliffe and Banks'

[13] Lewis 1970, 292–6; van Laun 2003, 100.
[14] Bayliss 1985, 18; Tharby 1968, 26–8; Lewis 1970, 181–3, 267.
[15] PA: Ev, 20 June, 81, 149.
[16] *Morning Chronicle*, 27 July 1805.
[17] Bayliss 1985, 19–20; *The Engineer*, 5 January 1900, 8a–b.

quarry at Merstham in 1805, but no more was ever built. The new line connected with the SIR at Croydon, but was run by a separate company, the Croydon, Merstham & Godstone Iron Railway Company (CM&G), albeit with many of the same directors and shareholders. A separate proposal of 1802, to link the SIR to London by means of a line from Mitcham to the Thames opposite the Savoy, was not proceeded with, nor was a proposal of 1802–3 for a line from Wandsworth to near Blackfriars (for which plans were actually deposited). Part of the original motivation for extending the lines disappeared as a result of the victory at Trafalgar in 1805, ensuring British command of the sea, though linking what had already been built to both Portsmouth and London continued to be discussed intermittently until at least 1823.[18]

The railway was intended for heavy goods, and it was probably never worth taking lighter high-value goods to Wandsworth for transshipment to water transport; nor were passengers ever carried. Maximum tolls were specified in the railway's Act for a range of heavy items including coal, building materials, various metals, lime and other manures, corn and malt (all 3d or 4d per ton per mile except dung at 2d), though 'Other Goods, Wares and Merchandize' (6d) were also listed.[19] However, this is not necessarily a guide to what was actually carried. When Jessop was asked in 1806 about the benefits of the line, he mentioned coal first, and coal was carried both for sale to the general public and for industrial purposes.[20] Abraham Rees, using information from 1806, said of the railway that 'its objects are the import of coals and manures, and the export of chalk, flint, fire-stone, fullers' earth, and agricultural products' (for the CM&G he provided the same list, but added as exports lime and freestone).[21] Other evidence largely confirms that analysis. An advertisement of 1809 stated that the wharf at Wandsworth (fig 4) was open for conveyance of goods of all descriptions, 'particularly for Coals, Timber, Building Stone from the Merstham Quarries, Lime, Bricks, Corn, Seed, Malt, Flints, Gravel, and Manures'.[22] Significant flows to and from the area traversed by the SIR itself are likely to have included coal, corn, flour and seeds. For example, around 1818, James Newton and William Simpson, calico printers at Merton Abbey, stored their bulk consignments of coal in a warehouse at Wandsworth and had it delivered from there as required by the railway's lessee. Richard Glover, an SIR proprietor who operated snuff, paper and corn mills near Mitcham bridge, leased a warehouse at Wandsworth from the railway company from 1804 to 1820, and also held a warehouse at the railway's Croydon terminus from 1810 to about 1815.[23]

The SIR benefited considerably from traffic originating on the CM&G. This included material from the lime works and gravel pits at Haling, gravel pits in and around Purley, and fuller's earth pits at Nutfield and Reigate, together with chalk and timber, but above all stone and lime from Jolliffe and Banks' quarry at Merstham.[24] Broken limestone could be burnt in a kiln to make 'lump lime' and afterwards crushed to produce powdered lime (quicklime), which was used to make mortar, to neutralise acidic soils and for various industrial processes. The kiln needed to be where either limestone or fuel could be brought cheaply, and from 1807 there were lime kilns on the railway's wharf at Wandsworth, assessed for the land tax at £36 per year and specified in 1809 as three kilns. They were occupied in 1807 by Anderson, Eades & Co and from 1808 by Jolliffe and Banks.[25] George Anderson and George Harrison Eades were partners of Hylton Jolliffe and Edward Banks in the Merstham

[18] Lee 1944, 12–21; Bayliss 1985, 8–12; McGow 2001, 45–7, 58–64; *Morning Chronicle*, 13 December 1802, 22 August 1803.
[19] Lee 1944, 10.
[20] Bayliss 1985, 14.
[21] Rees 1819, **6**. British Library, 435 k.19, states on the title page that Rees's article on canals was an abridgement of an unpublished work by John Farey of 1806, and the text reflects this date.
[22] *Morning Chronicle*, 18 October 1809.
[23] McGow 2001, 73–4; SHC: land taxes.
[24] McGow 2001, 83–4.
[25] SHC: land taxes.

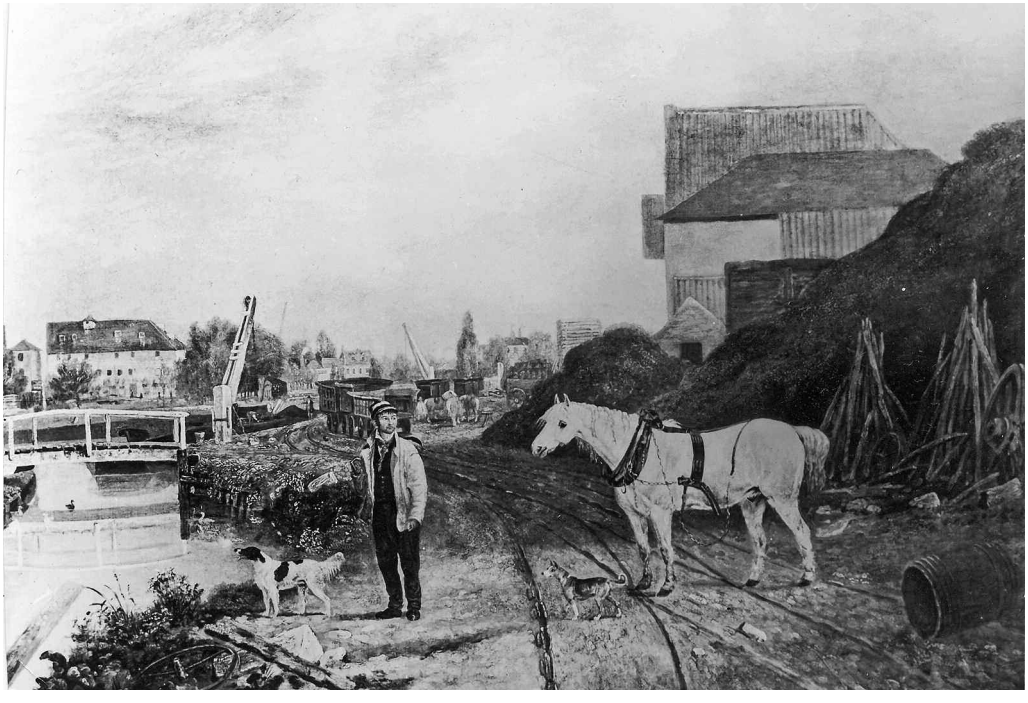

Fig 4 The Surrey Iron Railway's dock and wharf at Wandsworth, seen from towards the north end of the present Ram Street, looking north. On the left is the dock, and in the background on the left is the Lower Mill. This is the only known view showing the railway in operation. Its date is unknown. (Author's collection)

Limework Company, established between 1804 and 1806, but from 30 June 1806 the business was carried on by Jolliffe and Banks, with Anderson and Eades acting only as commission agents.[26] The railway was clearly an integral part of the lime business. Equally clearly, limestone was extremely important to the railway, since even a single small kiln might use 16 tons of limestone per day, and large ones might use six times as much.[27]

The cost of the railway

Jessop's estimate in 1801 of the cost of the railway had been £33,000, probably excluding the dock, indicating about £3600 per mile.[28] The share capital authorised in 1802 was up to £50,000 in shares of up to £100,[29] indicating 500 shares. By 1 March 1805 the company had received £49,805 (excluding tolls) and was owed a further £484 by shareholders; it had spent or committed £54,688, plus £2273 lost in a bank failure and £1738 for sundry bills (perhaps operating costs).[30] It needed more capital than the initial £50,000. A further £10,000 through new shares or a mortgage of the tolls was provided for in an Act of 1805, which cited 'the great Advance in the Price of Materials and Labour, and [...] other Circumstances'.[31] Evidence given in 1846 was that payment of the original £100 per share

[26] McGow 2001, 86.
[27] Searle 1935, 282, 287; Williams 2004, 29.
[28] McGow 2001, 27.
[29] 41 Geo III cap 33, s. 35, 36, 39.
[30] PA: HL/PO/CO/1/50, 24.
[31] 45 Geo III cap 5.

was begun in 1801 and completed in 1802, and that the £20 shares (evidently a further 500 shares making up the additional £10,000) were paid for in 1805 and 1806.[32]

However, it was also stated in 1846 that 'To declare and pay a dividend of only £1.0.0 per share requires one thousand pounds of money within £2 or so', which indicates that there were 1000 shares of equal value.[33] The 1805 Act authorised the company to raise an additional £10,000 by issuing new shares of the same value as the earlier ones, but this was a failure, and another Act in 1806 allowed the company to make the new shares of such value as it chose and to dispose of them at such prices as it chose, with the provisos that holders of existing shares should have first call on an equal number of new ones and that shares sold at less than £100 would not carry an entitlement to vote or to serve on committees.[34] Evidently the company designated the shares as £100 ones but sold them for £20, diluting the value of the original shares, hence a reference of 1819 to the sale of fourteen 'double shares' in the railway.[35]

The £60,000, or, on the March 1805 figures, about £54,700, had paid for both the railway and the dock. The claim made at a meeting in 1803 that the railway had cost £6400 per mile appears to have been based on a division of the full £60,000 by the number of miles of railway, ignoring the dock. It was countered by a claim (by advocates of extending the railway) that the cost was not more than £4500 per mile.[36] On that basis the railway cost about £41,600 and (using the March 1805 total) the basin about £13,100. A letter of 1810 from Luttly refers to a cost per yard of £1 13s 6d 'For forming and gravelling the Road [...] and for the Stone and Iron including Labour Plugs and Spikes' but excluding the cost of land and parliamentary and administrative expenses.[37] This indicates a cost per mile of £2948 and a total cost of about £27,300 for the track-bed, sleepers and rails. With the addition of the £10,000 estimated in 1800 for land purchases[38] and unknown parliamentary and administrative costs, it is reasonably consistent with the £4500 per mile and total £41,600 stated above.

Running costs and income

The company's running costs were listed by Luttly in 1846, and are shown in table 1. The list relates to 1845–6, when the line was in hand rather than leased out. There were four employees, apart from the part-time clerk – superintendent, lockman, watchman and repairman. The cost of repairs, including the repairman's wages and repairs to the dock, were put at £202, minus £30 received for broken plates. As discussed later, this probably covered repairs to only one of the two tracks, and only between Wandsworth and Hackbridge, and costs were kept down by using the material from one track to repair the other. Twenty-five years earlier the annual cost of repairs had been put at £262.[39]

Having stated the expenses as 'between £500 & £600 as near as I can judge it for the present year', Luttly opted for the £600 figure. To the £523 12s 0d in the first part of table 1 he added £30 a year for the salary of the clerk, £10 for law charges, £10 for

[32] PA: Ev, 20 June, 6, 9–10. A surviving share certificate is numbered 814 (Lee 1944, 10). The 1846 evidence and the statement of income by 1 March 1805 contradict the statement in *The Engineer*, 5 January 1900, 8a, that the shares were 'apparently £94 paid up'.

[33] PA: Ev, 20 June, 13–14.

[34] 45 Geo III cap 5; 46 Geo III cap 94.

[35] *The Times*, 1 May 1819.

[36] Rees 1819, **6**. Basil Cane was said to have put the cost at 2 guineas per yard, or about £3700 per mile (*The Engineer*, 5 January 1900, 8b).

[37] Bayliss 1985, 8; McGow 2001, 27.

[38] Bayliss 1985, 8. Some of the land was not paid for until decades later (Bayliss 1985, 23; WHerS: Wandsworth vestry minutes, 1830–47, 17 August 1832).

[39] Tables 1 and 2. In 1815 the cost of repairs to a heavily used iron railway was put at £170 per mile per year (Lewis 1970, 295).

Table 1 Annual expenses (in £ s d) of the Surrey Iron Railway, as stated in 1846 (original spelling):

Dr.	Superintendant	100	0	0
	Lockman, with house to live in rent free	54	12	0
	Watchman	52	0	0
	Man to repair tram road	52	0	0
	Repairing bridges, locks, cranes etc	75	0	0
	Metal plates and nails for tram road	75	0	0
	Rates and taxes	115	0	0
	Books, stationery & sundry expences	30	0	0
		553	12	0
Cr.	By broken plates	30	0	0
		523	12	0

Clerks [£30]
Law charges [£10 plus £50]
Rent City of London [£10]
q see what other outgoings [disbursements £10, tavern bills £20, meeting rooms £3 8s.; total said to be £626, probably before taking into account broken plates, or £670 with the extra £50 law charges; actually £657]

(Source: PA: Ev, 20 June, 110 (and 121–2 for material in square brackets))

'disbursements', £20 for tavern bills, £3 8s 0d for meeting rooms, £10 as rent to the City of London in respect of the dock and a further £50 for legal expenses, reaching a stated total of £670 (actually £657).[40] He may well have exaggerated the costs, and the further £50 for legal expenses is disregarded here as likely to be peculiar to 1845–6, leaving a total of about £610. Of this, staff accounted for 47% and repairs for 33% (in both cases including the repairman).

As Luttly pointed out, when the tolls were leased out, the company had little to pay at all: the costs of repairs and staff (except the clerk) were borne by the lessee. Any serious expenses were likely to be caused by the dock since, at least in the last years of the railway, the lessee was not responsible for repairs occasioned by tempest or flood. Luttly referred to a high tide, which had made new lock gates and other repairs to the lock necessary at a cost of £1500.[41] But in general, when the toll lessee paid for staff and repairs, the company could probably break even with lease income of about £130.

The company's income from tolls or leases of tolls since the opening of the railway and dock was also set out in 1846, and is shown in table 2. One conclusion from table 2 is that the company was more often directly involved in running the railway and dock than has previously been realised. Probably its preference was to avoid this burden when it could find a suitable lessee, but the railway and dock were in hand in 1802–6, 1809–14, 1817–18 and 1845–6. Another conclusion is that the company apparently always covered its costs, except when it had to pay for major repairs to the dock, but that, like many transport undertakings before and since, it never (after its first few years) had sufficient income to pay respectable dividends or carry out significant improvements, or probably even to maintain the line properly.

Table 2 shows an almost continuous deterioration in the company's finances from 1809, but with that deterioration concentrated in several periods. With the information available concerning costs and when the railway and dock were in hand and when leased out, the deterioration can be analysed. The major unknown is the extent to which tolls changed. The little evidence available indicates a reduction at some date between 1804 and 1845, since

[40] PA: Ev, 20 June, 116, 121–2. Jessop's estimate in 1800 of the annual cost of maintenance and running expenses was £600 (McGow 2001, 9).
[41] PA: Ev, 20 June, 74, 116–18.

Table 2 The Surrey Iron Railway Company's income from tolls or leases of tolls, 1802–46

Date	Income (£ s d)	Income per year (to nearest £)	Conjectural income net of costs per year (to nearest £10)	Comments
21 Sept 1802–5 July 1806	5647 4 11¼	1492	1000	Tolls [railway only partly open 1802–3; tolls about £2200 in 1805 – hence net income *c* £1690]
7 July 1806–7 July 1809	7560	2520	2390	Lease; lessees lost money
July 1809–1810	2169 14 8	2170	1470	Tolls
1810–11	2052 9 7¾	2052	1350	Tolls
1811–12	2322 10 0	2323	1620	Tolls
1812–13	1929 4 4	1929	1230	Tolls
1813–31 May 1814	1538 1 8	1676	980	Tolls
1 June 1814–1 June 1817	2280	760	630	Lease
1817–18				Tolls; amount not known (except £70 3s 4d for June 1817)
[1 May] 1818–1 Jan 1822	2888	788	660	Lease; £1050 pa, minus £262 pa for repairs
1 Jan 1822–1 Jan 1823	800	800	670	Lease
1 Jan 1823–1 July 1828	3300	600	470	Lease
July 1828–1 July 1835	3500	500	370	Lease
1 July 1835–1 July 1845	3000	300	170	Lease
1 July 1845–31 May 1846	1066	1161	550	Tolls; increased rates

Source (except for fourth column): PA: Ev, 20 June, 10–13, 111–13. For tolls in 1805, PA: HL/PO/CO/1/51, 398–9.

Note: The table indicates the company's income rather than the lessees' income. Dates are as stated. The first account contradicts itself with an inexplicable entry of £2471 12s 4d for tolls 1 June 1814–1 June 1819. Whereas the first account has £500 for 1 July 1831–1 July 1833 and then £300 from 1 July (no year) onwards, the second has £500 a year for 1828–35 and £300 for 1835–45; the lease is known to have been renewed in 1835 (McGow 2001, 71), and the second account is therefore relied on here. £760 is given as the lessee's annual payment in 1814–17, whereas the lessee himself said it was £750. Note that transcripts of private bill evidence were not corrected in this period (Gerhold 1997, 14), so there are sometimes errors.

Conjectural net income: The company's costs when the railway and dock were in hand are assumed to be £700 (disregarding Luttly's extra law costs and using for repairs the 1818–22 figure in the table instead of Luttly's), but £440 in the first three years when repairs did not have to be paid for and £610 in 1845–6 (using Luttly's figure for repairs). When the line was leased out neither repairs nor staff had to be paid for; the position regarding rates and taxes, especially the latter, is less clear, and these are arbitrarily split half and half between company and lessee here, as are stationery, tavern bills and 'disbursements', leaving £130 for the company to pay. The company probably also received the rent for leasing out parts of its Wandsworth property, usually assessed at £56 per year in 1807–13, £20 in 1814–20 and £32 in 1821–30.

the charge in early 1845 for linseed was 2d per ton-mile, compared with 3d in 1804.[42] This suggests that traffic may have declined somewhat less than the figures in table 2 suggest, but it does not alter the chronology of financial decline.

Toll income in the company's first years was healthy, at about £1492 per year in 1802–06, but that average masks significant variation, since at the start of the period only part of the SIR was open, whereas from July 1805 both the SIR and the line to Merstham were fully open. The tolls for more than two years up to 1 March 1805 totalled £1917, whereas tolls in the whole of 1805 were about £2200, even though the Merstham line was open for only

[42] PA: Ev, 22 June, 18; Bayliss 1985, 14.

half that period.[43] Moreover, for the first three years the cost of repairs to the railway was borne by the contractors who had built it.[44] From 1806 to 1809 the line was leased out, apparently to Charles Morris & Co.[45] According to Luttly, the lessees, who agreed to pay £2520 per year, lost money, but the toll income both before and after that period suggests that the amount was not wholly unreasonable.

After the 1806–9 lease ended, toll income remained high, with a peak in 1811–12, but there followed a sharp decline in revenue from 1812 to 1814. Net income estimated on the basis of the company's figures fell from £1620 in 1811–12 to about £630 in 1814–15,[46] and the lessee of 1814–17, Basil Cane,[47] paid less than one-third of the 1806–9 figure. Actual tolls, and thus traffic, would have declined less sharply, since Cane needed to cover his costs and make a profit as well as to pay the rent, and costs were probably reasonably constant. Actual tolls needed to be about £1330 plus whatever he regarded as a reasonable profit, so toll income and traffic were probably between one-half and two-thirds of what they had been in the best years of the company from 1806 to 1811. The effect on the company's finances was severe.

The cause of the decline in traffic was the Croydon Canal, authorised in June 1801 (just five weeks after the SIR itself) but not opened to Croydon until October 1809. Heavy goods could then pass by barge between Croydon and London wharves without any transshipment, which undoubtedly resulted in much CM&G traffic as well as Croydon traffic being diverted to the canal. The effect of this was apparently felt not when the canal opened to Croydon in 1809 but only after a short connecting rail link was opened in Croydon from the canal to the two railways in late 1811,[48] reducing the transshipments required at Croydon from two to one; even then it was several years before the full effect was clear. The impact of the canal and the timing of that impact are confirmed by an unexpected source: Wandsworth vestry's minutes. Basil Cane had protested to the justices of the peace about being assessed for parish rates in Wandsworth on the full sum he paid to the railway, as opposed to his expected profit. He secured a reduction in the assessment from £750 to £500, and then a further reduction by the rates committee to £300, at which point Wandsworth vestry instructed the churchwardens to investigate Cane's accounts.[49]

Cane told them that 'the profits of the Railway have been very considerably reduced, in consequence of the Articles usually sent to the Wandsworth Bason, from the Estate of Mr. Joliffe, being conveyed by the Croydon Railway, and the Croydon Canal, whereby the receipts of the Surrey Railway have been diminished upwards of £600 per annum'. When asked why he had accepted one abatement (to £500) but then requested another, Cane said the first abatement was made in August 1814, when he had held the SIR lease for only two months and had not been aware of 'the effect the Croydon Railway and Canal has since

[43] PA: HL/PO/CO/1/50, 24; PA: HL/PO/CO/1/51, 398–9. The total stated for 1802–6 (table 2) seems to exceed what the individual figures suggest.

[44] Marshall 1803, 15.

[45] The railway's main land tax payment was made by Morris & Co in 1809, and they were also tenants of the company in 1808, but are not separately listed in 1806 or 1807; see also McGow 2001, 66.

[46] The valuation of the SIR for the land tax in Wandsworth was £50 in 1803–4, £100 in 1805, £200 in 1806–16 and thereafter nothing.

[47] Cane was superintendent and wharfinger in 1809; he had probably been appointed to that post in 1806, and appears in the land tax assessments for Wandsworth from 1807 (*Morning Chronicle*, 14 June 1806, 18 October 1809; SHC: land taxes).

[48] McGow 2001, 89–90.

[49] WHerS: West Brixton Petty Sessions minutes, 1812–16, 6 August 1814; Wandsworth vestry minutes, 1796–1817, 7 March, 14 and 28 December 1815. In 1806, when the tolls were leased for £2520, the parish was persuaded to reduce its assessment from £1500 to £1000 (40%); in 1814 the magistrates agreed that the same ratio should apply (hence the £300 assessment on Cane); the only surviving Wandsworth rate book, for 1836, indicates the same ratio (lease £300, assessment £120 (WHerS: West Brixton Petty Sessions minutes, 1803–7, 30 August 1806, 1812–16, 6 August 1814; WHerS: Wandsworth 1836 rate).

produced in the diminution of his profits'.[50] The last point regarding the precise timing is not convincing. The Wandsworth churchwardens recorded that Cane's profit in 1814–15 was £308, which, added to the £750 for the lease and perhaps £570 for costs, indicates total receipts of about £1628 – not much below the £1676 in 1813–14. On the other hand, the reduction in receipts from 1811 is confirmed in table 2, and confirmation of declining use of the SIR by Jolliffe and Banks is provided by the land tax assessments: Jolliffe and Banks' lime kilns at Wandsworth are last mentioned in mid-1813, and had gone by mid-1814, though Jolliffe and Banks continued to occupy a warehouse at Wandsworth until 1819 and Merstham continued to be important to the SIR, as discussed later. Perhaps it had taken Jolliffe and Banks several years to establish new kilns served by the canal, or the advantage of changing from rail-kiln-river-cart to rail-canal-kiln-cart was marginal. Whatever the case, the closure of the lime kilns at Wandsworth must have been a severe blow to the railway. It is clear that, but for the Croydon Canal, the SIR would have remained moderately successful, continuing to provide a low but respectable return of perhaps 2½% a year on the capital invested. It is perhaps relevant that the canal was a much greater financial failure than the railway.[51]

Cane evidently abandoned his five-year lease in 1817, but apparently not because of a further decline in traffic, since the rent for the tolls remained stable until 1823. The company failed to find a new lessee in 1817, but secured one in 1818 – Anthony Lyon, barge-builder, wharfinger and coal merchant at Wandsworth,[52] who paid slightly more than Cane had done. But after 1822 there was a slow deterioration in the railway's finances, with lease income falling from £800 in 1822 to £600 in 1823–8, £500 in 1828–35 and £300 in 1835–45. Again, actual tolls would have declined less sharply: the sums needed to cover the lessee's costs and rent (but not the lessee's profit) probably fell from about £1350 in 1822 to £800 a year in 1835–45. There are four possible reasons for this decline: the decline of the Wandle valley's industries, deterioration in the quality of the track, improvement in the roads and a reduction in traffic from the CM&G. As regards the Wandle industries, some of these, such as dyeing and calico printing, were indeed in decline, but departing industries were still being replaced by new ones and few industrial sites had gone out of use by 1846.[53] In any case, some Wandle industries, notably seed-crushing, evidently provided far more traffic for the railway than others, and the number of seed-crushing establishments did not change. As regards the track, the underlying problem was the short plate rails and the narrow wheels of the waggons. The short rails easily became uneven, which contributed to breakages. Two German engineers noted in 1826–7 that the narrow wheels wore deep grooves in the rails, and in 1830 it was observed that the track was 'generally filled with dirt and stones, and of not more use than a common road', though the last part was an exaggeration.[54] Maintenance standards almost certainly did deteriorate, and there is evidence (discussed later) of a decline in the weight that could be drawn per horse, though it is not possible to link this with the timing of the decline of the SIR. It was of course as much a result as a cause of that decline. The third possibility, improved roads, may have been significant in the 1820s, as turnpike trusts increasingly adopted McAdam's methods of road repair, increasing the loads that could be drawn per horse on ordinary roads.[55]

However, the fourth factor, reduction in the CM&G traffic, probably had the greatest impact on the SIR. According to Luttly in 1846, CM&G traffic on the SIR had been 'most considerable in its amount when the Merstham works were at work', providing about half the SIR's own traffic, but by the time the CM&G closed in 1838–9 it was 'very small'.[56] The

[50] WHerS: Wandsworth vestry minutes, 1796–1817, 28 December 1815.
[51] McGow 2000, 74, 81–3.
[52] McGow 2001, 71; *Morning Chronicle*, 6 May 1817; table 2.
[53] See the detailed histories of individual sites in McGow 2005.
[54] Bayliss 1985, 16; *The Engineer*, 5 January 1900, 8b.
[55] Gerhold 1996, 499–500.
[56] PA: Ev, 20 June, 83. A draft lease of the CM&G in December 1836 provided for rent of only £170 a year (Bayliss 1985, 12).

key date was not the dissolution of the partnership of Jolliffe and Banks in 1833, which brought to an end their civil engineering business, but probably the closure of the underground stone quarries at Merstham, apparently in the 1820s, which would correspond with the SIR's declining income.[57] The best indication of the level of activity at Merstham may be the fortunes of the CM&G, which paid dividends of 1% in all but two years from 1809 to 1820 and then 1% in 1825, ½% in 1826 and 1½% in 1832 (it was at best very slightly more successful financially than the SIR).[58] Declining activity at Merstham was probably the main reason for the reduction in the rent paid for the SIR's tolls in 1823 and 1828.

In 1835 the reduced rent for the tolls may have reflected the threat of a railway between Croydon and London. In fact, the closure of the Croydon Canal in August 1836 following its purchase by the London & Croydon Railway, almost three years before the opening of the railway in June 1839, must have increased receipts on the SIR, as must the SIR's substantial traffic in bricks for the London & Brighton Railway during its construction in 1839–41. On the other hand, the closure of the CM&G in 1838 and the opening of the London & Croydon Railway in 1839 must have had the opposite effect.[59] These factors would have affected the receipts of the SIR's lessee and not those of the company itself, so they are not reflected in table 2. The Act of 1846 for dissolving the company claimed that traffic 'has of late Years been gradually diminishing' and was scarcely sufficient to meet expenses,[60] but the company seems to have quietly continued, neither making nor losing money, during the ten years of the 1835 lease.

The company's income increased considerably in the railway's final year. This resulted from taking the line in hand and increasing toll rates to the maximum allowed by the company's Act, which in at least some cases, such as oil seeds, meant a doubling. It was acknowledged to have driven some traffic away.[61] According to Luttly, who was of course seeking to prove that the railway was not needed, the line was 'hardly usable' in 1846 and the traffic 'extremely insignificant'; many people, including coal dealers, preferred to use the public highways. Indeed, he stated that 'The traffic at present is insufficient to pay the expenses of a boy going up the line to look after any damaged roads plates &c.', though he does in fact seem to have included such a person in his list of expenses.[62]

Dividends paid were never generous, and ceased altogether after 1825 (table 3). They amounted to only about 0.4% per annum over the 44 years of the railway's operation. In 1806 and 1807 dividends were 2½% and 3% per annum respectively, but thereafter never more than 1.7% in any one year and in many years nothing. The dividends can be related to the receipts in table 2. High income made the company confident enough to pay out £1500 in March 1806, and £1800 in June 1807. Thereafter the knowledge that the lessees were losing money may have made them more cautious. There were even leaner times after 1813,

[57] *The Engineer*, 19 January 1900, 58b; Sowan 1984, 41; McGow 2001, 87; Bayliss 1985, 74. The decline in Merstham traffic may have reflected the London housebuilding cycle: London housebuilding rose to a peak in 1825 and then declined sharply to 1832 (Cairncross & Weber 1956–7, 291–2).

[58] McGow 2001, 91. The figures given here assume a £1 dividend was a 1% return on a £100 share. Uncertainty arises over the total return because £100 shares were not necessarily sold for £100. In the SIR's case, £120 bought two shares each denominated £100. A reference to a double share in the CM&G suggests a similar situation (*Morning Chronicle*, 15 April 1819). The CM&G was authorised to raise up to £90,000, but by June 1806 only £45,500 had been raised, and a second Act in July 1806 provided for raising the remaining £44,500 (*The Engineer*, 19 January 1900, 57–8; Bayliss 1985, 10–11), but it is not clear how much was raised, or whether £100 shares were sold for less than £100. If *The Engineer* was right to suggest that the CM&G's capital after the 1806 Act was £65,000, and the extra was raised by selling shares at below face value to existing shareholders, the payment for one existing and one new share totalled £144, a £1 dividend per share was more than a 1% return and the dividends throughout the company's life totalled 18%, compared with the SIR's 17%. If all shares were sold for £100, the CM&G's total return was only 13%.

[59] Bayliss 1985, 21; PA: Ev, 20 June, 124.

[60] 9 & 10 Vict., cap 33, s 1.

[61] PA: Ev, 20 June, 115, 22 June, 18–19.

[62] PA: Ev, 20 June, 13, 20, 106–7; table 1.

Table 3 The Surrey Iron Railway's dividends

Date	Payment per share (£ s d)	Approximate total sum paid (£)
1 March 1806	1 10 0	1,500
4 June 1807	1 16 0	1,800
1 June 1809	1 0 0	1,000
7 June 1810	1 0 0	1,000
3 June 1813	1 0 0	1,000
4 June 1818	1 0 0	1,000
1 June 1820	1 0 0	1,000
7 June 1821	1 0 0	1,000
3 June 1824	0 10 0	500
2 June 1825	0 10 0	500
Total	10 6 0	10,300

Source for payments per share: PA: Ev, 20 June, 9.
Note: The total sums are calculated on the basis of a £1 dividend requiring £1000. Since the shares had cost £100 and £20, the payment per share was the return on a £60 investment.

and the next dividend was not until 1818. The payments in 1820 and 1821 significantly exceeded income, though the smaller ones in 1824 and 1825 did not. Subsequent income may well have been swallowed up by expenditure on the dock, which was not borne by the lessee. In 1846 Luttly stated that the company's capital (presumably working capital) was under £1000 and was exceeded by liabilities.[63]

A rough attempt can be made to convert toll income into tonnage, though it is complicated by the fact that the income included both railway tolls and lockage, and that the railway traffic was carried over varying distances. In the earlier years, when the railway was busier, it seems reasonable to assume that all or most of the traffic using the dock (paying 3d per ton, or slightly less for coal) was also carried on the railway. If it is also assumed that the typical toll was 2d or 3d per ton-mile, averaging 2½d per ton-mile,[64] and that the typical journey was 4 miles (allowing for traffic from the CM&G using the whole line but the SIR's own traffic being heavier near Wandsworth), and receipts in the peak year of 1811–12 (£2323) are taken into account, the tonnage carried was then 42,900. At 2 tons per waggon, there would have been about 69 waggons using the line per working day, comparable to the numbers on many coalfield lines in the 18th century.[65] In 1845–6, making the same assumptions but increasing the tolls (to 3½d per ton-mile and 4d for the lock), the railway could have carried 15,500 tons, but this is very uncertain: if Chatting was correct that the tolls in 1845–6 were 'principally lockage',[66] the tonnage by rail would have been much lower, but the shorter length of haul (without the CM&G traffic) could have meant that the tonnage was higher.

The railway's users in 1845–6

Detailed information was provided in 1846, especially by William Chatting, about the use made of the railway. Chatting had been clerk to the last lessee, James Lyon of Wandsworth, and was now superintendent to the company. Lyon, who had entered into partnership with his father, Anthony, in 1823 and succeeded him on his death in 1832, was evidently the unnamed lessee of the Wandsworth dock who was auctioning stock including 32 rail waggons in June 1845.[67] Chatting provided a pessimistic view, reflecting his new employers' determination to close the line. He stated that Lyon had been carrier for others but had not

[63] PA: Ev, 20 June, 19.
[64] For toll rates, see Bayliss 1985, 14.
[65] Lewis 1970, 206.
[66] PA: Ev, 20 June, 151.
[67] PA: Ev, 20 June, 122–3; TNA: PROB 11/1803, Anthony Lyon; Bayliss 1985, 23.

carried much. Five others had carried coal on the line for their own uses (Messrs Maslin, Petherhead, Chapman, Rogers and Burnett), but only Lyon had done so for the general public. He had carried coal from Wandsworth to Croydon and Carshalton, but this now went entirely by the London & Croydon Railway; in fact nothing was now being carried on the line to Croydon. The tolls were 'principally lockage' (they also included wharfage and porterage), and 'nearly all' that was brought into the dock at Wandsworth was carried away by road waggons unless the railway passed close to the relevant premises.[68]

According to Chatting, there were now only five users of the line, and the tolls were principally on wheat and seed. Lyon had used it only three or four times in the past eleven months, paying under £10 in tolls. John Child, corn miller at Merton Mills, who had his own branch and four railway waggons, had used it five times since November, paying only £3 in tolls, and got corn to his mill by road waggons instead. The others were James Watney, occupier of the Lower, Middle and Upper Mills, all flour mills, at Wandsworth, George Lee, seed crusher at Earlsfield Mill, and Messrs Saunders and Harrison, seed crushers at Hackbridge Mills, Carshalton. The latter, located at the end of the Hackbridge branch and having a warehouse at Wandsworth, carried goods seven miles on the railway, whereas no others, except possibly Lyon, ventured more than three miles from Wandsworth.[69]

John James Saunders gave evidence on behalf of Saunders and Harrison, who were seeking compensation for closure of the railway. Saunders emphasised that the railway's existence had been an essential consideration in taking the lease of the mill, and that they would not otherwise have paid so much for it. They had been working the mill for two years, and in that time had carried over 4000 tons on the railway, principally linseed and linseed cakes, but also 138 tons of coal, corn and casks. From 31 August 1844 to 28 January 1845, 'which are the working months of the 12 months', they had carried 2070 tons on the railway and, from 1 July 1845 to 30 April 1846, 2073 tons. Chatting's figures indicate that they carried 399¾ tons by railway in January 1846, whereas there was sometimes less than 5 tons per month in summer. So important was the railway to the business that similar amounts were sent by it even after tolls were doubled.[70] On the basis of 2070 tons per year, the company paid £121 in railway tolls alone in 1844–5 and £242 in 1845–6, the latter being 23% of all tolls including lockage.

Saunders and Harrison were however selective about what they carried by railway. Once the oil was pressed from the linseed, it was sent to London by carts rather than by railway:

> By railway we should only get to Wandsworth where at Wandsworth we should have to put it into a barge & by the barge convey it to London and then only to a wharf, whereas the wagon takes it direct from the mill to any part of London; there is an additional reason also that there would be a very great inconvenience in moving casks of oil out of the wagon at Wandsworth into a barge & the necessity also of detaining a barge a long time there to get a full load of oil. A wagon carries 5 pipes of oil whereas the barge will require 40 or 50 pipes to fill it, or more, 70 or 80; that would cause a great detention of the barge so that altogether as regards oil it is better to send it direct to London.[71]

In other words, for small quantities going to dispersed customers, it was better to use road from door to door. Empty casks for London and occasional small quantities of oats and coal were also carried by road.[72] No doubt the railway's customers had been making similar judgments ever since 1802.

[68] PA: Ev, 20 June, 122, 124–5, 136, 151, 155, 157, 22 June, 62–3.
[69] PA: Ev, 20 June, 85, 131, 133, 135, 137, 151, 160; McGow 2005 (for identification of the mills).
[70] PA: Ev, 20 June, 158–60, 22 June, 14–19, 24, 38, 46–9.
[71] PA: Ev, 22 June, 22–3.
[72] PA: Ev, 22 June, 56.

Saunders provided some interesting information about the way his goods were carried on the railway, though unfortunately the committee on the Bill, clearly becoming bored, would not allow him to make his detailed comparison of costs between railway and road. The business owned eleven railway waggons, and kept eight horses, though not exclusively for hauling on the railway. Each waggon carried 2 tons, and 'We generally put one horse to each waggon'.[73] Whereas Jessop had indicated that horses would be able to draw eight times as much as horses could then draw on ordinary roads, and the reference from *The Star* of 1802 bears this out, Saunders and Harrison's horses were drawing about four times as much as horses could draw by road in 1802, though not quite three times as much as could usually be drawn on the improved roads of the 1830s and 1840s (2 tons per horse by rail compared with about 15 cwt by road).[74] Saunders reckoned five extra horses would be needed if the railway closed.[74]

The end

There is no doubt that the railway was in a bad state by 1846, and Luttly noted that 'a great portion' of one track had been taken up in order to repair the other.[76] The decision to close the railway seems to have been taken by a meeting of shareholders as early as 1842.[77] But Lyon's lease ran to 1845, and the proprietors perhaps hoped to make an advantageous sale to a railway company that would modernise the line, which they nearly succeeded in doing. The London & Brighton Railway (L&BR) had reached Croydon in 1841, but its trains passed on to London over the lines of other companies, to which it had to pay tolls. It sought an alternative route to London in conjunction with the London & South Western Railway (LSWR), which in 1844 was planning to extend its main line from Nine Elms to Waterloo. In August 1844, William Chaplin, Chairman of the LSWR, agreed on his own authority to purchase the SIR as far north as Allfarthing Lane, Wandsworth, for £14,000 or £19,000 (the sources disagree on the amount, though the latter is more likely).[78] This agreement was superseded by one of 1 October 1844, whereby the LSWR became the purchaser, and paid a deposit of £1000. Under a separate agreement, the L&BR was to join in the purchase and to build a railway on the land from Croydon to the point where the SIR crossed the LSWR (now Earlsfield Station) (fig 5). The LSWR and L&BR were to pay the costs of the SIR obtaining the Act needed to dissolve itself. The L&BR changed its mind as early as November 1844 and selected an alternative route to join the LSWR, and in 1846 it merged with the London & Croydon, so that an alternative route into London was no longer needed, but it remained committed to sharing the purchase of the SIR with the LSWR.[79] Crucially, while the agreement of August 1844 and that between the LSWR and the L&BR provided for the SIR's land to be used as a railway, the agreement of October 1844 with the SIR did not.[80]

The LSWR and L&BR were committed to purchasing the SIR's land that they no longer needed, and to paying for the company's dissolution, provided that the SIR could obtain authority to sell the land to them. However, the SIR was unable to obtain an Act authorising its dissolution without the insertion of a clause requiring it to offer its land back to the

[73] PA: Ev, 22 June, 50–1, 54, 58.
[74] Bayliss 1985, 6; *The Star*, 29 September 1802, col 3c; Gerhold 1996, 499–500. Ten cwt per horse (at most) is more likely for horses on ordinary roads in 1802 (*ibid*).
[75] PA: Ev, 22 June, 24.
[76] PA: Ev, 20 June, 13, 17, 110.
[77] PA: Ev, 20 June, 76, 22 June, 45.
[78] McGow 2001, 104; PA: Ev, 20 June, 23, 51, 55, 168–70, 178. The 1846 evidence consistently indicates a price of £14,000; the records of the LSWR and London & Brighton consistently indicate £19,000. The latter is more likely, since transcripts of private bill committees were not corrected in this period and were of only fleeting usefulness (Gerhold 1997, 10, 14), whereas it was important for a railway's records to have the correct figure.
[79] PA: Ev, 20 June, 21–66, 168–70, 178, 187–9; TNA: RAIL 411/325; McGow 2001, 104–6, 108a.
[80] PA: Ev, 20 June, 94, 173–5.

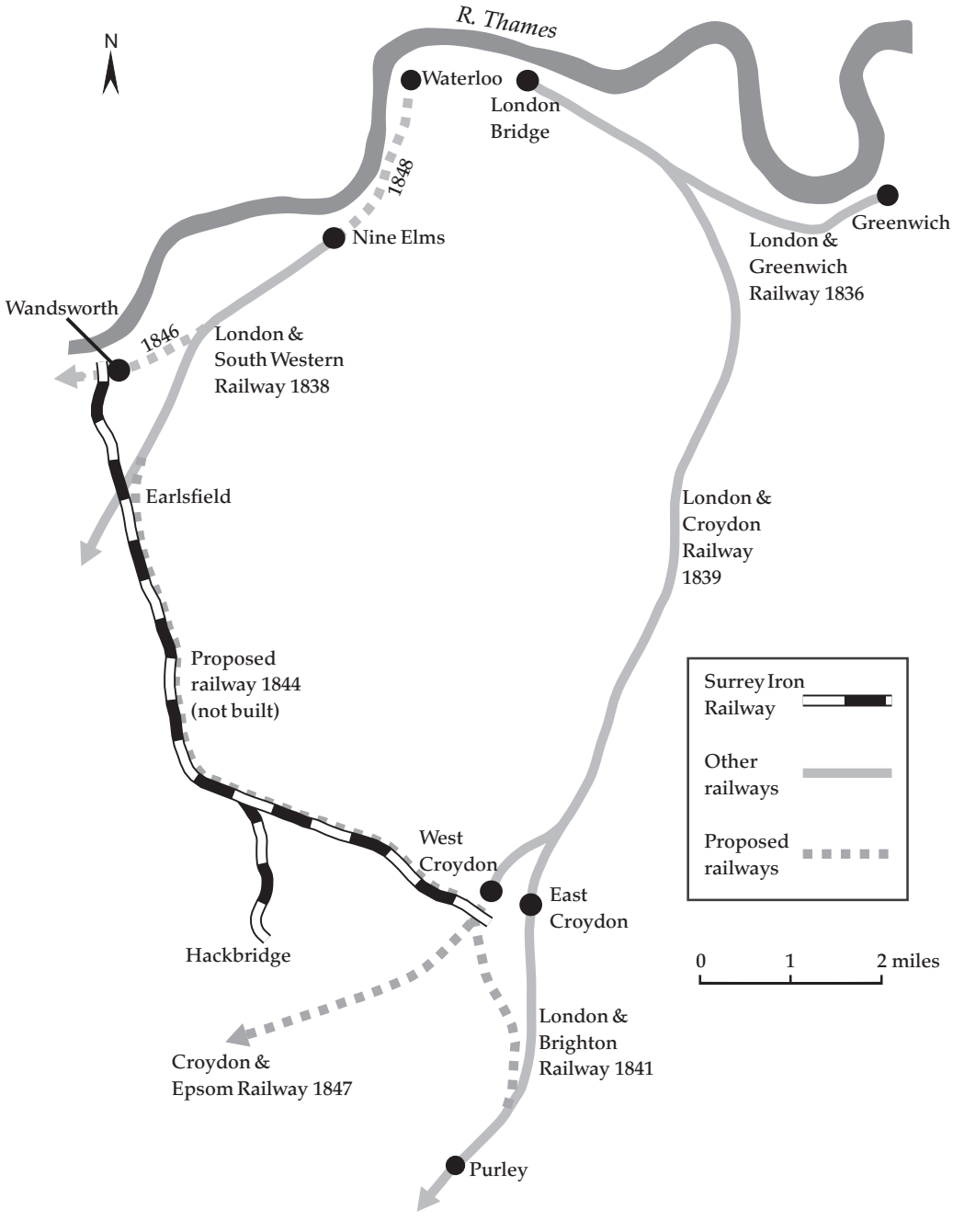

Fig 5 The proposal of 1844 for rebuilding the Surrey Iron Railway as a link between the London & Brighton Railway and the London & South Western Railway, also showing other railways existing or planned in 1844 (after Bayliss 1985).

landholders it had been taken from 40 years earlier if the land was no longer needed for a railway and they were the owners of adjoining lands. Since the LSWR had in October 1844 avoided committing itself to using the land as a railway, and therefore had the option of selling it for other purposes, the fact that the land was encumbered in this way invalidated the contract.[81] The SIR therefore lost a highly advantageous contract, worth £14 or £19 per share, as well as becoming liable for all the costs of obtaining its dissolution Act. The SIR's attempt to enforce the contract through the court of King's Bench led to an out-of-court settlement, under which the LSWR agreed to pay the cost of the SIR's dissolution Act minus £500 of the deposit paid in 1844. The SIR received a mere £847 as a result.[82]

Nevertheless, the company succeeded in obtaining authority to close the line and dissolve itself. Traffic on the railway was stopped on 31 August 1846, and on 11 November tenders were invited for taking up the iron and stone on the railway and stacking it on the company's wharf at Wandsworth.[83] The company held its last meeting on 1 June 1848 – like the first, at the Spread Eagle in Wandsworth – and was wound up in August 1848.[84] The Wandsworth dock, on the other hand, long outlasted the railway. It passed out of use only in 1923 and was filled in between 1932 and 1937.[85]

The SIR is usually depicted as an over-optimistic venture. But the figures presented in 1846 show that it began well, carrying significant traffic and paying reasonable dividends, even if much of the traffic on which it relied was from the Merstham line (which was not part of the original scheme) rather than the SIR's own area. The major blow, from which it never recovered, was the completion of the Croydon Canal and the linking of the canal to the railway in 1811, which removed much of its Merstham traffic. Thereafter the SIR could pay its way, but could not contemplate improvements. It was trapped with an increasingly outdated technology, and slowly declined. Yet even in 1846 there were a few who found the railway useful and sought to prevent its closure.

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SHC: Surrey History Centre, Woking

[81] PA: Ev, 20 June, 181–5, 193–4, 197, 205–8.
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