Potteries Loop Line

Background, Description and Train Services

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Background

Some 40 years after its closure the Potteries Loop Line still elicits fond memories amongst railway enthusiasts who knew it. After many years of delay it was built reluctantly by the North Staffordshire Railway (NSR) and almost immediately became its 'pot of gold'. The Loop Line regular service timetable governed the diagramming of the main line services and the line achieved some national prominence from it being regularly mentioned in the literary works of Arnold Bennett.

The NSR, which became a small part of the LMS in the 1923 grouping of British railway companies, was the only main line railway that operated in the area popularly known as the Potteries. The 'Knotty', as it was known because the Staffordshire Knot was its emblem, was formed in 1845 and quickly constructed a network of lines centred on the area. Owned by local industrialists it provided rail links to the rich coal, ironstone, limestone and clay deposits in the area. The network of lines that connected the Potteries with major surrounding centres was all built by 1849.

Three of the six Potteries towns did not gain direct railway access when this initial burst of railway construction was complete. Tunstall, Burslem and Hanley were all sited on the high ground a mile to the east of the valley in which the main north to south railway was located. The first scheme to connect any of these towns to the rail network was planned as early as 1846, but it was not until 1864 that a branch to Hanley was in place, Burslem and Tunstall had to wait a further nine years for a rail service. The Loop Line was completed when the extension to Kidsgrove was opened in 1875.

That the Loop Line was a success is something of an understatement with over 50 passenger trains each way daily. Additionally there was the goods traffic associated with the pottery manufacturers and the mineral traffic from the collieries and brickworks. The frequency of the passenger services was reduced somewhat in later days as the competition from the trams, and then the buses of the Potteries Motor Transport was increasingly felt. However prior to WWII there were still some 40 or so stopping trains daily in each direction.

During WWII Waterloo Road station was closed and with peacetime came repeated cuts to the passenger train services. Kidsgrove Halt closed in 1950 and by 1960 there were less than half a dozen passenger services in either direction. Freight traffic from the collieries continued to be heavy until 1962 when the coal won from Hanley Deep Pit and Sneyd Colliery was brought to the surface at the new, enlarged Wolstanton Colliery. Passenger trains were withdrawn in 1964 but the line remained as a through route until 1966 as it handled some traffic diverted from the main line whilst the latter was being electrified. The section between Waterloo Rd and Etruria lingered on for two more years whilst the line north of Newchapel and Goldenhill was retained until 1976 to provide access to an opencast coal mine.

Today the half mile stretch of line from Etruria as far as the Cobridge Rd overbridge has largely been obliterated and it is not possible to trace its route. However from there as far as Cobridge Station the route of the line can be followed on OS Maps although it is very difficult to see or access any of it. From Cobridge north to Kidsgrove the line is now a greenway and, apart from a few short diversions, one can follow its course on foot.

Description of the Route (as it was in 1938)

The southern end of the Loop Line is at Etruria Junction where it leaves the main line and climbs in an easterly direction towards Hanley. The gradients on this section are quite steep, 1 in 49/54 as far as the crossing of the Trent and Mersey Canal, easing somewhat for a short distance until resuming at 1 in 41/43 to Hanley. Prior to crossing the canal, on the upside the line passes the Etruria works of Josiah Wedgwood, famous for its fine porcelain wares. The down side is occupied by the slagheaps steelmaking and rolling mill sheds of the Shelton Iron and Steelworks. The steel works has its own line serving this facility and this line parallels the Loop Line for some distance either side of the canal bridge. After the canal is crossed we pass the steel works coke ovens and Etruria Hall, previously the residence of the Wedgwoods, but now the administration offices of the steel works. The two Racecourse Colliery waste tips are also on the downside.

Before Hanley is reached, the large slag tip of the old Shelton Iron Works is prominent on the upside of the line. Hanley Junction signal box controls access to the Hanley goods yard which also contained the original 1864 terminus station which was superseded by the through station in 1873. The newer station was situated on a very sharp left hand curve which continues for some distance, in the course of which the line changes its direction from eastwards to northwest. This is quickly followed by a sharp right hand curve to correct the line direction to north eastwards before running into Waterloo Rd station. On the up side of the line there is a goods yard serving some local industries, including Walker's Oil Refinery. From Hanley the line has still been climbing, somewhat less steeply, at gradients between 1 in 94/200 but it steepens to 1 in 67 onwards to Cobridge.

The line passes under Waterloo Rd immediately after the station and the exchange sidings of the Hanley Deep Pit follow on the up side. The railway connecting this colliery to the Shelton Steel Works crosses the Loop Line just before the 301 yard Cobridge Tunnel beyond which is the station. There are up and down refuge sidings here.

The descent towards the valley of the Scotia Brook commences beyond Cobridge station at gradients of 1 in 190/380. The connection to the exchange sidings of Sneyd Colliery and Brickworks follows on the up side. This complex is laid out on both sides of the Loop Line.

Next is Burslem Station which surprises in that the goods yard is small and, unlike Hanley and Tunstall, there is no goods shed for serving what is a large town. The reason is because the goods services are largely met by the nearby Longport Station on the main line so Burslem Station's main business is with passengers.

The stretch of line to Tunstall Junction is downgrade with no sharp curves and it allows the highest speeds of the whole line for down trains, not that reaching the 40mph speed limit can be called fast. Tunstall Junction signal box governs the junction with the Pinnox Branch which trails in on the down side and immediately precedes Pinnox Viaduct. This is the only viaduct on the line and crosses Scotia Brook. Originally built with 16 wood spans on brick piers, it was rebuilt in 1916 replacing the wood with steel girders resting on the same brick piers. Its length is 325 yards with a maximum height of 40 feet.

The Pinnox Mineral Railway together with its Brownhills and Greenhead branches pass under the Loop Line here. On the downside the Pinnox Sidings can be seen where the Chatterley Whitfield Colliery traffic is exchanged with the LMS. The Pinnox Mineral Railway roughly parallels the Loop Line on the upside as far as Pitts Hill.

From Tunstall Junction the line is climbing once more, at 1 in 76/90 which is maintained to beyond Pitts Hill. Tunstall has an extensive goods yard and shed. It also has carriage sidings because Tunstall is the northernmost station for many of the Loop Line trains. The line continues past Newfield Junction where the Newfields Branch trails in on the down side. Pitts Hill Station marks the commencement of the only stretch of line that could be regarded as rural, but even here the marks of old spoil tips can be seen here and there.

The line is still climbing and will continue at gradients of 75/148 as far as the summit, which is ½ a mile beyond Newchapel & Goldenhill Station. At the latter location the line becomes single and enters a deep cutting which stretches for 2 miles almost to Kidsgrove. A siding continues on the up side as far as the next overbridge. Beyond it the long headshunt for the upper connection to the Birchenwood complex commences on the down side leading to what is known as Summit Junction. This line continues to parallel the LMS line down the long 1 in 40 gradient with the Birchenwood Brickworks and Coke Ovens on the down side. The Heaths Railway connecting Birchenwood with Victoria Colliery in the Biddulph Valley

bridges the Loop Line. The 75 yard Kidsgrove tunnel precedes the lower rail connection to the coke ovens, whilst on the upside are the slag heaps of the long closed iron works.

Kidsgrove Halt platform is on the upside of the line and then 600 yards further on the doubling of the line marks the bottom of the incline and the entry to Kidsgrove Station. The northern end of the Loop Line is at Kidsgrove Junction where it rejoins the main line after a 7 mile journey.

Train Services

The revenue from the passenger services on the Loop Line had been so important that the timetable for the Loop Line stopping trains influenced the timing of traffic on all other lines that intersected with it. The services had to be smartly timed to compete with the bus services provided by Potteries Motor Traction. The number of trains was 45 daily in each direction in 1938. It was not a regular interval service and the frequency of trains increased so markedly at peak periods that goods train movements were seriously curtailed. Indeed, whilst the 5 and a half day working week still operated in the 1950s, the midday Saturday peak service on the Loop Line necessitated that the down 'Comet' (the premier London to Manchester Express) had its departure from Euston put back by 30 minutes to avoid it interfering with the down services.

The Loop Line service operated between Cresswell on the Derby Line as far as Congleton on the main line to the North. However most trains only travelled between Normacot and Tunstall, and these traversed the urban areas.

The only other regular passenger train to use the Loop Line was a morning stopping train from Cresswell to Crewe and a return evening train. This transported railway staff, who had previously been employed at the North Staffordshire Railway works at Stoke (closed 1927), to and from the Crewe locomotive works of the LMS. This train had to change its direction of travel at both Kidsgrove and Harecastle in order to access the Crewe line.
There were many weekend and holiday excursion trains which started or finished in the Stoke area. Most of these avoided the Loop Line so the residents of Hanley, Burslem and Tunstall had to travel to main line stations to connect with them. However there were fairly regular summertime weekend day excursion services to both Blackpool and Alton Towers which used the Loop Line.

The Loop Line, on occasions, was used as a diversionary route when the Harecastle tunnels were closed for maintenance or repair. However in this case the line was only used between Kidsgrove and Tunstall where the diverted trains were sent down the Pinnox branch to Longport. This was to avoid the sharp curves at Hanley. Even so only Class 4 locomotives

could be used on the Loop Line so there had to be a great deal of engine changing and resorting to banking.

On the freight side there were two daily goods pickups from Stoke to Hanley and two others from Stoke via Longport to Tunstall. One of the latter also dealt with Burslem and Cobridge before returning to Stoke via Hanley. The other serviced the Newfields branch before returning to Longport.

There was a heavy traffic of coal empties from Longport Junction to both Sneyd Colliery and Hanley Deep Pit. These trains had to reverse direction at Tunstall Junction. The full wagons were returned to the main line via Hanley and Etruria. Additionally there were sand wagons to, and brick wagons from the Sneyd Brickworks which were run on an 'as required' basis from Stoke. A similar service was maintained with oil tankers to the Walkers Oil Refinery at Waterloo Rd except that the incoming tankers started from Etruria Yard.

Locomotives

By the late 1930s almost every North Staffordshire Railway locomotive had been scrapped. The Loop Line passenger service was now the preserve of the capable Fowler 4P 2-6-4Ts, with the Fowler 4F 0-6-0 goods locomotive also dealing with many services.

The goods work was nearly all handled by the 4F 0-6-0, although the 4P 2-6-4Ts did some of the duties. One exception was the Tunstall pickup goods out of Longport Junction. This was worked by the elderly Webb 2F 0-6-0 'Cauliflowers', because their low axle loading permitted their use on the Newfields Branch.

Pinnox Branch

This line, which is only one mile long, commences at Longport Junction and was originally planned well before the Loop Line as a much longer branch via Tunstall to Newfields. In the event two parts of it were built at the same time as the Loop Line. The upper part became the Newfields Branch, the middle part was abandoned and the lower part became the Pinnox Branch. Branching away eastward from the main line at Longport Junction it becomes a single line and crosses Westport Lake on a low embankment before crossing the Trent & Mersey Canal. Beyond that the link to Peake's Tilery trails in from the north and the line starts to climb at 1 in 98 to Pinnox Junction where a link line leads away northward to the exchange sidings with the Pinnox Mineral Railway. The gradient steepens to 1 in 37 to take the branch up to Tunstall Junction passing under the Greenhead branch of the Pinnox Mineral Railway on the way.

Apart from the occasional passenger train using the line as a diversion when the Harecastle tunnels are closed the Pinnox Branch is entirely involved in goods trains. The traffic on the branch, particularly west of Pinnox Junction is extremely heavy. There are 11 return transfers of Chatterley Whitfield coal wagons between Longport Junction and the exchange sidings at Pinnox. Ten trains of coal empties are taken from Longport Junction up to Tunstall and then reverse to travel up the Loop Line, 8 bound for Sneyd Colliery and two for Hanley Deep Pit. Finally there are six return trips from Longport Yard to shunt the station yards at Tunstall, Burslem and Cobridge,with one trip being extended to Newfields Yard.

Newfields Branch

This short branch, less than one mile long, was to have been the upper part of a branch from Longport Junction as mentioned in the notes on the Pinnox Branch. In order to access Newfields from the Loop Line it was necessary for the branch to commence at Newfield Junction climbing at 1 in 46 in a southerly direction as far as a headshunt which is on the down side of the loop line and high above the northern end of Tunstall Station.

The branch then climbs towards Newfields in a southerly direction so the headshunt is in effect the neck of a zigzag. This section is mainly at 1 in 37/52 and finishes in a three road yard servicing a substantial pottery works.

The Newfields Branch is serviced by no more than one pickup goods service a day. This has operating interest not only for the zigzag but also because the train must be pushed up to Newfields Yard. This necessitates that the train must proceed from Tunstall to Newchapel & Goldenhill before returning to Newfield Junction. In addition there is a severe weight limit on the branch so a pair of ex LNWR Cauliflower 0-6-0s are retained at Stoke motive power depot specifically for this duty.

Grange Branch

Opened in 1872, the Grange Branch was opened to give access to the Grange Colliery. It commenced in the sidings at Grange Junction and finished at Grange Wharf near Burslem, 1 and a quarter miles away. It was mainly on a rising gradient of 1 in 73. Initially it skirted part of the blast furnace slag heap of Shelton Iron and Steel and then kept company with the Trent & Mersey canal before crossing it.

The Grange branch climbed away from the canal and curved towards the east with the waste tip of Grange Colliery on the right. After bridging the access road to the mine the branch terminated at Grange Wharf.

The main reason for the existence of the branch, Grange Colliery ceased operations in 1917 after the underground workings were inundated. At about the same time Shelton Iron & Steel constructed their elevated line leading to the blast furnaces and extended it northwards via North Yard to make a junction with the Grange Branch just north of the canal overbridge. This restored a lot of traffic to the branch as it provided the link for much of the iron ore, limestone and coal requirements of the works. Apart from that there was a daily trip servicing Grange Wharf.

There was no signalling on the Grange Branch, it operated on the 'one engine in steam' principle. This was either a Fowler 3F 0-6-0T or 4F 0-6-0. Grange Wharf was closed in 1950 and British Railways sold the line to Shelton Iron and Steel who modified it and continued to use until closure of the bar mill in 2000.

Birchenwood Railway System

The Birchenwood Industrial Complex had a long history. Large scale coal mining was underway at the start of the 19th Century and blast furnaces were blown in in 1833 to commence production of pig iron. For the next 30 years the iron works was steadily expanded as was the production of coke but by the late 19th century the iron ore was largely worked out and the blast furnaces were shut down. The coal mine and coke works continued on, the latter being expanded to process 6000 tons of coal per week, becoming the largest coke works in the country. A large proportion of the coke output was shipped out to the Biddulph Valley blast furnaces of the Heath industrial empire.

The Birchenwood colliery closed in 1931 and the iron works at Biddulph succumbed at about the same time. However operations at the brickworks and coke ovens continued, at a somewhat reduced rate with coal being brought in on the private railway line from Black Bull, near Biddulph. There was a growing market for the gas by product produced at the ovens and this was sold to the City of Stoke on Trent gas works until North Sea gas became widely available. Coke making continued up to 1973 then the site was shut down and the buildings demolished.

In the 1930s most coal coming to the site came from Victoria Colliery, Biddulph arriving over the private Heaths Railway from Black Bull. All other incoming traffic including sand for the brickworks and empty wagons accumulated at Kidsgrove from whence it was transferred to the works via the upper connection at Summit Junction. Coal empties returned to Victoria Colliery whilst outgoing coke and bricks plus sand empties were returned to Kidsgrove via the lower connection at Tunnel Junction.

Birchenwood maintained a small fleet of locomotives sporting a red livery. Most of these were built by Bagnalls and were 0-4-0 or 0-6-0 saddle tanks. The trains on the Heaths Railway were hauled by ‘home made’ locomotives built in Heath’s own engineering works.

Pinnox Mineral Railway

In the 1930s Chatterley Whitfield Colliery was the largest coal mine in the UK and was the first to record an annual output exceeding 1 million tons. Most of its output was destined for either the Cheshire salt fields or export via Liverpool. When the pit commenced operations there were exchange sidings with the North Staffordshire Railway at Whitfield Siding on the Biddulph Branch. To reach its markets the outgoing coal traffic had to take a lengthy detour southwards via Stoke. To shorten the delivery distance and the resultant transport charges from the main line company, the colliery built a private railway link as far as exchange sidings at Pinnox Junction which opened in 1875.

The 2.7 mile long line ran eastwards from the mine, climbing steeply at 1 in 55 as far as the single track 404 yard Chell tunnel which pierced the ridge separating Whitfield from the valley of the Scotia Brook. The line then turned southwards and fell even steeper, at gradients varying between 1 in 55 / 47 towards Pinnox Crossing. The single line section became double, but not adjoining tracks after passing Little Chell Lane level crossing and the line threaded the Tunstall Park and Pinnox Sidings where there was a considerable space to store full and empty coal wagons.

The only signal box on the line was located at Pinnox Crossing and this not only controlled rail traffic crossing the Scotia Road but also the junctions with the Greenhead and Brownhills branches. The 'main' line passed under the Pinnox viaduct carrying the Loop Line and finished at Pinnox Junction just beyond the extensive exchange sidings with the LMS, who took the traffic forward over the Pinnox Branch leading to Longport Junction.

The 1 mile long Greenhead branch served a land sale wharf on the north side of Burslem. From Pinnox Crossing it ran in a southerly direction firstly under Pinnox Viaduct and then over the Pinnox Branch. Gradients were steep Large sections being at 1 in 34 and this limited train size to a few wagons. To prevent runaways all trains were pushed up to Greenhead.

The short Brownhills branch ran westward from Pinnox Crossing. It served a land sale wharf on the south side of Tunstall. As with the Greenhead branch train size was limited and all

trains were pushed up to Brownhills. If anything this branch was more difficult to work than Greenhead with gradients as steep as 1 in 25.

Traffic on the Pinnox Mineral Railway was exclusively coal, since other materials for the mine were transferred via the exchange sidings at Whitfield. With an output of 1 million tons a year the line was quite busy with an average in excess of 300 wagons being loaded each day at the colliery screens. With its heavy gradients this was a difficult line to work since all outgoing trains had to be kept well under control when descending towards Pinnox Crossing. To prevent runaways all trains bound for Pinnox Exchange Sidings had the engine at the head of the train whilst returning empties were pushed up the bank towards the colliery.

On the closure of the Loop Line and the Pinnox Branch in 1964 the Pinnox Mineral Railway also ceased operation and transfers of coal reverted to the Whitfield exchange siding. The colliery company maintained a fleet of 0-4-0 and 0-6-0 tank engines with a black livery and from a variety of locomotive builders. The smaller engines were used for shunting purposes whilst the 0-6-0s were used for “main line” activities.

Sneyd Colliery & Brickworks

Coal mining in the vicinity of Sneyd Colliery had been ongoing since the 18th Century although the company named Sneyd Colliery Ltd was not registered until 1900. It occupied a sloping site to the east of the Loop Line between Cobridge and Burslem. This was a progressive and well equipped operation and it was unfortunate that it was the site of the worst mining disaster in North Staffordshire.

Output from the mine was about 400 000 tons per annum and nearly all of this was despatched via the exchange sidings with the Loop Line. Incoming empties were pushed up to the top sidings from whence they were gravity fed via the colliery screens to the full sidings for collection.

An extensive brickworks was established which straddled the Loop Line. It specialised in glazed bricks which gained a high reputation. The internal rail system was laid out as a large circle which crossed the Loop Line at two points. It was difficult to operate since the sloping site necessitated gradients as steep as 1 in 20. For this reason the colliery company purchased a powerful 0-4-4-0 articulated Beyer Garratt locomotive to do the heavy shunting. The railsim depiction of the route shows a narrow gauge railway system operating over part of the brickworks. There is no evidence that such a system operated.

The colliery, along with the nearby Hanley Deep Pit was connected underground to the refurbished Wolstanton Colliery in 1962. This allowed coal winding from both collieries to be transferred to that site and the loss of the coal traffic on the Loop Line hastened its demise. The colliery closed in 1966 but one of the shafts was left in place until 1985 when Wolstanton Colliery ceased operations. The brickworks continued for a few more years . The site is now an industrial estate.

Shelton Iron & Steel

This works was the largest industrial site in North Staffordshire and the Shelton company was the largest enterprise in that it also owned 7 coal and ironstone mines in the area. It was a works with a long history stretching back to 1839. By the early 20th Century it was considered to be small and suffered from its cramped layout and some old equipment, particularly the steel melting and rolling facilities so development of the works capacity commenced during WWI. A little later it was acquired by John Summers & Sons Ltd in 1920 so they could guarantee a supply of pig iron to their own cold charged steelmaking facility at Shotton in North Wales. They invested heavily, particularly in those parts of the works which directly affected output from the blast furnaces. The mechanised charging of the blast furnaces and the expansion of the coke ovens boosted output of the blast furnaces and the (in the near future) later additions of a sinter plant and conveyor connection for coke from the ovens to the blast furnace storage bins meant significant operational cost savings.

The railway system serving Shelton Bar (the name used for it, locally) was large and somewhat confusing because it had developed bit by bit over the years. The best way to describe the system is to discuss each commodity in turn and describe the route travelled by the wagons in that traffic.

1. Iron Ore

   Shelton had exclusively used low grade ore found locally, often won from the same mines that provided coal for coke making. This blackband iron stone often contained significant quantities of coal and the ore was enriched by building up extensive beds of it on the surface at the mine and igniting it. This drove off the considerable quantities of water contained within the ore. Where the ironstone would not self ignite it was mixed with coal. Burning of ironstone was an objectionable practise which added significantly to the air pollution levels in the Potteries. By the 1930s home produced ores from more distant locations were also being used at Shelton, although better than the local product they were still low grade; higher grade imported ores were for the future. All incoming ore came from south of Etruria so the full wagons arrived at Etruria down yard and were transferred

via Grange Yard and thence to North Yard. They were then taken on the high level line and emptied into the blast furnace storage bins. The empties returned via North and Grange Yards to Etruria up yard prior to returning to the iron mines. At this time some ironstone still came from Racecourse Colliery and that would have been shipped to and from North Yard through the Coke Ovens area.

2. Coal

Coal was sourced from company mines within North Staffordshire. Coal wagons from Racecourse Colliery and Hanley Deep Pit were brought down the works railway's "main line" direct to the coke ovens coal unloading point, unloaded and returned to the collieries. Coal from other mines came from south of Etruria so the full wagons arrived at Etruria down yard and were transferred via Grange Yard and thence to North Yard. They were then taken to the coal unloader at the coke ovens. The empties returned via North and Grange Yards to Etruria up yard prior to returning to the collieries.

3. Limestone

Shelton obtained limestone from Caldon Quarries which were south of Leek. Full wagons travelled via Stoke to Etruria down yard and followed the same route as the iron ore wagons prior to returning to the quarry.

4. Coke

Coke was collected from any of the three separate coke ovens coke bins and was transferred either to North Yard or one of the sidings between that yard and the high level bridge. The wagons were then taken to the blast furnace charge bins, emptied and returned to the coke ovens. If there was excess coke capacity coke was sold to outside parties. After loading those wagons they were taken out to the main line and down to Etruria up yard for distribution onward. Returning empties came in via Etruria down or up yard, Grange Yard and North Yard.

5. Pig Iron

All pig iron casting was carried out at No. 1 blast furnace. Empty wagons from Shotton arrived at Etruria up yard and were routed via Grange yard to North

Yard. From there they were taken over the high level bridge and thence to the pig iron loading point. Full wagons were returned via North and Grange yards and were despatched northward from Etruria down yard.

6. Hot Metal

Hot metal was tapped into refractory lined ladles from all blast furnaces and transferred to the hot metal mixer within the melting shop. It was important not to delay this traffic for any reason and it had absolute priority over other traffic movements.

7. Blast Furnace Slag

Molten slag was tapped from all three blast furnaces into slag pots or ladles. These were then taken to the slag banks and the contents were tipped out.

8. Steel Scrap

The hot metal only made up 50% of the metal charge in the melting shop. The balance was supplied from steel scrap. Some of this was circulating scrap from within the steelworks itself but most was brought in from scrap metal merchants. This arrived at Etruria up yard and was transferred up the “main line” to the melting shop. Empties basically retraced their steps.

9. Steel Bar

Empty flat wagons would concentrate at Etruria Up Yard and brought up the “main line” to the bar mill. After loading the wagons would return to Etruria Up Yard for forwarding to the industrial markets which were mainly in the Birmingham and Manchester areas.

10. By Products

The coke ovens by products plant at Shelton produced fertilisers, coal tar, light oils and sulphuric acid. The vans and tankers for these products were concentrated at Etruria Up Yard and sent up the “main line” to the by product loading points adjacent to Etruria Hall. After filling they returned to Etruria Up Yard.

Shelton's traffic was entrusted to a sizeable fleet of locomotives, mainly sourced from Barclays although others from Bagnall, Hawthorn and Peckett were in use. Most of these engines were 0-4-0 saddle tanks but 0-6-0 examples were employed on the heavier duties.

Prior to WWII Shelton Bar could be considered to be primarily an iron works with over half its output being shipped out as cold pig iron. The Indian Summer of Shelton was to come in the early 1960s when, with Shotton having become an integrated iron and steel works, the increased hot metal capacity at Shelton was fully utilised in on site steelmaking with the construction of a new oxygen steelmaking plant together with a billet concast facility and new bar mill. In fact Shelton was the first steelworks in the world to abandon ingot casting of steel and by dispensing with the heavy rolling mills it became one of the most efficient iron and steelworks in the country. However, due to its small size, it did not possess the economies of scale of the larger works. Iron and steelmaking ceased in 1978 although the bar mill continued on, supplied with feedstock from other steelworks until closure in 2000.

North Staffordshire Railway Main Line

The main line of the North Staffordshire Railway was opened in 1849. It ran from Macclesfield southwards as far as Colwich and carried traffic between Manchester to the north, and Birmingham and London. Following the route north from Stoke-on-Trent station the line climbed the valley of the Fowlea Brook at moderate gradients as far as Chatterley and then tunnelled below the watershed ridge between the river basins of the Trent and the Mersey at Harecastle. From Harecastle the main line continued to climb to North Rode via Congleton before descending sharply to Macclesfield.

On leaving Stoke the line passes the northern end of the Stoke Goods Yard on the down side with some carriage sidings on the up side. The gradient initially is favourable at 1 in 330 as far as the bridge over the Trent & Mersey Canal but then it climbs almost continuously, mainly at the same gradient as far as the southern portal of Harecastle Tunnel. After the crossing of the canal the Market Drayton branch swings away on the downside at Newcastle Junction. This line has a limited passenger service but the coal and ironstone traffic is quite heavy because it serves a number of mines. Behind the junction signal box a fictitious Stoke motive power depot is situated on the layout. In fact the real Stoke depot was located about a mile south of Stoke but it is shown here so that there is one motive power depot on the route.

On the upside of the line are the extensive Cockshute Sidings and on the opposite side are the Cockshute Carriage Sheds which extend as far as the Newcastle Road overbridge. Beyond that are the sidings associated with the large Etruria gas works and a link to the Canal Tileries before Etruria Station. This station is unusual for the area in that it has an island platform and there is a small goods yard on the up side of the line. The Loop line branches off on the upside immediately after the station and climbs steeply away towards Hanley.

Shelton Iron & Steel Works is visible on the upside for a short distance before it is hidden behind an enormous slag heap accumulated over many years of operation of its blast furnaces. The line passes between Etruria Up and Down Yards which handle the arrivals and despatches of most goods trains for the works. The Up Yard merges with Grange Yard which

handles the goods in transit between Etruria Yards and the North Yard of the steelworks. This last named yard is reached via the Grange Branch which trails away on the up side of the line at the North end of Grange Yard.

From Stoke as far as Grange Junction the line has been mostly four tracks with the goods lines on the outside of the fast lines. Beyond that point the line becomes two tracks only as far as Longport Junction. Wolstanton Colliery yard follows on the down side of the line with the colliery itself situated on the hillside beyond the yard. The line threads a cutting and then passes Midland Tileries on the down side. Longport Station is preceded by a level crossing beyond which is the station yard, including a goods shed on the upside, and sidings on the downside which handle the heavy coal traffic on the Pinnox Branch. At Longport Junction the Pinnox branch trails away on the upside and the main line reverts to four tracks as far as Bradwell Sidings.

At Bradwell sidings there are connections to Oakwood and Bradwell Wood Tileries on the downside and Brownhills Tileries on the upside. From this point northwards as far as Harecastle the modelling on the main line has not been fully developed; junctions to two branch lines and connections to some industries have not been included since they are not linked in any way with operations on the Loop Line. The down slow line continues as far as Chatterley Junction which is followed by Chatterley Station. This facility is being run down with few stopping train services calling there. It will close in 1948.

The southern portals of the Harecastle tunnels of the Trent & Mersey canal can be seen close to the station and the railway enters a deep cutting prior to entering its own 1 mile long Harecastle Tunnel. The line is level through the tunnel but resumes climbing at 1 in 330 beyond it as it threads the subsequent two short tunnels (180 and 130 yards long respectively). On the upside and at a higher level can be seen a private single track line belonging to the Birchenwood coke ovens. The Trent & Mersey canal is crossed immediately before Harecastle Junction where the Crewe branch trails away on the downside, having its own platforms which adjoin those of the main line. There is a goods yard and shed on the upside which contains a crane for transfers to and from the canal.

Shortly after Harecastle station The Trent & Mersey canal is crossed again. Kidsgrove station, on the Loop Line can be seen on the upside together with the exchange sidings for Birchenwood before the Loop Line joins the main line at Kidsgrove Junction. There are sidings on both sides of the line here to handle traffic to and from Birchenwood as well as a line to Maryhill Colliery on the upside. Maryhill has a rail link which passes under the main line to reach the Albion iron foundry, a canal wharf and disused coal workings.

The sidings extend as far as Harecastle North signal box from whence the double track main line continues northwards towards Macclesfield.

Passenger train services include a number of expresses between London (Euston) and Manchester (London Rd). The Manchester to Bournemouth "Pines Express" also uses this route on summer Saturdays. Apart from a couple of Manchester to Birmingham semi fasts the remainder of passenger turns are stopping services. Although the Loop Line trains only use the Stoke to Etruria section, there are two other services; Manchester to Stoke and Stafford plus the Crewe to Derby.

Goods trains comprise a number of through fitted freights but most traffic is mineral traffic. Coal trains predominate, with a steady flow northward towards Crewe and beyond, the empties returning in the opposite direction. Many more coal trains enter the main line from the Pinnox Branch, the Loop Line and the Newcastle Branch. Shelton Iron and Steel works is an important source and destination for a great deal of other goods movements.

Motive power for expresses and semi fasts are 5MT, Jubilee, Patriot, Claughton and Prince of Wales 4-6-0s. Stopping passenger turns are the preserve of the 4P 2-6-4Ts and the 4F 0-6-0s. The 3P 2-6-2Ts are also in evidence but they are not popular and will be transferred to areas with less demanding duties. Goods trains are mainly powered by 4F 0-6-0s with some assistance from the 4P 2-6-4Ts. Heavier trains from outside the area bring in 7F 0-8-0s, 8F 2-8-0s and 5MT 4-6-0s. There are also two 2F ex LNW Cauliflower 0-6-0s which traverse the main line between Stoke mpd and Longport Junction on the Newfields branch service.