

# The 1825 Stockton & Darlington Railway: Historic Environment Audit

## Volume 1: Significance & Management

October 2016 (2019 revision)

Archaeo-Environment for Durham County Council, Darlington Borough Council and Stockton on Tees Borough Council.



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## **NOTE**

**This report and its appendices were first issued in October 2016. Subsequently it was noted that some references to S&DR sites identified during fieldwork and given project reference numbers (PRNS) on an accompanying GIS project and spreadsheet had been referred to with the wrong PRN in the report and appendices. This revision of 2019 corrects those errors but in all other respects remains the same as that issued in 2016.**

## Executive Summary

### *The 'greatest idea of modern times' (Jeans 1974, 74).*

This report arises from a project jointly commissioned by the three local authorities of Darlington Borough Council, Durham County Council and Stockton-on-Tees Borough Council which have within their boundaries the remains of the Stockton & Darlington Railway (S&DR) which was formally opened on the 27<sup>th</sup> September 1825. The report identifies why the S&DR was important in the history of railways and sets out its significance and unique selling point. This builds upon the work already undertaken as part of the Friends of Stockton and Darlington Railway Conference in June 2015 and in particular the paper given by Andy Guy on the significance of the 1825 S&DR line (Guy 2015). This report provides an action plan and makes recommendations for the conservation, interpretation and management of this world class heritage so that it can take centre stage in a programme of heritage led economic and social regeneration by 2025 and the bicentenary of the opening of the line.

More specifically, the brief for this Heritage Trackbed Audit comprised a number of distinct outputs and the results are summarised as follows:

*A. Identify why the S&DR was important in the history of railways and clearly articulate its significance and unique selling point. This will build upon the work already undertaken as part of the Friends of Stockton and Darlington Railway Conference in June 2015.*

The significance of the S&DR is outlined in Section 3 of this report and in six appendices. The Stockton & Darlington Railway marked a significant milestone in the development of the modern railway. The S&DR differed from early waggonways and railways in its application and development of several areas of new engineering, not least the steam locomotive; and because it established a permanent rail infrastructure providing a regular service transporting both goods and passengers. By linking populated areas and so attracting additional businesses and industries, the S&DR resulted in population growth and movement. It was designed from the outset to have branchlines as well as the main line; and by 1830 it had branchlines at Darlington, Yarm, Haggerleases, Croft and Black Boy and had extended its main line to the new railway town of Port Darlington (Middlesbrough). Its business model for running the service was not unlike the rail system that we have today with the trackbed being operated by one organisation and licenced operators running the trains. It was also designed and obliged by its Act of Parliament to carry not just coal but any goods that businesses and residents were prepared to pay for. From its opening day the trains were used for a wide variety of freight and passengers which included regular business commuting. This was the start of the modern railway and if in its first few years it was something of an uncouth child, rough around the edges, it was developed and 'educated' by its founders and engineers within a few short years to be an inspiration to the world. The S&DR provided the singular point at which technological developments, engineering excellence and perseverance were married with financial and business support and here in South-West Durham the modern railway network was launched. This made possible the rapid expansion of railways in the 19<sup>th</sup> century across the globe, together with attendant huge worldwide social and economic change.

*'The opening day of the Stockton & Darlington Railway on 27th September 1825 was as important a date in world history as 20th July 1969 when man first walked on the Moon' (Holland 2015, 30).*

The S&DR was designed to be operated by travelling locomotive and through the skills of Timothy Hackworth, it was here that the locomotive engine became reliable and efficient. Through his work for the S&DR, confidence in the use of locomotives was gradually built up so that other embryonic railway companies were also prepared to embark on their use. By the time the Liverpool and Manchester line opened in 1830 the S&DR had 12 locomotives and by 1832 it had 19.<sup>1</sup>

The S&DR also led the way in devising a system to run a public railway. It was here that passenger timetables evolved, baggage allowances were created, rules made regarding punishment for non-purchase of tickets, job descriptions for railway staff evolved and signalling and braking developed and improved for regular use. The S&DR also recognised the need for locomotives of a different design to haul passengers rather than heavy goods and the need to provide facilities for passengers and workers at stations – all before 1830.

Survey work carried out for this report has identified that much of the line and its associated structures still survives and that nearly half of it remains as an active railway resulting in nearly two hundred years of continual use which adds to its significance. Further, a number of structures built for the S&DR such as the Gaunless Bridge represent considerable innovative technological achievements. It was here, on the S&DR, that the Stephenson model of railway construction was made and developed; a model which went on to be used on the majority of later railways around the world.

**B. Determine the time period that covers the unique selling point element of the line – where it was most influential within history (that will be of national and international importance and influence).**

The Statement of Significance research (Section 3) would suggest that the period when the S&DR was most influential was 1821-1830. Construction works started in 1821 in Stockton, but it was from the official launch in September 1825 when the S&DR began to make a significant difference. As it was at the forefront of technology in terms of operating locomotives regularly and over a relatively long stretch of line, it was to the S&DR that other embryonic railway companies looked to. Railway engineers and promoters from other parts of the UK, France, and the USA attended the opening ceremony in 1825. Two of those distinguished French guests went on to found France's first public railway. Others were to visit the S&DR Works in the years that followed including engineers from Prussia who took copious detailed notes on Hackworth's experiments. Hackworth himself shared his results widely (often at the request of Edward Pease) and organised trials at the request of engineers from other companies who were torn between the use of canal versus railway, or horse versus locomotive, or stationary versus travelling engine.

*Tues., Mar. 30. [1841] A day of great bustle and unsettlement from the opening of the Great North of England Railway. Twenty years ago these projects, or rather that from this coal district, was of much interest to my mind and its completion in 1825 may be said to have given birth to all others in this world.' (from Edward Pease's Diary)*

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<sup>1</sup> Based on tables published by Pearce, T 1996, 233-5

The surviving documentation suggests that without Hackworth's promotion of the locomotive and his key developments such as the plug wheel and blast pipe which allowed the practical and ultimately successful implementation of locomotive power on the S&DR for all to see, then the railways that followed would have significantly delayed the use of travelling locomotives. Hackworth cast enough doubt in the Director's minds of the Liverpool & Manchester Railway about the dangers and short comings of rope pulled inclines, that they organised the Rainhill Trials only months before opening in order to test the power and efficiency of various locomotives. Although Hackworth's *Sans Pareil* came second in the trials, the L&MR purchased it and it went on to give many years of good service. Importantly the S&DR demonstrated that a steam locomotive powered railway could also return a healthy dividend for investors, and from 1828 when the locomotives were proven technology (thanks to Hackworth's design of the Royal George the previous year), there was a growth in locomotive engineering companies in England, and by 1830, also in America and France.

*'Perhaps there was no man in the whole engineering world more prepared for the time in which he lived. He was a man of great inventive ability, great courage in design, and most daring in its application...'* (The Auckland Chronicle, April 29<sup>th</sup> 1876 referring to Timothy Hackworth)

The S&DR had been ahead of its time, but by 1830, the principles of running a railway and of using locomotive power had been established by the S&DR. Therefore, from 1830, the S&DR became one of a number of railway companies operating throughout the world and it was no longer unique. Any marketing of the S&DR, or consideration of World Heritage Site status should therefore concentrate on this period.

There are however a number of other structures and historic influences associated with the S&DR that are post 1830 but should still be considered to be pioneering in terms of the development of the railway. There were significant technological achievements to follow 1830 such as the delivery of Russia's first locomotives to the Tsar in the 1840s from Hackworth's Soho Works in Shildon, the continuing evolution of the first railway towns at New Shildon and Middlesbrough and the delivery of gas to the works in New Shildon in 1841 before anywhere else in the country apart from Grainger Town in Newcastle. Further the grouping of internationally important structures with later pioneering structures (such as at North Road in Darlington or at Locomotion in Shildon) provides an insight into those rapidly developing days of the early railway and add value to each other. This is particularly relevant when exploring mechanisms to attract audiences from across the world to visit the railway heritage of the Stockton & Darlington Railway.

**C. Provide an audit of what information is available, to identify what gaps there are that need more detailed work/site visits etc.**

The report appendices outline the survival of the 1825 trackbed and associated structures, identified through historic map and archive analysis, and the walking of all accessible sections (not live line). This was partially undertaken in partnership with the Friends of the Stockton & Darlington Railway during their HLF funded sharing heritage project. Appendices 1-6 of this report outline in more detail what was found on different stretches of line with

management and access recommendations. The appendices cover the following stretches of trackbed:

Appendix 1. Witton Park to St Helen Auckland.

Appendix 2. West Auckland to Shildon.

Appendix 3. Shildon to Heighington Durham/Darlington Council Boundary.




Appendix 4. County Boundary to North Road Station, Darlington.

Appendix 5. Darlington to Goosepool (Stockton Council boundary).

Appendix 6. Goosepool (Borough boundary) to Stockton.






Access was restricted in places where the line is live with Network Rail unable to provide access during the timescale of the work. Other stretches are on private land and access was also restricted in part here to public rights of way. Branch lines were largely excluded from this audit with the exception of the Darlington branch line which opened on the same day as the mainline.

The report has identified a number of gaps in our knowledge regarding the significance of the line. Many of these gaps relate to our understanding of the significance of the structures, but where an initial assessment has suggested that they are nationally or internationally important. Statements of Significance have been recommended for:

-  **15 buildings or groups of buildings in County Durham;**
-  **9 in Darlington Borough, and**
-  **1 in Stockton**

These reports will help to inform the case for further designation, inform future changes and provide information for future interpretation. Not all are of the highest priority and some could be achieved through private or community research.

There are also gaps in our knowledge regarding the state of survival of the line and associated structures. Features have been identified through fieldwork that were either previously thought to be destroyed, such as trackbed, or where further information is required to test survival at well-known sites such as the first Merchandise Station in Darlington. These need to be tested archaeologically to see to what extent they survive, so that if appropriate, they can be protected through designation. Some can be the subject of trial trenching solely for the purpose of testing survival, others could provide opportunities for local community involvement too, display and interpretation. Potential excavation sites include but are not restricted to:

-  Parts of the Etherley Incline and Engineman's House.
-  Brusselton Incline and village.
-  Hackworth's House garden and the Soho Works and sites of the stables (near the platelayer's cabin) at Locomotion.
-  The coal and lime depots at Heighington, Darlington, Fighting Cocks and St. John's Crossing.
-  The first purpose built Goods Station at North Road.

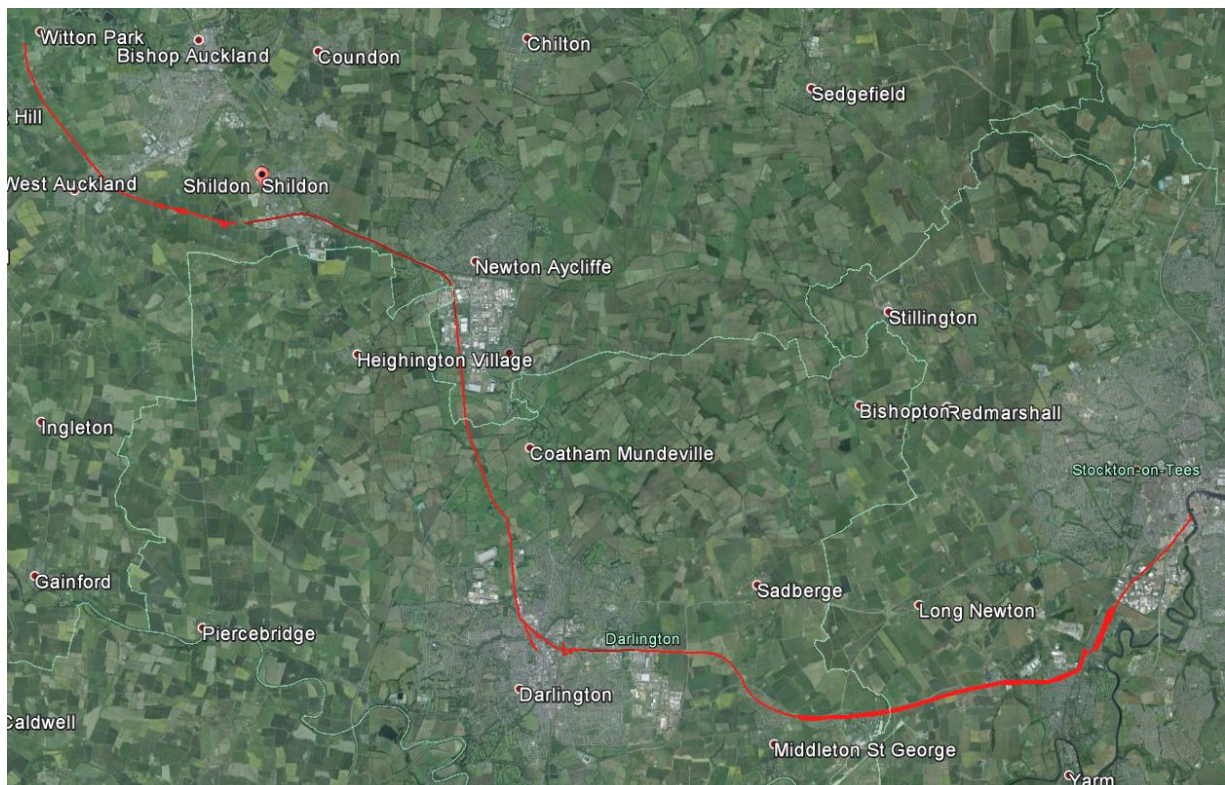
- 🏠 Kitching's Ironworks site adjacent to the Head of Steam Museum.
- 🏠 Edward Pease's garden in Garden Street, North Road.
- 🏠 The earthwork remains of the S&DR at Preston Park.
- 🏠 Yarm Road, Stockton garden archaeology.

A series of other research themes have also been identified which could be the subject of more detailed research. The most important relates to the development of the railway station from the railway inns and depots from 1825. It has also been recommended that the North East Regional Research Framework (Petts and Gerrard 2006) which is due to be revised soon, should include much more on the S&DR in its research priorities.

In order to help with future work on the trackbed, a bibliography has also been created on an excel spreadsheet which includes any publications that cover the S&DR. This can be added to over time. It includes published secondary source material and unpublished grey literature.

**D. Map out the precise route in chronological order using land registry and planning records where possible.**

The alignment and extent of the route as opened in 1825 has been defined using historic mapping. This has been provided as a shape file on the project GIS (Geographical Information System). It has identified a few places where the line has been encroached upon and some places where the existing scheduling does not quite match the extent of the trackbed. This along with site data will be a powerful tool for local planning authorities and statutory bodies to protect the S&DR in the future.



*The route of the 1825 S&DR*

**E. Map out public rights of way around the route as identified in D.**

This information has been collated and supplied as shape files on the GIS.

**F. Identification and recording (using national data standards), the structures, features and elements of the line were that were developed within the timescales determined in B.**

Two main sources have been used to add an additional 566 records to the Historic Environment Records (HER) which cover the route. Many of these are outside the 1825-30 timescale but add knowledge to our understanding of how the S&DR line evolved into the next phase of railway growth. However, in excess of 200 features have been identified which relate to the 1825-30 timeframe and where they are still extant. This data has been added to the GIS as shape files and as an excel spreadsheet and have been allocated temporary HER numbers until they are transferred into the local authority Historic Environment Records. Network Rail have also agreed to accept this data to assist with their management decisions on live line.

**G. Map out current land owners for the full length of the original route as per D.**

Ownership information has been provided on the GIS as shapefiles and point data. Local authority ownership has been collated and added to the GIS as shape files. Network Rail have been unable to provide their ownership data as their system is too complicated to transfer the data. However, they have agreed to respond to site specific requests for information on their ownership in the future. Ownership, mainly of farmland has been added using information obtained from local residents and farmers met during field work. This is most complete at the west end of the trackbed where the land is still used for agriculture. It was agreed in advance of the project commencing that there was insufficient budget to make enquires to Land Registry. Correspondence has also taken place with the Coal Authority regarding their ownership, but they have confirmed their landowning interests along the line were disposed of some time ago and they are no longer significant landowners in the area.

**H. Map out key stakeholders to ensure they are involved where possible in the audit and future work.**

A list of the holders of historic archive material has been provided in Section 11 along with recommendations to improve access to S&DR material being held. Two additional lists of stakeholders have been provided in Section 12 of the report where it is recommended that works needs to start in order to engage with national and international heritage, tourism and economic development bodies so that stakeholders can help to build up a critical mass of audience development in the area, to access support, training, funds and expertise. Stakeholders can also help to work towards coherent management of a high standard, and extend the positive legacy of the S&DR to present day generations.

**I. Audit planning policy across the route as outlined in D to ascertain opportunities and any possible vulnerable sites.**

Planning policy is dealt with in Section 5 of this report. There are three local planning policy authorities in the area covered by the trackbed, although Middlesbrough Council may also be included in the future if the audit is later extended to the major development of 1830 when the S&DR was extended across the River Tees to found Port Darlington which was to become Middlesbrough. Only Stockton-on-Tees has a current adopted Local Plan and it is recommended that the other two local planning authorities (Durham and Darlington) adopt



similar planning policies in relation to the S&DR which not only protect the S&DR trackbed remains, but seek opportunities to protect or restore the route (or a corridor adjacent to it) so that the line can be accessed by walkers and if appropriate, cyclists and horse riders. Careful consideration needs to be given to any landscaping schemes next to the line so that new planting does not obscure the trackbed in the future. The creation of an additional 500 records through the survey element of this project, and which will be added to the local authority Historic Environment Records, will require consideration of these sites in the planning process.

The report has flagged up in Section 6, that much of the S&DR trackbed and associated structures are currently not adequately protected and this means that they are vulnerable to damage, neglect or destruction. This is important because not only does the process of designation as a Scheduled Monument, Listed Building or Conservation Area bring with it additional protection and recognises the structure's national importance, but the National Planning Policy Framework (2012) makes a clear distinction between designated and undesignated heritage assets. Only those that are designated have a higher level of protection through the planning process. This report has therefore recommended that the S&DR trackbed merits more designation than it carries at present.

As a minimum, all surviving trackbed from 1825 regardless of whether it is live line or not, should be a Scheduled Monument. At the moment, only 4.27km has this level of designation and is restricted to the two incline planes at Brusselton and Etherley and their associated bridges and culverts, plus Skerne Bridge in Darlington. Some areas where the trackbed was thought to have been destroyed have also been flagged up as candidates for designation including short stretches of possible trackbed at Witton Park, Phoenix Row and Brusselton Farm former open cast site although some may need trial trenching to test survival. Associated structures such as Brusselton engine pond should be added to the scheduling and the site of the first Goods Station on North Road in Darlington, although this too should be tested by trial trenching. Scheduling does not preclude using the line as an active railway and can be set out so that routine maintenance can carry on unhindered.

If the trackbed is scheduled then there is no need to list the individual structures which form part of it such as bridges or culverts, however there are associated structures nearby which merit further consideration for listing. These include the railway taverns and coal/limestone depots associated with them, although in some cases further work will be required to better understand their significance and survival. There are also a number of cases where local listing would at least flag up historic interest and be a consideration in the planning process. Some historic structures which are already listed grade II such as the Coal Drops at Shildon may merit a higher grade of listing and thus be eligible to be included in the Heritage at Risk register. In doing so, it creates the possibility for additional funding for their conservation.

The need for an enhanced level of designation, plus a coherent management regime can also be met through wider area designation as a Conservation Area. For instance, the 78-mile-long Settle Carlisle Railway sets a precedent for railway lines being Conservation Areas and would bring stakeholders together to agree management policy and practice. Conservation Areas are treated as designated heritage assets in the NPPF and this therefore requires development within them to preserve and enhance significance.

The Statement of Significance has also noted that the level of importance of the S&DR meets the criteria for a World Heritage Site because it represents an outstanding example of

a type of building, architectural or technological ensemble or landscape which illustrates a significant stage in human history. This does not mean that WHS designation would automatically follow and the process is a long and expensive one. However, such a level of designation would afford additional planning controls to protect the asset and has the potential to increase audience numbers and tourism numbers. The operational Semmering Railway in the Austrian Alps, built over 41 km of high mountains between 1848 and 1854 has been a World Heritage Site since 1998 and functions efficiently along with its designation.

**J. Make recommendations in terms of next steps in the interpretation, management and preservation of the trackbed. This is to include the identification of key/vulnerable assets which may require a statement of significance and a timescale for putting in place key documentation such as interpretation plan, management plan etc. To include a project plan and indicative costings for each element.**

The next steps (and beyond) and a timetable have been outlined in an action plan which has been submitted separately (Appendix 7). There are also more details of the action points in appendices 1-6. In summary, the next steps include:

- 👉 Further work to enhance access to the line, or to land nearby where the line is live, and so create a 26-mile-long linear route suitable for walkers and if possible cyclists and horse riders. This will require an access plan and an ecological survey in order to determine the best route. The results of these surveys will need to be cross referenced to this report so that conflicts between ecological, heritage and access needs are addressed.
- 👉 A programme of conservation has been recommended so that historic structures associated with the S&DR are in good repair ready for visitors from around the world. This requires some additional research to produce Statements of Significance to inform that process of repair.
- 👉 A programme of archaeological recording of S&DR boundaries to help prioritise their conservation and the appropriate methods to be used.
- 👉 An interpretation plan so that an S&DR identity is established along the whole line and its associated features to tell the story in a coherent and integrated fashion.
- 👉 A series of options on the means of managing the whole line coherently to the same consistent high standard.
- 👉 Recommendations to enhance the scheduled area, create a Conservation Area and to explore the possibility of creating a S&DR World Heritage Site.
- 👉 A programme of research to fill gaps in our knowledge and to further inform the process of enhanced designation.
- 👉 Suggestions to raise the profile of the S&DR, locally, regionally, nationally and internationally such as the creation of a S&DR apprenticeship, awards, engineering qualifications etc. Recommendations for museums and galleries to collaborate on a rolling series of displays and exhibitions in the lead up to 2025.

- 👉 Recommendations to make more archives accessible to a wider audience through online publication of catalogues and in some cases, projects to scan, transcribe and publish archives on the web.
- 👉 Recommendations to develop community involvement and volunteering in research and conservation, such as community group/school adoption of stretches of the monument to study and conserve.
- 👉 A recommendation that this trackbed audit is extended to any branch lines dating to 1830 or before. Depending on the results of this audit, they may be included in any enhanced designated area.

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We gratefully acknowledge the support of the commissioning body – the three local councils Darlington Borough Council, Durham County Council and Stockton-on-Tees Borough Council. We have also had considerable help and expert advice from a number of other special interest groups including the Friends of the 1825 S&DR, the Friends of the National Railway Museum and the Brusselton Incline Group all of whom helped out with the fieldwork and the documentary searches. A number of individuals have gone above and beyond the call of duty to help with this project and at the risk of missing someone out, we would like to pay particular thanks to:

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**Appendix 5. Darlington to Goosepool (Stockton Council boundary).**

**Appendix 6. Goosepool (Borough boundary) to Stockton.**

**Appendix 7. The Action Plan**

## 1.0 Introduction

This report arises from a project jointly commissioned by the three local authorities of Darlington Borough Council, Durham County Council and Stockton-on-Tees Borough Council which have within their boundaries the remains of the S&DR line which was formally opened on the 27<sup>th</sup> September 1825. It does not specifically cover the branch lines nor extensions which followed, however recommendations have been made which include them. The project sought to:

-  Identify why the S&DR was important in the history of railways.
-  Determine the time period that covers the unique selling point element of the line – where it was most influential within history.
-  Provide an audit of what information is available, to identify what gaps there are that need more detailed work/site visits etc.
-  Map out the precise route in chronological order using land registry and planning records where possible.
-  Map out public rights of way around the route.
-  Identify and record the structures, features and elements of the line were that were developed within the most significant timescales.
-  Map out current land owners for the full length of the original route.
-  Map out key stakeholders to ensure they are involved where possible in the audit and future work.
-  Audit planning policy across the route.
-  Make recommendations in terms of next steps in the interpretation, management and preservation of the trackbed. This is to include the identification of key/vulnerable assets which may require a statement of significance and a timescale for putting in place key documentation such as an interpretation plan, management plan etc. To include a project plan and indicative costings for each element.

Much of this information has been brought together on a newly created S&DR GIS where new sites, rights of way and ownership information is included. The information on the importance of the S&DR has been set out in a Statement of Significance. This has set out the nature and extent of heritage significance and its international and national importance. The recommendations for next steps in the interpretation, management and preservation of the trackbed are included in this report and in a supplementary volume six appendices which cover specific lengths of the line.



## 2.0 Investing in the S&DR

The fieldwork and research carried out to date have flagged up a number of important management issues and conservation priorities which need to be achieved before 2025 and what are likely to be the major celebratory events of the bicentenary. Long term management is particularly difficult at a time when most organisations and local councils simply have insufficient funds to maintain existing heritage assets without incurring extra responsibilities. To address this, we have suggested a number of ways of easing the costs and spreading it out over the next nine years (and beyond) and by encouraging greater participation from local special interest groups and communities. However, when deciding whether to invest in the conservation, management and interpretation of heritage assets, it is worth remembering that:

- 🏠 Heritage makes a significant contribution to the UK economy: providing jobs and output across a number of industries from hospitality to construction.
- 🏠 Heritage plays a key role in the broader economic activity in the UK.
- 🏠 Heritage helps achieve sustainable growth <sup>2</sup>, and promotes a positive image of the region.

It is outside the remit of this report to identify private business opportunities along the 26 miles of S&DR line, but it is clear, that if there is an asset worth visiting, the area will benefit from the provision of refreshments, accommodation and links to other attractions if the initial investment is made in ensuring that the S&DR assets are properly cared for and presented. There are currently few opportunities for the existing visitors to spend any money at key locations such as the National Railway Museum in Shildon and the Head of Steam in Darlington. Consequently, they are failing to generate sufficient beneficial economic impacts in the areas in most need. These private business opportunities can also result in finding alternative uses for historic buildings which allows them to continue to make a positive contribution towards our townscape and countryside, but also generates nationally about £11 billion a year in the wider supply chain as well as repair and maintenance provision.<sup>3</sup> Visit Durham are poised to help improve small and medium sized enterprises and micro businesses performance as part of their tourism strategy until 2020.<sup>4</sup>

*Plate 1. Disused railway buildings can be sensitively developed to make a positive economic benefit to the community and to improve the tourism offer. Given that signal boxes have reduced in number from 10,000 to 500 in the UK and they are about to be made redundant by Network Rail, conversions to holiday cottages, such as this one at Cliburn near Penrith is a way to generate income and save historic buildings<sup>5</sup>*



<sup>2</sup> Historic England 2015 Heritage and the Economy

<sup>3</sup> Ibid, 1

<sup>4</sup> Durham Tourism Management Plan 2012-2016,11

<sup>5</sup> Photo from <http://cliburnstation.co.uk/> [accessed 050516]

Tourism and the contribution it makes to the UK economy is growing and heritage is a key part of the UK brand. In 2013, the UK ranked 5th out of 50 nations in terms of being rich in historic buildings and monuments, and 7th for cultural heritage in the Nation Brand Index.<sup>6</sup> The visitor economy is currently worth over £659m to County Durham<sup>7</sup> and the S&DR has the potential to significantly increase this. Also of relevance to the S&DR is that people spend more in their local economy after investment in the historic environment and one in four businesses find that historic environment investment directly leads to an increase in business turnover.<sup>8</sup>

Part of the UK's brand is already as the cradle of the industrial revolution and the Durham Tourism Strategy has identified the leading role that heritage has to play in attracting visitors to the area.<sup>9</sup> More specifically, it is clear that railway heritage has an additional special role to play in encouraging potential visitors to travel across the world. Locomotion hosted a massively successful Mallard/A4 locomotives reunion event in February 2014 with over 120,000 visitors. However, there was little opportunity for those visitors to stay and spend and make a positive economic benefit in Shildon or the wider area and the events concentrated on the locomotives, while the historic buildings relating to the early railway heritage were largely excluded from the public events. The investment in the historic building stock creates opportunities for additional income generation and creates a consistent permanent attraction, in addition to the one off events associated with visiting locomotives.

Currently, County Durham has relatively low numbers of international visitors<sup>10</sup> and the S&DR is an excellent opportunity to redress this as the importance of the line in the creation of the world's railway network is recognised abroad. Even 100 years ago, visitors attended the celebrations from across the world and in 2025, access to the line will be relatively easy using the east coast mainline between London and Darlington. It is also an important element in helping Durham County Council reach its 2020 targets of increasing tourism generated income to £863.4 million, or 17% of the visitor economy (ibid). Another target for Durham County is to keep visitors in the area for longer (ibid, 10). A 26-mile recreation rail with various attractions en-route and links to other important and related sites across the north east of England such as Stephenson's birthplace and Beamish, is an obvious way to do this.

What the Historic England statistics<sup>11</sup> do not provide, is the indirect and less tangible effects on well-being. However, the government acknowledges the benefits of the rights of way network on health and well-being, and as a safe and convenient, sustainable way of travelling (DEFRA 2008, 1.3). The 26-mile route is coincidentally the same length as a marathon. There are opportunities here for an annual S&DR run with heritage interest at its core. However, for most of us, a shorter walk, run or cycle ride is quite enough and the route provides an excellent opportunity to get out and about and explore the area on foot, with the dog, or depending on the final decision on the status of the route, to cycle or ride. The recently opened stretch of railway cycle path between Shildon and Aycliffe is exceptionally popular and has created a safe and healthy way for people to commute between Shildon and Aycliffe. Further, the designation of Darlington as one of the NHS's demonstrator

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<sup>6</sup> Ibid, 4

<sup>7</sup> Durham Tourism Management Plan 2012-2016, 3

<sup>8</sup> Historic England 2015, 5

<sup>9</sup> Durham Tourism Management Plan 2012-2016, 15

<sup>10</sup> Durham Tourism Management Plan 2016, 4

<sup>11</sup> Historic England 2015 Heritage and the Economy

Healthy New Towns in March 2016 offers additional opportunities to integrate exercise and recreational approaches including walking and cycling routes to community, educational and work places. Commuters walk, cycle and skate to and from work and the health benefits will ultimately reduce the bill for the NHS and other welfare support services. This is of course more difficult to measure.



*Plate 2. The government acknowledges the benefits of the rights of way network on health and well-being, and as a safe and convenient, sustainable way of travelling (Etherley Incline)*

In addition to tourism and cultural activity, investment in the S&DR also provides opportunities for education, research and training in a wide variety of fields from history and archaeology to engineering as will be explored later in this report. It also has the potential to increase the positive image of the area to inward investors, interested in quality of life and a tradition of engineering excellence from George Stephenson to today's Hitachi train factory.

The investment therefore required to conserve these internationally important S&DR heritage assets is therefore just that – it is an investment in an area of high levels of economic deprivation which will result in economic benefits through the provisions of jobs, services and an enhanced environment – as a consequence employment will increase, dependency on benefits will reduce and more taxes will be paid.

## **3.0 A Statement of Significance**

### **Why is the 1825 Stockton & Darlington Railway important today?**

This section of the report identifies why the S&DR was important in the history of railways and sets out its heritage significance and unique selling point. This builds upon the work already undertaken as part of the Friends of Stockton and Darlington Railway Conference in June 2015 and in particular the paper given by Andy Guy on the significance of the 1825 S&DR line (Guy 2015). It explores the influence of the S&DR nationally and internationally and also explores some of the more regional impacts.

Having described and identified what makes the S&DR so significant, this is then defined more accurately in terms of a timeframe within which the S&DR can claim to be internationally and nationally significant. This process has also helped to clarify what gaps there are in our knowledge regarding the significance of the S&DR and makes recommendations for processes to fill these gaps.

The report sets out to discuss significance using the special interests outlined in the England's National Planning Policy Framework (2012). This allows the same terminology to be used whether dealing with the planning process or the significance of the trackbed and associated remains and will make it easier to transfer information into the planning process if appropriate. Therefore, the significance of the 1825 S&DR is divided into architectural, archaeological, historic and artistic interests. The historic interest is key to this process because if it can be shown that the S&DR in 1825 played a significant role in the development of the modern railway, then it will raise the significance of the architectural and archaeological interest of the remains, which individually may have only had local or regional importance. In any event collectively the special interests are likely to combine to suggest national or international importance.

This report does not seek to provide a statement of significance for every heritage asset along the route, but confines itself to the bigger picture. A separate report on recommendations for future work and management will contain some specific recommendations where a statement of significance is a matter of some urgency for vulnerable features or where new uses are required urgently. That report also sets out where statutory and non-statutory designation needs to be changed in order to better protect the remains.

This report does however seek to transfer our understanding of significance into an initial view on the appropriateness of World Heritage Site status and so compares the significance of the line to the UNESCO criteria for WHS status and the beginnings of an Outstanding Universal Value.

### **3.1 Historic Interest - The Influence of the S&DR Regionally, Nationally and Internationally**

*The 'greatest idea of modern times' (Jeans 1974, 74).*

#### **3.1.1 Pre-modern railways and how the S&DR was different**

There had been rail ways for centuries. If the definition of a railway is a transport system in which a vehicle is guided by a purpose-built track which it cannot leave, then such systems had been in place since the 'diolkos' of Ancient Greece, constructed about 600BC across a narrow neck of land to join the Saronic and Corinthian gulfs (Guy 2015, 1). In Tudor England, German miners were brought over to develop and expand the British metal mining and smelting industries because German technology was renowned across Europe (Archaeo-Environment 2010, 19) and they appear to have introduced the idea of a railway for mines, usually underground, into the Lake District (Guy 2015, 2). The more familiar configuration of raised rails and flanged wheels seems to have been developed by English mine engineers about 1600, either in Nottinghamshire or Shropshire. It was taken to the collieries of north east England, and here it really took root, with several hundred miles of 'Newcastle roads' or 'waggonways' used in the coalfield by the mid-18<sup>th</sup> century. The rails were of wood, lying on sleepers laid on a prepared trackbed, with power supplied by horses, each of which usually pulled a single large waggon. Similar components, but sometimes in different arrangements, were also in use in other parts of the country, nearly always in industrial areas and usually hauling coal or minerals (Guy 2015, 3).

However, towards the end of the 18<sup>th</sup> century and the early 19<sup>th</sup> century there were a number of rapid technological advances which would come together on the S&DR making the transition from a mining waggonway to a modern railway possible. In that respect the S&DR hit the 'zeitgeist', but it could have been very different. Some of those technological advances that made the modern railway possible at the S&DR included Birkinshaw's wrought iron malleable rails; the S&DR decided to use them in October 1821, in the end 80% of the rails they commissioned were malleable and the rest were cast iron which was more prone to breaking under the load of heavy locomotives (Proud 1998, 14). Advances in steam locomotion design at Wylam and Killingworth were also to play a part. From 1814, Killingworth Colliery and George Stephenson were important feeders into the development of the railway as we know it today. It was George Stephenson with his friend and colleague Nicholas Wood who in 1821, persuaded Darlington based wool merchant, Edward Pease of the S&DR Company to consider the locomotive as the preferred form of traction over the horse. When Pease went on to visit Killingworth at the behest of Stephenson, he left inspired and with a vision of a national mail system run by rail rather than steam ship (Orde 2000, 22). Their success in turning Pease's head is astonishing when one considers that at that particular point in time, the Bill for a 'Railway or Tramroad' which would be horse powered and would not specify passenger use, received its Royal Assent and became an Act of Parliament (Guy 2015, 12). Further, the Company seal was approved five weeks later showing the waggons being pulled by horses, yet Pease was now to investigate locomotives and passenger use. Stephenson was given a 'make-over' by Pease to make him presentable to railway companies (Guy 2015, 13) and appointed him as the surveyor to the

S&DR in 1822 assisted by John Dixon and Stephenson's twenty-year-old son Robert. Stephenson produced an alternative route which was more suited to the locomotive where a more direct route was possible rather than Overton's long hill avoiding loops.

***" I felt sure that before long the railway would become the King's Highway" (Edward Pease, from his diary reflecting on 1822)<sup>12</sup>***

Because of Stephenson's vision and Pease's wholehearted support, the Act was amended in 1823 to include passengers as one of the many possible loads to be carried by travelling or stationary steam locomotives (1823 Act para VIII).<sup>13</sup> Such was Stephenson's and Pease's confidence in the locomotive that Stephenson went on to open his own locomotive company in Forth Street, Newcastle with Edward Pease of the S&DR and Thomas Richardson of Killingworth, his ex-employer and a powerful banker, Friend and Committee member of the S&DR, as partners (Young 1975, 100).

Consequently, the S&DR was not the first to use steam locomotives (travelling or stationary), nor the first to use malleable iron rails - these technologies already existed, but the S&DR's vision to use the technology and adapt it for a bigger more ambitious purpose, set it apart from other early railways of the time such as the Kilmarnock and Troon, Canterbury and Whitstable or Swansea and Mumbles. While each of these other early railways is important in the development of aspects of the modern railway, it was to be the role of the S&DR to bring several technical innovations together in one place and through hard work and perseverance prove that it could be made to work on a public line, permanently set out with a network of branchlines. In the process the modern railway was invented and the world was shown that not only could the steam locomotive powered railway be made to work, but that importantly it would return a healthy profit.

It is fair to say that the technology for the steam locomotive was still in its infancy even by 1825 and it took Timothy Hackworth to build on Stephenson's success to produce a more reliable and efficient product suitable for long, continuous journeys with heavy loads that rendered the horse redundant on the rail.

***"It will be of no public use; we must have a continuous line of communication; the canal will not be of so much use as the railway, for if the railway be established and succeeds, as it is to convey not only goods but passengers, we shall have the whole of Yorkshire and next the whole of the United Kingdom following with railways."***  
***(Mewburn recounting Edward Pease's views of canals versus railways).<sup>14</sup>***

The majority of early railways had been constructed to serve specific collieries or mineral extraction sites and so they were private lines. They certainly made no attempt to serve the local populace in towns which the S&DR did by linking West and St. Helen's Auckland, Darlington and Stockton and within a month, Yarm. Importantly as well as a mainline, the 1823 Act of Parliament also specified permanent branch lines, in effect a rail network. While others had developed the steam power and rail technology up to a point, it took the vision of

<sup>12</sup> [https://archive.org/stream/thediariesofpeas00peasuoft/thediariesofpeas00peasuoft\\_djvu.txt](https://archive.org/stream/thediariesofpeas00peasuoft/thediariesofpeas00peasuoft_djvu.txt) [accessed 30.06.16]

<sup>13</sup> This decision just came too late to be reflected in the Company's official seal which had just been agreed and was of horse drawn traction not locomotive power

<sup>14</sup> [https://archive.org/stream/thediariesofpeas00peasuoft/thediariesofpeas00peasuoft\\_djvu.txt](https://archive.org/stream/thediariesofpeas00peasuoft/thediariesofpeas00peasuoft_djvu.txt) [accessed 300616]

the S&DR entrepreneurs and investors to see that it had applicability beyond the ownership of colliery sites or copper mines to create a permanent public railway serving towns and industry with a main line and branch lines. This distinction between the earlier colliery waggonways and the birth of the public railway system was important at the time and remains so today. Jeans, writing in 1875 had the benefit of hindsight while still having the opportunity of meeting people who were present on the 27<sup>th</sup> September 1825. He drew the distinction between the public railway and the earlier private waggonways...

***'Lines of tramways had been opened here and there for the convenience of colliery proprietors but being private property, they were little known, and never used, by the great mass of people, while horses or stationary engines were the motive power mainly employed. Here, however, was a public railway projected and carried out on a scale of magnitude and novelty not hitherto approached, and furnished with the then unfamiliar accessory of steam locomotion.'* (Jeans 1974, 65).**

This was an important milestone because it meant that the financial backing was coming from beyond the colliery owners to create a permanent public asset with multiple uses. It achieved this through its 1821 enabling Act which established a stand-alone commercial operation and public company in its own right, empowered to buy the land it needed, by compulsory purchase if necessary, and hence able to construct a permanent route. In return, it was obliged to offer a service at agreed rates and to be available to carry that traffic for the public market (Guy 2015, 6).

Detractors of the S&DR suggest that the line was little more than a colliery railway (Marshall 1979, 199), but the Act set out a wide range of products the railway could carry and from the outset the line was established with coal and lime depots along it, which were rapidly used for a range of goods and in some cases, passengers too. It was no coincidence that on the opening day, the waggons were filled with coal, flour and passengers conveying for all to see, the potential uses of the line to the surrounding area. Further, at the celebratory banquet in Stockton Town Hall, toasts were also made to the coal trade, the Tees Navigation Company, the lead trade and other mining interests, coal owners, the plough, the loom and the sail – all key businesses that the railway could advance but which were also required as railway customers (Young 1975, 119). The S&DR was therefore much more than a waggonway. It was, however, exactly the same as the railways that were to follow such as the Liverpool & Manchester Railway (which was also toasted to at the opening banquet along with the projected Leeds and Hull Railway) (Guy 2015, 7). It was therefore the birthplace of the modern railways that we know today. Coincidentally, the model chosen by the S&DR of creating a railway trackbed with privately owned 'trains' running along it, is the same model that the UK rail network has today with Network Rail providing the line and private businesses operating it under licence. That arrangements started with the S&DR.

***'The success of the Darlington railway experiment, and the admirable manner in which the loco-motive engine does all, and more than all that was expected of it, seems to have spread far and wide the conviction of the immense benefits to be derived from the construction of new railways.'* (The Times 2nd December 1825)**

### **3.1.2 Passenger Services; But surely the S&DR did not really provide a passenger service? You need a passenger service if it is to be a modern railway?**

The role of passenger traffic is also often underplayed in the S&DR in order to suggest that it was not a recognisably modern railway. Passenger traffic was an intended use for the S&DR and was specifically stated so in the 1823 Act (para VIII). At the time this was very unusual – only three other railway acts had ever referred to passengers (Guy 2015, 9). As well as commissioning a locomotive engine in time for the opening (with a second delivered on the 1<sup>st</sup> November), the S&DR also commissioned a passenger coach – the Experiment and 150 waggons. The *Experiment* railway coach was a 'long coach', fitted up with glazed windows, central table and cushioned seats; fit for the higher status passengers of the S&DR Committee who first travelled in it on the 26<sup>th</sup> September between Shildon and Aycliffe.<sup>15</sup> On the opening day of 27<sup>th</sup> September 1825, an estimated 600-700 passengers clambered in to the waggons, or clung to the sides, where 300 had been catered for, while the Experiment was reserved for S&DR Committee Members – a case of overcrowding certainly reminiscent of railway travel in some parts of the world today!

The passenger coach 'Experiment' began hauling<sup>16</sup> passengers on the 10<sup>th</sup> October 1825 when it was leased to Thomas Close who signed a contract and paid a weekly fee to the S&DR. From 1<sup>st</sup> April 1826, Richard Pickersgill, the Darlington booking agent, took over 'Experiment' with seating for 12 passengers on top and a contract to run it at £200 a year. Tickets for travel and the sending and receiving of packages and parcels could be purchased from Pickering at the S&DR offices in Darlington or from Mr Tully who worked first from the S&DR offices on the quayside at Stockton and then transferred to the new weigh house, coal and lime depot and offices at St John's Crossing in Stockton in 1826.<sup>17</sup> It was in April 1826, that the first S&DR railway timetable was printed complete with baggage allowance.<sup>18</sup>

Later that month, a new coach 'Express' started work between Darlington and Stockton, and 'Experiment' was relegated to the Darlington-Shildon run. The Express, the Defiance, the Defence and the Union were all passenger coaches working on the line in 1826 and by May 1826 coaches were also running between Yarm and Darlington (Jeans 1974, 82). In November 1827, Old Dan Adamson's 'Perseverance' took over from the original 'Experiment' on the Shildon-Darlington section, taking advantage of the new privately owned Surtees line which ran passed his inn, the Grey Horse, in Shildon and linked with the S&DR. As a result, in December 1827, the first passenger coach was reduced to a shed, used by bank riders at the foot of Brusselton bank, where it remained for a few years until accidentally destroyed by fire when two enginemen spent the night inside (Tomlinson 1987, 129 and Holmes 1975, 20).

The S&DR went on to commission 'tubs' for lower status passengers from 1825. All were modelled on old mail and passenger coaches with inside and outside accommodation, with

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<sup>15</sup> *First in the World: the Stockton & Darlington Railway* by J Wall (Stroud, 2001), 60-63. The Durham County Advertiser of 1<sup>st</sup> October 1825 referred to 'Experiment' as a long coach design, soon to be in daily service. The Newcastle Courant of the same date referred to it as an 'elegant covered coach'.

<sup>16</sup> The term hauling was used for passengers but waggons laden with coal were 'led' (Young 1975, 122)

<sup>17</sup> He was also attending to the weigh house in Darlington by 1827 (Tomlinson 187, 134) and so was presumably commuting

<sup>18</sup> The timetable is printed in several publications including Jeans 1975, 81



those on the outside being at greatest risk of colliding with the arches of bridges. One bridge on the Brusselton Incline built up some notoriety in his regard (at Hagg Lane), but what is also interesting is that there were passengers on this inclined part of the line at all, although they could have been railway staff only. These tubs appear to have gone on to be the template for the railway enclosed cars on the Baltimore and Ohio Railway in the States in 1830 (Young 1975, 124).

The "Express" started in 1826, and to meet the unexpected demand, some old stage coaches were requisitioned and mounted on flanged wheels. One coach ran from the "Black Lion Hotel" yard, and the other from the "Fleece," at the bottom of Castlegate, Stockton. They each made one journey, to Darlington and back, daily.

In preparation for the proposed extension of the S&DR to Middlesbrough, the Committee commissioned Hackworth to design a suitable engine specifically for passenger traffic, the plans for which were prepared in 1829. This would carry a lighter load at faster speeds and improve reliability and so by 1829 the S&DR recognised that different types of engine were required for different purposes.

The railway appears to have been quickly accepted as a business mode of transport for commuter. At the appeal against the decision to refuse a licence at the public house at Heighington in 1829 Archibald Knox included a statement that he travelled '*along the railway two or three times a week*. I live at Black Boy, about three miles from Mr Turnbull's house [the S&DR Station Heighington].' Robert Crowther also testified that his business often took him to Stockton or Darlington and that he always travelled by railway '*which is a great convenience to the public*' (reported in Durham Advertiser 24.10.1829, p3).

S&DR staff had to use the railway to commute between their varied and largely undefined jobs in a profession that was only just unfolding. For example, Percival Tulley worked at the weigh houses in Stockton and Darlington from 1826 and presumably used the railway to travel between them. Joseph Anderson who was appointed in May 1827 to manage the weigh house at Shildon, keep himself useful, collect tickets at the foot of Brusselton Incline, monitor the time worked by the mechanics at New Shildon and report breaches of bye laws had to travel between Stockton, Yarm and Darlington at least twice a week, with his wife covering his duties while he was away (Tomlinson 1987, 134-5). So from very early on in the railway, it was being used for commuting to and from work as well as other passenger travelling.

There are few figures for the numbers using the railway in those first few years because the price the contractors paid to the S&DR and to the government in duty was tied into the numbers of people they carried. There may have been some motivation in keeping the legitimate numbers low. We know from contemporary accounts that there were real problems of people illegally mounting the waggons or coaches as they passed roads and hitching a lift and in some instances, this was done with a nod and a wink to the engine driver (Jeans 1973, 83). An account from 1826 of a passenger journey from Darlington referred to the journey starting with thirteen outside passengers and two or three inside and picked up several others on the way. 'The coachman informed us that one day lately, during the time of the Stockton Races, he took up from Stockton nine inside and thirty-seven outside, in all forty-six. Of these some were seated all-round the top of the coach on the outside, others stood crowded together in a mass on the top, and the remainder clung to any

part where they could get a footing.’ On that particular journey, the speed varied between 10 and 15 mph with two horses (Young 1975, 127). By 1830 the Company had introduced fines to the drivers of any sum not exceeding 20s for every offence (Jeans 1973, 85).

An account of how many journeys were made by Old Dan Adamson’s coach service survives for the year 1<sup>st</sup> October 1831 to 1<sup>st</sup> October 1832. He ran a coach at that time between Shildon and Darlington and provided 12 journeys a week carrying about 74 passengers a week. That worked out at an average of six passengers per journey (Jeans 1975, 85). The coach was horse drawn (one horse) along the railway and seating was provided inside the coach for six and outside on the roof for twenty, with fares being 1 ½ d per mile or 1d a mile respectively (ibid). Other estimates of passenger numbers suggest that during the first seven years, the average number of passengers was 520 a week.

While these numbers seem relatively low, one needs to look at the population density the passenger service was serving. Guy (2015, 8) noted that the combined population of Stockton and Darlington was well under 20,000,<sup>19</sup> which meant that in 1832 approximately 2.5 journeys took place on the railway per head of population. For Liverpool and Manchester, with its huge population of over 320,000, journeys/head came to just over one per year.<sup>20</sup> And while the L&MR could look to exploit an existing coaching traffic with some 180,000 seats available annually<sup>21</sup> and so had doubled this traffic, the single road coach between Stockton and Darlington had had the capacity of less than 70 passengers a week or perhaps 3,500 a year (Kirby, 90, 91).<sup>22</sup> Yet as early as 1826-7, the S&DR was carrying some 30,000 passengers, a more than eightfold increase in local travel.<sup>23</sup> This has to be counted an outstanding performance from what was virtually a standing start and considerably more impressive than the rise achieved by the L&MR (Guy 2015, 8). The use of horse rather than locomotive power for much of this traffic is understandable bearing in mind that the locomotives of the day were initially unreliable, expensive and designed to pull heavy goods trains, not lighter, faster passenger traffic. This was, as with so many innovations on the S&DR, something the company quickly responded to with Hackworth the chief engineer specifically asked to design and build a suitable locomotive for fast passenger traffic ‘The Globe’ in 1829.

### **3.1.3 Early Stations (inns, depots and goods stations)**

The S&DR when it opened didn’t have railway stations in 1825, in fact nowhere did as the concept hadn’t been invented. The S&DR did open coal and lime depots which could also be used to collect packages and goods, but they were also places that tickets could be purchased to ride on a train or to buy waggon space. As soon as the line was open, private

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<sup>19</sup> *Pigot & Co.’s national commercial directory* (London, 1834): Stockton, 1821-5184, 1831-7991 (median for 1826-6587); Darlington, 1821-6551, 1831-9417 (median for 1826, 7984); total, 1831-17408 (1826-c.14571). The census figure for Middlesbrough in 1831 was just 154: *Slater’s directory* (Manchester, 1876-7).

<sup>20</sup> Doubtless partly accounted for by the large number of the ‘labouring classes’ in Liverpool and Manchester, who would not be expected to travel by train at this time.

<sup>21</sup> Figure extrapolated from Carlson, 23

<sup>22</sup> Kirby, 90-91.

<sup>23</sup> Kirby, 91, although different figures (about 18,000 a year, extrapolated) were given by Prussian observers – see footnote 54.

companies ran coach services from the inns in Stockton (McLaurin 2006, 13) and presumably in Darlington as well as the depots and so it should be no surprise that the S&DR decided to open three inns of its own. They would provide somewhere comfortable with refreshments for the public and in that respect they were fulfilling the role of passenger stations, before such a thing existed.

The very first railway inn to be opened however was not an official S&DR one, but was opened in a private capacity by Mr Meynell, the S&DR Company Secretary, on the Yarm Branch. His inn, the New Inn (now the Cleveland Bay) opened in October 1825 and is still an inn today. There was a coal and lime depot to the rear of the inn and he ran this depot and inn as his own to such an extent that the S&DR asked for returns of invested money (Barry Thompson pers comm). Within a year the S&DR had commissioned three inns at Stockton, Heighington and Darlington to serve the railway; this was the same year they commissioned a goods station for Darlington. However, two (Darlington and Heighington) were denied licences by Darlington's Council and had to go to go to appeal which took until 1829. The site of the Heighington Station/Inn/house (for it was all three and a coal and lime depot, although the term station was not yet being used) was described in the appeal proceedings by one speaker as 'bleak' being a mile and a half from the villages of both Aycliffe and Heighington (Durham Advertiser 24.10.1829, p3). Despite the bleak and remote nature of the surroundings, the railway had still provided a regular passenger service, albeit without alcoholic refreshments from 1826 until 1829 (ibid). Testimonies also referred to the station building as being somewhere to receive and distribute parcels; indeed the quantity of parcels distributed from the Heighington Station/ Inn/ House/Depot by 1829 was described as 'considerable' (ibid). Darlington had its own Goods Station by 1827, but other areas continued to rely on the local inn or depot. Heighington was also a 'service station' for the travellers. Thomas McNay later recounted how the coaches stopped on their journeys at the S&DR inn at Heighington (then called Aycliffe) where passengers could get out and seek refreshments and a stretch before commencing their journey (Young 1975, 125<sup>24</sup>).

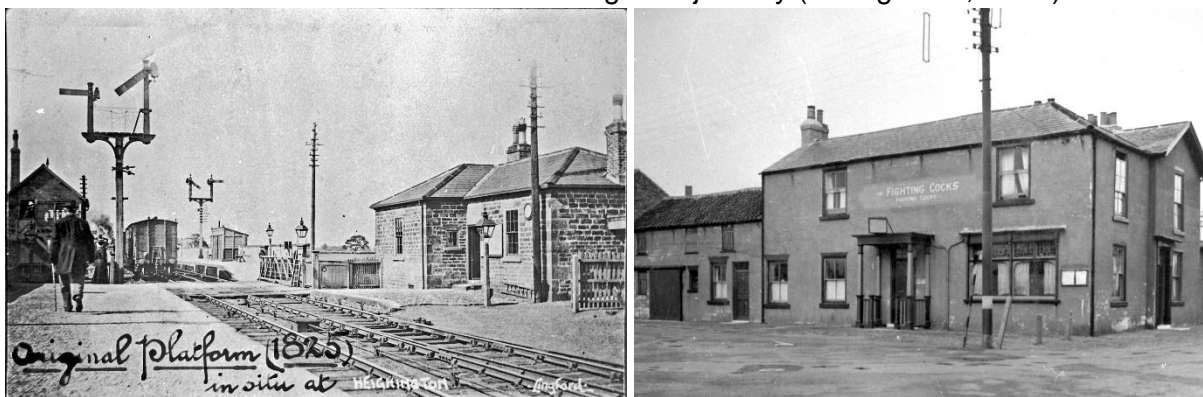


Plate 3. Left: Heighington Station with its platform next to the line. Right: Fighting Cocks Inn in the 1930s.

The role of the inns/depots as proto stations is not yet fully understood and changed quickly within those first few critical years. The Fighting Cocks inn didn't exist when the line was surveyed in 1822 by Stephenson, but it was certainly in place by 1828 (Pigot and White Trade Directory 1818) and possibly before. It was functioning as a station and it may also have been used to managed the adjacent coal and lime depot, but by April 1830 the S&DR

<sup>24</sup> citing McNay's speech at Shildon in the Bishop Auckland Herald Oct. 3<sup>rd</sup>, 1863

decided that they needed a purpose built place for the ‘accommodation of Passengers and Parcels and the sale of Coals Lime etc’. The word they were looking for to describe this place wasn’t in common parlance yet, so they referred to it as a ‘cottage’ (PRO RAIL 667/31). This may have been partly motivated by concerns about drinking and driving and the need to separate the duties of the station from the demon drink, a view that was to be strongly expressed by George Stephenson (not that one!) who commuted from Fighting Cocks to work in Darlington every day until his retirement. Therefore, by 1830, the role of managing passengers and depots appears to have started a process of separation. Meanwhile in Darlington, by 1830 the ground floor of the 1827 Goods Station was partially converted into two cottages<sup>25</sup> and subsequently, in 1833, it was remodelled and dedicated as a passenger station, dwelling house and shop, with additional cottages being created from bays in 1835 and 1843.<sup>26</sup>

Private businesses saw the potential of the inn and depot combination as loading stations for a variety of goods and an incentive to provide refreshments for people waiting deliveries or arrivals as well as the local workforce that operated the depots. Consequently, many inns opened along the line to serve railway staff and the public. Some of these inns went on to become railway hotels such as The Fighting Cocks Inn which became the Station Hotel for a while and the landlord signed a contract with the S&DR in 1840 to convey first class passengers between Dinsdale Spa and the railway.

There were many other inns on the line which merit further research including the Lord Nelson Inn, Potato Hall, Marshall Fowler's estate; Early (Urlay) Nook; Goosepool (West Hartburn Tavern); The Fleece Inn; Dan Adamson's, Shildon, the Mason's Arms in Shildon (which also functioned as a station and business premises for the S&DR) and the Railway Bridge Inn at Etherley.

The development of the current North Road Station from the early 1840's saw the replacement of the first station at North Road, and with it the S&DR was learning from others rather than forging the development of the modern railway itself as it had been up to 1830.

### ***3.1.4 The role of the S&DR in creating a railway method – how to run a railway!***

The S&DR's pioneering origins meant that at its start there was no model for it to follow as to how to run an established public railway, and of what such a railway should consist of. Nothing had been invented in a form that could simply be acquired and kick started for the S&DR. Considerable thought and care had to be given to how to practically get three different forms of traction to harmonise – horse, inclined plane and locomotives on a single line. This was further complicated by the fact that it was a public railway that anyone could use subject to payment and an agreement to abide by any rules. The increasingly popular use of the single line also meant that rules had to be established for giving way and the ‘first past the post’ system was adopted. Signalling over long distances was tried and tested, warnings were sounded on the approach to level crossings, braking systems improved and sleepers made heavier. There was no past experience to learn from, no book to consult and the duties of railway officials had yet to be clearly defined (Young 1975, 121).

Station masters weren't referred to as such until later. Job descriptions were loosely defined as it was clear that unforeseen things could crop up. Joseph Anderson's job in Shildon was

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<sup>25</sup> Fawcett 2001, 17

<sup>26</sup> *ibid*, 18

part accountant, part work's manager, part weigh house operator, part ticket collector at Brusselton (Tomlinson 1987, 134-5). Robert Garbutt at the Stockton depot was expected when not book-keeping, to make wooden pins. The Company also switched between employing people as employees or subcontractors. For example, the Engineman at Brusselton Incline in 1825 was William Mowtrey, who was paid as a sub-contractor 1 ¼d to draw the loaded waggons and haul the empty ones, and to maintain them. He was also responsible for paying his assistant's wages, the fireman's wages and to source supplies. The Company reverted to a waged structure of 22 shillings a week and 18 shillings for the assistant, presumably because it cost less, but then reverted to subcontract terms at a reduced tonnage rate (ibid, 133).

Once the S&DR was up and running as a 'rail-way', it quickly became apparent what worked well and what needed improving. The gauge chosen for the line by Stephenson was 4 feet 8 ½ inches which was subsequently adopted as the standard gauge for railways, not only in Britain, but throughout the world (Davies, Hunter 1975). Almost immediately, it was apparent that the waggons used on the launch day in 1825 were not big enough and that emptying them was cumbersome requiring the waggon to be lifted so that the contents could be dropped out the end door. When two Prussian engineers visited the line in 1826 they noted that most waggons had been altered to become trap door waggons where the contents could be let out the bottom of the waggon and the waggon sides were sloped to encourage this to happen quickly. They were also increased in size with the addition of a wooden coaming around the top (Forward 1953, 4).

After the launch date in 1825, advances followed rapidly. These included the creation of more loading and unloading depots which would evolve into the now familiar railway architecture such as goods and passenger stations, the bylaws for running a regional railway, the growth of health and safety, the administration of running a regional railway, the creation of passenger timetables and of course commercial success that would reassure other investors that it was safe to invest in their own regional railway that would soon form part of a national and then international railway network.

The first purpose built goods station (as opposed to coal and lime which went to the depot down the road) was opened in Darlington 1827. Its loading bays were let to individual carriers at varying rates and its two storey design was to form the inspiration for the later 1830 warehouse at Liverpool Road Station in Manchester which still survives.<sup>27</sup>

Many aspects of the line were still unproven technology when it came to be used in the context of a public regional railway. Until it could be proven (and the launch of 1825 went some way to do that with enough customers ready to pay for the service to immediately allay fears of money losses), that the line had to work first before it could be expanded. It was up to the S&DR to find a way forward as new problems arose, or rather it was up to Timothy Hackworth who was not only superintendent of permanent and locomotive engines, but also the manager of the line. He was in charge of the locomotives, fixed engines, waggons, tools, and main line permanent way and paid the wages of the officers (Young 1975, 128). However, through the hard knocks of money shortages, operating difficulties and the limitations of contemporary engineering, the S&DR had discovered what would be necessary by the start of 1829, at a time when the L&MR was still vacillating over vital traction and operating decisions (Guy 2015, 11-12)

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<sup>27</sup> Fawcett cites PRO 667/ 31

### **3.1.5 Advances in locomotive design by the S&DR**

Hackworth had already played his part devoting much of his time to the locomotives at Wylam under Blckett and Hedley, but his refusal to work on the Sabbath meant that he had to give up his job there and he moved to Walbottle in 1816 (Young 1975, 76-79). It is of note that the development of the locomotive design at Wylam came to a grinding halt for the eight years that Hackworth was employed at Walbottle and this fossilisation was such that Pease saw no reason to patent Stephenson's designs as there was no other locomotive development taking place in 1824 (Young 1975, 81-2). It is thanks to Stephenson that Hackworth was then lured on a temporary basis to work at the Forth Street works on the new locomotives that had been commissioned by the S&DR (including Locomotion No. 1) while Stephenson went south to survey the proposed route for the Liverpool and Manchester Railway in May 1824 (ibid 103). Stephenson was so impressed at how Hackworth had run his business in his absence that he offered him one half of his own interest in the business at the end of 1824. Hackworth declined; perhaps all too aware that the business already had several partners and was not paying its way with George Stephenson too busy as surveyor to various railways and his son Robert being posted to South America. He returned to Walbottle where his old post had been filled by his brother Thomas and instead considered setting up his own business, which he proceeded to do. Stephenson again managed to lure Hackworth back to meet Edward and Joseph Pease in 1825, but nothing was instigated as the S&DR were still waiting on the arrival of the locomotive engines from Stephenson & Co. and so they were not quite ready to appoint a resident engineer. Hackworth set about setting up his own business in Newcastle and Stephenson, somewhat panicked by this, managed to get a firm offer from the S&DR for Hackworth to be their Resident Engineer (Young 1975, 106). This decision was to be the making of the S&DR. As George and Robert Stephenson were increasingly absent and their commitments spread too far and too wide, the locomotives being provided by Robert Stephenson & Co had a number of problems that resulted in a loss of confidence. It would need Hackworth to rescue the locomotive and put the S&DR to the forefront of locomotive design and so demonstrate the fundamental soundness of locomotive traction.

The route of the S&DR had two major topographic challenges that had to be negotiated, namely the Brusselton and Etherley Ridges. Stephenson tackled them head on with incline planes driven by stationary engines as at Hetton Colliery Railway of 1822. It was left to Hackworth however to maintain them and he quickly appreciated their limitations and set about making tactful suggestions to Stephenson about how they could be improved. This was a delicate matter as criticising the new engines within months of the opening risked the reputation of the S&DR and Stephenson. However, Stephenson was unable to deal with the changes and the matter became so urgent that Hackworth wrote to Pease in March 1826 outlining options for improvement, which Pease accepted after consulting with Stephenson. He introduced double acting drums at Brusselton to increase traffic flow with less power in 1826 and then went on to Etherley where he used the weight of descending laden waggons to lift the empty waggons. He also introduced the discharge hook or 'dog' for instantly detaching the rope from waggons without stopping as well as the drag frame or 'cow', attached to the last carriage of the train to arrest the descent in the case of rope breakage. Another innovation which reduced accidents was the switch to throw waggons off the line to prevent collisions (Young 1975, 132). It is clear from Hackworth's surviving notebooks that the smooth running of the inclines required a great deal of his time with monitoring of efficiency, identifying obstacles to the system (sometimes the demon drink amongst staff

rather than technical hitches) and dealing with stretched and broken ropes, so it is no surprise that by 1829 he was arguing against their use wherever possible and instead strongly recommended to other railway companies that they use travelling locomotives (NRM HACK 1/1/22).

The S&DR only had one locomotive in September 1825, but, the line was laid out specifically with the intention of using locomotives on its main Sildon to Stockton length, but sufficient engines were not yet available, nor could the Company at first afford them. The engine 'Hope' No.2 had been commissioned at the same time by the S&DR in July 1824 (Fox 2007, 62) and arrived in November 1825. 'Black Diamond' No. 3 arrived in April, and 'Diligence' No. 4 in May 1826 – all from Robert Stephenson & Co. They all carried some modifications from Locomotion No. 1. And so within eight months the Company owned and were using four locomotives.

***'When N<sup>o</sup> 1 Engine was put on to yon Mount afront the station<sup>28</sup> there was a great deal discushion about her I could condicked them in many words but I thought it was not my place to do so she all in a original state excepting the tender it was a water barrel put on to top on an end on a muck waggon and she travled as nigh as I can tell for 2 years before she got a proper tender'. (Recollections of Robert Metcalf, a S&DR labourer)<sup>29</sup>***

The fortunes of the locomotive and the S&DR was a roller coaster ride of innovation, disappointment and innovation again. Locomotion No.1 as it arrived was based on Stephenson's Killingworth engines, but it had been altered at Hackworth's suggestion of coupling wheels with side rods instead of the old chain coupling patented by Dodds and Stephenson in 1815. The trials of Locomotion after she arrived at Aycliffe on the 20<sup>th</sup> September found that its steaming qualities were unpromising. Within a month a wheel had broken and on the 1<sup>st</sup> July 1828, the boiler blew up on Aycliffe Lane (where it had first been delivered) when it took on water and killed the driver John Cree and maimed the water pumper, Edward Turnbull. Locomotion No. 1 went on to be rebuilt and remodelled three times by Hackworth (Young 1975, 138-9). Hope No. 2 wouldn't work on arrival, and so Stephenson was anxious regarding Black Diamond's performance and sought Hackworth's advice on improving it before the next one, 'Diligence' was completed. That was the entire order complete and they were considered to be the best there was. But they were disappointing and not especially suited to long distance rail travel. Pease was concerned and wrote to Robert Stephenson in South America in April 1826, making it clear that the work coming from his business was not doing him any credit and Thomas Richardson warned that if Robert did not return, the factory was in such poor condition that it would be abandoned (Young 1975, 145). Indeed, Pease did try to back out of the business, but George Stephenson could not afford to buy him out. The fact that Pease was looking to exit from the business having been such a strong supporter and financial backer was a massive vote of no confidence in the company, if not the locomotive (ibid). This was a considerable threat to the success of the S&DR and if its model was to be copied by other railway companies, the locomotive was going to have to improve.

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<sup>28</sup> When Locomotion No.1 was placed on a pedestal outside North Road Station to commemorate the S&DR

<sup>29</sup> [https://archive.org/stream/thediariesofpeas00peasuoft/thediariesofpeas00peasuoft\\_djvu.txt](https://archive.org/stream/thediariesofpeas00peasuoft/thediariesofpeas00peasuoft_djvu.txt). Appendix 9 [accessed 30.06.16]

The S&DR attempted to buy locomotives from other places, but there were few engineers who had the skills necessary and save for Fenton, Murray and Wood of Leeds who had produced several Blenkinsop rack and pinion engines between 1812 and 1826 and which had been seen to be a dead end for conventional railways; no other locomotive building firms existed. Meanwhile at Hetton Colliery where Stephenson's locomotives had been used since 1822, the colliery reverted to using stationary engines – a public display of loss in confidence in the locomotive. Another blow to the locomotive was the decision for the proposed Newcastle and Carlisle Railway to opt for horse

drawn waggons instead of locomotives. The failure of locomotive traction was risking the S&DR as the value of shares dropped and could have been a major setback for the development of the railway nationally. Instead of the number of horses being reduced as the S&DR Committee had planned, the numbers had in fact increased to compensate for the failure of the locomotive – stationary and mobile.



Figure 1 Sketch made by Timothy Hackworth in his notebook dated 26<sup>th</sup> February 1828 of the plug wheel (NRM HACK 1/3/2/1).

Hackworth had a plan to rescue the railway and proposed constructing an engine that would exceed the efficiency of horse power. The S&DR Committee had no other option but to abandon the use of locomotives and so consented to allow Hackworth to proceed with his designs. The result was the Royal George and in the process of designing this, engineers from across the world came to watch the process, to consult Hackworth and the S&DR and to report back. Due to financial constraints, he reused the casing from a failed locomotive by Robert Wilson, the 'Chittaprat'. He had it enlarged both in diameter and length at Lumley Forge and the flue was replaced by one of Hackworth's own design. The engine itself was constructed at the Shildon workshops. The engine was tried in September 1827 and began regular work in November. Its construction was the turning point in locomotive design and marked a new era in locomotive history. It contained so many novel and successful features that it became the original of a class the use of which became general on the line. The Royal George was to pave the way for the general adoption of steam (Young 1975, 157).

One of the many innovations by Hackworth was the plug wheel. The wheels had been prone to breaking on locomotives, but Hackworth developed a system of cast iron wheel with a wrought iron tyre shrunk on. The wheels were made up in parts because the lathes in the Shildon workshops were too small to turn up the rims when fixed upon the axle. They were dotted with plug holes to ensure sound castings and reduce unnecessary weight. This new wheel type was very efficient and so was used on nearly every engine on the S&DR and on other railways for many years (Young 1975, 157-8).





*Plate 4. Street furniture in Shildon today references Hackworth's plug wheel*

Another innovative design was the spring safety valve and again it was to be used on many engines subsequently. Perhaps the most important invention was the blast pipe which ensured that boiler pressure was always maintained; thus curing the lack of steam found in Stephenson's earlier engines. The boiler was also lagged with strips of mahogany to insulate it. The Royal George was built for coal traffic and so was designed to be strong and with good tractive adhesion suitable in all weathers and

the blast pipe doubled the amount of useful work an engine could do (Young 1975, 228). The S&DR Committee marked their satisfaction with a bonus of £20 to be paid to Hackworth and the engine remained in use until December 1840 when it was sold to the Wingate Colliery Company for £125 more than its original cost (Young 1975, 162).

These innovations put the locomotive back on track not just for the S&DR but also for other railway companies that were considering their options for traction. It made the use of locomotives on rails over long distances with a variety of different loads, a viable option. However, there were still issues with the quality of locomotive coming from Stephenson's works, with No.5 being delivered in November 1827 which required alterations in order to work on arrival and then blew up with fatal results at Simpasture. Two similar engines had also been sent to St. Etienne in France with similar results. A 6<sup>th</sup> engine (nicknamed 'Old Elbows', but officially called 'Experiment') arrived at the end of January 1828 from Stephenson & Co and this too was generally considered to be a nuisance which got in everyone's way and had several phases of modification by Hackworth so that the final engine bore little relation to the original, but did incorporate some of the features used in the Royal George (Young 1975, 163-4).

These failing engines from Newcastle set back the progress of the S&DR which then had to rely again on more horse power, as the Works at Shildon were being kept busy trying to keep the temperamental locomotives online. To help keep the traffic moving, the Dandy Cart<sup>30</sup> was introduced for downhill coal traffic from 1828 and was sufficiently successful to continue in use on the Haggerleases branch line until 1856 (ibid, 166). This set back was to spark more rumours that the locomotives were to be laid off in favour of horses. However, the S&DR had the confidence, through Hackworth, that the locomotives could be improved and Hackworth kept detailed records of the tonnage, speed and costs of transporting coals which showed a steady improvement. The S&DR Company ordered that "the engines are in future to take all the coals possible. Horses are only to take what is left" on July 18<sup>th</sup> 1828. Further, on September 5<sup>th</sup> the Company ordered that 'the coal owners, east of Brusselton plane, are to send their coal by locomotive engines as formerly, and if they are unwilling, they must apply to the Company' (Young 1975, 169). Clearly, the S&DR were determined to

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<sup>30</sup> An adaptation for horse drawn waggons whereby the horse was trained to jump on the dandy cart on the downhill runs where it could rest and eat some hay, then take over the lead again on the level or on hills. This increased the efficiency of horse drawn traffic by about a third.

be seen to be a railway company that used locomotives and if anyone had a problem with this, they were to get in touch!

The process of monitoring the efficiency of the locomotives was to be particularly important in influencing the decisions that other railway companies would make in the choice of traction. After all, there was no other public railway in operation over these long distances that could provide the necessary evidence of practical working (Young 1975, 171).

In 1829, Hackworth designed, at the S&DR's request, a locomotive specifically for passenger travel. Hackworth named this engine, the 'Globe' (Young 1975, 233) and it was designed to be faster, lighter and more reliable than any that had gone before. In particular, he designed an innovative crank axle inside a double horizontal cylindered engine (ibid, 235). The Shildon workshops were not large enough to erect the 'Globe', so the parts were made at Stephenson's Forth Street works in Newcastle. After initial scepticism, the design so impressed the engineers at Forth Street, that they delayed its production while 'borrowing' Hackworth's designs to build an engine themselves which they called the 'Planet' and which they supplied to the Liverpool & Manchester Railway in October 1830, delaying the production of the Globe until two months after (Young 1975, 233-237). Hackworth's role in the design of the Planet class of locomotives was acknowledged in some quarters:

***'The 'Planet', by Messrs. Stephenson, undoubtedly presented the first combination of the horizontal cylinders and cranked axle with the multitubular boiler; and the cylinders were furthermore encased in the smoke box, and thus warmed by the waste heat escaping from the tubes — an arrangement suggested to the late Mr. Robert Stephenson by Richard Trevithick. The constructors of the 'Planet', from their established position and long practice in engine making, were enabled to turn to good account the plans and suggestions of Messrs. Hackworth and Kennedy, who had formerly occupied responsible positions in the Newcastle factory, and who still maintained a friendly if not intimate intercourse with their old employers. It must be admitted, to the credit of both the gentlemen just named, as well as to Messrs. Stephenson, that the 'Planet' was the prototype of the modern English locomotive and that for many years it was the model from which both British and American locomotive engineers copied, not only freely, but minutely' (Locomotive Engineering, and the Mechanism of Railways: Vol. 1, Colburn and Clark (1871)).***

The Globe went on to work the S&DR passenger trains with great success for nine years after which it exploded through lack of water, but it had apparently reached speeds of fifty miles an hour during its nine years of steady service. This was an astonishing advance in the development of the locomotive and also advanced the safety of the driver through the provision of guards to secure the driver or fireman. Young Daniel Adamson, son of Daniel Adamson who ran the passenger service from Shildon from 1827, later spoke of Hackworth and his technological innovations at a banquet held in Shildon in April 1876:

***'Perhaps there was no man in the whole engineering world more prepared for the time in which he lived. He was a man of great inventive ability, great courage in design, and most daring in its application...The invention of the crank axle was the most daring thing which Hackworth ever attempted.'* (The Auckland Chronicle, April 29<sup>th</sup> 1976)**

The extent to which the S&DR then went on to influence the growth of the railway network is considered below, but Hackworth's innovations went on to be used throughout the world, although his engine works in the end failed to make the transition from the small scale to the larger industrialised works that would become necessary once the reign of the locomotive was underway (Hopkin 2010, 301). Like so many innovators, he died of relatively modest means and there was little interest in his business from other companies.<sup>31</sup>

By the time the Liverpool and Manchester line opened in 1825 the S&DR had twelve locomotives<sup>32</sup> and by 1832 it had nineteen. It was a well-established financially successful mainline transporting anything that could be carried for a fee. It was however more than a mainline, The S&DR also had five year old branch lines at Darlington and at Yarm and other private branches had opened at Black Boy (funded by S&DR Committee members) and the Surtees Line in 1827. A new S&DR branch line at Haggerleases would open the same year that the Liverpool & Manchester opened and three months later at the very end of 1830, the S&DR main line was extended across the River Tees to found Port Darlington which would soon become known as Middlesbrough, the 'Infant Hercules' of British industrial expansion in the 19<sup>th</sup> century. The locomotives developed, tried and tested largely by the S&DR as being the only place where they could be put through their paces regularly, were now more reliable, less accident prone, faster and with different types of locomotive for passengers over minerals. From 1828 when the locomotives were proven technology, there was a growth in locomotive engineering companies in England, and by 1830, also in America and France. Commuting by train was now a regular occurrence, journeys could start and end at places of shelter and refreshment, and journeys planned using a timetable. Tickets could be booked, luggage allowances allowed for, railway bye-laws introduced and a notion of first and second class travel established based on indoor seating or outdoor scrambling. The S&DR had been ahead of its time, but others were keenly observing the lessons that the S&DR had learned, often painfully and expensively, and overcome so that by 1830, while the S&DR continued to innovate and evolve, others were ready to catch up and join in the railway mania. In 1829 the 'Stourbridge Lion' arrived in New York from Foster, Rastrick & Co., of Stourbridge and was the first 'real steam locomotive' to be seen in America. 1830 was also the year when the first locomotive to be built in America, the Tom Thumb, was placed on the Baltimore & Ohio Railroad and then the 'Best Friend' was built especially for the railroad the same year (Young 1975, 230). The modern railway by 1830 therefore moved into a different phase where burgeoning railway companies had an agreed vision of the future – that would be one where the land surface of the world would be criss-crossed with railway lines and locomotives; horses would not be practical for such a vast undertaking.

### **3.1.6 What impact did the S&DR have on the world?**

As the S&DR line was developed and the design of the locomotives improved, there were keen observers from across the United Kingdom and the world watching with interest. Other companies were interested in forming railways too, but the S&DR with its Quaker money was leading the field and it was clear that lessons could be learned from the Company because it had the practical application of railway method. Letters survive in national and local collections<sup>33</sup> between representatives from other railway companies and S&DR officials

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<sup>31</sup> Thank you to Jane Hackworth-Young for the sale brochure and inventory for Soho Works

<sup>32</sup> Based on tables published by Pearce, T 1996, 233-5

<sup>33</sup> The Search Engine at NRM, York and the Public Records Office at Kew

(usually Edward Pease or Timothy Hackworth). Their letters begging information and data regarding the efficiency of locomotives must have imposed a considerable additional workload on the likes of Hackworth, who not only had to provide complex data obtainable only through practical trials and experiments, but also continue his day job of maintaining the locomotives (stationary and mobile), whilst adapting and improving them and building new locomotives. He was also expected to ensure that the locomotives were clean and polished so that they looked their best for visiting dignitaries (NRM HACK 1/1/12). However, the S&DR adopted a policy of welcoming all accredited visitors who were taken over the line, shown the engines and workshops and provided with any relevant data on the running of the railway (Young 1975, 152).

The S&DR had been advising other interested parties on the potential of the railway even before the inaugural day of the 27<sup>th</sup> September 1825. In Spring 1824, Henry Booth, the Secretary to the Liverpool and Manchester Railway (which didn't open until 1830) visited "Darlington with Mr Ellis and Mr Saunders" and carried back "a very favourable impression of the principle on which the rail is constructed. Mr Stephenson also (who is here) has just shown me a letter from Mr Mewburn [S&DR Secretary], speaking of your road in very favourable terms." Booth followed this up with a letter on the 10<sup>th</sup> March 1825 to Edward Pease while the Bill was still under consideration for the L&MR to ask for supporting information that the S&DR was a success. In particular, he asked for figures on strength of rails and how frequent breakages were (Jeans 1875, 77).

On the inaugural day on the 27<sup>th</sup> September 1825, William Strickland visited on behalf of the Pennsylvania Society for the Promotion of Internal Development. There was considerable debate in Pennsylvania at that time regarding the choice between canals or rail roads (and indeed between mainliners and branch liners) and as a result of his visit to Britain, he returned to enthusiastically support the cause of the railroad which further fuelled debate. Strickland also used his experiences at the S&DR to recommend using a series of inclined planes, just as he had seen at Brusselton and Etherley for use in lifting traffic over the Alleghenies mountains (as opposed to a canal tunnel which had been proposed) (Churella 2012, 29-30). Despite his recommendations and due to various conflicts of interest and the stifling of survey data, an Act was passed in January 1826 authorising canals with the means to cross the Alleghenies Mountains to be decided at a later date. The resulting transport proposals were a hotchpotch of canal and rail road and were disastrous for the state (ibid 34).

Also present at the banquet on the 27<sup>th</sup> September 1825 was the chairman of the Liverpool and Manchester Railway Company and the Chairman of the Liverpool and Birmingham Railway Company, (not to be opened for another 12 years as the Grand Junction Railway having been amalgamated with the Birmingham and Liverpool Railway Company). They were there to see how the locomotive would operate on the day and to test their reception by the general public. Their attendance at the inauguration would be followed up by requests for trials, experiments and raw data to help them decide how to construct railways in their own regions. Much of this research and development would be carried out by Timothy Hackworth on behalf of the S&DR as he shared his knowledge and experiences across the world.

Later in 1825, French engineer Marc Seguin and his brother Camille visited the S&DR, accompanied by Mgr De Montgolfier (inventor of the hot air balloon). Seguin had in 1822

constructed what is often referred to as the world's first suspension bridge<sup>34</sup> over the Rhone River and was about to have his interest in locomotives and railroads peaked. Shortly after the September opening of the S&DR, he visited it and observed George Stephenson's *Locomotion* in operation and acquired two of his engines, which however proved unreliable in French conditions. The brothers went on to be largely responsible for the construction of France's first railway, the Saint-Étienne–Lyon railway, between 1828-33 which used horses for its first few months as tractive power. In 1829, he delivered two steam locomotives of his own design to the new railway. These used an innovative multi-tube boiler and also prominent mechanically driven fans to provide draught on the fire, rather than a blastpipe.<sup>35</sup> It is therefore clear that by 1829 locomotive technology was being improved worldwide as well as in Shildon and Darlington for the S&DR.

In 1826 two engineers from Prussia made their first visit to Darlington to learn more about the railway in order to inform progress back home where mineral railways had long been established (using wooden sleepers). They returned to Darlington the following year when they also explored other lines under construction, such as the Liverpool and Manchester and earlier colliery railways. The account they wrote, concentrated on the S&DR because it was the most advanced. It showed the state of play one year after the S&DR line was opened and highlighted some of the improvements that had been made to sleepers and waggons as well as locomotive operation by that stage. They concluded by recommending wrought iron railways as the better type (Malleable iron rails as used by the S&DR). It is clear from the text that they saw 'Darlington' as the finest railway in England followed by Hetton Colliery (Forward 1953).<sup>36</sup>

In 1828, Robert Stephenson wrote a note to Hackworth asking him to show a French visitor the 'railways and machinery' (HACK 1/1/13). The same visitor must have been visiting the Liverpool and Manchester Railway which was not yet complete.

In January 1829, a deputation of American engineers of the Baltimore and Ohio Rail Road Company spent two days with the S&DR in Darlington in order to discuss the relative merits of stationary versus travelling locomotives and particularly on the second day to travel along the line and conduct trials on the speed and water consumption of locomotives (NRM 1/1/17) and the costs of maintaining locomotives with Timothy Hackworth.<sup>37</sup> It is not clear if the second day took place, because in April they were back again, this time, travelling on the S&DR back and forth a distance of 12 miles. The snow had just been scraped off the rails and the locomotive was made to push and pull loads up and downhill to show its strength. As a result, they expressed confidence that the approach of a rail road would succeed in Baltimore and Ohio and that the efficiency was far greater than a canal could ever be. They described the velocity and power of the locomotives as 'astonishing'.<sup>38</sup> Construction on the Baltimore and Ohio Rail Road had already commenced on July 4, 1828 and so it is clear that the principle of using a rail road had already been established, but the fact finding mission by the engineers was to explore options for traction and ways of making the movement of traffic

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<sup>34</sup> However, there are examples of other earlier suspension bridges, but Seguin certainly took the technology further forward.

<sup>35</sup> Letters reproduced in Nile's Register April 4<sup>th</sup> 1829

<sup>36</sup> Carl Von Oeynhausen and Heinrich Von Dechen. Their research led to a report: 'Report on English Railways in England 1826 – 1827' - translated by E A Forward in the Transactions of the Newcomen Society Vol 29 1953-5 –pp 1 – 12.

<sup>37</sup> Letters reproduced in Nile's Register April 4<sup>th</sup> 1829

<sup>38</sup> *ibid*

more efficient. The Baltimore and Ohio Rail Road opened in 1830 with horse drawn traction on wooden rails with iron straps laid on stones, however the first trial run of Peter Cooper's Tom Thumb was in August 1830 and brought steam to the railroad along with many other improvements. Cast iron rails replaced wood, trains of carts divided the weight upon the rails, flanged iron wheels held to the rail better than wood, and a braking system was developed<sup>39</sup> – all within a year of the visit to the S&DR which had made considerable progress with the braking system and flanged iron wheels. Today, the Baltimore and Ohio Rail Road is marketed as the Birthplace of American Railroading and the S&DR had a role to play in its creation.<sup>40</sup>

However, the most frequent visitors and the source of most requests for data came from The Liverpool and Manchester Railway which received its Royal Assent in 1826 and was opened on the 15<sup>th</sup> September 1830. The Chairman of the Liverpool and Manchester Railway Co, then newly projected, and the first chairman of another railway company – the Liverpool and Birmingham line - were amongst those present at the celebratory banquet in Stockton Town Hall at the end of the opening procession. As we have seen, the correspondence between the L&MR and the S&DR pre-dated the opening of the S&DR, but was to take on a sense of urgency as the L&MR wrestled with whether to use travelling locomotives or stationary engines, particularly where hills were to be negotiated. They had acquired the services of George Stephenson from the S&DR and went on to increasingly make use of Robert Stephenson. When the S&DR publicly announced that the locomotive was cheaper than horses in 1827, it was at the same time that Hetton Colliery was replacing its locomotives with stationary engines which was a public expression of a loss of confidence in the locomotive (Guy 2015, 10). However, the S&DR stuck with them and Hackworth adapted and improved them and in 1828 the S&DR resolved to make locomotives the preferred and principal haulier, and commissioned Hackworth's *Royal George*, the first in a series of reliable heavy-duty designs (Guy 2015, 10). The L&MR however had vacillated between horse, locomotive and stationary-engine traction from the outset. Stephenson, the great advocate of locomotive use, was in bad odour with some of the directors following the failure of the first L&MR Act in 1825. With the line adapted and resurveyed by other engineers for the second Parliamentary Act, the company decided not to insert any reference to locomotive use and the hearings were dominated by discussions on horse traction (Guy 2015, 10).

On the 7<sup>th</sup> July, 1828,<sup>41</sup> Robert Stephenson in Liverpool wrote to Hackworth of the S&DR to ask for information about the extent to which horses were being used as opposed to locomotives. He had heard through the grapevine that horses were being used extensively because the locomotives were not performing well. He needed accurate information to fend off the enemies of the locomotives (NRM HACK 1/1/10). This suggested that both Stephenson and Hackworth favoured the use of locomotives, but that Stephenson, while in Liverpool was having to fend off the critics who rejected the locomotive as the way forward. He needed Hackworth's support with data from the S&DR. On the 25<sup>th</sup> July, George Stephenson wrote to Hackworth and referred to his earlier advice to Canterbury regarding the use of horses and that he had never intended horses to be used at Darlington because

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<sup>39</sup> <http://csx.history.railfan.net/history/histbo.html> [accessed 070416]

<sup>40</sup> <http://www.borail.org/> [accessed 070416]

<sup>41</sup> The same day that work commenced on the S&DR's Haggerleazes branch line

Locomotives would be used. He then invited Hackworth to the line at Botton due to open on the 1<sup>st</sup> August (NRM HACK 1/1/11).

In September 1828, Pease wrote to Hackworth to say that members of the Liverpool & Manchester Board were going to visit in order to see the 'way' but also to evaluate the benefits of locomotion power versus fixed haulage. He asked Hackworth to see to it that the engines were clean and that Hackworth should have his calculations ready to show how much more they could do in a given time (NRM HACK 1/1/12). By that time, the S&DR owned nine mobile locomotives (although two had suffered serious explosions in the last two years), and still there was no other national railway company providing a public service in the country. The deputation arrived and included Robert Stephenson and Joseph Locke (who would later become the President of the Institution of Civil Engineers and an M.P. for Honiton). Hackworth carried out a number of experiments for them exhibiting the hauling powers of the Royal George and they were suitably impressed but as yet unable to persuade the Directors of the Liverpool & Manchester to adopt the travelling locomotives.

John Rastrick was commissioned in 1829 with James Walker to report on the economics of using either rope haulage or locomotives on the Liverpool and Manchester Railway which was as yet incomplete and unopened.<sup>42</sup> On the 3<sup>rd</sup> February, Rastrick wrote to Hackworth of the S&DR to ask again for the costs of maintaining locomotives (NRM HACK 1/1/17). He asked for itemised accounts for the last 12 months and to help him understand the figures; he asked for the numbers of each locomotive and the names of the men who drove them so he could distinguish them in the lists of tables. He also referred to the visit of the American engineers from Baltimore and Ohio to Darlington and the experiments they had been conducting on the S&DR on the quantity of water and coal used in laden and empty waggons as well as the speeds. He asked for any data arising from these American experiments (ibid).

Walker followed this letter up with another only five days later to ask Hackworth to experiment with the running costs and efficiency of locomotives with coke and coal (NRM HACK 1/1/18). However, Rastrick and Walker's report came out in favour of rope haulage on economic grounds, but they favourably described the Royal George... '*Hackworth's engine is undoubtedly the most powerful that has yet been made, as the amount of tons conveyed by it compared to other engines proves.*' They included the rider that there were some benefits to locomotive haulage not least their probable technical improvement in the future.

The sense of exasperation in letters that followed between Robert Stephenson and Hackworth is tangible. On the 17<sup>th</sup> March 1829, Robert Stephenson wrote to Timothy Hackworth from Liverpool to say that the Liverpool & Manchester Railway had opted to use stationary engines having visited 'the North'. He asked for additional data to help him persuade the directors to move away from fixed engines and suggested that their report conclusion may have been the result of either prejudice or lack of information (NRM HACK 1/1/21). Timothy Hackworth replied to Stephenson with additional data and warned that stationary engines with ropes wouldn't work especially for passengers and that ropes were dangerous and prone to stretching and a scene of endless confusion would follow. He suggested using both stationary and travelling locomotive engines and sympathised with Stephenson who, he said, could only do his best to persuade them of their folly in only wanting to use fixed engines.

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<sup>42</sup> [http://www.gracesguide.co.uk/John\\_Urpeth\\_Rastrick](http://www.gracesguide.co.uk/John_Urpeth_Rastrick) [070416]

**‘Do not discompose yourself, my dear sir, if you express your manly, firm decided opinion, you have done your part, as there [sic] adviser, and, if it happen to be read someday in the newspaper ----whereas the Liverpool & Manchester Railway – has been strangled by ropes, we shall not accuse you of guilt in being accessory either before or after the fact. Yours very respectfully, Timothy Hackworth.’ (NRM HACK/1/1/22).**

The directors of the Liverpool and Manchester Railway went on to run the Rainhill Trials in October of 1829. This was a six-day trial designed only months before the line was due to open to see if locomotives would be used at all and if so, which were the best (Guy 2015, 11). However contemporary reports suggested that the judge’s decision was not about the principle of locomotive use, but the respective abilities of the different locomotives<sup>43</sup> (Newcastle Courant 31.10.1829).

The engines had to run ten trips over the ground at Rainhill in order to assess whether they were fast and reliable enough to make the return journey between Liverpool and Manchester. Five engines competed for the £500 prize; however, the *Sans Pareil* burst a cylinder and lost out to Stephenson’s *Rocket*. Local feeling in Shildon had it that the cracked boiler, which was cast and bored at Stephenson’s works had been deliberately sabotaged by the rival company. The Trials contributed towards the directors shifting towards the use of travelling locomotives and they went on to purchase not just Stephenson’s *Rocket*, but also Hackworth’s *San Pareil* where it served for two years before being leased to the Bolton and Leigh Railway.

In the end, was it the Rainhill Trials or the successful use of locomotives by the S&DR that persuaded the Liverpool and Manchester to use travelling locomotives? By 1828, the S&DR was fully committed to locomotive use and they had improved considerably since 1825, but rumours about their inefficiencies consistently spread south to Liverpool which undermined Hackworth’s statistics. Stephenson, now working for the L&MR, was in full agreement with Hackworth and the S&DR but was out of favour with the L&MR Board. The use of locomotives over these long distances with heavy loads including passengers, was relatively new, but the use of stationary engines was more tried and tested. It was easier to believe the naysayers and go with what they knew, despite the risks pointed out by Hackworth. But the Directors didn’t automatically go for Rastrick and Walker’s recommendations. They did commission the trials on their own territory and the trials were locomotive against locomotive. Perhaps Hackworth and Robert Stephenson had really persuaded them, but they needed a public showing of the potential of the locomotive for shareholders? Certainly, without the S&DR experience and Hackworth’s data, it is almost certain that the Liverpool and Manchester would have opted for rope hauled inclines over locomotive at least in its early days after 1830. It is however clear, that Hackworth and the S&DR could be turned to for advice and instruction because they had the practical experience and lessons learned through various hard knocks, to make them the world’s leading authority on running railways.

When Jeans wrote his celebratory tome fifty years after the launch of the S&DR, he said that the 27<sup>th</sup> September 1825 was destined to set at rest all doubts and to dispel all illusions as to the practicality of railway locomotion. While this is a grand claim for a single day, it did mark a significant date in the process, but it took another three years with more design innovations by Hackworth and the S&DR and more data on locomotive efficiency to persuade all

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<sup>43</sup> The term used in the newspaper is carriages but it is clear they are writing about locomotives



countries to adopt the rail road over the canal and to adopt travelling locomotive power over horse or stationary engines. The opening was reported widely across the UK:

***‘The opening of this railway...may be considered as the most important practical experiment which has yet been made on the power of the railways and of locomotive engines; and certainly the results are highly satisfactory and conclusive as to the advantages of this mode of internal communication’ (Caledonian Mercury 8<sup>th</sup> October 1825)***

***‘On Tuesday week, that great work, the Darlington and Stockton Railway was formally opened by the proprietors, for the use of the public....’ (Cumberland Pacquet and Ware’s Whitehaven Advertiser 11<sup>th</sup> October 1825)***

***‘On Tuesday 27<sup>th</sup> ult. The railway was publicly opened, in the presence of great crowds of spectators on every part of the line, including many scientific gentlemen from London, Birmingham, Liverpool &c. To the loco-motive engine 60 waggons were attached, containing one thousand persons, who were highly delighted, as were the thousands of spectators, by the exhibition...’ (Cambridge Chronicle and Journal 7<sup>th</sup> October 1825)***

***‘The formal opening of that stupendous work, which effects a communication between the port of Stockton and the coal field in the interior parts of this county, took place on Tuesday last...’ (Manchester Mercury 11<sup>th</sup> October 1825)***

The S&DR demonstrated the railway’s abilities to produce very healthy profits – in fact it would be the most profitable railway in Britain right up to 1860 (Guy 2015, 14). Further, the successful opening of the S&DR did not just increase the value of shares for the S&DR, but the stock price of the Liverpool & Manchester Railway also rose thus providing a great vote of confidence amongst potential investors in the railway at home and abroad:

***‘Some of the gentlemen interested in the Manchester and Liverpool Railway, were present at the opening of the Stockton and Darlington Railway, described in our paper of Saturday, and in consequence of the promising result witnessed on that occasion, the premium of stock of the former has advanced from 15 to 19.’ (Caledonian Mercury 13<sup>th</sup> October 1825)***

Henry Booth, the treasurer of the L&MR called the S&DR *...the great theatre of practical operations on railways....*<sup>44</sup> Although he included in this the other steam waggonways in the north east (Guy 2015, 14). In a classic study of the economics of transport history, it was said of the passing of the first S&D Bill, *it would be a little melodramatic to date the beginning of the railway age from this very day...But all that now followed was in fact the culmination of this initial stroke.*<sup>45</sup> Technically, financially, publicly, it had succeeded: the first large-scale demonstration of a new style of railway, a new form of inland transport (ibid).

Would the railway revolution have happened without the S&DR? Yes, it certainly would, but it would have taken a different trajectory, perhaps a slower one with less public confidence in the investment risks and perhaps there would have been more canals. The decisions about

<sup>44</sup> *Account of the Liverpool and Manchester Railway*, by Henry Booth (Liverpool, 1831), 68. He included in this the other steam waggonways in the north east.

<sup>45</sup> Dyos & Aldcroft, 121.

the traction in particular would have been different in parts of France, the States and England with more investment in the tried and tested rope pulled inclined plane with stationary engine over the travelling steam locomotive. Investment in new technology would have been slower and horses used for longer.

The singular point at which technological developments, engineering excellence and, perseverance were married to financial and business support and came together to make the worldwide expansion of railways possible with huge implications for the social and economic change in the 19<sup>th</sup> century, can be traced to the opening day of the S&DR.

***'The opening day of the Stockton & Darlington Railway on 27<sup>th</sup> September 1825 was as important a date in world history as 20<sup>th</sup> July 1969 when man first walked on the Moon' (The Times History of Britain's railways, 2015)***

### **3.1.7 Local and regional impacts of the S&DR**

While the S&DR was influencing the nature, extent and form of rail roads across the world, it was having other impacts locally, nationally and regionally. While the flourishing of the railway had many major impacts on the way of life across the globe, there were more specific impacts created by the S&DR in particular.

***'Everything in South Durham and North Yorkshire dates from the making of the railway. In the beginning the Peases made the railway. Then they took to coal-mining to bring traffic to their railway. Then they made a new port to ship their coals; and the new port made a town which in thirty years became the capital of Cleveland, and the greatest iron-producing centre in the world. The railway created a demand for coke. They built coke ovens by the hundred, and thus laid the foundations of a great and flourishing industry...When a vast population was gathered together, in a district which had once but responded with the cry of the lapwing and the curlew's lonely note, members of the same family were ready to open out on the one hand a direct route to the Lake District,<sup>46</sup> the tourist ground of England, and on the other to transform a sandbank and a smuggler's retreat into the watering places of Redcar and Saltburn...[The Peases'] connection with the railway made them particularly alive to every want of the district through which it ran. They made the railway to serve the district, and then they developed the district to serve the railway.'* (The Kings of British Commerce. The Peases of the North of England. Founders of the First Railway in the World. N.p., [1876], pp27-8.)**

The author may have exaggerated somewhat when he or she said that everything in the region post-dated the railways, however the spirit of the quote does capture the impact of the S&DR, the Peases and the railways in the region. Of course coal mining already existed in the region prior to the S&DR, but the provision of a publicly accessible direct route from the largely under-exploited coal fields of south-west side of County Durham through or passed the towns of Darlington and Stockton, with numerous coal and lime depots en-route, plus the export of coals to London from the newly constructed staithes at Stockton, opened up the market, reduced the cost of coal throughout the country and encouraged others to invest in their own railways or to construct branch lines to the S&DR from their own collieries.

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<sup>46</sup> And itself the subject of a bid for WHS status

Prior to the construction of the 1825 S&DR, coal was sold from the Bishop Auckland area to the south of Durham county and into north Yorkshire, but the transport costs were high. Land carriage doubled the pithead price of coal every ten miles (Orde 2000, 20) and the thirty five collieries of 1810 in central and southern Durham were able to only produce 390,000 tons of coal a year compared to 3.5 million tons from the sea coal mines of the Tyne and Wear area (Bailey 1810, 11-17). The S&DR opened up these markets and via their long term research and development of the locomotive, the Company would inspire the confidence in others to follow their lead. After 1825, the price of coal fell from 18s a ton to 12 s a ton and then 8s 6d in Stockton. At the opening banquet, the chairman of the S&DR Company remarked that the price of coal had now reduced to one third to the public, a much stronger tonnage expected to pass and an export trade was now certain as they already had an order from London that alone would pay 4% on shares (Jeans 1974, 75).

Coal owners on Tyne and Wear feared the new railway would interfere with their monopoly of the London market – then the largest in the country. They wanted to retain the shipping trade for themselves and tried to limit what could be charged to convey coals by ship, but such lower dues were sufficient for the S&DR to make money and helped make the trade a success (Jeans 1974, 96).

The S&DR's claim to significance is often undermined by its perceived emphasis on coal over other goods including passengers – the implication being that it looked back to waggonways rather than forward to the modern railway. However the 1821 Act clearly set out a range of goods that the railway could move and the costs for doing so including limestone, road repair materials, manure, 'Coal, Coke, Culm, Cinders, Stone, Marl, Sand, Lime, Clay, Ironstone and other Minerals, Building Stone, Pitching and Paving Stone, Bricks, Tiles, Slates, and all gross and unmanufactured Articles, and Building Materials,... Lead in Pigs or Sheets, Bar Iron, Waggon Tire, Timber, Staves and Deals, and all other Goods, Commodities, Wares, and Merchandizes', and finally coal (para LXII). Indeed, the figures for 1827-8, of nearly 12,500 tons of general merchandise carried by the railway was hardly negligible, a weight of traffic that previously must have been small indeed on the roads and which was therefore largely created by the railway. The concentration on coal in the early stages was precisely because that was where the market was and in due course, the presence of the railway made the opening of more collieries (and quarries) possible and so the amount of coal requiring transportation grew and grew so that it out grew the first port at Stockton and merited the purchase of a farm at Middlesbrough which would become Port Darlington in 1830. The S&DR was doing what was, and is, expected of a modern railway, carrying the available traffic, and it was doing so to a plan quite alien to the traditional waggonways of the north-east coalfield (Guy 2015, 7). Further demonstrating the S&DR's ambitions and forward thinking the carrying of passengers was added to the 1823 Act.

Inevitably, the expansion of the coal market and other industries, also led to the demand for housing which in turn led to the demand for building materials such as sandstone, limestone and lime. The difference in quarry numbers between the 1823 proposals map by Stephenson and the 1855 OS 1<sup>st</sup> edition speaks for itself with numerous quarries and sidings extending to the S&DR. Prior to the railways, New Shildon consisted of marsh land rich in bird life, Middlesbrough was a farm and Darlington and Stockton largely clung to their medieval boundaries. The long finger of branch line extending from the main line southwards towards Darlington's new coal depot would become the back bone of the extending town as it spread along North Road towards the mainline, bringing with it housing, businesses,

taverns and of course goods sheds, railway stations and iron foundries. Darlington had no iron, but it had access to iron and coal and so the Albert Hill area became packed with iron and steel foundries, the first of which was Kitching's of 1831 (Kitching was a S&DR Committee Member). The same process was to be seen at Fighting Cocks where iron foundries sprung up to take advantage of the railway's ability to bring coal from Shildon and iron ore from the Cleveland Hills from the 1850s.

Shildon was a tiny village located along a main road with a few inns and houses. New Shildon was created to the south and became home to the S&DR's Railway Works managed by Timothy Hackworth and it was here that locomotives were made and maintained along with waggons. The works started in 1825 and in 1833 Hackworth set up his own Soho Works, both of which dominated the town until 1984 when the last of the Works closed. John Dixon, the company engineer and erstwhile assistant to George Stephenson recollected the area before the railway came to town:

*'I have known Shildon for fifty years when there was not a house of any sort at New Shildon, much less a Mechanics Institute. When I surveyed the lines of the projected railway in 1821, the site of this New Shildon Works was a wet, swampy field – a likely place to find a snipe, or a flock of peewits. Dan Adamson's was the nearest house. A part of Old Shildon existed, but 'Chapel Row', a row of miner's houses, was unbuilt or unthought of.'*

**(Bishop Auckland Herald, 3.9.1863)**

By 1854 a journalist working for the Darlington and Stockton Times took "a run among the Auckland collieries" starting in a horse drawn coach at Shildon. Going at a quiet pace there is time to observe the country which between this place and West Auckland is essentially a coal district. On every hand are to be seen steam engines, puffing and sobbing as they bring to the surface the results of the labour of those who are toiling below".<sup>47</sup> This was a radical change from the more rural landscape which had existed before September 1825.

### **3.1.8 Archives and Collections**

Although not specifically within the remit of this report, it should be noted that substantial amounts of archive and artefactual material relating to the S&DR exists both in public archives and museums and in private hands. Much of this remains to be assessed in detail, but it is clear that the quantity and quality of material add significantly to the historic importance of the S&DR.

## **3.2 Archaeological interest – what survives, what can it tell us, how rare is it?**

The survival of the original 1825 route is relatively good and half of the line is still live, meaning that by 2025 it will have been running as a public modern railway for 200 years; it is therefore the longest running, continually operated, modern public railway in the world. The archaeological potential of the 1825 S&DR should be seen as high both with regard to its own history, but also to regional, national and international agendas for research into the development of the modern railway. A full list of recommended excavations is included in the

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<sup>47</sup> Northern Echo 3<sup>rd</sup> August 2005, 8 courtesy of Chris Lloyd

management document, but it is clear that the remains of the S&DR are of high archaeological potential and even a relatively modest amount of fieldwalking has already uncovered much. The trackbed and its associated structures including depots, stations, inns, sidings etc. are of considerable archaeological interest.

### **3.2.1 The Trackbed**

The trackbed of the 1825 line is in varying condition. Some lengths were abandoned, some are still operational railway lines and other parts have been destroyed through development and mining. About one third is already accessible for walking and cycling (See Section 9). Much however still remains and is described below.

*'In 1822 thomas Law Robert Peacock james Wade edward Bainbridge and Robert Metcalfe myself comence making the line from Stockton to shildon we started off below Earlynook I continued on with them untill a disunt relation on mine took a contract from whiley hill to heighten lane it came on wet on friday night and rained all day Saturday Myers flat batery was a 4 foot metal on monday morning battery went down and blow pete earth mountain high company men was many week levying (? leveling) as we were going through codling cut there was a slide came down and broke both my legs and collar bone old Mr fothergill was company docter and he attended me at 8 week end I was out then and upon works but was not able to work at that time I was ganner for my cousin when I was weary of standing I sat down and could look after the men the company aloud 2d a yard premen money he never could get out a thousand yards untill he engaged me he used to work hard himself I told him if it would not pay him to let the working alone and look after men job was good for nothing well he said I cannot help I must be working he said I wish you would look after men I said I will but I must have some money we started off at monday morning after pay I begun to lie men on'. (Account of building the trackbed (battery) in 1822 by Robert Metcalf of Church Street in Darlington)*

### **3.2.2 Live Trackbed**

Just over 19km of trackbed remains as live railway line and so has been in continual use since 1825. In some instances, the live line may have veered slightly off the original route as the line has expanded and then contracted again. The live line includes original cuttings, embankments and level line. Despite remaining in continual use, it is surprising the extent to which stone sleepers from 1825 can still be found in the adjacent verges. One stretch of line near Goosepool has been raised in height to accommodate a later bridge and the 1825 level crossing at North Road in Darlington will have been scooped out and the railway embankment heightened in order to put in a bridge for the trains to cross the road. The line at Shildon has been widened considerably and by the 1920s it was the largest area of sidings in the world,<sup>48</sup> but it has since contracted to a double line with a wide area of waste and cycle path. While having an active line continuously for nearly 200 years will mean that the route will have been the subject of many changes, some of which will have damaged the original infrastructure, it is of particular significance that it is still possible to travel in a train along it. The live line also includes a large number of engineering features dated to 1825 including embankments, cuttings, culverts, accommodation bridges, and the scheduled Skerne Bridge in Darlington designed by Ignatius Bonomi & George Stephenson in 1824-5.

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<sup>48</sup> Charlie Walton, Chairman of the Bishop Line Community Rail Partnership).



to the other side of the road in 1852, so the 1825 railway was left to be taken over by parkland woodland. As such a number of features survive intact within the woodland in an unusually unaltered state, but they are not yet clearly understood despite some trial excavation.

Areas of line which clearly already meet the criteria for scheduling but which are currently unprotected, are highlighted in the six management documents covering the line.

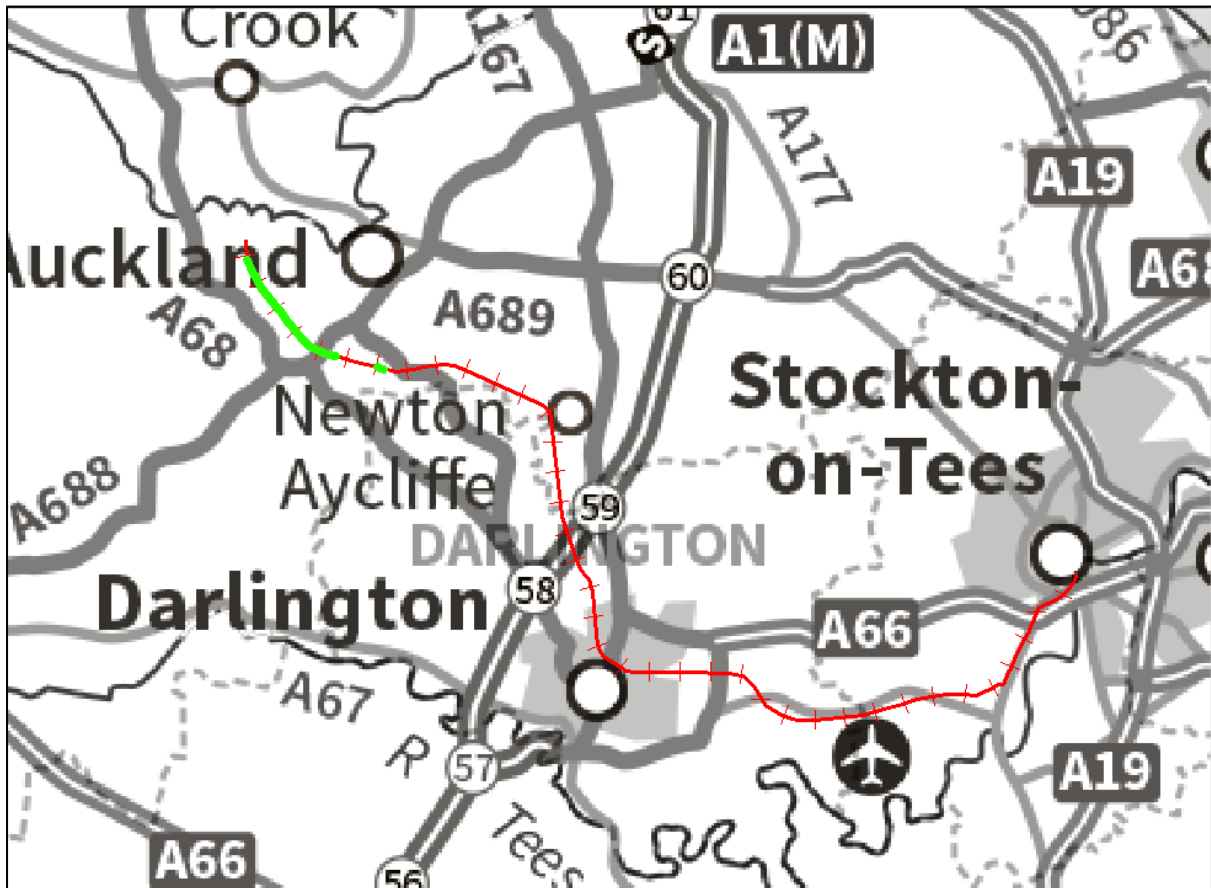


Figure 4. The S&DR route (in red) and the length that is currently scheduled (in green)

### **3.2.4 Destroyed Trackbed**

Parts of the trackbed have been destroyed by surface mining, road cuttings and roundabouts, although the extent of road destruction has not been tested archaeologically. Not all roads have destroyed the line; the Eastern Transport Corridor in Darlington has left much intact and buried some, while the A688 West Auckland by pass was raised up to preserve the line beneath it. It is surprising the extent to which the remains have even managed to survive surface mining by being positioned under bunds and offices rather than in areas of extraction. In total, it is estimated that 3.60km of the 1825 trackbed has been destroyed out of an original total of over 40km, which equates to 9% of the original 1825 mainline from Witton Park to Stockton.

### **3.2.5 Areas of Unknown Survival of Trackbed**

The extent to which the line survives in certain parts such as urban areas and under roads is not clear. At the village of Brusselton, recent clearance work by the Brusselton Incline Group

has exposed in situ stone sleepers along the roadside verge and the route clearly then passes under the tarmaced road. In Shildon, the line is clear, but has been tarmaced or is currently grass verge until it joins the live line. In Darlington, the Eastern Transport Corridor has been built reusing the railway embankment and the extent to which this has altered the 1825 topography is not clear. However, what is clear is that the embankment ditches survive at least on the north side, original culverts survive and stone sleepers are still to be found in the verges on the north side, although they may not have originated here, but brought in as a source of building stone.

The 1825 line has suffered especially in Stockton where the 1825 Way, a modern road, plus parts of the A66 have been built on top of it and the extent to which any of its infrastructure has survived is unknown. The stretch of line leading towards the staithes on the riverbank is now under a car park and again, the extent and nature of any survival is unknown. Unlike the busy 'A' roads, this car park area could be investigated archaeologically to test for survival.

An area of surface coal mining west of Brusselton appears to have removed a stretch of the incline, but map and cropmark evidence suggests part of this may be an in-filled cutting

The remainder of the line is where survival appears to exist in some form, although the quality of that survival is unclear and will require further investigation. These are areas where the line is a footpath, an earthwork or a crop mark, sometimes with associated features such as accommodation bridges, culverts or reservoirs for engines and stone sleepers. Much of the line east of the A66 near Darlington is in a cutting and now functions as a cycle way, but sleepers survive as do the drainage ditches, and so in these non-scheduled areas, there is still much that relates to 1825.

### **3.2.6 The Archaeological Potential of the Trackbed**

Research into early railways has had a strong bias towards the locomotive (Gomersall and Guy 2010,8), but the archaeological evidence as retained in the trackbed of the railway and its rope hauled inclines can contribute towards our knowledge regarding the approaches to its construction. The trackbed in 1825 consisted of a line of rails running between hedges and fences through a dozen cuttings, and a similar number of embankments, from Shildon to Stockton. There were sidings every quarter of a mile, watering places here and there, a few bridges over or under the rail, one bridge over the Gaunless, and one bridge over the Skerne and there were coal and lime depots, boundary stones and milestones. There were also stone boundary walls at least as far as Darlington and hedges beyond to set out the extent of S&DR property (see below, section 3.2.8).

Some of the specifications survive in the Public Records Office for the making of the line and there are detailed accounts left by visiting engineers from other countries such as Oeynhausen and Von Dechen who visited in 1826-7 (Forward 1953). Further Nicholas Wood recorded the forms used by the S&DR for the trackbed in his treatise of 1831. However, the fieldwork carried out as part of this project has cast some doubt on the accepted methods for constructing the line and suggest that changes were made very rapidly, or that approaches were not quite as intended. For example, 64,000 stone blocks were quarried locally for sleepers as far as Darlington (Jeans 47), but wooden sleepers (9,200 oak blocks arrived from Portsea for the purpose (Jeans 47)) were supposed to have been used at the east end of the line where stone was scarce. Despite this, stone sleepers have been found at the east



side of Darlington, the line to Fighting Cocks and even as far east as Goosepool suggesting that stone replaced wood in places very quickly. This appears to have been confirmed by Oeynhausen and Von Dechen during their 1826 visit (Forward 1953,3).

Where the trackbed has already been cut through, obtaining archaeological sections would be useful to confirm the structure and how it was made. Photographs of the demolition of the road bridge at Brusselton suggest that the embankments (called batteries at the time) were made up in stages of colliery and quarry waste and the levels stepped in towards the top. Then the structure was overlaid with earth and grassed over. However no archaeological recording has taken place to confirm this or to identify local variations.

What was the trackbed surface covered with? Some form of ballast would have been required and some stretches of line were later covered with coal ash, but in 1825 what material was used? This appears to vary in places where small holes have exposed lime, or slag.

Where the line consists of an embankment, ditches were laid out along the top edge, but often outside the boundary. Can this be seen regularly along the line and if so, does that mean that the ditches were not in the ownership of the S&DR?

Accidents happened when the cuttings were made. What provision, if any, was there to prevent the sides caving in after the bad weather, such as that experienced towards the end of 1823?

We know from recollections that have survived that early forms of signalling were devised especially on the inclines where the engineman needed to know when the waggons were ready to be hauled up. There are key places at the foot of each incline and at the engine houses, where evidence of these early forms of signalling might survive.

There are also visible features which are not understood, but could be interpreted through archaeological excavation. A large regular shaped pond on the east side of Etherley Incline does not appear on maps, but is within the S&DR property boundary. Similarly, a crude rectangular set of foundations can also be found near Etherley Incline and within S&DR ownership. At Brusselton a metal post was found of unknown function and another metal post with the letter P on it was uncovered at the earthwork remains at Preston Park. More archaeological context is required to begin to interpret these.

The line was preceded by a temporary way and a permanent way followed; this was certainly the case at Etherley where massive embankments and cuttings were required and the work was carried out by Thomas Greener (Glass 1875, 6). Very little is known of the form of this first temporary way and evidence may be found alongside the 1825 route. How was the route first set out in the landscape? What form did the temporary way take?

Very little is known about the nature and form of sidings or passing places on the S&DR and these should be archaeologically investigated whenever possible. Evidence of rails should be clearly noted and a record made of whether they were cast or wrought iron as both were used on the S&DR trackbed. When excavating trackbed remains, the wider area should always be examined because it is likely to contain scatters of redundant features such as sleepers and chairs.

### **3.2.7 *The Archaeological Interest of Watering Places***

There is also very little evidence of the watering places required for the early steam locomotives. It is not clear where they were positioned and how the engines were re-watered. In the absence of other data, excavation is the only option to uncover information on this process. Although we have a record of various watering places used on the 27<sup>th</sup> September 1825, we do not have the exact locations however, and so it is important that if ground disturbance is due to take place alongside the trackbed, that this is recorded archaeologically so that such features can be looked for.

### **3.2.8 *The archaeological interest of boundaries***

Boundary walls do survive along much of the line in various stages of decline. Their form should always be recorded to see if there is a distinctive S&DR design or whether the design simply reflected the preferences of the contractor. Where walls do survive to their full height, they appear to be topped with triangular copes and are usually, but not always dry stone walling. As the boundary walls approach a structure such as a bridge, gate or culvert, they often slope up towards the structure. Boundary walls can therefore be an indicator of where there has been a railway structure in the past.

The survival of quick set hedging is less easy to identify as where the line is still bounded by vegetation, it is often unmanaged with considerable amounts of self-seeded trees in the area. It is not clear if the hedging was planted directly into the soil or if a bank was created first and the hedging planted on top of that. Therefore, opportunities should be taken to carry out a cross section of boundary lines that had hedgerows towards the east end of the line. If more detailed survey of the 1825 route takes place, the full extent of the boundary features should be recorded before decisions are made on their conservation.

### **3.2.9 *The archaeological interest of inclines***

The first phase of rope pulled incline was rapidly replaced with improved models by Hackworth and it is these improved models that we have a better understanding from contemporary illustrations and adverts for their commissioning or subsequent sale. It is possible that the Brusselton Engine House or the ground upon which the engine house once stood, may have additional archaeological evidence to help understand the nature and form of the earliest incline engines. The need to better understand the performance characteristics of the rope hauled inclines has been flagged up as a research priority in the Early Railway Research Agenda (Gommersall and Guy 2010, 8) including such essential points as their braking capacity and of their performance in comparison with the other principal power systems of the horse and the locomotive including running costs estimated and actual. However, Hackworth led the field in this study in the 1825-30 period and carried out numerous trials, but there is scope to compare the S&DR results with those of other railways and earlier collieries. Were his results influenced by the need to promote the locomotive and defend the future of the S&DR? More specifically, in terms of the archaeological potential, the Research Agenda states that 'All powered inclines, reciprocating rope systems and balance inclines and their related features should be examined archaeologically. Key features for recording are the gradients (which may vary

along the line), embankments and cuttings, measurements of any 'kip' or hump at the highest point and evidence for the number of rails used along the width of the plane (essentially at the ends and at the central meeting point of the waggons). Structures such as engine and drum houses are important, as is any evidence of signalling.' There is very little above ground evidence left of the engine houses apart from the partial survival of Brusselton which is now a private house, but the below ground remains remain accessible for future archaeological investigation, which combined with excellent records will help to contribute to our knowledge of the development of early railways.

### **3.2.10 The archaeological interest of bridges, culverts and accommodation arches**

These structures do not all conform to a particular design, but a few do use the same round topped terminals and have string courses over the arches. A programme of archaeological recording combined with additional documentary evidence from the Public Records Office for specifications, could throw more light on the forces behind the choice of design for such structures. An interesting example is the accommodation bridge at Brusselton which was adjacent to a road bridge built at the same time. The accommodation bridge was ornate and elegant, but the road bridge was a simpler design. Why were two different approaches used? The Skerne Bridge is a nationally important structure somewhat blighted by a poor quality setting, but it has been through a number of alterations starting with strengthening in 1827 and subsequent widening and then contraction again. Archaeological recording of the structure would help to inform its future maintenance by Network Rail and any planned alterations. Much of this could be done remotely using laser scanning (of the original south side at least) and so would not disrupt the rail service. When recording takes place of any structures, the wider area should be examined for architectural fragments that have fallen away and perhaps rolled down embankments as these are often the distinctive terminals that could start to suggest an S&DR style.



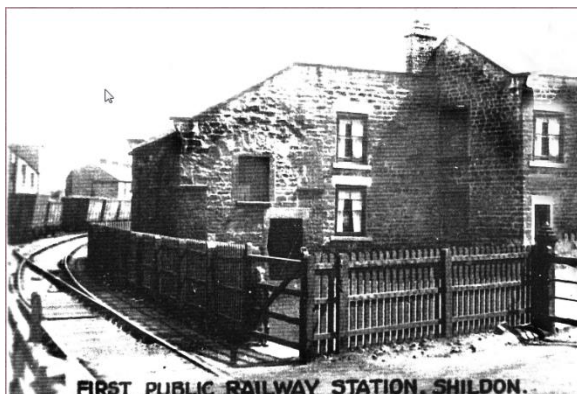
*Plate 5. Left: The Hummerbeck Bridge with typical string coursing to the arch. It also had peppercorn terminals which have fallen off but lie nearby. Right: a culvert below Etherley Incline*

### **3.2.11 The archaeological interest of houses, inns and depots**

A number of buildings and sites are also of archaeological potential to try and understand their role as the first 'stations' in the period up to 1830. The use of cement renders has sadly obscured much of the external archaeological evidence on many. It is not clear how the inns

and coal depots have evolved and we only have dates for a few. No former railway inns have been the subject of detailed internal and external survey. Survey combined with a detailed statement of significance would help the owners to make alterations that are in keeping with the national importance of these buildings, although as they are all in private ownership, there is no obligation on the owners to permit such research to take place. However, if there are requests for planning permission or listed building consent, then such works should help to inform any alterations, as set out in the National Planning Policy Framework para 128. In particular, such surveys and statements of significance should take place at:

- 🏠 The former Railway Bridge Inn, Etherley
- 🏠 The Mason's Arms (now called The Crossings), Shildon
- 🏠 The Grey Horse and Daniel Adamson's Coach House (and adjacent building<sup>49</sup>), Shildon
- 🏠 Locomotion Number One (Heighington)
- 🏠 The Railway Tavern, Darlington
- 🏠 Fighting Cocks Inn, Middleton St. George
- 🏠 West Hartburn Tavern, now a house, Goosepool
- 🏠 St. John's Crossing, Stockton
- 🏠 The New Inn (Cleveland Bay), Yarm (on the Yarm Branch Line but pre dates the S&DR inns)
- 🏠 Heavisides (1912), mentions a number of other railway related inns, especially at the east end of the line.



*Plate 6. Left: Daniel Adamson's Coach House and adjacent building, possibly the first inn, with the rails for the 1831 Surtees branch line running adjacent. These linked up with the S&DR mainline. Right: The former Mason's Arms, used by the S&DR as their offices and booking station as well as an inn, but rebuilt in late Victorian times.*

There were a variety of other structures required for the operating of the line such as weigh houses and ticket offices at depots. The use of the inclines or the trackbed was subject to a fee based on weight and this had to be administered from somewhere. The location of these pay offices or weigh houses has not yet been fully established. No.1 Phoenix Row may be the site of the pay office which was used before embarking on the Etherley Incline. The cottages at Bankhouse may be where payment was made and waggons weighed before embarking on the Brusselton Incline. We know that there was a weigh house on Spout Lane

<sup>49</sup> Based on contemporary descriptions, it is possible that the adjacent house was the inn and not the current inn across the road

in Shildon. However, we have little or no evidence for them and so archaeologically we may be able to learn more.



*Plate 7. Left: The Railway Tavern built by the S&DR in 1826. Right: West Hartburn Tavern. Located opposite a coal depot and probably owned by Benjamin Flounders a founding member of the S&DR who bought this land in 1820, but date unknown*

The mapping evidence suggests that the weigh house at St John's Crossing did not have its bay window added by 1826 and so it may be a later addition; we do know that the weigh machines were late in arriving, but the distinctive window that could be used to see up and down the line is a curious omission from an otherwise very detailed map. Just how these early S&DR buildings evolved, may be the subject of archaeological research where the documentary evidence is lacking.



*Plate 8. The weigh house at St. John's Crossing, Stockton.*

The layout of the coal depot in Darlington is still not understood in relation to what survives. A large wall appears to be the coal depot wall, but what function did the so called 'Tallyman's Cabin' have and at what point did the neo Gothic arched windows and doors appear? Does evidence of the coal depot survive in any of the subsequent buildings constructed on the site and along the banks of the Cocker Beck?

The coal and lime depot at Fighting Cocks still retains its elevated ramp which led up to the coal drops. But it is very vulnerable and has been recently damaged with the loss of the coal

drop walls. Archaeological recording is required as a matter of urgency before further damage takes place and in the process, the recording work and potentially excavation will help to throw more light on how the depots worked. For exactly the same reasons, the coal and lime depots at St. John's Crossing, Stockton and at Heighington, are also vulnerable to development, and so this must be informed by a process of excavation and architectural recording. In both cases the depot wall survives and some evidence of the coal drops. As coal and lime depots were the very origins of goods stations, these must be given high priority for further excavation and if appropriate after excavation, statutory protection.

A number of S&DR houses survive near the route, but not all are alongside the trackbed. Most are not listed and are vulnerable to change that does not require planning permission. All except Soho Cottages are now in private ownership. Each has the potential to tell us about the original layout and how the rooms were used, even if they have been altered. Where they are in private ownership, permission should be sought from the owners to carry out non-invasive survey of the interiors and exteriors which should be accompanied by archival searches. Copies of the resulting reports can be given to the owners in the hope that it might inspire them to protect their heritage assets. Copies should also be given to the HERs to help inform any future developments that do require planning permission.

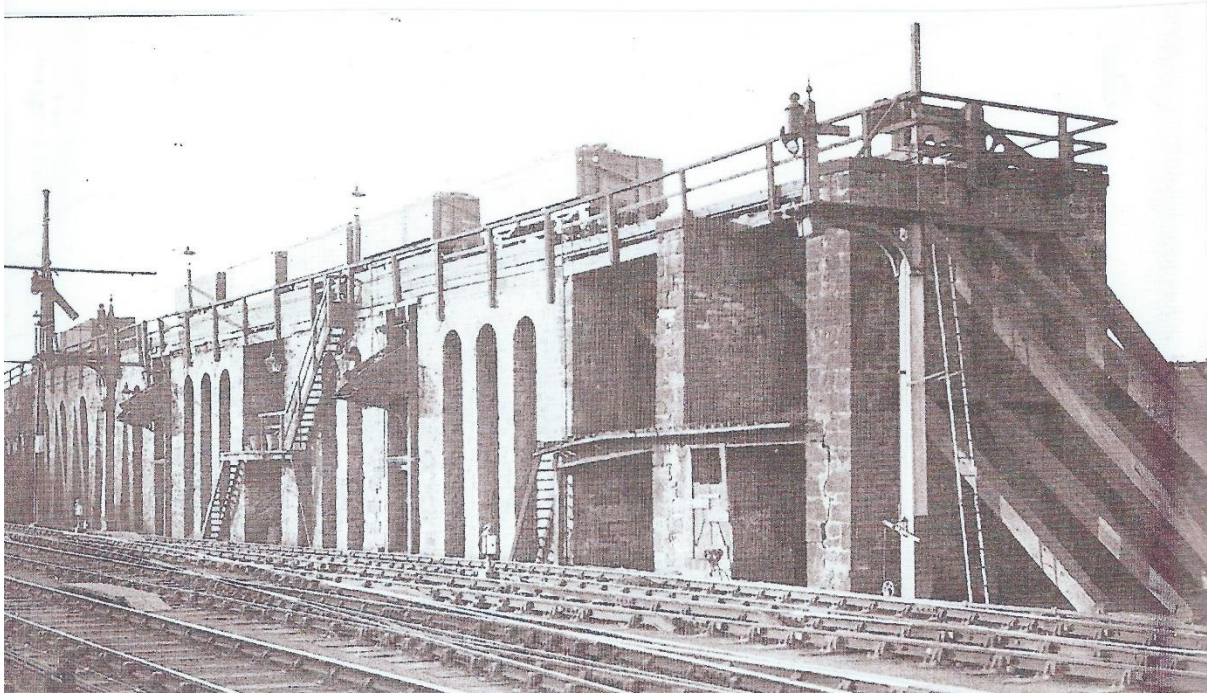


*Plate 9. A group of three buildings at the National Railway Museum in Shildon, often referred to incorrectly as the Black Boy Stables. On the right was probably a plate layer's cabin. To the rear the gasworks from 1840. All three buildings have now lost their roofs, the plate layer's cabin has lost its crenelated top and the grouping is fenced off behind security fencing while they continue to decline.*

The largest cluster of railway buildings and structures is at Locomotion – The National Railway Museum in Shildon. These structures have been sadly neglected, but are of considerable archaeological potential. The detailed recommendations for archaeological work and conservation are included in the management documents, but they have enormous potential to help us better understand how they worked and what they were used for. The so called Black Boy Stables were clearly not stables and the function of the adjacent structures is still in some doubt. The possible plate layers' cabin, has lost its distinctive crenelated top, and the group of three buildings here are in desperate need of conservation. The Goods

Shed is in better condition externally, but the coal drops to the rear are in poor condition and appear to have been restored inaccurately.

**Then and now.....**



*Plate 10. The coal drops at the National Railway Museum – photo dating to c.1920s.*



*Plate 11. The coal drops in 2016. These are now in desperate need of conservation.*

Similarly, the coal drops, are supposed to be the largest in the country and despite being part of a national museum, little is known about them and their condition is poor. Their structure is made of sleeper stones, sandstone and bricks from a variety of local quarries. The ramp at the back has been damaged by the insertion of the present day station and the

structure at the east end has been destroyed in order to provide access to the railway. Therefore, conservation work is urgent but must be informed by archaeological recording and detailed documentary searches.

The Soho Shed was built in 1826 and so is one of the earliest buildings on the S&DR line, but it has never been through a process of archaeological recording. Although built as a merchant's warehouse, it was subsequently acquired by the S&DR, but its role between being a warehouse and its later use by the NER is not understood. The interpretation panel, now obscured by security fencing, may be inaccurate. The building itself houses a nationally important collection of waggons and Hackworth's model engine, but is not adequately understood; internally there is much in the way of archaeology to suggest a number of modifications including widening.

Hackworth's house and adjacent cottages were rescued in the 1970s and are in need of rescuing again. Before this process of conservation, restoration and interpretation takes place, as clearly it must, a Statement of Significance must be produced first. This will be made easier by an existing report by Andy Guy (2009) and Dieter Hopkins (xxxx), but is essential before decisions are made about the restoration programme and end uses.



*Plate 12. Soho Cottages. Having been rescued in 1974, they are now in a state of disrepair with broken windows and rotting window frames. Their future uses need serious consideration including their role in generating additional income for the museum. The Hackworth family had their own garden, grew their own vegetables and had a little livestock (Young 1975, 182). The gardens are therefore also potential locations for community excavation with scope to return the gardens back to a representation of their 1833-50 condition.*

### **3.2.12 The archaeological interest of North Road Goods Station (the first one of 1827)**

The first purpose built railway station on North Road Darlington was demolished in 1864, but the site has had relatively little subsequent development. Therefore, the plot is of extremely high archaeological potential and would lend itself to a community excavation. This is a particularly significant site because it represents the first purpose built railway station and it went on to go through a number of adaptations which included the provision of refreshments and a waiting room. However, information on it is restricted to documentary material and drawings from before its demolition date and so more detailed records obtained archaeologically would help us better understand how it functioned. The wider area has been through a number of topographical changes which includes road lowering and possibly



embankment heightening in order to accommodate the 1857 road bridge, therefore archaeological evidence from the building footprint and any evidence from the railway embankment elevation would provide additional data on the day to day functioning of the station and how it was altered.



*Plate 13. An undated, but early, possibly contemporary painting of the line as working after the goods station was built between 1826-1827 – the goods station to the left and Skerne Bridge in the centre*

### **3.2.13 Locomotives and Rolling Stock.**

The archaeological potential is not restricted to the buildings and trackbed associated with the S&DR. While there has been a considerable amount of research into the locomotives using contemporary plans and descriptions, there is merit in archaeologically examining any surviving locomotives in order to record the adaptations that were made to counter their limitations and potentially to help with future reconstructions associated with the 2025 celebrations. Locomotives which remain accessible which could be the subject of non-invasive archaeological study, using appropriate engineering expertise.

### **3.2.14 The archaeological interest of Edward Pease's House, North Road, Darlington**

This listed building is not on the S&DR trackbed but is intimately associated with it and is a key structure in understanding the railway and urban development associated with railways. Some research has been carried out by Charles McNab (2011) and preliminary plans for

various possible phases of development and future configurations by Matthew Pease.<sup>50</sup> The building needs to be conserved on the outside at least with a façade that makes it easier to understand the extent of Pease's house. This can only be carried out after a programme of archaeological recording of all exterior elevations. The house is in private ownership and this does restrict what is possible, but should a way forward be found to allow access to the interiors a detailed archaeological survey and statement of significance should start to unpick the layout of the house when Edward Pease lived there, and associate particular rooms with notable events, such as the first meeting of Stephenson and Wood with Pease in Pease's kitchen in 1821. The building will have been much altered, but the information obtained should help to decide how best to approach a programme of conservation and end use. It is worth bearing in mind that the anniversary of this important meeting which resulted in the S&DR adopting the travelling locomotive rather than horse power will be 2021.



*Plate 14. Taken from a sketch of Northgate dated 1848. House no.73 was Pease's home and is substantially different to the building there today.*

The considerable archaeological interest of Pease's property is not confined to his house. His gardens were renowned but are now a car park. The garden archaeology may well survive below the car park and any future development proposals here should be informed by excavation and research into the layout of the gardens and the extent to which that can be referenced in future developments. Alternatively, the car park could be the focus of community excavation, but only if the site has not been identified as a developable area as grant aid could not be obtained for community excavations if they were to inform a development.

The area of North Road is also of interest in studying how the railway influenced urban development and growth in the early 19<sup>th</sup> century.

### **3.2.15 The archaeological interest of the S&DR Works and the Soho Works, Shildon**

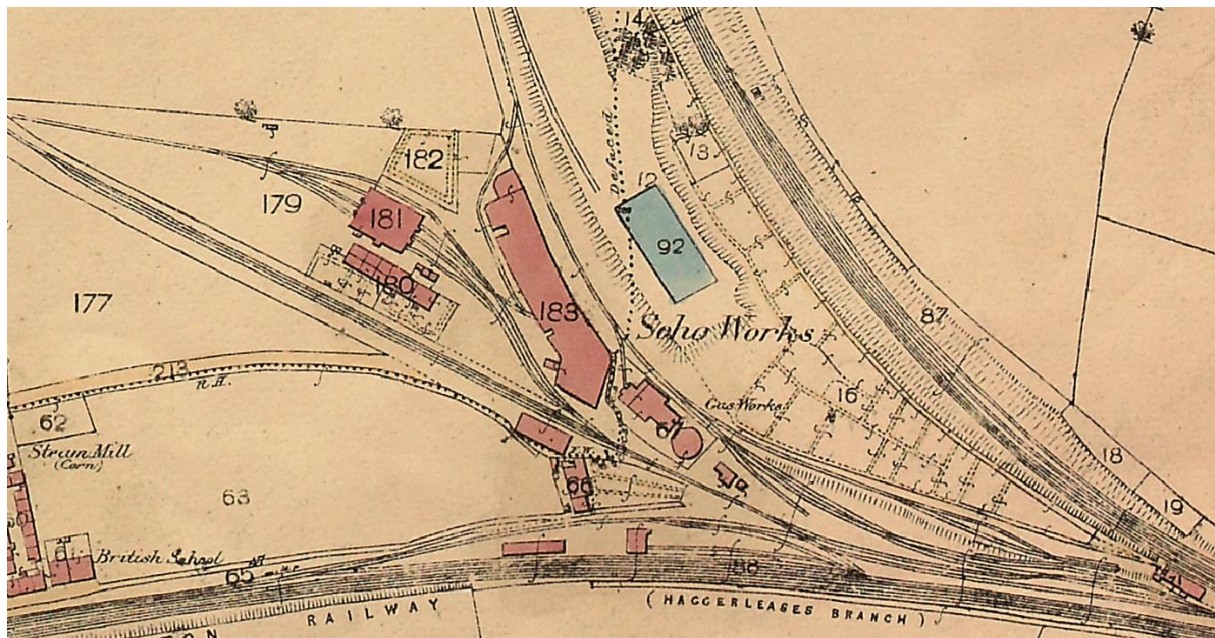
The Soho Works expanded from when Hackworth first established them in 1833 and they extended along the land in front and to the east of his house. This area is now landscaped grassy parkland, but the topography suggests that the foundations of the Soho Works may still survive behind Hackworth's house. The Ordnance Survey Plans provide a layout of these works in 1855, by which time Hackworth had been dead for four years and so archaeological excavation in this area could throw more light on how the Soho Works expanded from 1833 and what the functions were of each building; this could confirm or add to information published by Young in 1923. This combined with the inventory produced for the works after Hackworth's death and the bill of sales will go a long way to learning more

<sup>50</sup> Unpublished plans

about the works that made and so many successful locomotives and had them shipped across the world.



*Plate 15. Hackworth's first house at the S&DR Works (in foreground) prior to demolition.*



*Figure 5. The 1<sup>st</sup> ed OS map dating to 1855 showing the extent of the Soho Works by that time and the gas works. Hackworth's second Shildon home is the row of terraced houses with gardens to the front*

The S&DR Works at New Shildon became so successful that the site went on to be the focus of subsequent waggon works that expanded over time until the mass redundancies of 1984. Again Ordnance Survey plans provide the layouts of the works in 1855 and 1897, but there are few other maps – the tithe map largely excludes these Works areas. The

archaeological interest of the S&DR Works will be limited by subsequent developments, but it is clear that there are still areas of rail and some older buildings within the present day industrial estate that occupies the site. Further, it was in this area of S&DR Works that Hackworth's first house stood, built in 1825 and where he moved with his family in 1826. If the site of this was found and any underground remains exposed, they would need careful consideration for possible preservation and display. The recent excavations of the N.E.R round house at the Central Park development in Darlington has given an indication of how well preserved such buildings can be even after being developed. A similar roundhouse, probably of the 1850s existed at the S&DR Works and was called Sebastopol. If this site comes up for development in the future, archaeological evaluations would need to inform a suitable process of recording and/or conservation.

### **3.3 Architectural interest – what survives and what contribution does it make to significance?**

In the period when the S&DR was constructed, eminent architects, surveyors and engineers such as Ignatius Bonomi and George Stephenson were commissioned to work on the design of building projects. Indeed, at that time, the work of the architect was ill defined and often carried out by engineers or surveyors. Local builders drew on traditions of the vernacular using in the main, local materials, often with some variant of local styles, for example the Crossing Keeper's Cottage at Whiley Hill – a style of house that references the 18<sup>th</sup> century with its kneelers, water tabling and symmetrical frontage. This was different to the picture after the 1850s when many railway companies used standardised designs and regional or national materials (Hartley 2016, 247).



*Plate 16. An undated photograph of North Road Station*

The S&DR had to invent new building types and in doing so they borrowed architectural traditions from agriculture and the style of the time was influenced by neo-classical Georgian traditions. These can be most clearly seen at North

Road Station and Skerne Bridge. The styles of building long pre-dated the neo-Gothic that would become standardised amongst Victorian railways and that makes the S&DR buildings all the rarer. Structures had to accommodate unprecedented weight with heavy locomotives carrying many tons of laden waggons and buildings had to sit aside or straddle track that was gently curved or straight, sometimes with waggons moving at considerable speed (intentionally or otherwise!). Design of the structures may also have been influenced by the need to be neighbourly and pander to the wishes of adjacent powerful landowners who might demand accommodation bridges with architectural pretensions (Brusseton Bridge perhaps). The design of the buildings was of course heavily influenced by the engineering associated with it. The form of the engine house was dictated by the need to accommodate the engine and when the engine was updated, the housing had to be too, for example Brusseton. The Crossing Keeper's House at Whiley Hill reflects how the purpose of the house dictated its design – a frontage with a large number of windows faced the trackbed so

that the crossing could be operated when necessary, but precious few windows to the field at the rear.

The funding of the line via private businesses and individuals and the fact that nothing on this scale had ever been attempted, meant that there were tensions between the quality of design and costs. For example, we know that John Carter's original design for the weigh houses at the coal and lime depots in Stockton, Darlington and Heighington were more ornate but the S&DR Committee toned down the design to save on costs. The fact that the project was being funded by Quakers also resulted in modest buildings without pretensions because that better suited their philosophy of simplicity. However, the S&DR also had to produce architecture that would inspire confidence and investors, so care had to be taken to appear to choose quality and value.

The architectural interest of the line is concentrated on the buildings and structures associated with it such as taverns and depots, bridges, culverts, boundary walls, engine houses, workers' houses and the nationally important collection at Locomotion in Shildon. However, the nature of many of these structures is that they are discrete and hidden from view.

Culverts for example, have an important function to carry out and the trackbed (and any future rail trail) would be damaged without them, but they are largely unappreciated because of the vegetation and topography which hides them. However, on closer inspection they are well built attractive structures with simple arched lines and on occasion a small flourish in the form of string coursing or pepperpot topped piers.



*Plate 17. Oakley Beck and Hummerbeck culverts – both original 1825 structures but with differing degrees of architectural ornamentation*

Similarly, the Skerne bridge is well hidden down a back lane, but its design, a product of Ignatius Bonomi, a notable regional architect with some early input from George Stephenson, is elegant, if somewhat unappreciated in its current setting.

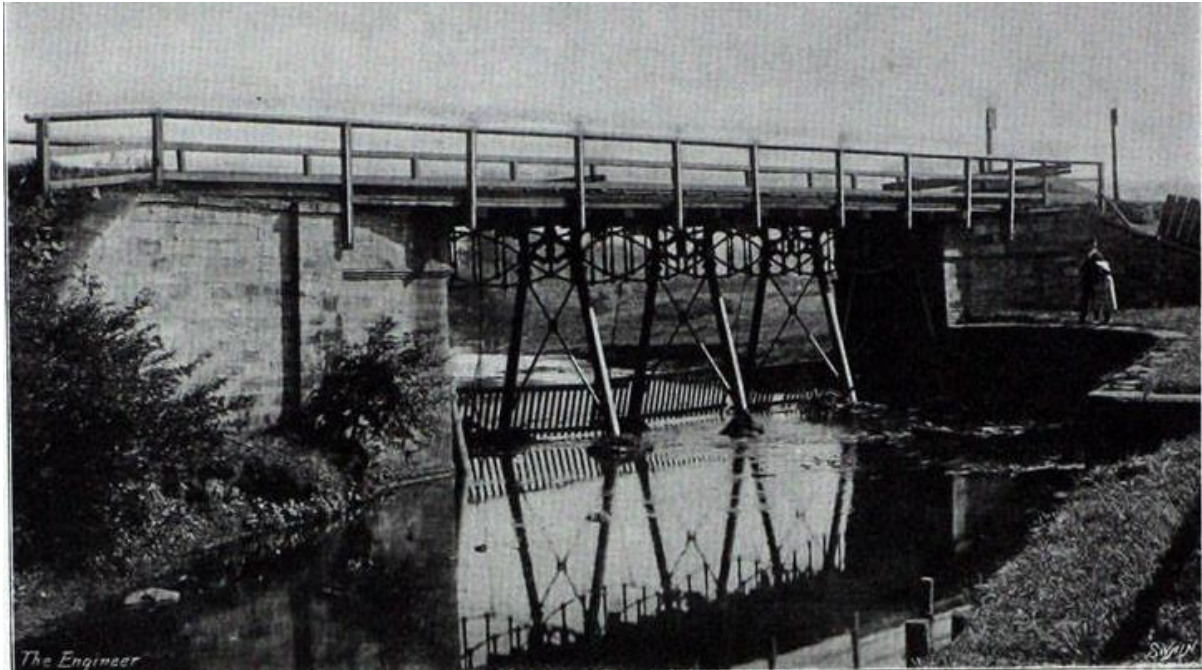


*Plate 18. The Skerne Bridge in the 1950s. Photo from the Bibby Collection in Durham University's Special Collections. Unaccessioned.*

The Gaunless Bridge is of particular architectural significance with its curving wing walls and circular terminals. It is the first railway bridge made of iron in the world and although the ironwork is no longer attached to the abutments, it does still survive in the National Railway Museum in York - its survival is in fact rather remarkable. Further it is the first railway bridge to use an iron truss and its lenticular truss design is extremely unusual. This design used two curved girders in a lens shape, one above and one below. The upper member was in compression, as for an arch bridge, and the lower in tension, as for a suspension bridge. The idea was that this formed a balanced truss, where the sideways forces in each member cancel out, being equal but opposite in direction. This leads to a truss with no side forces on its supports and so only requiring simple piers with no need for endways stiffness. Vertical members connected the two girders and supported the load-carrying deck of the bridge. These vertical members must also transfer some load between the two girders, as to maintain their lens shape. An efficient truss distributed the load of the deck between the two girders, rather than placing the majority of the load on one truss member, and so requiring it to be excessively strong compared to the other.<sup>51</sup> It is also the earliest bridge on the S&DR, being completed in December 1823.

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<sup>51</sup> [https://en.wikipedia.org/wiki/Gaunless\\_Bridge#cite\\_note-Chrimes.2C\\_Gaunless-2](https://en.wikipedia.org/wiki/Gaunless_Bridge#cite_note-Chrimes.2C_Gaunless-2) [accessed 14122015]



*Plate 19. The Gaunless Bridge 'The First Iron Railway Bridge', before its iron structure was replaced in 1901*



*Plate 20. The ironwork at the National Railway Museum in York – this should be moved to the National Railway Museum in Shildon*

The accommodation bridges were designed for private use and as such they are often on private land away from the public gaze. However, some such as the Brusselton Accommodation Bridge are striking structures in the landscape, with well-designed parapets and wing walls that make a positive contribution to their surroundings and emphasise the railway heritage of the area. Other accommodation bridges fare less well. The Milk Bridge at Brusselton has been quietly taken apart on its east side. Yet it has fine sweeping walls approached by a ramp that will go on to be appreciated by people using any future rail trail; its ramp should be included in future statutory protection. The use of sleeper stones is testament to phases of rebuilding and adds to its archaeological interest.



*Plate 21. Brusselton Accommodation Bridge in the 1950s. Photo: Gibby Collection, Durham University Special Collections, currently unaccessioned.*

The accommodation bridge at North Wood Farm near Aycliffe, possibly a later mid-19<sup>th</sup> century replacement, is an architectural triumph with finely executed tooled and margined ashlar blocks and string coursing, yet its current position at the top of high banks above the live railway line and out of sight of the road means that it is not widely appreciated. Perhaps a modest form of landscaping near the bridge might help to draw the eye of future walkers upwards to appreciate its grace and elegance, although it is currently in poor condition and vulnerable.

A number of bridges have had their arches removed to be replaced with flat decking, possibly around the early 1900s. The Gaunless Bridge had its decking altered in 1901, the adjacent accommodation bridge may have also had its decking replaced at this time. The Accommodation Bridge at Myers Flatt appears to have a very similar replacement decking supported on massive stone blocks the same as those found at Gaunless today. Despite these alterations, the bridges retain their elegance and their original form is still apparent.

These smaller bridges, often unprotected, are vulnerable. They are especially vulnerable because Network Rail have no process of identifying what is historically important and therefore their management decisions do not take that importance into account unless it is a listed building or a scheduled monument.





Plate 22. Myers Flatt Accommodation Bridge with its replacement decking, probably added 1901.

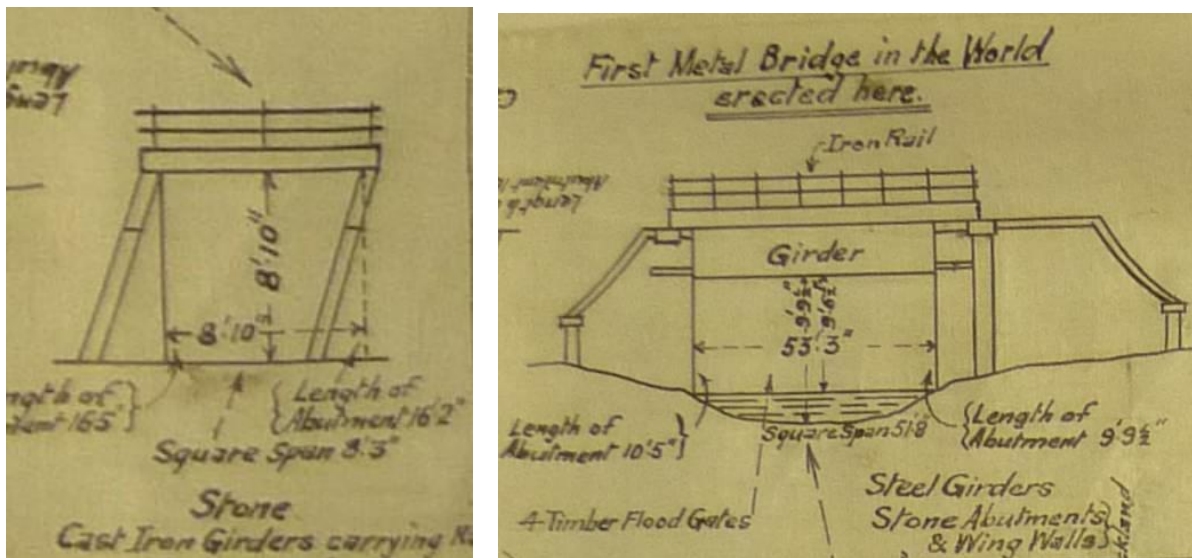


Plate 23. Two NER tracked plans with sketches of the two bridges over the River Gaunless dating to 1923. Each shows the distinctive replacement decking added in 1901.

Many of the privately owned buildings have lost much of their architectural interest, although this is potentially reversible. Cement renders, modern roofing materials and plastic windows and doors have taken their toll. This not only reduces the positive impact these buildings could be making on their surroundings but is potentially damaging the historic fabric that still survives internally.

In 1857 the S&DR had a series of black and white ceramic plaques made to be placed on groups of domestic properties owned by the company. Each plaque allocated each house or terrace with a unique number that allowed the Company to keep accurate records for each grouping. These plaques were positioned above doors or on gable ends. Not all have survived. On or close to the 1825 line there are still plaques at:

- 🏠 North Road Station E9
- 🏠 Whiley Hill Crossing House G1
- 🏠 Soho Cottage G9
- 🏠 Brusselton Bank Top House H1

Houses which survive on the 1825 line but have their plaques missing include:

- 🏠 St John's Crossing D6

- 🏠 Heighington Station G2
- 🏠 Brusselton West Bankfoot H2 and H3 (very partial survival only)



*Plate 24. Whiley Hill Crossing with the 1857 S&DR plaque added to the left side of the building. This is a listed building with good survival of traditional features*



*Plate 25. Rose Cottage on the Black Boy branch line, also with a S&DR plaque above the porch. This is not a listed building and so its historic features have been masked by pebble dash and modern windows and roofing materials.*

If we include other S&DR properties which survive on other lines, there would be an additional nine buildings with missing plaques<sup>52</sup>. While not relevant to the internationally important, pioneering days of the S&DR up to the end of 1830, these are, as with many later structures, still of considerable heritage significance and of value to local communities and future visitors. There is therefore potential to restore some of these plaques through a series of local projects and where the owners give consent.

### **3.4 Artistic Interest**

The S&DR railway is only of some artistic interest as it was designed to be a functioning railway rather than a work of art. However, the opening day was recorded in two well-known paintings both taken from the same place viewing the procession as it crossed the Skerne Bridge. Dobbin who painted one of them, had attended the opening ceremony as a child and was painting the event many years later from his memory; the other must have been painted in or after 1827 because it shows the goods station which opened in that year. The Skerne Bridge went on to feature on England's five pound note in the 1990s. In more recent years there have been numerous illustrations of the S&DR and it has inspired works by some notable artists amongst them 'The Opening of the Stockton and Darlington Railway, 1825' by Terence Tenison Cuneo (1907–1996), painted in 1949 and showing the race between locomotive and horse drawn carriage on the S&DR.



*Plate 26. The five-pound note issued in the 1990s featuring Skerne Bridge, with Brusselton Engine House in the distance and Locomotion No. 1 crossing the bridge. Stephenson's 1829 Rocket occupies the foreground.*

The individuals behind the S&DR were well established personalities and many went on to

have their portraits painted. Many of these paintings are now in various galleries, at Crown Street library in Darlington, or private collections and collectively they are of considerable artistic interest because they put faces to the personalities behind the S&DR. It is recommended that a display of these paintings should be brought together in 2025 and perhaps before, to highlight the notable individuals associated with this historic event. It may be appropriate to include them in the forthcoming Great Exhibition of the North in Newcastle and Gateshead which is being designed to showcase design and innovation from the north.

<sup>52</sup> Our grateful hanks to Jane Hackworth-Young for providing the information on the S&DR house plaques



*Plate 27. Putting faces to names: some of the leading personalities associated with the early days of the S&DR. From left to right: Edward Pease, Timothy Hackworth, Thomas McNay, Benjamin Flounders, Robert Stephenson and George Stephenson. Many more portraits are located around various museums and libraries in the area*

There are several sculptural art works of relevance to the S&DR from the 1875 statue of Joseph Pease in the centre of Darlington, to more recent commemorative pieces commissioned by Stockton Borough Council and located at St John's Crossing, by the Tees near the coal staithes and in the town centre where the Stockton Flyer whistles and toots every day at one o'clock. In Shildon Hackworth's plug wheel has been commemorated in various public realm and street furniture works.



*Plate 28. Commemorative statues to Timothy Hackworth (left) in Shildon's Hackworth Park and Joseph Pease in Darlington (right)*

Celebrations to commemorate the opening of the S&DR have been held every 50 years in 1875, 1925 and 1975. Each of these has been accompanied by pageants and performances with those in 1925 and 1975 captured in a number of films. Each commemoration has also been accompanied by a wide number of celebratory souvenirs, medals and other items, some of high quality such as a bronze medal gifted by the railway workers of Italy in 1925, but many for a broader market such as plates etc.



*Plate 29. Commemorative souvenirs from previous S&DR anniversaries. Left to right: 1925 mug, 1925 sweet tin, 1926 mayor's medal awarded to school children as a prize in an essay writing competition and a 1975 mug (photos by Michael Hope).*

## 4.0 Managing the Line

### 4.1 Management options

The S&DR route runs between three local authority areas – Durham County Council, Darlington Borough Council and Stockton Council. The line between Shildon and Darlington and between Oak Tree junction and Eaglescliffe is also live line and falls within the management of Network Rail. There are two railway themed museums on the route – North Road Station (Head of Steam) Museum and the National Railway Museum at Shildon (Locomotion).<sup>53</sup> This means that the approach to managing heritage assets has traditionally varied between organisations. Local planning policy has also differed in its approach to managing change. Management of the line will be improved if a mechanism is set in place whereby heritage practitioners cannot act independently and without reference to other stakeholders. It is essential that whichever body has the responsibility for managing the S&DR, that it works with other stakeholders as far as possible to develop and implement an agreed vision and policies for managing each heritage place within its broader physical and social context. This places a high premium on collaborative working and the full and transparent involvement of stakeholders and any management system, including the development and implementation of a management plan, needs to provide for this.

The significance of the S&DR is such that it merits the main stakeholders including at least the three local authorities, Network Rail and the museums combining forces to ensure that a consistent high standard of protection and management is carried out along the route's length. This can be achieved by one of the following options:

**Management Option 1.** One local authority takes the lead in applying for funding for capital costs on behalf of the rest and the others make financial contributions. The lead authority develops a house style for the S&DR in consultation with the other stakeholders.

**Management Option 2.** A third party 'Heritage Trust' takes the lead in applying for capital funding and maintaining the line (excluding live areas) and all three local authorities make contributions towards the costs proportionate to the amount of line within their area. This model works well at currently designated industrial WHS such as the Ironbridge Gorge in Shropshire. All three local authorities, the NRM and Network Rail (and others) sit on a steering group managing the 'Heritage Trust'. The third party can also apply for funding on behalf of other local groups and private owners and manage heritage assets where required regardless of which local authority area they lie within and for conservation and interpretation associated with live line on behalf of Network Rail. The third party would need to be a Charitable Incorporated Organisation (or similar) and key stakeholders such as the local authorities would need to be Trustees in the organisation. The details of such an arrangement would need detailed discussion regarding which parts of the line and buildings would be managed by the Heritage Trust and if this was by service level agreement, lease or asset transfer.

**Management Option 3.** Is similar to Option 1, but would maintain the status quo with existing authorities and institutions continuing to individually manage their own properties but with an overall agreed management plan and a coordinating committee. This would require

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<sup>53</sup> Both museums have local authority input and finance, but the NRM also has central government funding

appointment of an S&DR project officer to coordinate and manage the work. While this may be the simplest option it would not represent a step change in intent away from the current management regime which is clearly failing in many areas. It would also be limiting in not providing a single focus to future work and at best might be seen as a stepping stone to a longer term management solution.

**Management Option 4.** It is worth exploring if an existing heritage charity would consider either a management agreement, or asset transfer to manage the S&DR coherently. There are a limited number of bodies of sufficient experience and capacity such as the National Trust (NT) and English Heritage. It is likely that if either would consider taking on this role they would require an initial financial endowment. The NT have a formula for calculating the size of such endowment known as the 'Chorley formula'. Depending on which heritage assets were to be included considered a financial value could be worked out for consideration.

While all options should be considered, it is likely that either option 1 or 2 is the most likely to be achievable and meet the need to ensure a high consistent standard of management across the S&DR route, but option 2 has some benefits for local authorities struggling to meet severe austerity constraints as it makes better use of volunteer time. This of course carries risks, but neither option is without risk.

## **4.2 Conservation Planning**

The S&DR merits the production of an S&DR wide conservation plan which includes an agreed vision that sets out what should be achieved by 2025 and what needs to be achieved beyond that date to ensure the asset's long term conservation (for the next 200 years!). This will help to ensure a consistent standard of protection, conservation and interpretation across its length.

### **Recommendation 1.**

A Conservation Management Plan will be required for the whole 1825 S&DR that all relevant local authorities, Historic England and Network Rail adopt. It should also include the Black Boy Branch, the Surtees Line, the Croft Branch and the Yarm Branch as they all pre-date 1830 and feed into the S&DR mainline as was set out in the 1823 Act of Parliament. Further, the Haggerleases Branch and the Middlesbrough extension should be assessed for inclusion as they date to 1830. Collectively they represent the first fully developed network of railway infrastructure of main and branch lines which we recognise today. It also recognises the significant milestone of the creation of a wholly new railway town at Middlesbrough. As a group they represent the network of modern railways that would spread across the country and the world.

The Conservation Management Plan should include ecology so that any proposals to create new access on the trackbed or alongside it, can be informed by the significance and management needs of the natural environment.

## 5.0 Protecting the S&DR through Planning Policy

The protection of heritage assets is recognised in the National Planning Policy Framework of 2012, however it does draw clear distinctions between designated and non-designated heritage assets. Many of the assets that have survived associated with the S&DR are not designated and so the level of protection they enjoy in the planning process is limited. To date, many of these heritage assets are not even on the local authority Historic Environment Records, but this project has added 566 new HER records associated with the S&DR of which 200 still have physical evidence above or below ground. These sites will now be drawn into the planning process.

Recommendations to alter the statutory protection to some of the S&DR remains are dealt with in detail below and once designated, they automatically carry a higher level of protection. Historic England have offered to review and fast track a designation review coming out of this survey and report, but this will take several months. Regardless of any new and revised designations, local planning policy also has to be strong enough to protect the rest of the remains and their setting and encourage pro-active conservation and interpretation as part of future development proposals.

The Stockton on Tees Regeneration and Environment Local Plan (2015) is not fully adopted yet but represents the council's current thinking on heritage protection through planning policy. It specifically raises the international significance of the S&DR remains and has specific planning policies for the line, the Yarm branch and related structures:

*'Policy HE2: Stockton to Darlington railway of 1825, the branch line to Yarm and associated structures should be considered for their international interest.'*

*Policy HE5: Stockton to Darlington Railway*

- 1. The Council will support development which safeguards the line of the historic Stockton to Darlington railway of 1825, the branch line to Yarm and associated structures, and which preserves and enhances this cultural asset, its archaeological remains and setting.*
- 2. The Council will require any proposal for development on or adjacent to the line(s) to show how the proposal has regard to the preservation of any physical remains along the route(s) and their interpretation on the ground, and otherwise respects and interprets the route(s) where those remains no longer exist.*

This approach not only protects the surviving remains of the S&DR but also seeks proposals which respect the line of the 1825 route and the Yarm branch, even where the line itself has been destroyed. This ensures that in the longer term, replacement development proposals can be designed around retaining public access to the route so that physical access will improve over the decades to come. Hopefully the adopted plan will get the name of the railway line correct.

Darlington Borough Council's new Local Plan is also emerging and as such there is currently no up to date local planning policy and the emerging local plan has not been available to consult.<sup>54</sup> The Durham Plan is in a similar state of drafting. Where there is no adequate local

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<sup>54</sup> The Gladedale Homes judgement (2014), for a planning appeal at Middleton St George next to the S&DR, has set a precedent that whereby the local plan is so old regarding housing allocations that it is no longer a material decision in the planning process, so limiting planning control in some cases.

plan, there is a reliance on extremely old and out of date policies in the old district council local plans. As both authorities are now in the early stages of drafting policies to protect the historic environment, they should consider some S&DR specific policies as Stockton has done:

**Recommendation 2.**








Darlington Borough and Durham County Council's emerging local plans should have planning policies which recognise the international importance of the S&DR and its associated remains.

It should also respond positively to development that respects the route of the 1825 line and the Darlington branch line, even when the site itself has been destroyed in the past, so that public access can be maintained or restored.

In particular, planning authorities and developers should seek to enhance access or the quality of access via S106 agreements.

Planning officers and developers should ensure that any landscaping schemes of developments close to the 1825 should not obscure views of the trackbed and that provision is made to maintain vegetation so that it doesn't obscure views into the line from publicly accessible areas.

The following sections pulls together the recommendations for interpretation, management and preservation of the 1825 track bed and related features. These are also discussed geographically in the appendices covering individual stretches of line as follows:

-  Witton Park to West Auckland
-  West Auckland to Shildon
-  Shildon to Heighington (live line)
-  Heighington to Darlington (live line)
-  Darlington to Fighting Cocks
-  Fighting Cocks to Goosepool (partial live line)
-  Goosepool to Stockton



## 6.0 Protecting the S&DR through designation

The surviving pieces of rolling stock from the early days of British main line railways are rightly kept as national treasures in museums, but an appreciation of the importance of the architectural heritage has lagged far behind (Hartley 2016, 262). Over 1000 railway structures are listed in Britain and a quarter of these pre-date 1850. Throughout the UK, the major stations and structures, and good examples of wayside stations, have in the main been identified and listed for conservation. However, many other railway buildings, and almost all of the smaller bridges remain to be recorded and evaluated, and no part of the system has achieved World Heritage Status (Hartley 2016, 247).

Just over 21km of the S&DR is live line and there are conflicts between the conservation of the smaller structures such as culverts and bridges and the increasing demand for faster train services, or near Newton Aycliffe for an additional trackbed to serve Hitachi. There doesn't have to be a conflict, but at the moment, Network Rail cannot make decisions on an informed basis because they don't have the information on what survives on the line from the early days of the railway unless it is either scheduled or listed, nor do they have information on its significance. As a matter of some urgency, they need to be given that information and procedures put in place to use it, but statutory protection must also extend to the live line and the structures that are incorporated within it or run alongside it. An accommodation bridge south of Newton Aycliffe on a stretch of live line has been recently demolished (presumably by Network Rail) shortly before this report was written. Similarly, during the course of this project an 1825 stretch of walling complete with its distinctive rounded cope at Urray Nook was demolished by Network Rail as part of upgrading a level crossing. It is not clear whether the partial demolition of a long stretch of culvert at Myers Flatt was carried out by Network Rail or the neighbouring landowner. An engine shed dating to 1861 representing the last building to be constructed by the S&DR is in perilous condition on Whessoe Road in Darlington. There is no time to lose.

### Recommendation 3.

A mechanism is required for Network Rail to have access to the heritage records for the S&DR and to be able to access advice on any proposed changes to historic structures along the live line and within their ownership. They need to establish a procedure for having this data checked when making management decisions regarding improvements, maintenance etc. Some guidance on the appropriate methods of repairing historic structures may be beneficial as would heritage skills training for their contractors and commissioning staff so that the appropriate materials and methods are used to repair structures. Current methods may be causing more long term damage.

(Network Rail have agreed to receive the HER data generated during this project in order to help make informed decisions regarding the management of the 1825 trackbed, but other elements of this recommendation will require additional agreement and negotiation).

The issue of statutory protection and whether it is adequate has been raised throughout the management appendices. Fieldwork has flagged up a number of areas where new information means that existing designated sites need to be extended. There are several levels of protection each with a slightly different impact. The solution may be a pick and mix

of approaches, or to opt for wider designations such as a Conservation Area, with removal of permitted development rights over the more stringent scheduling. The following recommendations set out the options, but the final choice will rest on the results of trial trenching, additional research, available resources and current land use. However, scheduling and listing is no guarantee of protection. In recent years at West Auckland, a scheduled accommodation bridge was partially demolished by a landowner creating a new access, while at St Helen Auckland there have been long term issues of encroachment.

***'Don't be surprised if I should tell thee there seems to us after careful consideration no difficulty of laying a railroad from London to Edinburgh on which waggons would travel and take the mail at the rate of 20 miles per hour, when this is accomplished steam vessels [ships] may be laid aside!..' (Edward Pease's vision for the future of railways having visited locomotives at Killingworth in 1821).***

## **6.1 Scheduled Monuments (SM) and Listed Buildings (LB)**

These normally designate quite discrete areas using specific Acts of Parliament, although both have the capacity to encompass a setting around the main asset, such as a settlement with an extensive field system, or a country house with outbuildings and gardens. Long sections of the S&DR trackbed are already scheduled including most of the surviving stretches of Etherley and Brusselton Inclines. Scheduling protects the asset from any ground disturbance, or dumping on a monument and its setting can be protected through the planning process too if it contributes towards significance. Damage to an SM is a criminal act punishable by fines and potentially imprisonment. Damage or unauthorised alterations to Listed Buildings can be acted upon through local authorities who have enforcement power to serve and undertake repairs at the owner's expense.




The very high historic interest of the S&DR means that the bar for designation should be lower when it comes to its other special interests and its survival. It is recommended that most of the surviving 1825 trackbed is scheduled even where it is live line. This should not exclude or hamper normal running of a railway and it will never create obstacles to safety which will always have priority. The scheduling can cover the embankment or cutting, and ditches, culverts and areas where structures are known to have been in the early days of the railway, but it can exclude the top surface of rails and ballast. However, it will help Network Rail to make more informed decisions regarding the maintenance of the line and its structures.

### **Recommendation 4.**


It is recommended that the surviving 1825 trackbed is scheduled even where it is live line. This should include all inbuilt features such as culverts and bridges. If the trackbed is not scheduled, then each culvert, accommodation bridge and associated ramp and each bridge should be listed as a minimum instead.

The following areas have been identified where the existing scheduling needs to be revised, Historic England have already offered to review the findings of this report and prioritise a review of designations:

Table 1. Recommended increases to scheduled areas

What is to be protected	Why	Where is it?
Brusselton Bank (Site 88, NGR 420387 525812)	Stretch of incline cutting that survives as a cropmark in a field formerly thought to have had surface coal extraction. Also length of incline currently used as garden at Bankhouse Cottages	
Brusselton incline	Work in 2014 by the Brusselton Incline Group exposed more of incline trackbed with in-situ sleepers and so the extent of the scheduling should increase eastwards by about 10m to accommodate this. There may be a case to extend the designated area further, but this will need to be informed by archaeological evaluation of the buried remains (see gaps in our knowledge).	
Brusselton incline engine house reservoir	The engine house and engine man's cottage are listed and the incline is scheduled, but the engine pond and retaining walls have no specific protection, although they are within the Conservation Area. It is recommended for scheduling.	

What is to be protected	Why	Where is it?
S&DR trackbed	Brusselton Village to Locomotion at Shildon, including the Milk Bridge abutments	Requires trial trenching to determine survival. The Milk Bridge should either be included in any scheduling or listed separately.
S&DR trackbed	Shildon to Darlington	Trackbed survives and is live line, although some additional research may be required at Shildon to better define the route of the line within the sidings (although as they were the largest sidings in the world in the 1920s the entire width could merit scheduling in its own right). The extent can exclude where the line has been widened by Hitachi. It should be wide enough to capture parallel culverts and ditches which might be outside the ownership of Network Rail and ramps that approach accommodation bridges

What is to be protected	Why	Where is it?
Site of the first Goods Station on North Road, Darlington	Vacant plot where the station was built in 1827 and demolished in 1864. This could be included in any scheduling of the embankments adjoining the Skerne Bridge of 1825.	
S&DR trackbed	Eastern Transport Corridor	More research is required to define the impact of the road on the S&DR trackbed. The drainage system as a covered culvert or open stone lined ditch partially survives to the north. However the plans for the road construction need to be examined to see to what extent the trackbed was buried, demolished, widened, heightened etc
S&DR trackbed	A66 to Fighting Cocks	Existing cycle way on trackbed with survival of ditches, embankments and sleeper stones discarded. Extend at Fighting Cocks to include coal depot







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What is to be protected	Why	Where is it?
S&DR Trackbed	St John's Crossing to coal staithes	This requires further research and trial trenching in the bingo hall car park and riverside path to determine survival. It should take in the depot wall on the west side of the 1825 Way and the coal depot itself

## 6.2 Listed Buildings and local listing




If the scheduling is extended to the surviving trackbed, then any structures on or under the line will be included in the scheduling. However, there are structures set apart from the line which should be protected which have an intimate association with the S&DR. All of these buildings pre-date 1840, but many have been altered and so might normally only have a marginal or no case for listing. However, the historic interest of these buildings and the role they played in the evolution of railway architecture means that they should be recognised as being nationally important and listed. It is however acknowledged that some additional research would help to make the case and the first group is already referred to in this report as requiring a Statement of Significance include:

-  The former Mason's Arms, Shildon (largely rebuilt so probably more suited to local listing)
-  The Railway Tavern, Darlington
-  Fighting Cocks Inn, Middleton St. George (recently renamed Platform 1)
-  The remains of the coal depot including the Tallyman's Cabin at Westbrook, Darlington

Other buildings which merit listing which are off-track include:

-  The Engine Shed, Whessoe Road, Darlington. This is not part of the 1825 infrastructure but instead represents the last major building work carried out by the S&DR before it was taken over by the NER. It is owned by Network Rail and is in perilous condition. Its substantial size and distinctively engine house form makes it one of the last visible vestiges of Darlington's Locomotive Works. It is allegedly earmarked for demolition by Network Rail.

Buildings which are less likely to make the grade for listing but which still appear to have had an important role in the evolution of the railway include:

-  West Hartburn Tavern
-  King William IV inn, Shildon
-  The Railway Bridge Inn, Etherley

These should be included on a local listing and Durham and Darlington need to ensure that there is a planning policy in their emerging local plans which covers local listings.

## 6.3 Conservation Areas

Conservation Areas are areas of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. For planning purposes, they are treated as designated heritage assets and when assessing whether proposals should be given planning permission, an assessment will be made to ensure that developments protect and enhance the significance of the conservation area. Buildings inside the boundary cannot be demolished without consent from the planning authority and there is a process whereby permitted development rights can be withdrawn (an Article 4 Direction) thus providing



additional protection from permitted development. Consent is also required to fell trees beyond a certain age and/or size. Each Conservation Area should have a Conservation Area Character Assessment and Management Plan which goes out to consultation with the local community, although a large number do not have such supporting documentation.

Some of the line and its associated buildings are already included or are near Conservation Areas, namely:

- 🏡 West Auckland (near)
- 🏡 Brusselton Village
- 🏡 Shildon
- 🏡 Northgate in Darlington
- 🏡 Middleton St. George (near)
- 🏡 Stockton Town Centre (near)

Brusselton Conservation Area is a conservation area in name only; it has no conservation area appraisal and no Article 4 Direction. Its boundary has been drawn to include the incline, the Engine House and Engineman's house and the associated walls and engine reservoir.

West Auckland Conservation Area does not include the significant railway features that exist on its east side. It has largely been created to protect the village's medieval (pre-railway) layout.

Northgate Conservation Area includes Edward Pease's House, Skerne Bridge, the railway triangle of the Head of Steam museum, The Goods Shed, the Lime Depot, S&DR Carriageworks, the coal depot at Westbrook and the Railway Tavern. The retail part of Northgate Conservation Area has benefitted from a Historic Environment Regeneration Scheme and the withdrawal of permitted development rights. This has made inroads into the decline by providing new shop fronts and the restoration of traditional features to a number of early 19<sup>th</sup> century terraced houses on High Northgate, although the enforcement of the Article 4 direction has been limited and there is still much to do. The benefits have not yet reached a critical mass and overall the area still presents as a run down part of town which wholly lacks economic or cultural vibrancy and is divorced from the town centre by an unattractive ring road. The Conservation Area is listed by Historic England as being at risk.



*Figure 6. The Settle-Carlisle Railway is a 78 mile long Conservation Area*

Shildon Conservation Area is largely designated to protect its railway heritage mainly at Locomotion and has a conservation area appraisal which outlines why it is significant. Stockton Town Centre Conservation area includes the Town Hall where the celebrations of the S&DR took place both when the company was created and when the S&DR was launched. It does not include the collection of buildings at St. John's Crossing.

While most Conservation Areas include settlements or parts of settlements, there are examples where large tracts of landscape have been designated as Conservation Areas. The Yorkshire Dales National Park designated the Settle Carlisle Railway as a Conservation Area and the Swaledale and Arkengarthdale Barns and Walls Conservation Area. The Settle Carlisle Railway Conservation Area was designated in 1991 and has an adopted appraisal and management proposal. It is 78 miles long and only a few hundred yards wide and it includes tracts of working line and so clearly offers a template for the S&DR.

Conservation Areas have many of the proposed management benefits of individual heritage designations over a wider area; and can help to enhance economic well-being, quality of life and a certain amount of continuity and stability in a rapidly changing world. At the same time, conservation-led change can make a positive contribution enabling communities to regenerate. When considering investment, conservation area appraisals should guide the form and content of development, enhancement of the public realm, traffic management and outdoor advertisement. This value of an area is beneficial to both owners and developers, and estate agents are likely to put increasing emphasis on such a location when advertising properties.

Conservation Area appraisals are educational and informative documents about our cultural inheritance that aim to raise public awareness and support, and upon which the prosperity of an area is sustained. They are necessary if funding is sought for grant-aid, offering financial assistance for owners to encourage repairs and preventative maintenance.

The production of a Conservation Area appraisal for the S&DR would in effect be a Conservation Management Plan as recommended in Section 4.2 and this could be used to support future applications for funding. This would be a belt and braces approach to managing the line while ensuring that investment in research or conservation is put to a positive use. If a new S&DR Conservation Area is created, it means that there is less need to designate new listed buildings and locally listed buildings providing that they are included and that appropriate permitted development rights are withdrawn.

#### Recommendation 5.




The S&DR trackbed and associated features should be included in a new S&DR Conservation Area with a series of permitted development rights withdrawn. This new Conservation Area might overlap with three conservation areas at Brusselton, Northgate and Shildon, but where that overlap is total as at Brusselton and Shildon, the original one can be deleted. There may be benefits in severing part of the Northgate Conservation Area into the new S&DR one so that any application for Townscape Heritage Initiative Funds come from the S&DR.

## 6.4 World Heritage Site Status

WHS status within the English planning system carries some added weight and a detailed management plan would set out the Outstanding Universal Value (OUV) of the site and the planning process would seek to respect that OUV. However, there is no guarantee that WHS status will be possible and the process would take many years. It is an expensive process in officer time, and in the commissioning of reports, but it does raise the international profile of the site and has benefits for tourism and civic pride. It is more likely to be successful if sound management is taking place across the site already. If a site is declared a World Heritage Site, then many of the management responsibilities are passed to the WHS coordinator, usually a full time post, although this depends on the size of the site.

A **World Heritage Site (WHS)** is a place either natural or cultural that has been listed or inscribed by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) as being of special cultural or physical significance. Since UNESCO adopted the convention in 1972, 191 states parties have ratified the convention, making it one of the most adhered to international instruments. As of July 2015, 1031 sites are listed: 802 cultural, 197 natural, and 32 mixed properties, in 163 different states. Currently there are three railway World Heritage Sites (The **Semmering Railway, Austria** which was inscribed in 1998 and built over 41 km of high mountains between 1848 and 1854; The **Rhaetian Railway Switzerland/Italy** (inscribed 2008) across the Swiss Alps opened in 1904; **Mountain Railways of India** (inscribed 1999, extended 2005, 2008), the site includes three railways, the earliest the Darjeeling Himalayan Railway opened in 1881).

In order to qualify for World Heritage Site Status, an historic asset must meet one of the six criteria set out for cultural heritage by UNESCO. In the light of the work carried out to date on the remains of the Stockton & Darlington Railway, we suggest that the following criteria are most relevant.

-  To represent a masterpiece of human creative genius and cultural significance;
-  To exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or **technology**, monumental arts, town-planning or landscape design; (In other words, for the S&DR, 'to represent an important interchange of human values on developments in technology'.)
-  is an outstanding example of a type of building, architectural, or **technological ensemble** or landscape which illustrates a significant stage in human history.

While the S&DR remains would sit under either category, the strongest is probably the latter as the S&DR represents a series of technological achievements that marked a significant stage in covering the planet in railway lines in the 19<sup>th</sup> century and so can demonstrate a truly worldwide influence. Further work will be required to explore the balance between the benefits and costs of nominating the S&DR as a World Heritage Site and the full extent of any such designation.

### Recommendation 6

Further work is required to assess whether there is support from the local authorities and Historic England to promote the S&DR trackbed and associated features as a World

Heritage Site. This should look at the balance between the costs of submitting a bid and the benefits to the local community and the extent of any such WHS.

## **6.5 Heritage Action Zone and Townscape Heritage Initiatives**

See Paying for the S&DR Rail Trail below

## 7.0 Conserving the S&DR

The trackbed, much of it such as embankments and cuttings, an historic asset in its own right, also includes heritage assets that have survived on it and many need conservation. These assets are mainly boundary features and stone sleepers, with culverts and bridges where the line had to cross a watercourse or split a land holding. There are also three reservoirs, one engine house and one enginemen's house, four railway inns on the line and three off the line, coal and lime depots along the line in various states of preservation and a number of later features including those at Locomotion which are dealt with separately. There are very few milestones or property boundary stones left and only one parish boundary stone.

### 7.1 Boundary walls (mostly DCC).

**'LXXXIV – For fencing off Railways through private Lands.**

***.....'after any Land shall be taken for the use of the said Railways or Tramroads and other Works, to divide and separate, and keep constantly divided and separated, the same from Lands or Grounds adjoining to such Railways or Tramroads and other Works, with good and sufficient Posts, Rails, Hedges, Ditches, Mounds, or other Fences....'* (Extract from the 1821 Act of Parliament)**

The original line was mostly defined by using stone walls at the west end and hawthorn hedging at the east end. However, fieldwork has suggested that this was not so clear cut with stone walls being used near Urray Nook at the east end, although they may be replacements. Where stone walls were used they appear to have been mortared and were topped with triangular copes, although in some cases there is evidence of drystone wall construction with no mortar at all; this might be because the mortar has leached out, or represents a later phase of rebuilding. Mortared and non-mortared examples can be found on the same stretch. Where they approach another structure, the wall was usually sloped towards the adjacent feature. Very few of the walls are in good condition now and some have evidence of repeated rebuilding phases. Some have collapsed down to ground level. The height varies but those that survive to full height and only function as boundary walls appear to be ten courses high above present day ground level which is often below stock proof height, possibly because ground levels have increased and buried the bottom few courses. The 1821 Act of Parliament did not specify the height of boundary walls and was flexible about the form that they took (para LXXXIV), but when describing the height of walls on bridges (the parapet), it did specify that it should be no less than four feet (1.219m) which is fairly close to 1.3m required to be stock proof (para III).

S&DR boundary walls should be conserved where they survive; in most cases that will be conserved as found as full restoration may not be affordable and few are required to be stockproof. It may also be appropriate to only conserve those stretches that survive above an agreed height (say four courses). Walls associated with other structures such as culverts or coal depots can be conserved as part of a site specific project instead. This would restore enough walling as a representative sample which would convey the original intent by the S&DR Company.

## 7.2 Stone sleepers (all three authorities)



Stone sleeper blocks were used to mount the iron rails using an iron chair which was drilled into the stone block. The earliest sleepers had two holes and were about 18 to 24 inches long; 14 to 18 inches broad, 10 – 12 inches deep. The top and bottom were supposed to be parallel but it is clear from the surviving ones that this was not always the case. The cast iron chair was inserted to a depth of half an inch. Two holes, each  $\frac{3}{4}$  of an inch deep were drilled through each block to correspond with those of the chair; those that survive without weathering have a concentric ring around the holes. 8000 blocks were laid out in the quarry at Brusselton ready for loading by the 1<sup>st</sup> March 1822 and 8000 were commissioned every two months afterwards until 64,000 blocks were made. For drilling 24 blocks, boys were paid 8d a day (Jeans, 1974 p52 and Heavisides 1912, 44).

The two hole sleepers were replaced with four hole stone sleepers and from 1835 the sleeper blocks being produced were larger and heavier; the original blocks having been designed to be lifted by one man, were not weighty enough to provide a secure footing for the rail.

Stone sleepers survive on or near the trackbed mostly from Phoenix Row to Aycliffe, although they are also to be found lying beside the East Transport Corridor in Darlington and at Goosepool and Urray Nook *ex-situ* by the roadside. They are still *in situ* at Brusselton but also sit on the trackbed surface at Etherley in a re-sited position. Those at Brusselton also show grooves where the rails have worn into the stone which adds to their archaeological interest. They can be found slipping down the sides of the embankment at Etherley and rebuilt into walls at Brusselton and the coal drops and Goods Shed at Locomotion. Any exposed sleepers are at risk from theft and are gradually acquiring a monetary value.<sup>55</sup> This is likely to increase as we approach 2025.

Where they sit on the surface, as at Brusselton, they may well be an impediment to access for anyone using mobility vehicles and so alternative routes will need to be found, or an acceptance that the sensitivity of the route limits access. It is possible that a sensitive design for a path surface can be found. Where they have been reused (the steps at Brusselton Accommodation Bridge for example), they should be retained in their new position. This will help to avoid them being stolen; some have appeared on eBay recently, although these may be from other later S&DR lines of the 1830s with examples known from as far afield as Waskerley and Bowes (on the Stainmore line). Any sleepers found *ex-situ* in future should be gathered and reused in S&DR landscaping near the line.

Three sets of sleepers have been located which appear not to be in their original positions but which may have been reset as part of the 1925, 1975 celebrations or later. These are:

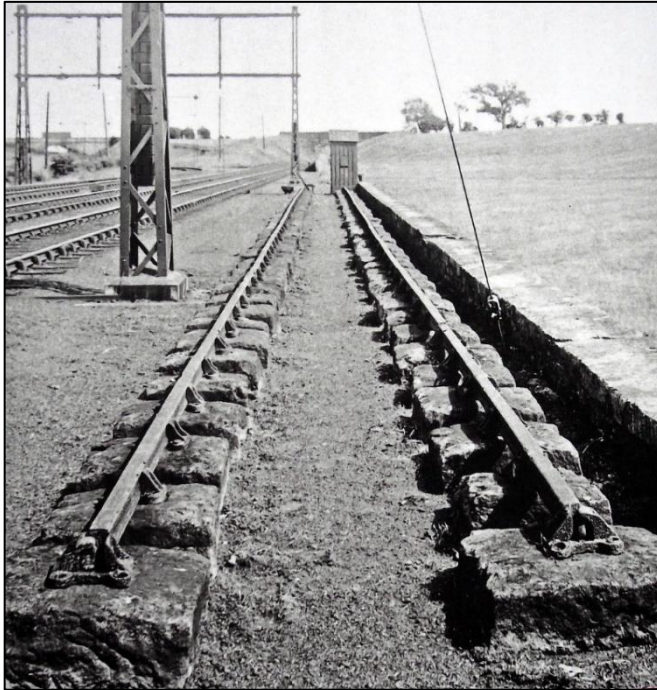
-  Eighteen stone sleepers on the Etherley Incline near Low Etherley on the approach to the site of the Engine House. They are positioned too close together to be in their original positions.
-  Twenty-eight stone sleepers immediately east of Brusselton Village. Some of these are upside down and so not in their original positions.

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<sup>55</sup> Some are currently for sale on eBay (2015-6)



The sleepers at Aycliffe Station are on the south side of the live line and only visible from the train as it approaches the station. They were in that position prior to the 1930s, but it is not clear if it is an original position; they appear to be reset, perhaps for the 1925 celebrations? Further research will be required before deciding if they can be moved into a more visible position. If they are *in situ*, they should be left.



*Plate 30. Sleepers and rails at what is now Aycliffe Station. The photograph is undated but the overhead electric wiring that can be seen was removed in the 1930s. Note the low embankment retaining wall to the right a design feature of the 1825 line.*

These should be left in their new positions, but if there are proposals to resurface, they can be moved and repositioned after the works take place. The re-sited ones at Brusselton could be removed to allow trial excavation to take place (see section on excavation) and reset in new positions the correct way round. Generally, exposed sleepers should be discretely numbered and marked so that they can be identified if they are stolen and sold.

This could be carried out by volunteers using ultra violet pens which leave the numbering invisible.

#### Recommendation 7.

Innovative and non-damaging, unobtrusive ways to tag sleeper stones should be investigated so that if they are stolen and advertised for sale they can be traced back.

### **7.3 Bridges, Culverts, Ditches and Level Crossings (mostly private ownership and Network Rail)**

The 1821 Act set out the need for a variety of bridges:

*'... to make, build, erect, bank, excavate, or set up, in, under, or upon the said Railways or Tramroads and other Works, or upon the Lands adjoining the same, such and so many Bridges, Piers, Arches, Tunnels, Aqueducts, Basins, Boats, Posts, Ropes, and Chains, for passing any Rivers, Brooks, and Streams and other Waters, and such as so many Wharfs, Houses, Warehouses, Toll Houses, Landing Places, Weighing Beams, Cranes, Fire Engines, or other Machines, and other Works and Ways, Roads and Conveniences, where in and such Manner as the said Company of Proprietors shall think necessary and convenient for the Purposes of the said Undertaking...'* (para I).

Bridges were designed specifically to communicate with public carriage roads and could not have an ascent of more than one foot in thirteen and the parapet walls were to be at least four feet high (para III).

Although the 1821 Act did refer to culverts and arches, it appears that accommodation and occupation bridges were not sufficiently budgeted for. The general committee presented shareholders with a report on the 9<sup>th</sup> September 1825 stating that unforeseen expenditure had been incurred building the railway line because of the necessity of purchasing land, paying for damages to tenants, *'exceeding by £18,000 the estimate made as to the value of the land, together with the great expense of erecting occupation bridges, which your committee did not anticipate...'*<sup>56</sup> There was therefore no particular design for these bridges at the outset and instead they appear to have been tailor made to suit the individual needs of the landowner and occupier of the time.

However, a distinctive style does appear on some of the culverts, bridges and wing walls, but it is not consistent. Some structures have terminals with rounded copes on top, similar to a pepperpot and can be found on the Hummerbeck culvert and the level crossing at Urlay Nook. On the Yarm branch they are found at the Cleveland Bay (was the New Inn) Goods Depot and on the Haggerleases branch on the Skew Bridge, the latter two being outside the remit of this report.

The 1821 Act acknowledged the need for level crossings where the new trackbed would cross existing roads. These appear to have had no specific infrastructure in 1825, but the sleeper stones were required to be sunk into the ground so that the rails did not protrude more than three inches above the road surface (para II). Once the line became operational, it became apparent that rights of way had to be established where road traffic met rail traffic and codes established to prepare for such eventualities with engine drivers being required to slow down and sound an alarm on the approach. Their ephemeral nature means that no original level crossings survive intact where there is still a road across the site. However, it is possible that the early sleeper stones were tarmacked over when the line became disused at locations such as Greenfield Lane on the Etherley Incline. There is also a minor level crossing location where a farm track crossed the formation near the foot of Brusselton Bank which appears to have simply grassed over. Others, such as that at Urlay Nook have evolved into complex level crossings with signal boxes, but ornate stone wing walls with pepper pot copes survive, albeit recently damaged by Network Rail.

Culverts, bridges and accommodation bridges have not survived particularly well. Bridges have had to be widened to accommodate larger volumes of traffic and one has been lost very recently to create a wider trackbed for the Hitachi works at Newton Aycliffe. Once part of the line fell out of use, accommodation bridges no longer had a purpose and so they were neglected or deliberately demolished to allow larger agricultural machinery through. Many have lost their decking to allow taller vehicles through and some on the live line have had new decking put on. Timetables for conservation will depend on vulnerability and the extent to which the bridge will be required if the trackbed is used as a right of way or on live line. The following table is a list of bridges, culverts and accommodation bridges that date to 1825 in origin and which survive in various states of preservation and will merit conservation and maintenance.

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<sup>56</sup> Jeans 1974, 63



**Recommendation 8**

Any trackbed structures dating to between 1825-30 should be conserved. The extent to which they are restored will depend on their individual state of survival and intended future uses. A statement of significance for each structure will be required to inform this process, although ideally this could be carried out for all structures on the line at the same time (possibly as part of a S&DR management plan) so that they can be prioritised. Once conservation or restoration is complete a maintenance plan will be required for each structure.

S&DR Audit & Ref No's.	TYPE	Place	Culverts, Crossings and Bridges; Conservation and management requirements
<b>Durham County Council</b>			
44/E24	CULVERT	Etherley Incline north	One key stone has slipped on east side and vegetation needs clearing.
25/E5	CULVERT	Etherley Incline north	Good condition but some stabilisation to the drains on the approach and exit required. Some poor quality work has been carried out near Greenfields Farm. Vegetation needs cutting back.
75/E55	CULVERT	Etherley Incline north	A simple stone structure designed to accommodate water below a crossing point over the incline embankment. Stable.
502/E57	CULVERT	Etherley Incline south	Stone arched culvert under incline just north of Greenfield Lane. Altered approach from west, stable but requires observation.
HER. D883	BRIDGE	Gaunless Bridge	Abutments vandalised, wing walls partially buried, poor setting, vegetation control required, also work to river bank walls. Consider new decking for future cycle path, but alternatives for walkers are available. Consider moving iron decking from the NRM at York to Shildon
16/G16	ACCOMMODATION BRIDGE	Gaunless (south side)	Partially destroyed in 2015. Rebuild south abutment wall in original position – owner to pay. Consider new decking for future cycle path? Alternatives for walkers are available
2/G2	ACCOMMODATION BRIDGE	Gaunless (north side)	Bridge removed and partially demolished late 20 <sup>th</sup> century. Evidence survives for an accurate rebuild if required but there is no practical need at this location.
87/WA11	CULVERT	West Auckland	Oakley Beck culvert. Two stones need resetting on top course. Some repointing required. One tree to be removed. Litter and tipping in water.
78/WA2	FOOT BRIDGE	Between West	Buried but top of arch visible in embankment on south side where the

S&DR Audit & Ref No's.	TYPE	Place	Culverts, Crossings and Bridges; Conservation and management requirements
		Auckland and A688	keystone is missing. Sketch plan with measurements from 1923 survive. Recommend exposing and fixing to avoid collapse. On north side, wing walls and adjacent boundary walls require consolidating and arch re-exposed. Tree removal required. Associated with an earthwork ramp on N side. Costs need to include excavation.
128/B137	BRIDGE	Hummerbeck Bridge	Wing wall pier and cope has become detached on north side. Tree removal required on both sides. S side is in good condition but walls along riverbank poor. Regular use by farm traffic, decking may need repair.
LB:1160402 8705; 35622	ACCOMMODATION BRIDGE	Brusselton	Vandalised, parapet requires conservation and wing walls. Sleeper stones slipping from trackbed. Retain sleeper in stone steps. Replace fencing on top. Currently requires steps to get down to ground level.
98/B109	ROAD BRIDGE	Brusselton	Demolished and road widened in 1954, but one abutment scar left on retaining wall. Could be reused to create a new bridge over the road.
117/B128	ACCOMMODATION BRIDGE (Milk Bridge)	Brusselton	Poor condition. NE side is missing. Decking missing, depending on need decking could be accurately replaced based on photographic evidence. Tree removal required.
227/A42	ACCOMMODATION BRIDGE	Simpasture	Abutments possibly later. Over live line. Decking replaced twice since first built. Abutments responsibility of Network Rail.
230/A45	ROAD BRIDGE	Aycliffe	Responsibility of Network Rail. Possibly later.
219/A34	ACCOMMODATION BRIDGE	Aycliffe Wood House	Over live line. Possibly later. Ends of bridge damaged and in poor condition. New barriers required if no access over bridge permitted.
220/A35	ACCOMMODATION	South of	Bridge destroyed 2014 for Hitachi development. Slight scar left on railway




*The 1825 S&DR: Preparing for 2025; Significance & Management.*

S&DR Audit & Ref No's.	TYPE	Place	Culverts, Crossings and Bridges; Conservation and management requirements
	BRIDGE	Newton Aycliffe Merchant Park	edging and stone to be reused at Brusselton (pile of stone also located to east of live line which now belongs to the farmer).
221/A36	CULVERT	South of Newton Aycliffe	Original stonework beneath NWR live line, east face recast in concrete. Survey and maintain, ideally remove modern facing and replace in stone.
Darlington Borough Council			
190/A5	ACCOMMODATION BRIDGE	North West of Stanley farmstead	Under Live Line. Stone arched bridge, renewed wing walls in modern brick. Earthen ramp leading to bridge. Some cracks in new wing walls
335/D107	CULVERT	Myers Flatt	A stone drain covered under a stone arch and running parallel to east side of S&DR trackbed in an area that is very boggy. Around 2014/5 the stone arched top has been ripped off and the stonework dumped alongside the now opened drain. The stonework includes reused sleeper blocks. Either repair or safeguard removed arched stones.
336/D108	CULVERT	Dene Beck Culvert	Network Rail. Replace missing rounded cope on west side
194/A9	ACCOMMODATION BRIDGE	Myers Flatt	Under live line. Arched accommodation bridge, arch removed just above springers and replaced with box girders. Fine wing walls but with painted graffiti which needs cleaning and poor condition gates obstructing access.
261/D29	RAILWAY BRIDGE	Elmtree Street Darlington	Network Rail site. Possibly later than 1825.
LB:110679	RAILWAY BRIDGE	North Road, Darlington	LISTED BUILDING. Much altered, originally built 1857. Network Rail responsibility.

S&DR Audit & Ref No's.	TYPE	Place	Culverts, Crossings and Bridges; Conservation and management requirements
LB:1002331	RAILWAY BRIDGE	Skerne Bridge	SAM. Widened with original parapet on upstream side damaged and requiring repair. Poor setting – requires clearing and some disused gas pipes removing. Two stones slipping on voussoir arch south side. Vegetation growth needs removing. Network Rail responsibility.
HER D3509	ACCOMMODATION BRIDGE	Houghton Road	Graffiti needs removing
330, 331, 32, 333.	CULVERT	Eastern Transport Corridor	Drain runs parallel to northside of line – same as 424. In places arched structure survives, in other it is an open stone lined drain. Vegetation clearance required and sample consolidation of archways
448	CULVERT	Yarm Road, Middleton St. George	Vegetation control. Face of culvert has been coated in concrete. May need to be removed to avoid damage to any underlying stonework
450	CULVERT	Oak Tree	Vegetation control required.
422, 451	BRIDGE & CULVERT	Goosepool	Bridge built in second half of 19 <sup>th</sup> century to allow cars to travel below the line. Embankment heightened and road dug out to create sufficient space. Responsibility of Network Rail. Culvert takes water course
<b>Stockton Council</b>			
513	WING WALLS	Urlay Nook level crossing	Wing walls of a type found on S&DR bridges with pepperpot top terminals. The terminal and part of the wall has been recently damaged by Network Rail. Architectural fragments have been retained. Terminal should be rebuilt.

## Ditches

Where the line was set into a cutting, ditches were essential to keep the line drained and if the resulting rights of way are also to drain freely, then ditches need to be maintained. If we exclude ditches that we know were covered, in which case we have treated them as culverts and they are listed above, then ditches have not been identified on many stretches of the line and appear to survive only at:

-  South Etherley. Here there is a ditch on the outside of the boundary wall above the cutting.
-  Shildon to Aycliffe cycle path. The ditch here may be recent rather than original – it has certainly been cut or recut very recently.
-  A66 to Fighting Cocks. The ditch here is on the south side within the cutting and over the years it has collected stone sleeper stones and considerable vegetation growth. If it is cleared with a ditching blade, care needs to be taken if stone sleeper blocks are uncovered that they are not broken and are either retained on the line or recorded and placed in a depot for use in nearby landscaping associated with the rail trail. Another ditch ran along the top above the cutting on both sides – as at Etherley.

### Recommendation 9

There may also be conflicts with ecology in the waterlogged ditches and this will have to be flagged up in any future ecology reports (possibly as part of a Conservation Management Plan). Any clearance of ditches will need to be supervised archaeologically and arrangements made to re-house temporarily any stone sleepers uncovered.

Much of the ditch maintenance can be done by controlling the vegetation and to a certain extent this can be done by volunteers. Ditch clearance should be carried out once every five years and carried out in autumn to minimise disturbance to birds, aquatic insects and seed setting. Dead vegetation matter should be left at the sides to allow insects to escape back to the ditch. Care should be taken only to remove recent sediment and not damage the ditch structure by over digging.







## 7.4 Taverns, coal and lime depots (private ownership).

These building types tend to cluster along the line because they were closely associated in the embryonic days of the modern railway before stations were invented. One of the main motivations behind the development of the S&DR was the local distribution of coal and limestone (as the main mineral resource of the south west part of Durham) and in order to do this, depots were required at regular intervals where the goods could be off loaded from the rail waggons on to road carts. While some of the early waggons had end opening doors it was quickly realised that bottom opening waggons with sloping sides were more effective, especially when delivery was from an elevated ramp into a cell below and so this appears to have been the form of the depots. By 1826, most of the waggons were altered to this design and they were increased in size (Forward 1953, 4). The remains of a ramp can still be seen at Fighting Cocks, but only the ramp wall survives at Darlington and Heighington.

In order to administer the use of the line for the transportation of coals it was necessary to have a weigh house where laden waggons could be weighed and tickets purchased to use the line. This then required staffing and staff needed shelter and refreshments and so railway taverns were seen as essential provisions. The depots then went on to be used as places where local people and businesses deliver and collect parcels and goods and the inn was a place to wait, in effect inventing the concept of the railway station with waiting room and postal service.

In 1826, the S&DR Company began building three public houses along the line: Railway Taverns at Stockton and Darlington and the more modest inn at Heighington. All were adjacent to coal and lime depots. They were not the first inn/depot combinations to be built however. Mr Meynell the Company Secretary had the New Inn built on the Yarm Branch and it was opened in October 1825. It too had a depot to the rear, but more research is required on their relationship and the financing of this inn and depot.

It is clear from archival information that the depots then became places where passengers could alight and depart as the line was increasingly used for commuting for business. The testimony of Archibald Knox at the appeal against the refusal of a licence to run what was in effect becoming Heighington Station as a public house in 1829 at Heighington included a statement that he travelled '*along the railway two or three times a week. I live at Black Boy, about three miles from Mr Turnbull's house [the S&DR Station Heighington].*' Robert Crowther also testified that his business often took him to Stockton or Darlington and that he always travelled by railway '*which is a great convenience to the public*' (reported in Durham Advertiser 24.10.1829, p3). The S&DR were not the only people to see the commercial potential in having an inn with a coal/lime depot and soon this profitable arrangement was also being funded privately at Fighting Cocks where a coal depot and inn were in place by 1828. So far, there are twelve coal and lime depots recorded along the trackbed but not all of these are original. Of those built before 1830 there are:

-  Darlington Branch Line opened for coal and lime September 1825 with Railway Tavern built 1826-7 (licence refused until 1829).
-  St John's Crossing in Stockton for coal and lime opened 1825 with Railway Tavern opened 1826.
-  Heighington for coal and lime built 1826-7 and King's Head Tavern built 1826-7 but licence not granted until 1829.
-  Fighting Cocks, Dates unknown, but inn opened 1828 and depot certainly in place by 1830.
-  West Hartburn Tavern and coal and lime depot, date not known.
-  New Inn (Cleveland Bay) and Yarm Goods Yard, 1825 inn, date unknown for depot but pre 1830 (outside project area)

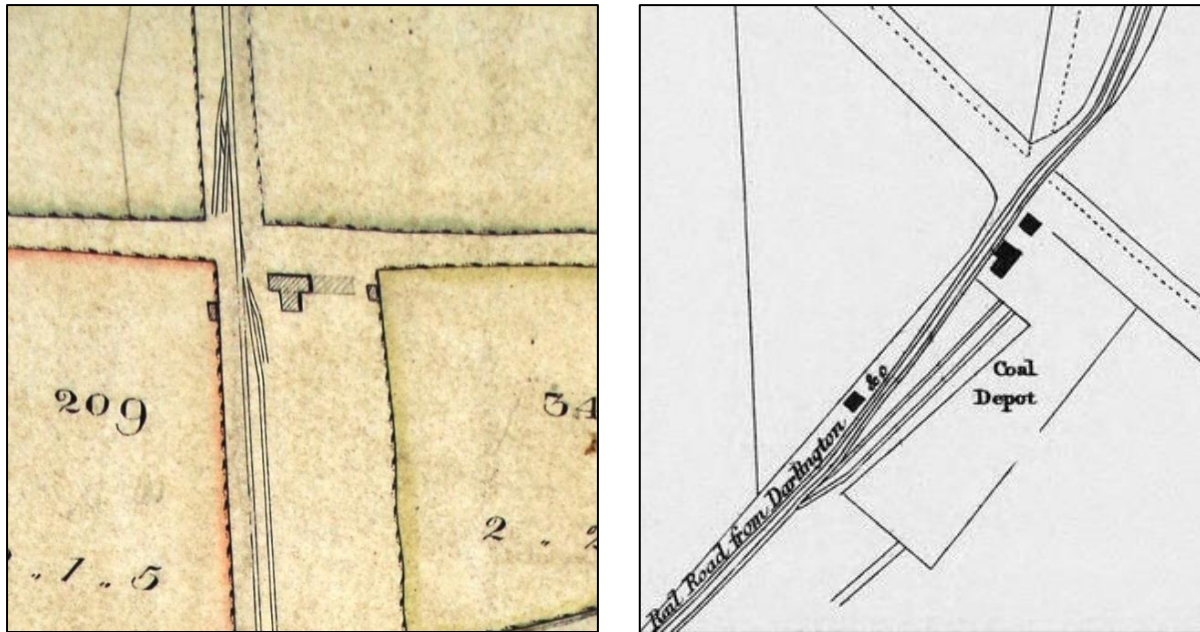


Figure 7. Left: The Coal Depot and Tavern at Heighington in 1828. The tavern was the T-shaped building with a planned extension to the east. The small building to the east was probably a weigh house. Sidings took the laden waggons into the depot to the rear. It is not clear what the sidings were to the north or the building to the west – possibly a waiting room. (DCD/ E/AF/7/1-2 (John Davison plan of Great Aycliffe for Dean and Chapter of Durham Cathedral, with book of survey, 1828, plan 1.5m x 2.5m) CCD 13607 (plan)) Right: The Coal Depot and sidings at Stockton in 1826. The tavern was only commissioned that year and so is not shown (John Wood's map of Stockton 1826).

It was to an inn that the S&DR looked to take the early bookings at Shildon – the Mason's Arms. This pub, built to take advantage of the railway, took on many of the functions of a goods and passenger station in Shildon. However, it is not clear if there were coal depots immediately adjacent because the area was subsequently very altered by the growing railway works and coal went on to be delivered further east at the Goods Shed built in 1857. The Mason's Arms was rebuilt in late Victorian times, but the extent of this rebuilding is not clear. Another passenger service was also started in Shildon on the Surtees line from the Grey Horse Inn. The Surtees line had been designed in 1831 as a branch line to the S&DR which could carry coal from the pits owned by the Surtees family out of the area for landsale or export. However, the landlord of the Grey Horse Inn, Daniel Adamson, operated a passenger service before the Surtees line was built and this presumably left from the Mason's Arms. The first purpose built goods station, also called a Merchandise Station and in fact also serving as a passenger station, was in Darlington and which following its replacement was demolished in 1864. Its site is today unprotected.

The relationship between the transportation of coal and lime and the evolution of what was to become a railway station was therefore very close and more research is still required. However, it is clear that neither the taverns nor the remains of the coal depots are adequately protected and that conservation and protection is required urgently for these vulnerable structures. Of the taverns, two are listed buildings, namely Heighington and St John's Crossing but the others are vulnerable to uninformed alterations.

None of the coal and lime depots are legally protected and most are not even on the HER. While further research is required on their significance generally, it is not too soon to suggest that they need protecting and conservation work and interpretation should be carried out.



The conservation work is urgent because one has only recently been damaged by heavy goods vehicles working in the vicinity at Fighting Cocks and one may be the subject of enhanced access to the S&DR at Heighington. The coal depot at St. John's Crossing is in Stockton Council's ownership, but the coal depots at Darlington, Heighington, West Hartburn and Fighting Cocks are in private ownership.

The owners of these taverns and depots would benefit from guidance on the significance of their assets and on potential alterations that would be either desirable or acceptable which recognise the significance of their place in history. Some information has been made available to them already (Brian Llewellyn provided research to the owners of the Railway Tavern in Darlington and some research is being conducted on taverns by Brendan Boyle and Barry Thompson of the 1825 Friends of the S&DR), but all require a statement of significance which looks closely at what survives, what alterations might be reversible and practical and offer design guidance and maintenance guidance on adapting these 19<sup>th</sup> century buildings for modern day use without loss of significance. Statements of significance should be used to inform any future conservation, interpretation or change of use. At Darlington coal depot where the changes are more complex and the remaining elements of the depot have been much altered and reused, then a 3D survey is required which will identify which architectural fragments merit conservation. It can also then be used for interpretation work and to create a reconstruction of the working depot.

**Recommendation 10.**

Subject to the findings of the Statements of Significance, the Railway Tavern in Darlington, the Fighting Cocks Inn in Middleton St. George and the Mason's Arms in Shildon should be protected because of their historic interest and associations with the developing concept of a railway station (if this study is extended to the early S&DR branchlines then the Cleveland Bay at Eaglescliffe should also be included).

## **7.5 Property Plaques and Signs.**

In 1857 the S&DR had a series of black and white ceramic plaques made to be placed on domestic properties owned by the company. Each plaque allocated each house or terrace with a unique number that allowed the Company to keep accurate records for each grouping. These plaques were positioned above doors or on gable ends. Not all have survived. While not relevant to the internationally important, pioneering days of the S&DR up to the end of 1830, these are as with many later structures still of considerable heritage significance and of value to local communities and visitors.

**Recommendation 11**

In order to restore some of the architectural interest to these former S&DR houses, it is recommended that a new set of ceramic plaques are commissioned for each property where the owner would be willing to have them remounted. There are local ceramic artists in the region who have a good track record of producing small scale projects often with assistance from local school groups. Small scale art based projects are likely to attract some local funding, possibly from organisations such as Darlington Building Society.

## 8.0 Maintaining the Line

The issue of finding the large amounts for the capital works is explored elsewhere in this report, but the issue of maintenance is more challenging. The three local authorities are understandably reluctant to take on more assets that require ongoing maintenance, even if it does result in indirect economic benefits. The new path network therefore has to be low maintenance and designed to prevent problems that will require ongoing costs. For example, desire lines need to be anticipated and designed-in to avoid damage to landscaping at a later date.

Parts of the trackbed, or the paths leading to it are currently suffering from illegal fly tipping, litter, overgrown vegetation, dumping, lack of maintenance of the boundary walls, dog fouling and vandalism. It is important that where the accessible paths have bridleway status that they have barriers to prevent vehicular access. This might conflict with DDA compliance.



Plate 31. Left: New cycle paths south of Newton Aycliffe are being used for fly tipping. Right: barriers at entrance points to bridleways ensure that pedestrians and horses can access the path but vehicles cannot. However, it also excludes mobility scooters.

### Recommendation 12.

Where fly tipping is likely to be a problem, barriers need to be erected at access and exit points of the railway path to prevent vehicular access.

Another feature of recent years is the unchecked growth of vegetation along linesides. This has led to the concealment of railway structures and their damage from root action. New landscaping schemes compound the problem. The planting of hawthorn between the new cycle path and the railway south of Millennium Way, presumably as habitat creation will create a barrier to viewing the railway which is the star attraction when the hawthorns start to grow. As there are no funds to cut hedging, this is storing problems for the future.

### Recommendation 13.

Accepting that security and public safety are paramount, fencing alongside the live line should be visually unobtrusive so that the line can be seen and any structures associated with it. Where new cycle paths are constructed, no planting should take place between the path and the line. Where new planting has taken place south of Merchant Park at Newton Aycliffe, it should be removed to the other side of the path.

Keeping the line clear of litter and dog waste is going to be challenging. While rubbish and dog waste bins should be regularly spaced and emptied often in recent years local authorities have had reducing resources to monitor and regularly empty bins and remove fly tipped material and are obviously reluctant to create more work. Fostering a sense of civic pride in the S&DR and encouraging community responsibility for looking after it is important and could make use of two initiatives.



*Plate 32. Litter, a significant problem with cost implications in cleaning up – unless we use volunteers*

Use community payback to do organised and regular litter picks. Community payback is for people who have been convicted of a crime and have to carry out work for the local community in lieu of other sanctions. It still requires co-ordination and supervision and therefore staff time and may not always be available for the whole length of the line, but should be able to offer person hours where there are settlements such as Bishop Auckland area, Shildon, Darlington and Teesside. In order to make use of community payback, an accredited organisation will need to be responsible.

A volunteer adoption scheme can be set up for the S&DR. The recent work by the Friends of the S&DR and other local groups have shown that people are willing to adopt and care for their local stretch of line. It is important that if this is to succeed that they are supported with protective equipment and health and safety training and are not taken for granted. It could be run by a volunteer or local community group instead of the councils and could seek grant aid to apply for protective clothing. School groups could be encouraged as part of an education package to 'adopt' a stretch of line near their school and have regular litter picks combined with history/ecology lessons.

Monitoring of the line and arranging/coordinating the work of volunteers, school groups and others would best be served by appointing two S&DR rangers to lead on outreach and guiding. Each would need specialist training in not just countryside and rights of ways issues, but also the heritage of the S&DR and historic monument conservation.

In either cases, arrangements would need to be made to dispose of the litter after collection.








**Recommendation 14.**

In order to keep the paths clean, a local group or local authority should set up an adopt a line scheme and a system of accreditation so that community payback, or volunteering can also be used in areas prone to fly tipping. Appoint S&DR rangers to monitor the line, organise volunteer litter picks and provide guiding for school groups and visitors.

## 9.0 Access to the S&DR Trackbed





The Stockton & Darlington Railway is 40km long, although it is recommended that any accessible rail trail should go as far as Stockton Town Hall and start at Witton Park which increases its length slightly. It is also recommended that the early branch lines built up to the end of 1830 should be included in any project. These were however not surveyed as part of this commission.

Out of that 40km, the route already has a defined cycle and footpath access along 13.25km of its length with level surfaces; therefore, about a third of the line is already fully accessible.<sup>57</sup> Along these parts of the line, no further works would be essential to allow them to be used by most people of all abilities, although there are additional costs to be incurred for conservation and interpretation. Some parts are not ideal with walkers using busy roads with painted cycle lanes (Yarm Road for example), but it is nevertheless a sufficiently high standard to make further access works here a low priority. A detailed audit of surface condition is advised and measures to curb encroaching vegetation. These stretches include:

-  Shildon to Newton Aycliffe
-  Heighington (proposed – some ground clearance has already taken place)
-  North Road to Skerne Bridge (proposed)
-  Haughton Road to A66
-  A66 to Fighting Cocks
-  Fighting Cocks to Goosepool
-  Yarm Road (Preston Park)

There is also a stretch of 716m bridleway on either side of the West Auckland bypass (A688), however it has no adequate surface to permit cycling or use by people with restricted mobility and the path has a number of hazards which need addressing. There is also no safe and easy crossing of the A688, a problem requiring attention at several locations along the line. It has therefore not been included in the fully accessible list above. Similarly, a stretch of bridleway south of Heighington (BW 10, Great Aycliffe,) which can be used to access the path parallel to the trackbed for 435m has been effectively blocked by churning up by heavy vehicles and flooding on the approach and so has not been included. It also has an access from the A167 which is unsuitable for people with mobility difficulties. DCC own this bridleway and a large area of land adjacent.

There is no access at all, even in the form of an adjacent road with pavements to 11.57 km. These are the highest priority areas for enhancing access. That is 28% of the trackbed which is currently inaccessible and this also includes potentially expensive crossings over the A1(M) and the East Coast mainline in Darlington, although in both cases there are alternatives with much lower costs. These inaccessible areas include:

-  South Etherley Incline to Northbridge
-  Brusselton Bank (Brusselton Farm and Bankhouse Cottages)
-  Preston Road to Heighington Station (Industrial Estate)
-  Coal Depot south of Locomotion Number One pub (and in their ownership)

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<sup>57</sup> This includes a short stretch between North Road and Skerne Bridge in Darlington which while not in existence yet, is in hand. It also includes a 1.22km stretch consisting partly of existing bridleway and partly a stretch to be funded through a Section 106 agreement south of Newton Aycliffe, however the S106 stretch does not exist yet

- 🚧 Moordale Park to Coatham Lane (Network Rail)
- 🚧 Coatham Lane to Patches Lane (includes A1 (M) crossing – ownership unknown)
- 🚧 Skerne Bridge to LNER Engine Shed (includes East Coast Mainline Crossing – ownership unknown)
- 🚧 West Hartburn Tavern to Carter's Lane (road but no pavement)
- 🚧 Urlay Nook Road to Whitely Springs Farm and Eaglescliffe Station (Network Rail)
- 🚧 A66 to St John's Crossing

That leaves about 11.58km requiring upgrading from either footpath to cycle route or a nearby (up to 100m) road to an improved more accessible route. Some of these areas are sensitive because of their historic or natural environment interests and upgrading them to a fully accessible level may not be possible. In some instances, adjacent land could be purchased where the trackbed is too sensitive. In addition, the riverside path in Stockton from the coal staithe to the Town Hall has steps on the road bridge and no safe route across the car park near St. John's Crossing. If the route was to be fully accessible into the town centre then these would also need addressing.



Finally, there is a long history of encroachment on the south part of the Etherley Incline and in St. Helen's Auckland. This needs to be addressed to that there is a disincentive to further encroachment on the incline.

**Recommendation 15.**

Proper enforcement of the Ancient Monument and Listed Building legislation needs to be carried out where criminal damage and encroachment takes place on the S&DR. This enforcement should be carried out by the local authority, Historic England and by the police.

The current access divides as follows (red is highest priority if funds are limited):

**Recommendation 16.**

A detailed access survey is required for the line and in particular for areas with no legal access or where the access is only at footpath level. This needs to cross reference to the heritage trackbed audit so that sensitive areas are avoided by cycles.

**Recommendation 17.**

Ecological surveys will also be required to establish constraints to footpath creation or upgrading and to assess the sensitivity of alternative routes as well as opportunities for interpretation.

The route should ideally be 3 metres in dedicated width and surfaced appropriately, although heritage and biodiversity constraints may mean that the paths have to be created to a lower and cheaper standard. Fortunately, there are no major viaducts requiring conservation which would increase the investment and there are alternatives to constructing an A1(M) crossing by using an existing farm bridge and right of way at Stanley Farm. New routes would need to be dedicated as public bridleway to allow passage on foot, bike and horse and safeguard access in perpetuity, but again, there may be reasons why this level of access is not possible. Permissive rights of way established for new stretches may provide better controls over what form of vehicles can use them subject to byelaws. Maintenance for the dedicated bridleway will be the responsibility of each Council and so it is important that planting schemes or drainage should be low maintenance. That means that planting to increase biodiversity should not occur where it will obscure views towards the line when the trees mature as has happened south of Newton Aycliffe. Costs may also be incurred for archaeological recording where ditches need cleaning out or if surfaces are to be scraped before new surfaces are laid down. The drainage regime that the line was designed with will need restoring as much as possible so that the line remains dry.

Location	Status	Length	Priority to increase access	Comments
<b>Durham County Council</b>				
Witton Park to New Inn Crossroads	Public footpath	340m	N/A	Limited parking available, but this stretch could be used by bicycles and walkers.
New Inn Crossroads to south end of Phoenix Row	Road with pavement and back lane	383m	Low	Residents may have concerns about increased use of back lane, however this stretch could be used by bicycles and walkers.
South end of Phoenix Row along Etherley Incline to Greenfields Road	Public footpath	1.6km	Low	Existing access good, but the surface could be churned up if used by bicycles or horses and is not currently DDA compliant. Altering the surface composition by removing turf and replacing with other materials will expose stone sleepers and so is not appropriate.
Greenfields Road (south end of Etherley Incline) to West Auckland	No public access	1.3km	High	<p>967m is in private ownership, possibly a pension fund; 348m belongs to DCC. The incline cutting is flooded due to historic encroachment. Local people use a not legally defined, but well used path to the west of the incline consisting of an arable field then woodland and finally the reclaimed West Auckland Colliery site and this may be a more realistic route. Potential conflict with natural environment if the cutting used. This stretch of incline features on published self-guided walk routes although no legal access (Slack and O'Neill 2015) and was opened up as part of the 1975 celebrations.</p> <p>There are areas of encroachment at St. Helen's Auckland. There is no way through the gap at the former colliery site to the incline at Northbridge because of vegetation, illegal fly tipping and a den. Existing fencing is a mix of types.</p>

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Location	Status	Length	Priority to increase access	Comments
West Auckland to Gaunless Accommodation Bridge and subsequent 92m stretch of S&DR line up to culvert	No legal public access, but well used DCC owned land. Footpath crosses E-W.	375m	Medium	<p>DCC owned land so access already established. Existing access diverts from S&amp;DR trackbed briefly at the Gaunless Bridge and returns on the S side of river.</p> <p>Opportunity to create a bridge decking to carry the cycleway/footpath across the Gaunless bridge and its accommodation bridges.</p> <p>Existing surface uneven and existing footbridge has steps so some adaptation required if it is to be suitable for bicycles or to be made DDA compliant. The original bridges if re-decked could make use of the old line as a ramp to the surface</p>
West Auckland (housing estate and culvert) to West Auckland Bypass A688	Bridleway and footpath	314m bridleway and 107m footpath	Low	The bypass is difficult to cross as very busy. A new bridge, underpass or light controlled crossing needs to be considered here.
West Auckland Bypass A688 to Burnshouse Lane	Bridleway and footpath	238m bridleway (to end of Broom Mill Farm buildings) and 373m of footpath	Medium, but see comments	<p>No apparent reason why bridleway cannot be extended along the entire length.</p> <p>Bridleway and footpath area used for dumping waste and is very unsightly and a hazard.</p> <p>Barbed wire has been mounted on the inside of the fencing which is a hazard to users.</p> <p>Clear potential for partnership working with Broom Mill Farm Shop</p>



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Location	Status	Length	Priority to increase access	Comments
Burnshouse Lane to Hags Lane	No access	277m is garden and 616m is former open cast land now used for pasture.	High	Alternative route may be required to avoid private gardens. An alternative would use the Lane and the former Roman Rad, both attractive alternatives requiring no significant improvement.  S&DR remains do survive in part of open cast fields.
Hags Lane to Brusselton Lane	Public footpath	608m	Low	The fields have been opencast so potential to create a new path surface along field boundary and upgrade to bridleway without damage to archaeology.  The road bridge at Brusselton has been demolished and so Brusselton Lane has to be crossed and steps used to get down from the accommodation bridge to the road and up again on to the incline embankment. Stone sleepers sit on the surface which would make the incline unsuitable for wheeled vehicles without innovative design work. The bridge could be accurately reinstated to provide a level access. If not, then an alternative route on the north side of the incline embankment suitable for bicycles and DDA compliance may need to be considered.
Brusselton Lane to end of Hackworth Industrial Park	Footpath Although a quiet lane is an alternative without steps	760m footpath plus 359m pavement	Low	The lane to Brusselton village could be used as an alternative route for cyclists and be made DDA compliant. Making alterations to the footpath east of the village would have archaeological implications, although the ground is quite disturbed near the village and so trial

Location	Status	Length	Priority to increase access	Comments
	as far as Brusselton village. And pavement through industrial estate			<p>trenching and excavation could clear the way.</p> <p>A bridleway crosses the footpath N-S from High West Thickley Farm. This originally used the partially dismantled Milk Bridge of 1825. This could be reinstated to allow connection to wider bridleway network.</p> <p>The footpath is very narrow after the Milk Bridge and widening for cyclists or DDA compliance would have archaeological implications, but it might be possible to achieve the desired widths simply through vegetation clearance.</p> <p>East of the Shildon bypass, Scrap yard material is spilling on to the footpath. A layer of 'terram' or similar has become exposed so black material sticks out of the ground. Fencing and landscaping are issues here.</p>
Hackworth Industrial Park to Car Park B at Locomotion	Narrow path with grass verges	No legally designated route but owned by DCC and a well-established route	Low	Joins with cycle ways within Locomotion, public footpath at Black Boy and Shildon Tunnel Branch and footpath from Shildon Station to Spout Lane which then rejoins the S&DR. Easily made suitable for cyclists and DDA compliance, but may need widening into grass verges at the town end.



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Location	Status	Length	Priority to increase access	Comments
Heighington Station to Darlington Borough Council Boundary	No access but access planned adjacent to the line to link with bridleway at Moordale Park.	43m no access	High	<b>LIVE LINE</b> Behind the No1 Locomotion pub, 43m is in private ownership with no planned access. This is the site of the S&DR Coal Drops and S&DR Cottages and is archaeologically sensitive.
Heighington Station to Darlington Borough Council Boundary	No access but access partially constructed adjacent to the line to link with bridleway at Moordale Park.	541m cycle access just built. 436m bridleway, but currently inaccessible. 719m no access	High	<b>LIVE LINE</b> There is currently no access to this part of live line and no footpaths that can be used to run alongside. Access to this route will require land acquisition. Land near Hitachi is due to be turned into a cycle way, funded by adjacent development. New hedgerow landscaping will obscure the line and create maintenance problems in future. The bridleway from the A167 is not DDA compliant and is currently blocked because heavy machinery has churned it up south of ALDI.
<b>Darlington Borough Council</b>				
Darlington Borough Council Boundary to Coatham Lane	No access, but partial parallel footpath at Whiley Hill	134m of footpath (no.11) to Whiley Hill could be used	High	<b>LIVE LINE</b> Most footpaths in this area run E-W so do not support access on the S&DR which runs N-S. Footpath no.11 runs parallel for 134m so could be used instead of a new path but would require a diversion to Whiley Hill Farm and back to Coatham Lane.

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Location	Status	Length	Priority to increase access	Comments
Coatham Lane to Whessoe Road	No access, then footpath 134m west of line which could be used to link with Whessoe Lane	No access for just over 1km, partial footpath access in the vicinity for nearly 1km.	High	<b>LIVE LINE</b> A1(M) crossing required – recommend using existing farm bridge on bridleway.  Can use vicinity footpaths to link with Patches Lane at Bridleway No.5 . or for whole length use Patches Lane which runs parallel on east side 630m away
Whessoe Road to North Road	No access, but Whessoe Road runs parallel (between 9 and 100m east) to live line – no pavements	2.8km	High	<b>LIVE LINE</b> Intervening development between Whessoe Road and live line at north end and increases towards Darlington. Waste ground close to the live line appears wide enough to accommodate an additional pathway for most of its length. Includes 1861 S&DR Engine Shed. Can link with cycle path to Heighington which joins Whessoe Road at Elmtree Street. DBC owns land on side of Whessoe Road which would allow widening for a cycle path. DBC owns land on both sides of North Road Station.
North Road to Skerne Bridge East Transport Corridor, Darlington (A66)	Cycle path (proposed) from Haughton to Skerne Bridge.		Low	North Road can be difficult to cross as very busy; the traffic island is very useful. This may require a light controlled crossing, or negotiating with Network Rail for a fenced crossing within the railway bridge
Skerne Bridge to	No access.	516m	High	<b>LIVE LINE</b>

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Location	Status	Length	Priority to increase access	Comments
Haughton Road				Creating a new access parallel to the line would require crossing the East Coast main line on a new bridge. Alternatively use Albert Road and Cleveland Street to Allan Street and pick up the line at the LNER Engine Shed
GNER Engine Shed to Haughton Road	No legal status, but must meet criteria for permissive path	283m	High	Part of route due to be retained as road by developer. Path from Allan Street needs widening through vegetation removal and some tree clearance to open views towards the junction between the East Coast main line and the S&DR. Then use Haughton Road and pavements – cycle route needs marking out.
Haughton Road to A66	Cycle path and footpath	2.6km	Low	Route well established with purpose made bridleway standard bridge
A66 to Fighting Cocks	Cycle path and footpath	2.5km	Low	Route well established
Fighting Cocks to Goosepool	Cycle path and footpath	1.47km	Low	Route well established
<b>Stockton Council</b>				
Goosepool to Urray Nook	Pavement beside main road to Low Goosepool Farm; then no pedestrian	2.6km	High	<b>LIVE LINE FROM OAK TREE JUNCTION</b>  Road is roughly parallel to trackbed, but diverts 96m away to the north for a stretch, so use old road instead up to Urray Nook Road.  There is a pavement on the north side of the old road adjacent to the old Works, eastwards towards Urray Nook Crossing. The road

Location	Status	Length	Priority to increase access	Comments
	access			west from here is quiet and therefore walkable, and could connect to the very old road which is very close to the track west of the A67 overbridge if it could be linked. A footbridge cantilevered off the north face of the road bridge would be ideal.
Urlay Nook to Allen's West	Urlay Nook Road is parallel to trackbed	1.09km or road; 1.11km of no access	High	<b>LIVE LINE</b>  Industrial estates and depots to the north may have spare land. If using the Urlay Nook Road, then 1.11km of new path is still required. The ex-MoD site to the north of the track plus the strip of Network Rail land that parallels the north platform of Allen's West station would be a possible route subject to the necessary agreements. Alternatively, it might be possible to find a way through the adjacent West Acres housing development. Land to south is private gardens and so no access possible, but there could be an opportunity to accommodate the Yarm Branch.
Allen's West station to Eaglescliffe Station Preston Park	Housing estates only. No access	956	High	Ideally land acquired from Network Rail could provide a route, but there is a way through housing which minimises the detour required. Establishing a RoW through 'Black Diamond Bridge' is the most desirable option.
Eaglescliffe Station to Preston Park	Quiet road (Station Road)	148m	Medium	Cycle route needs marking on <u>both</u> sides

Location	Status	Length	Priority to increase access	Comments
	then busy main road with pavements and cycle route in places, but not consistent	508m		
Preston Park to roundabout with A135 Concorde Way	Cycle paths on main road and pavements on both sides. Or use paths inside Preston Park to walk on line	1.7km	Low	<p>Inside Preston Park on the remains of the line only suitable for walkers as archaeologically sensitive. Potential to upgrade to DDA compliance or cycle route subject to trial excavation but low priority as adequate access available on road and pavement. Path from Preston Park joins with Queen Elizabeth cycle way as alternative. Or walk on the Teesdale Way. Both options off route.</p> <p>The Friends of the S&amp;DR are working with developers and planners to establish a much closer-to-the-line route through this section.</p>
A135 roundabout to 1825 Way (east end)	Pavements on A135. No access on 1825 Way	1.4km of no access on A66. 0.6km of no access on 1825 Way	High	<p>Wide verges with vegetation could be used to create cycle paths and footpaths, but very little space on 1825 Way. Crossing of the A66 which runs east-west is also not obviously arranged.</p> <p>This would not be necessary if the current discussions between the Friends of the S&amp;DR, planners and developers manage to achieve the closer route mentioned above together with Bowesfield Lane bridge and also protected land adjacent to the housing on the NE side of 1825 Way.</p>



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Location	Status	Length	Priority to increase access	Comments
St John's Crossing to Coal Staithes	Busy Road, car park and path	391m	Medium	Pedestrian crossing. Need safe signed route across car park – suggest the route of the trackbed is marked on the ground through insertion of different materials in the car park surface.
Coal Staithes to Yarm Town Hall	Footpath	651m	Low	Not suitable for bicycles and not DDA compliant at the footbridge over the ring road as it has steps.

## 10.0 Finding out more – gaps in our knowledge

This initial assessment of the 1825 trackbed has flagged up many gaps in our knowledge. These cover a number of areas to do with the early operation of the railway company, but also to do with the survival of remains. A number of discrete areas are listed below that merit further research. The list is not exhaustive but intended to inspire budding researchers or as a list of projects that might be eligible for local heritage funding to engage the local community. In some instances, the work is essential in informing the appropriate approach to conservation, interpretation and designation.

The North East Regional Research Framework (NERRF) for archaeology is due to be refreshed soon and should review questions on early railways and the S&DR in particular. The existing research strategy for early railways by Guy and Gommersall, should be used as a starting point to creating a research agenda for the S&DR. In addition to the encouragement of research by volunteers, both Historic England and the NRM (as part of the Science Museum Group) have access to Arts and Humanities Research Council (AHRC) funding for PhD study and have indicated subject to identifying suitable titles they would consider sponsoring doctoral research on the S&DR and related topics.

### Recommendation 18

The revised NERRF should include much more about the S&DR when it is revised. Alternatively, a new S&DR research agenda should be created which will be cross referenced to in any revised NERRF.

### *Archaeological excavations and research*

These can be run as community excavations. They are mainly small scale and can be tackled quickly. They of course need the owner's consent and that may not be forthcoming.

#### **1. Possible track bed remains near Witton Keep north of Phoenix Row.**

On the west side of the modern road just before the entrance to Witton Keep there is a grass covered linear earthwork running parallel with the modern road (Temp HER 555). This could be the line of the 1825 track which goes under what is now the access road, and ran down on the east side of the field wall or it could be the exit from an adjacent pit which linked to the trackbed. This should be the subject of a small scale trial excavation to test if this identification is accurate. If the track bed does survive, scheduling should be extended to here. The track bed already features on the S&DR Self-Guided Walk Booklet No.1 which may require updating in the light of the trial trenching.

#### **2. Possible track bed remains at Bank Well Road, Phoenix Row**

The 1825 line ran parallel to Bank Well Road on its east side (Temp HER 556). Between Sloss Lane and the start of Phoenix Row a faint line can be discerned in the field where the earthwork appears to survive below ground. However, until relatively recently, this strip of land was not ploughed and the line could simply be a reflection of different ploughing regimes. However, it is on the correct alignment and the lack of historic ploughing may be because of the presence of the earthwork remains of the line. If the earthwork is caused by the survival of the 1825 line, then it is vulnerable to plough damage and damage caused by heavy machinery passing through the field

gate in wet weather. The tithe map of 1839 shows sidings from the line opposite East Softley Farm; there is no evidence of these on recent aerial photographs. This should be the subject of a small scale trial excavation to test if this identification is accurate. If the track bed does survive, scheduling should be extended to here. The track bed already features on the S&DR Self-Guided Walk Booklet No.1 which may require updating in the light of the trial trenching.

### **3. Former opencast land west of Hags Lane (Brusselton Incline)**

The land to the west of Hags Lane was the subject of surface mining in the 1940s and evidence on the ground suggested that the incline plane had been destroyed here. However, the Google Earth aerial photography dating to 2009 shows that the incline appears to survive in one entire field immediately west of Hags Lane. If the survival can be confirmed through trial excavation, it should be designated.



*Plate 33. Two linear lines strongly suggest that the incline plane has survived the open casting of the late 20<sup>th</sup> century in this field.*



*Plate 34. The same view in 1945 showing the extent of the inline plane and its location in exactly the same place as the linear cropmarks above.*

#### **4. Phoenix Row (Temp HER 514)**

The terrace of houses at Phoenix Row was built shortly after the Etherley Incline went out of use. The incline is projected to run along the backs of the houses in an area of gardens, garages and the back lane. Small scale excavation should establish how well it survives. This could link with the above and an exploration of the possible weigh house (below) as part of a Phoenix Row community project.

#### **5. The site of the Etherley Engine House and water management (SM and D36360, Temp Her 504, 505 and E6).**

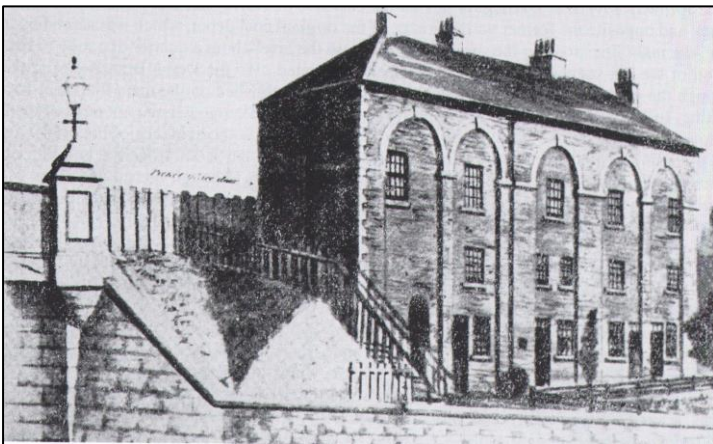
The site of the Etherley Engine House and its associated engineman's house (including the blacksmith's house, ponds and water system, including a possible reservoir north of the engine by the track side, should be investigated. Although in private ownership this is a key site for interpretation along this part of the line. Excavated remains will have the potential for display or reconstruction.

#### **6. Darlington Merchandising Station and Passenger Station, North Road**

Darlington's first purpose built station was commenced in September 1826 as a good's warehouse and completed in March 1827. It was a two storey building with the upper floor at rail level. (PRO RAIL 667/31). The interior was originally divided into three unequal units let to carriers at rents ranging from £20 p.a. to £30 p.a. Road cart access to collect goods was at ground floor level and operated by individual carriers. The means by which the waggon were emptied into the warehouse is not understood.



*Plate 35. Extract from an undated, but early, possibly contemporary painting of the line as working after the goods station was built between 1826-1827 – the goods station to the left. Original in Preston Park Museum*



*Plate 36. The passenger station as it was when converted into four cottages between 1835-43*

In 1830 the company considered converting two bays of the lower floor into cottages and in 1833 when a new Goods Station was built across the road, it was recognised that they needed to formalise and improve on the passenger offer. The directors got their Secretary to report on this and the outcome was the conversion of the warehouse to provide a cottage on the lower floor and a shop, booking office and waiting room above (PRO RAIL 667/298). The building also acquired a low platform, with a meagre shelter in the form of a short verandah bracketed out from the wall. The dedicated passenger station came into use in November 1833 with the dwelling house and shop being let to Mary Simpson at £5.p.a. in return for which she was to 'keep the coach office clean and afford every necessary accommodation to coach passengers' (ibid). On 9<sup>th</sup> May 1834 it was let to John Sedgewick for the same amount – he was allowed 2 waggons of coal a year for fires 'in the passenger waiting room' which he was to keep clean. In 1835 and 1843 further bays were converted into cottages. Once a new station was built in 1842 across the road, the building was used as an office for the company's extensive lime trade (lime from Weardale). The building was regarded as an obstruction and too close to the increasingly busy lines and its demolition was ordered in 1864 (Bill Fawcett 2001, 17-18).

Remarkably, the plot of land that the building stood on has not been developed although it is fenced off and is used for fly tipping. A wall that runs parallel to North Road abuts the later bridge (built 1856-7) and has a blocked doorway in it. This is probably later, but it is not clear. Given the importance of the building that once occupied the site, the plot merits some trial excavation in order to better understand the layout of the region's first purpose built passenger station and the world's first goods station. There is also evidence of structures on the walls abutting the railway line and this can also be seen on the wall which faces the railway line. There is therefore some vertical archaeology to record. Census returns for the area tell us about who lived here and the records in the Public Records Office include specifications and tenders for repair works.

The site should be the subject of trial trenching with a view to considering whether there is anything on site that merits exposing and landscaping as part of a future rail trail interpretation. If nothing survives, a landscaping scheme should be devised or a sympathetic use that will preserve the site in a form that suggests that the railway heritage is looked after. Whichever option is chosen, the project should include additional research using archival material and encompass other structural remains nearby which appear to be railway related – possibly walls from a depot yard. The information should be used to feed into an interpretation strategy using smart phone application technology or web based information to create virtual reconstructions of the building.



Plate 37. An interwar photograph suggesting that the site was used for possible temporary buildings?







Plate 38. The site of the first goods station and the region's first dedicated passenger station in 2016

## 7. Site of cutting between Brusselton village and the Milk Bridge.

This cutting was allegedly re-excavated for the 1975 celebrations and stone sleepers set into the ground surface. However, the sleepers have been inserted upside down in places and the cutting appears to be on a slightly different alignment from the rest of the incline plane. This should be tested archaeologically and if necessary the cutting restored on the correct alignment. It should also consider if there is still a platform here that could be conserved and displayed. The platform was there within living memory, but was not part of the 1825 works. Ground penetrating radar could also be used to establish to what extent the incline plane and sleepers survive below the village road.

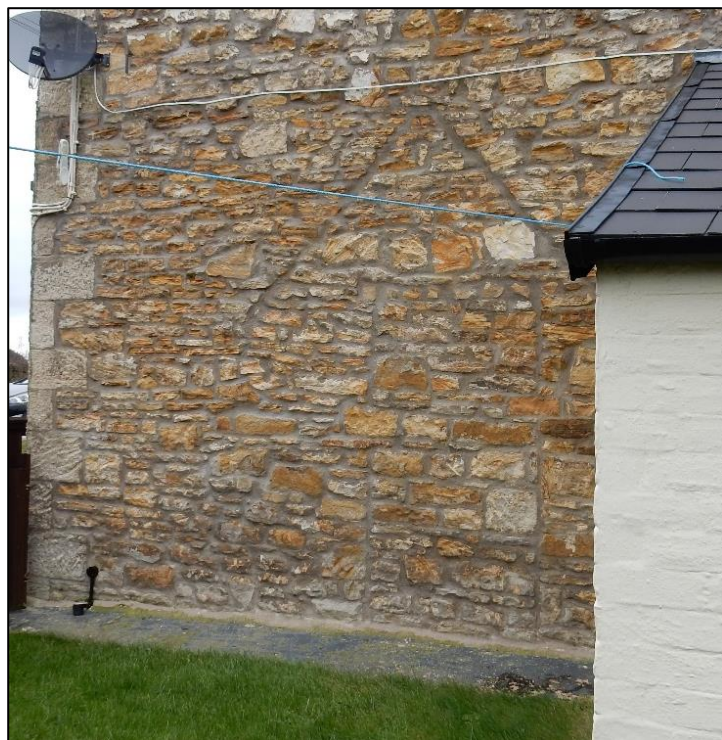
## 8. Coal Depots

We have some basic understanding of how the coal depots along the line were laid out, but further information is required to help inform possible conservation, interpretation and designation options. Trial excavation combined with additional archive research can help to establish layouts and methods of working over time. The coal depots which merit targeting include:

-  Heighington
-  Darlington (this will be a form of back yard archaeology)
-  Fighting Cocks
-  St. John's, Stockton

## **9. Hitching points to the inclines (SDR 51 and 517)**

Further research is required to better understand how and where waggons were hitched to the inclines and where facilities such as weigh houses were located and from what date. Research led excavation could uncover more information about the hitching up point from horse to incline plane powered by steam combined with additional archival research. The two areas requiring research are near No.1 Phoenix Row and at Bank Houses Cottages at Brusselton.



*Plate 39. Site of the alleged pay office and hitching point for accessing the Etherley Incline at Phoenix Row*

## **10. Footbridge between West Auckland and Broom Mill Farm (SDR. 78)**

On the north side of the embankment there is a stretch of walling that slopes. This sloping walling is used where the walls are abutting another structure. In this instance, the other structure is a below embankment bridge accommodating a footpath. This can be seen in the embankment on the south side where there is a small hole where the remains of a culvert, bridge or tunnel can be seen. Only the top of the arch is visible in the hole and it is clear that the keystone has slipped. On the opposite side of the embankment, the bridge can be discerned amongst collapsed rubble, the sloping wall and a ramp leading towards it. It should be excavated and exposed so that decisions can be made regarding whether it should be conserved or reburied.



Plate 40. Both sides of the buried accommodation bridge now buried beneath the embankment

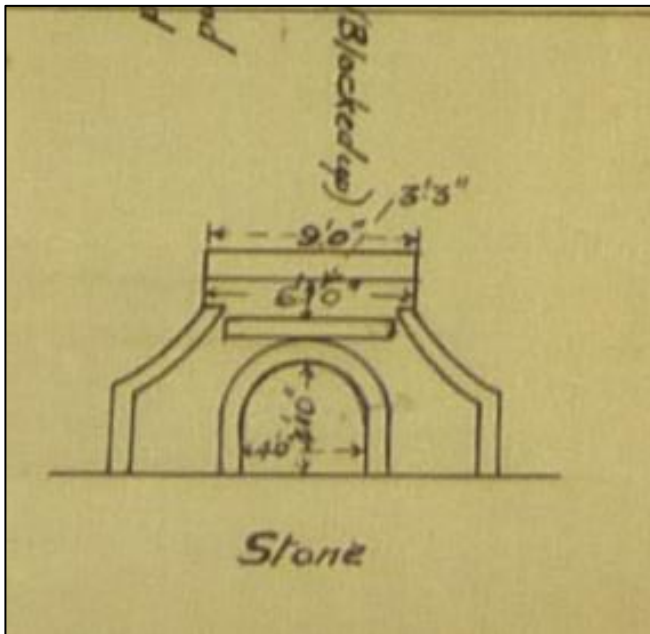


Plate 41. A sketch of the footbridge in 1923 by which time it was blocked up (NER trackbed plan from Search Engine, NRM)

#### Recommendation 19

A series of trial excavations and research projects should be carried out in order to fill gaps in our knowledge about the early days of the S&DR. These can be stand-alone projects run by local groups or part of a larger research project, however they should be centrally coordinated so that the information feeds back into emerging research strategies, designation enhancements, conservation projects and long term management.



## **11. NRM Locomotion**

There are a number of nationally important buildings in poor condition at Locomotion and conservation work is urgent. However, this needs to be informed by survey, statements of significance and in some cases excavation. Excavation can be an added attraction and encourages people to get involved in the museum who may not have been involved before. It is also a way to get more school involvement. The following structures should be targeted:

- 🏠 Hackworth's Soho works, the majority of which was behind his house, survived until the mid-20<sup>th</sup> century. The buildings were demolished and the site is now a raised grassed area. This should be investigated using geophysics and trial trenching to explore building survival. Depending on results this could inform further excavation, display and interpretation.
- 🏠 Hackworth's garden. There are references to his family keeping a garden with animals and growing their own vegetables. This would be an exciting research project that might uncover some of the everyday household items used by Hackworth and his family. It could inform future interpretation including a means to display the garden.
- 🏠 Hackworth's house has been the subject of research already by Guy and Hopkin but further survey work is required to turn it into a statement of significance that can inform future conservation and display plans and feed into an options appraisal for better income generating uses for the whole row of houses.
- 🏠 The Coal Drops. Survey work and additional research is required before urgent conservation is carried out.
- 🏠 The Goods Shed. The reconstructed ramp and coal cells may not be accurate. Further survey work and research is required to inform future work. This should include the Goods Shed buildings. It is generally in good condition however, so a lower priority.
- 🏠 The 'Black Boy Stables and out buildings'. Almost certainly not stables, but they may have been located to the rear. Excavation to the rear on vacant land could help to establish uses and further research and survey work could help to better understand the remaining buildings prior to their conservation.
- 🏠 Soho Shed. A very important building that requires a statement of significance and repairs to the roof.

### **Recommendation 20**

A large programme of conservation and management is required at Locomotion which needs to be informed by additional research leading to a better understanding of significance. This will also help to identify opportunities to improve the economic benefits from having the National Railway Museum located at Shildon.

## **12. Edward Pease's house, Darlington**

This is an incredibly important building in the history of the modern railway and despite its status as a listed building, its current state does not reflect its historic interest nor its national importance. The future uses of this building are potentially many and varied and its historic interest does not preclude the use of the shops staying at ground floor level, but their frontages would certainly need to be improved. The commercial viability of potential future uses needs to be weighed against the significance of the building and in order to do that some additional research is required to confirm the suggested phasing by Charles McNab (2011) for the building and a survey to identify what features internally and externally survive from Pease's time (if any). Some proposals have already been made to identify how Pease's house might have looked at various stages in its life and how it could be restored in the future along with an enhanced setting (Matthew Pease, architect).

The project to restore or at least enhance the appearance of Pease's house is a substantial one and will require the support of a third party trust or similar to oversee the works and the applications for grant aid; it will also need considerably more information about the house and some difficult decisions to be made regarding the practicality of restoring it to its early 19<sup>th</sup> century form.

Projects to enhance Pease's house should also explore the options to restore, at least in part, his gardens on the site of Garden Street car park. These could be preceded by archaeological excavations of the car park to help identify any surviving garden archaeology – another potential community archaeology project.

### **Recommendation 21**

Project work to enhance the significance Edward Pease's house and to run an excavation in the Garden Street car park should be instigated with the owner and other interested parties. This should lead to an options appraisal to test of additional uses would bring any public benefit.

### **Recommendation 22**

Once Statements of Significance (and trial excavations if appropriate) have been undertaken – a piece of work is needed to pull together all recommendations in terms of works needed in order to conserve and preserve key features/structures.

## **11.0 Improving intellectual access and interpretation**

There is a substantial amount of information about the S&DR and the personalities associated with it, but it is spread far and wide and is not always accessible. We need to shout loud about the S&DR and have a number of events running and we need to make the information as widely available as possible in order to encourage more people to take part in research.

The archives which include quantities of information relating to the S&DR are widespread and this makes researching any particular aspect of the railway difficult, expensive and time consuming.

The main archive is in the Public Record Office in London, but substantial archives also exist in Durham (The Durham Records Office and the University Special Collections), Darlington (Crown Street and the Ken Hoole Collection), Stockton (local library), Northallerton (North Yorkshire Records Office), Manchester (Barclays (Backhouses) Bank), Mansfield (the Coal Authority) and York (the NRM Search Engine). There are also a number of smaller private archives such as the John Proud Collection.

Not all of these archives have online catalogues and so it is not even possible to narrow down what is held there before visiting. This is very limiting for researchers and so it is recommended that funding is sought to get all archives available as a catalogue on line as a minimum level of access.

Some of the more important archives should be made fully accessible online so that they can be accessed from around the world, freeing up the resource so that research can be conducted and gaps in our knowledge filled from anywhere in the world. The catalogues and resulting fully accessible archives can be made accessible via each organisation's own web site and with links from Access 2 Archives, but also with links from a central point such as the Friends of the 1825 S&DR web site. From the user's point of view the host web site does not matter as long as the archive is picked up in popular search engines, although there are distinct time saving advantages to having everything available on one online catalogue.

The Friends of the S&DR, using HLF grant money, have already scanned and catalogued some private archives, but as yet these are not available online. A proposed second HLF bid by the Friends would seek to put these archives and other resources on line and could, subject to agreement, put the historic mapping collated for the GIS part of this project into the public domain.

Archive	Nature of content	Current accessibility	Recommendations to improve access	Contact made during the trackbed audit?
PRO, Kew	S&DR minutes, reports, invoices, specifications, letters to and from S&DR staff such as Hackworth	Catalogue available online	Project to scan all early S&DR material and put online	Y
DRO, Durham	Stephenson's and Overton's maps of proposed routes, two books of reference; Acts of Parliament; some OS mapping; some books	Catalogue available online	Scan mapping for proposed route and associated books of reference only.	Y
North Yorkshire Records Office	Records relating to landowners at the Stockton end of the line including Benjamin Flounder who purchased land at Goosepool in anticipation of a railway	Catalogue available online	-	N
Stockton library	Some useful local history publications.	Catalogue available online for books. A search on the Heritage Stockton catalogue for S&DR produces nothing and a search for railways unsourced information.	-	N
University Special Collections, Durham	Church as landowner collections, tithe maps, historic mapping of 1820-30s, proposals maps for railway bridge at Stockton	Catalogue partially available online; large collections awaiting accessioning. Tithe plans and apportionments already scanned and available online	-	Y

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Archive	Nature of content	Current accessibility	Recommendations to improve access	Contact made during the tracked audit?
Crown Street, Darlington	Historic photographs, pre OS plans, newspapers, census returns, trade directories	Only books and pamphlets catalogue available online; maps, photographs etc still on card index	Upgrade online catalogue to cover S&DR material and select material for access via web	Y
Ken Hoole Collection, Head of Steam Museum and NERA	Extensive collection of railway material covering all north east railways, but includes S&DR material, 3 vols of railway views on the S&DR, plans, Acts of Parliament, S&DR Anniversary material, S&DR locomotive material; secondary source material; items, tickets, posters, teaching materials, S&DR Locomotives.	Parts of collection catalogue is separately set out in individual PFDs and Excel spreadsheets which can be downloaded, but searches would need to be carried out individually for each separate collection. They do also have data already on a MODES database which is set up for transfer to web sites. The museum would prefer images to be watermarked and low resolution so that money could still be made from scanning. This may be an obstacle as the point of scanning the images is to be able to use them remotely.	Upgrade catalogue to online (whole collection) and potentially new web site. Select early S&DR material (pre 1830) for online access	Y
NRM Search Engine, York	Home of the Hackworth letters some of which are transcribed (although not all correctly); old rail plans; some photos, a few accessions	Catalogues not available online and not even available to search in the search room. Exists as a series of excel spreadsheets on staff PC.	Upgrade catalogue to online (selection of S&DR material)	Y
Barclays	Home of the original shareholders' certificate	Catalogue not available online	Create catalogue and scan material	N, but Friends of the S&DR made contact

Archive	Nature of content	Current accessibility	Recommendations to improve access	Contact made during the trackedbed audit?
Friends of the 1825 S&DR	Scanned images of John Proud Collection (1970s); some private collections, transcriptions of 1821 and 1823 Acts of Parliament; transcription of Stephenson's book of reference (could be housed with DRO material); transcription of Henry Pease's speech; walks leaflets available as PDFs for 7 sections of S&DR line	Information available digitally and already have a web site with an uploadable facility	Upload existing archives to web site and create new pages for walk leaflets and other recreational information (current web site focuses on conference and papers)	Y

Recommendation 23.

Discussions should take place with the main archival holders with the aim of working together to improve the access of the S&DR archives via publicly accessible catalogues where there are none, and/or access to records, scans and transcriptions via the internet. This could result in enhanced access to individual archives or the creation of a new S&DR archive.

## 11.1 Coherent interpretation

Key to making the most of the S&DR is an inspired, overall, coherent scheme of interpretation. This will need to be developed from material in this report through an interpretation plan. The plan will need to develop approaches to interpretation along the line and related sites but also define a 'house style' or brand using standardised fonts, colour schemes, logos, signage and themes for all S&DR projects and literature. Reflecting the international importance of the S&DR between 1825-30, this should be undertaken to a very high standard and use innovative approaches such as smart phone apps and IT which are largely vandalism free; as well as conventional mediums such as public art, interpretation boards and printed material. To that end costed ideas and proposals should be obtained from the best consultancies in the UK. In the spirit of having one approach to management and creating a coherent asset, the S&DR interpretation scheme will need to encompass the entire 26 miles together with other related sites (such as Edward Pease's house or Daniel Adamson's Coach House). It will need to explore whether the same S&DR 'brand' and artwork should also be used at the Head of Steam Museum and Locomotion. It could also revisit the name of the Head of Steam museum. It would be worth exploring to what extent this theme is also reflected in the modern Bishop Line railway service.

### Recommendation 24.

An interpretation strategy should be commissioned to design a coherent approach to interpreting the S&DR and to share knowledge about its significance more widely.

## 11.2 S&DR Engineers & Education

The success of the S&DR was largely due to the work of notable engineers and in particular George and Robert Stephenson and Timothy Hackworth and his family. It would be a testament to their skills if there was to be a S&DR engineering or surveying element to accredited courses run in regional further education colleges. The railway triangle in Darlington has a number of active groups adept at restoring locomotives or building them from scratch. The A1 Steam Locomotive Trust based at Hopetown Carriage Works, through its subsidiary Locomotive Construction Co Ltd, built the 60163 Tornado steam locomotive. The Darlington Railway Preservation Society used to run an apprenticeship course for young people many years ago by helping them to restore locomotive engines. The scheme has not been active for some time and would not meet the standards of accreditation nowadays, not least because they have no safe place to work from. However, if links could be established with colleges in the area teaching engineering skills, or surveying skills, with the railway triangle then there may be scope to have a module or foundation course that involves placements here. Indeed, there may be scope to construct a new building, possibly on the site of Kitching's Ironworks, that could be a S&DR college building and thus free up the Goods Shed for a use more suited to its limited space, but still strongly associated with the railway. This would bring people of all ages looking for training into the area, forge links with Hitachi and possibly help to generate more income for refreshment facilities at the museum. This is not dead knowledge. Steam power is becoming popular again with more than 100 steam powered lines operating in the UK now and more lines are set to become active. And the skills that are learned here are transferable to other engineering jobs.

Discussions should take place with a number of further education establishments and the Institution of Civil Engineering and the Institute of Mechanical Engineering,<sup>58</sup> to explore options to use the S&DR and its history to create a S&DR qualification and take it forward in the training of new engineers and surveyors. While many further education colleges look to attract young people, our S&DR qualification should also target older people seeking to retrain and to pass on skills from older people with traditional skills to younger people.






Hitachi is now constructing new trains based on the west side of the 1825 S&DR line at Newton Aycliffe and a link has already been established between them and UTC South Durham on the east side of the 1825 S&DR line.

Educational bodies that merit discussions with include most importantly:

#### *UTC South Durham*

UTC South Durham opens in September 2016 and will be the first University Technical College in the North East. It will specialise in advanced manufacturing and engineering, sectors that are vital to the future of the North East offering opportunities for highly skilled young people. It will be built on Aycliffe Business Park, a business area where over 10,000 people travel to work every day. The location deliberately reflects the UTC's specialism placing it next to some of the most advanced manufacturing and engineering facilities in the country, enabling students to access fantastic real-world experiences close-by. **The University of Sunderland, Hitachi Rail Europe** and **Gestamp Tallent** are the founding members of UTC South Durham and are committed to offering fast track routes to students who are successful at the UTC. This includes enhanced offers for UTC students who go on to study at the University, guaranteed interviews with Hitachi Rail Europe and Gestamp Tallent if suitable positions are available and apprenticeship places for Gestamp Tallent exclusively for UTC students.

Other further education colleges that may have an interest:

-  Newcastle University
-  Durham University
-  Teesside University
-  Open University re foundation degree
-  Universities in countries influenced by the S&DR e.g. Baltimore and Ohio

#### Recommendation 25.

Discussions should start with regional further education establishments, major engineering employers and the relevant professional organisations with a view to creating an S&DR Award for innovation in engineering, surveying and architecture. Options to create an S&DR Award apprenticeship or module should also be explored.

<sup>58</sup> IMechE run annual Vision Awards celebrate the achievements of engineers who are not only doing excellent engineering, but who are inspiring other young people into the profession.



### 11.3 Raising the profile, S&DR events

The annual conference run by the Friends of the 1825 S&DR was the start of a series of S&DR related events but if the profile is to be raised, crowd funding to succeed and people engaged beyond 2025, then events need to continue aimed at a variety of different audiences. The honeypot sites of Locomotion, Head of Steam (and Crown Street library) and Preston Park (and Stockton library) should collaborate on alternating S&DR (**Sharing & Displaying Resources**) events and displays each year with opening dates on the 27<sup>th</sup> September (so one every three years for each organisation). Other organisations should sign up to agreements to share their resources too such as Durham University Special Collections so that some of their material can be aired on the S&DR. An opportunity to do this is now available with the recent announcement of funding for the Great North Exhibition which it is proposed will bring Stephenson's Rocket to Newcastle. This may be an appropriate place to exhibit Locomotion No.1, the Royal George and Sand Pareil too. It is also an opportunity to more generally promote the role of the S&DR in creating the modern railway. It is also recommended that the iron superstructure of the Gaunless Bridge be moved to Locomotion, the National Railway Museum in Shildon.

#### *The Faces behind the S&DR*

A display that may merit organising soon and possibly repeating in 2025 could be about the personalities behind the S&DR and this would require cross collaboration. It could be located at any of the honeypot sites or it could move between them. It should seek out all the images, photographs or prints of the S&DR personalities and display them with a biography for each one and what they did for the S&DR. It could be supported with census documentation, obituary information from Grace's Guides and newspaper cuttings, but most of all each person should be depicted.

#### Recommendation 26.

The major curatorial organisations should combine to look at creating a series of rolling exhibitions where S&DR resources are shared and used as part of exhibitions designed to share information about the role of the S&DR in forming modern railway travel.

## 12.0 Taking you further on the S&DR

The recommendations in this report have concentrated on the creation of a 26-mile-long recreational trail with conservation, interpretation and enhanced protection. However, part of the significance of the line is that by 1830, it consisted of a series of branch lines too and so was a regional network of railways that we would recognise today. We need to extend this assessment to the branch lines that pre-date late 1830 but which were linked to the main S&DR, namely:

-  Yarm
-  Black Boy
-  Croft
-  Haggerleases
-  Middlesbrough

The Darlington branch line has been included in this report because it opened on the same day as the rest of the line. The 1830 extension of the S&DR mainline across the River Tees to Port Darlington, which would become Middlesbrough will require the engagement of Middlesbrough Council.

These need to be considered for possible inclusion in any designated area.

Recommendation 27.

This Heritage Trackbed Audit needs to extend to cover the branchlines so that we have a better understanding of what survives and whether designation needs to extend to the branchlines. It is also an opportunity to spread the economic and social benefits of the S&DR to a wider area.

## **12.1 Locomotion and the Head of Steam Museum**

The appendices briefly raise the current offer at Locomotion in Shildon (Appendix 3) and the Head of Steam in Darlington (Appendix 5). Both are failing to make enough beneficial economic impacts in the wider area, neither are currently sustainable, both have substantial conservation and repairs works that are overdue and yet both are vital if we are to succeed in celebrating and using the S&DR to improve economic regeneration. Funding to address the conservation and repair bills may be possible, but in order to be eligible there has to be a commitment to long term maintenance. It is also vital that changes are made so that more income is generated. It does not necessarily require abandoning free admission at Locomotion, but there do need to be more ways for visitors to spend money at both sites. At Locomotion there is scope to spread visitors across more of the site and to create more outlets for spending at the Soho end and more one-off displays, events and activities that could impose a charge. There is also scope at Locomotion to generate income from reusing some of the historic building stock in sympathetic ways. The current reliance on funding from the local authorities and the NRM is clearly not generating enough income for maintenance and it is time to review how these organisations are run and funded before major funding contributions are sought.

Each is going to require major investment to repair the historic buildings. However, it also requires revisiting the street signage at Locomotion and the displays inside the buildings, plus the hospitality offer and shopping opportunities especially at the Soho end.


The works to the Head of Steam Museum require removal of modern materials externally and making good and some decorative repair works internally. The displays also need some further thought so that they respect the layout of the buildings and to take advantage of the cellar space (Archaeo-Environment 2012). A hospitality offer needs to be reintroduced where access requires no payment. There is also the issue of whether to bring the Goods Shed back into the museum's management and paying for essential works and refitting internally.

## **12.2 The S&DR marathon**


Well the line is 26 miles long! What about the 27<sup>th</sup> September each year starting in 2025? This would be an ideal opportunity for private sponsorship.

### 12.3 Paying for the S&DR Rail Trail


The capital works associated with the costs of creating access to the trackbed and any associated conservation, enhanced designation and interpretation will need considerable support from agencies outside the three local authorities. The following sources of potential funding have been identified for capital works:

 Heritage Lottery Fund (works will have to be accompanied by clear outcomes for the heritage, communities and people). The major aspects of the work will need to apply for a major heritage grant which is competitive nationally. Other smaller grants assessed at a regional level can be applied for discrete projects by various individual groups, schools, councils and museums.


 The Heritage Enterprise fund run by the HLF can help communities repair derelict historic places, giving them productive new uses. By funding the repair costs and making these buildings commercially viable, the fund intends to breathe new life into vacant sites. Not-for-profit organisations work with private partners to generate economic growth, and create jobs and opportunities in those places that need it the most. This fund goes up to £5 million.










 Community Business Fund launched in April 2016 with a national budget of £10 million. Grants will be awarded between £50k - £300k to community not for profit businesses and expect there to be some match funding of at least 25%. It can be used to purchase buildings, renovate and adapt for new uses. Applications run from 1<sup>st</sup> June 2016 and then other rounds of funding in July and October. Projects applying for this grant may have to avoid using HLF money. This is a very competitive fund with only 5% of applications succeeding and so it must show a benefit to the local community. Projects need to meet one of the following criteria:

- Reduce social isolation
- Improve health and wellbeing
- Increase employability
- Create better access to basic services
- Improve local environment
- Enable greater community cohesion
- Foster greater community pride and
- empowerment

 Neighbourhood funding from local county councillors.

 County Durham Environment Fund.

 European Agricultural Fund for Rural Development (EAFRD). The fund is £10.5m and of that £5.5m is specifically for tourism. Visit County Durham are working with the NELEP, Rural Payments Agency and a range of partners to finalise the fund details and call content in the hope that they will be able to issue the first call for projects in September. European funding is still available until such time that the UK is no longer part of the EU. However, applying for such funds should be treated as a priority.

-  Other tourism funds currently being explored by Visit County Durham including Discover England for projects up to £250k and particularly for projects which join up existing attractions, especially where bikes are used. There are two rounds of funding, the first is now until 5<sup>th</sup> July 2016, the second is in 2017.
-  S106 agreement funding and works required as a planning condition. Some works to either help inform the nature of development or to mitigate the impacts of development can be developer funded. Some land has already been identified for new access to the S&DR line at Newton Aycliffe through such mechanisms.
-  The original S&DR relied on private investment and this will also need to be sought for the S&DR Rail Trail and events from major businesses along the route. Sponsorship for specific events may be possible (e.g. S&DR marathon) and also through charities such as Sport Relief.
-  Crowd Funding can also be used to encourage railway enthusiasts from around the world to contribute – it has recently been used to fund a number of archaeological excavations.
-  Area Action Partnerships can be approached for smaller sums of money to support elements within their geographical coverage (Teesdale AP for Etherley, BASH for Bishop Auckland and Shildon). Also some additional Welfare funding can be distributed through them because of the health benefits of walking.
-  Brightwater Landscape Partnership – lottery funded so need to avoid double funding, but there are opportunities for partnership working.
-  Local Transport Plan funding for paths.
-  Railway Paths Ltd is a specialist charitable organisation which owns and manages a portfolio of former railway land to provide routes, roads and paths suitable for cycling, walking, horse riding and wheel-chair use. They also manage the properties held by Sustrans, and raise funds through their property portfolio.
-  Heritage Action Zone: The S&DR could apply to be made into a Heritage Action Zone, or specific parts could be identified such as the railway triangle at Darlington or all of Shildon. A heritage action zone can help regenerate a wider area such as a place in decline, a whole town, or a conservation area and it harnesses Historic England's expertise and resources to help. To be considered for Heritage Action Zone status an area needs to be of significant historic interest, and able to contribute to the social, economic and environmental needs of a place. On that basis the S&DR or parts of it are eligible. If the S&DR becomes a Heritage Action Zone, Historic England are able to provide:
  - Research into historic sites or buildings
  - Help with engaging local communities
  - Grant aid - from Repair Grants to Capacity Building Grants
  - Advice on repairing and finding new uses for a building

- Advice on planning policy
- Condition surveys
- Historic Area Assessments and characterisation reports
- Help with updating entries on the National Heritage List for England
- Training in how to assess the significance of historic places
- Help with identifying places that could be listed
- Networks and contacts that may bring other key players to the table

To apply for Heritage Action Zone status the organisation applying must:

- Be part of a partnership, which could consist of public, private and third sector organisations
- At least one local authority must be actively involved in the application
- Each partner must be committed to delivering sustainable long-term growth in the historic area in question
- The project should be capable of delivery within three to five years

## **12.4 Who is going to do all of this?**

At the beginning of this report we suggested that although the S&DR runs through three local authorities and is managed for about half its length by Network Rail, for management to be successful, for activities and applications for funding to be co-ordinated and to create a 'product' with instant identification, the lead needs to be taken by one appropriately qualified organisation with representation from the others. Someone needs to fund raise, commission work, oversee quality control and get out on the ground themselves and start generating interest and projects and profitable associations. That will cost money but where their salary is administered doesn't really matter. When local authorities are losing staff, it is difficult to ask for more, but this post should reap benefits and bring in income. It should be funded by the main stakeholders so that the costs are spread. The right person will have an interest in the S&DR and have contacts with the right people. They will have experience in applying for and getting money from other organisations. But they also have to be commercially and business minded. They need to take risks, come up with innovative schemes that balance conservation with economic sustainability, they should look to invest in property that can make an income, look to spend money to make more and in that respect they may not be suited to being located under the umbrella of a local authority. Therefore, the location of this S&DR Co-coordinator may be better managed elsewhere. Network Rail clearly don't have the expertise, although their input is vital for their expertise in running a railway. It may be difficult to get these skills in one person. They will certainly need the support of a team who can fill the skills gaps

## **12.5 Stakeholders, winning friends and influencing in the region and beyond.**

There are many stakeholders who are also important in order to achieve a harmonious level of management and support for the S&DR and who need to buy into the vision, although their level of involvement will vary. Further there are organisations which currently have no vested interest in the line itself but which may have expertise, assets with economic links or historic associations or private industry experts with a keen commercial eye and an ability to contribute in kind or financially. An important element in the successful long term

maintenance of the line is also the local community, school and volunteer groups. The following is a list of potential partners that should be involved in the management of the line.

Stakeholder	Their role	Any contact established during project?
Darlington Borough Council	Tenants or owners of heritage assets associated with the S&DR (North Road Station, Crown Street Library Local Studies Collection), planning and economic regeneration authority. Access to European funding. Source of political support.	Y
Durham County Council	Owners of heritage assets associated with the S&DR, planning and economic regeneration authority. Access to European funding (while it is available) and strategic tourism authority. Source of political support and neighbourhood budget funding.	Y
Local Members of Parliament	Already very supportive having organised an adjournment debate in the House of Commons on the S&DR – will want to be kept informed and help as and when appropriate	Y (via Friends of S&DR)
Stockton Council	Owners of heritage assets associated with the S&DR, planning and economic regeneration authority. Access to European funding (while available). Source of political support.	Y
Middlesbrough Council	Local planning authority which includes the major extension of the S&DR line in 1830 across the Tees to create Port Darlington which was to become Middlesbrough.	N
Durham County Area Action Partnerships (Bishop Auckland and Shildon AAP and Teesdale AAP)	Source of local community support and funding – possible source of volunteers	Y TAP only
Network Rail	Owner of live trackbed and other associated assets. Their support is vital to help protect structures still used and to help work towards new uses for redundant structures such as signal boxes and engine sheds. It may also be desirable to acquire structures from their ownership when disused.	Y

Railway Heritage Trust	National body with responsibility for the care and grant aid of heritage railway buildings in the ownership of Network Rail. Its scope is buildings and structures either owned by Network Rail or part of the Highways Agency Historical Railways Estate. Its objectives include assisting the operational railway companies in the preservation and upkeep of listed buildings and structures, and in the transfer of non-operational premises and structures to outside bodies willing to undertake their preservation. The Trust achieves its objectives by giving both advice and grants.	N
Railway Paths/Sustrans	National charitable bodies with responsibilities for developing and maintaining former railway land for access and recreation.	N
National Railway Museum and Friends of the NRM	Part manager of Locomotion at Shildon. Key visitor attraction and hub for 2025 events. Potential economic nodal point for regeneration and links to other attractions.	Y
Head of Steam Museum and Ken Hoole Collection	Managed by Darlington Borough Council. A key visitor attraction and hub for 2025 events. Potential economic nodal point for regeneration.	Y
Hitachi	Currently taking the railway infrastructure into the future. However, they should be involved in celebrating its past. Access to new sidings for potential events. Possible source of private finance or business expertise. Potential partner in the creation of a S&DR engineering apprenticeship scheme.	N
The National Trust	A charity which owns no entry fee attractions in Durham – a gap identified in Durham’s tourism strategy. Could they have a role in managing the Hackworth/Soho cluster at the NRM, the North Road Group at Darlington or areas of countryside?	N
Landmark Trust	Could they have a role in managing the Hackworth/Soho cluster at the NRM?	N

A1 Steam Locomotive Trust, North East Railway Association, Darlington Railway Preservation Society, North East Locomotive Preservation Group.	Access to locomotive events in Darlington, source of volunteers, partners in S&DR engineering apprenticeship scheme	Y - NERA
Local history groups, Brusselton Incline Group	For advice and volunteer support. Access to material for displays	Y BIG
Friends of the 1825 S&DR	An umbrella group willing to take a lead on the conservation, protection and designation of the line, a source of volunteers, a third party to apply for funds, potential managers of heritage assets, source of expert advice	Y
Heritage Lottery Fund	Potential source of funding	Y (via Friends of S&DR)
Brightwater Landscape Partnership	Potential source of funding (avoiding double funding with HLF), potential source of volunteers, partners in projects	Y
Teesside, Durham, Newcastle, Northumbria & Sunderland Universities	Input into any future S&DR apprenticeship scheme; sourcing students for research projects to fill gaps	N
Historic England	To review designation status, support for WHS nomination if required, access to specialist advice, potential source of Heritage at Risk funding	Y
Private owners	Many assets, such as taverns and former S&DR houses are privately owned and the co-operation of owners in sharing the vision for the future will help	Y (some)
Local businesses and entrepreneurs	The area has to improve its hospitality offer and this is best achieved with local investment, although Visit Durham can help small businesses to raise standards.	N



Other major attractions in the area such as Beamish, Elvet Arches, Durham Cathedral, Stephenson's birthplace, Bowes Museum, Causey Arch, Stainmore Railway Company, South Tynedale Railway, Bowes Railway.	To combine forces to draw in visitors and share them. To make joint applications for funding. To share accessions. To share expertise, such as industrial engineering at Beamish. To borrow accessions, to coordinate exhibitions and events.	N
Local residents	To be welcoming to visitors and to participate in decision making so that their concerns can be addressed.	N
Durham University Special Collections	Curator of archives that relate to the S&DR – usually church owned land.	Y
PRO - Kew	Curator of RAIL archive.	Y
Durham Records Office	Curator of some archives relating to the S&DR.	Y
Local colleges and schools, especially Hackworth School in Shildon and Corporation Road in Darlington	Source of volunteers, help with engagement.	Y (some via Friends of S&DR)

In addition to regional stakeholders considerable work is also need to engage with national and international heritage, tourism and economic development bodies. The following is an initial short list which needs to be developed to ensure as wide an audience as possible, to access funds at a national level and to better understand the influence of the S&DR internationally.

The development of corporate links with industry and private capital is also important, both regionally and nationally. No formal contact has been made with any of these organisations during the course of this project.

Stakeholder	Their role
Heritage Alliance	A coalition of over 100 independent heritage organisations. They brief opinion-formers in the Westminster government and beyond on the value of heritage and the contribution that independent heritage organisations make to contemporary society.

<p>Europa Nostra</p>	<p>Regardless of the outcome of Brexit, there are benefits in sharing knowledge at a European level. This organisation represents a rapidly growing citizens' movement for the safeguarding of Europe's cultural and natural heritage. They consist of 250 member organisations (heritage associations and foundations with a combined membership of more than 5 million people), 150 associated organisations (governmental bodies, local authorities and corporations) and also 1500 individual members. They lobby for cultural heritage in Europe; celebrate excellence through the European Heritage Awards organised by Europa Nostra in partnership with the European Union; and campaign to save Europe's endangered historic monuments, sites and cultural landscapes.</p>
<p>Institution of Civil Engineers and Institute of Mechanical Engineers (IMechE)</p>	<p>ICE supports civil engineers and technicians by awarding professional qualifications, ensuring they work to high standards, and helping them to develop their careers. They also work to inspire school students about civil engineering to influencing government investment in infrastructure. They can help with the creation of a S&amp;DR engineering qualification. IMechE seek is to improve the world through engineering by inspiring the next generation, developing professional engineers and setting the agenda. They have Vision Awards celebrating young engineering talent which this year was awarded on the 28<sup>th</sup> September, remarkably close to the S&amp;DR anniversary date.</p>
<p>Standing Conference on Early Railways/Mainline Railways</p>	<p>A group which alternates between early and mainline conferences but where neither side find easy to accommodate the S&amp;DR believing it belongs to the other!</p>
<p>Overseas Railway Preservation and Industrial heritage bodies such as the Baltimore and Ohio Railway</p>	<p>Help in understanding the influence of the S&amp;DR in railway development across the world. Comparative studies need to be made to ensure that the international influence of the S&amp;DR can be better understood and to test to what extent other Stephenson era railways still survive across the world.</p>

Recommendation 27

Works needs to start in order to engage with national and international heritage, tourism and economic development bodies so that stakeholders can help to reach a wide audience and build up a critical mass of audience development in the area, to access support, training, funds and expertise. Stakeholders can also help to work towards coherent management of a high standard, and extend the positive legacy of the S&DR to present day generations.

## **14.0 Conclusion**

The Stockton & Darlington Railway marked a significant milestone in the creation of the modern public railway that we would recognise today. Between 1825-30, it was the S&DR that started the process of running a public and permanent modern transport infrastructure that was no longer tied into one business and which commissioned, tested, improved and innovated its way into the history books. It was here that locomotive power suitable for longer and frequent journeys was made reliable and it was here that passenger travel became frequent and commuting by train began. It was here that the need for specific passenger facilities was identified and the railway station evolved from the humble coal and limestone depot into something more accommodating. This was no waggonway, but a mainline railway with branchlines and a fleet of locomotives all well established by 1830.

The S&DR was where George Stephenson set out his model for constructing and running a railway and where he tested his skills in survey and engineering which helped him go on to offer his services at the Liverpool & Manchester Railway. It was at the launch of the S&DR on the 27<sup>th</sup> September that engineers and financiers attended from the rest of the UK and the world to see for themselves the extent to which a railway might be feasible in their part of the world. It is no coincidence that some of the other earliest railways were founded by people who attended the opening of the S&DR first. It was Pease that instructed Hackworth to make visitors from other railway companies from the States, France, Prussia and other UK companies welcome and to work with hem testing the locomotives to prove their reliability and efficiency. Without the S&DR's international influence, the railways that followed may well have been delayed and the adoption of the travelling locomotive taken a different path.

The fieldwork carried out for this report has shown that the level of survival is astonishing given that the very rapid process of change that resulted from the railway, was also to result in growth and development, innovation and change resulting in some early losses, such as Darlington's Merchandising Station commissioned in 1826 and demolished in 1864. Despite these changes, most of the line survives and about half of it remains in use as a railway. The three S&DR inns that were to become the prototype for a station still survive. The fact that the Railway Tavern in Darlington has remained as an inn since then and has not even changed its name is highly significant.

However there have been losses, many of them since the last major celebrations of 1975. Lessons need to be learned and the celebrations of 2025 preceded by a programme of conservation and policy to protect these internationally important remains. The surviving remains of the trackbed and associated structures are not adequately protected through designation or the planning process. Many are suffering from a lack of maintenance.

This report outlines a series of opportunities for heritage led regeneration along the line which through enhanced access, community events, improved conservation and management, can create an asset twenty-six miles long through areas of low economic output which will encourage visitors from across the world to explore the embryonic days of the modern railway. In doing so, there will be opportunities for public and private investment in providing improved services and a greater sense of pride in the important role the S&DR had in developing the world's railways. By using the Action Plan which accompanies this report as a starting point, it should be possible to ensure that the remains of the 1825 S&DR will merit a visit from the other side of the world.

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