Independent Reporter A

Reporter Mandate – Coal Dust Spillage Costs
Final Report

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Reporter Mandate - Coal Dust Spillage Costs

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Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Initial
0	1	Draft Report compiled	07/03/08	PRE/RS
0	2	NR Comments added	26/03/08	PRE
1	0	Final Report	02/06/08	PRE

Content

1 Introduction

1.1 Remit

1.1.1 The costs of coal dust spillage are currently recovered through a 20% mark-up on the variable usage charge (track element only) for coal traffic, which raises around £5 million per year. As part of the Strategic Business Plan, Network Rail has estimated the costs of coal dust spillage to be £7.1million per year. Network Rail has outlined five options for dealing with these costs, with its preferred option to keep the existing mark-up but levy a rebate for operators who could demonstrate that they are taking steps to minimize spillage, for example through best practice loading techniques. EWS have challenged Network Rail's estimates stating that proactive interventions such as vacuuming coal spillage could reduce costs to around £1 million per year.

1.1.2 The purpose of this mandate is for the Reporters to review Network Rail's and others estimates of coal dust spillage costs and provide an estimate of efficient incremental costs of coal dust spillage (regardless of approach).

1.1.3 A short study is to be carried out over a four-week timescale, starting in early February 2007 and culminating in a draft final report in early March.

1.1.4 The purpose of the work is to provide an estimate of the efficient costs of coal dust spillage. This will involve:

- A review of the Network Rail cost calculations given in the Strategic Business Plan;
- A review of the cost calculations provided by other parties, for example EWS;
- Meetings with Network Rail engineers to discuss coal dust spillage costs;
- Discussions with other interested parties such as EWS, other freight operators and terminal owners;
- A limited number of sites visits (across one or two days) to see the effects of coal dust spillage;

1.2 Background

1.2.1 The growth of imported coal is expected to rise throughout CP4 (Control Period 4 – 2009 to 2014) which will have a significant effect on coal loadings particularly from the eastern sea ports (Immingham and Hull Docks) and the Anglo-Scottish routes from the Port of Hunterston and the Ayrshire Opencast coal fields to the Aire and Trent Valley Power stations in South Yorkshire and the Midlands.

1.2.2 Network Rail has published details in their Route Utilisation Strategy for Freight describing the coal routes and growth predictions in more detail. For the purposes of calculating spillage based on coal tonnages and kilometres that coal is moved across the network, Network rail have used ACTRAFF data which is summarised for each Territory below.

Territory	MGT	Distrib.	MGTKm	Distrib.
LNE	1,125.39	59%	8,957.48	54%
Scotland	372.10	19%	3,408.06	20%
LNW	228.39	12%	2,602.20	16%
Western	157.06	8%	1,584.61	9%
South East	28.81	2%	137.60	1%
Totals	**1,911.74**	**100%**	**16,689.95**	**100%**

Figure 1.2.1 Million Gross Tonnes (MGT) of coal and MGT x Distance (Km)

1.2.3 Both core routes run through the LNE Territory because of the eastern sea ports and the predominance of Power Stations in this region. Therefore LNE carries by far the largest volume of coal at 59%. Scotland and LNW Territories carry the Anglo-Scottish routes and have 19% and 12% respectively. Western has the coal traffic to Didcot and South Wales Power Stations carrying 8% of the tonnage (see UK map below).

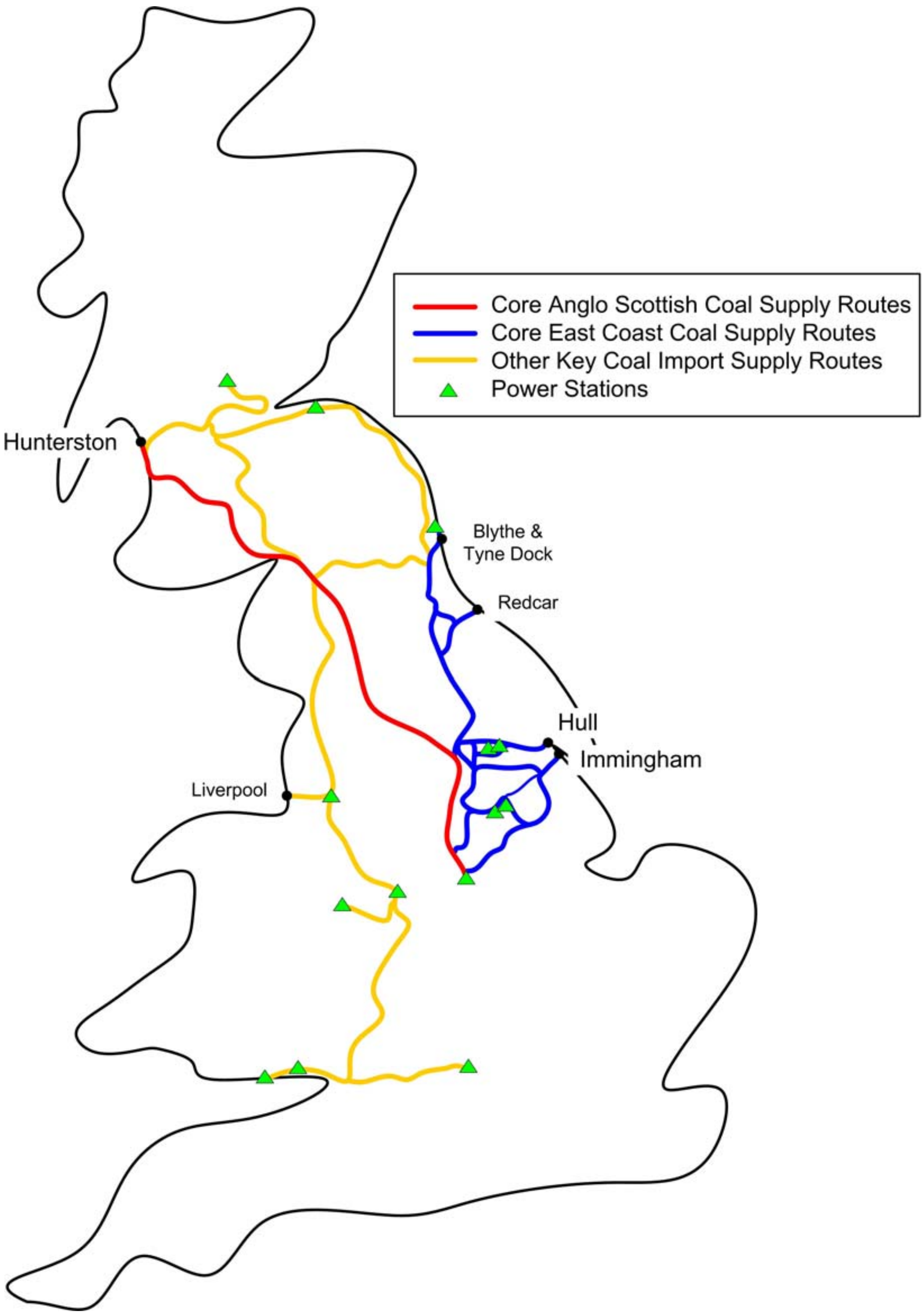


Figure 1.2.2 Key Coal Routes in the UK

Coal carrying Wagons

1.2.4 There are three Freight Operating Companies currently involved in the coal movement by rail, with 4 different wagon types used and two methods of wagon loading.

1.2.5 English Welsh and Scottish railways (EWS) are the predominate haulier, using the old British Rail two axle 'merrygoround' HAA wagons and more modern bogie wagons type HTA. Freightliner Heavy Haul is the next biggest operator with nearly 40% of the market. Their trains are formed of the modern HHA bogie wagons. Recently GB Rail Freight have commenced operations and they use a third type of modern bogie wagon type HYA

1.2.6 The HHA, HYA and HTA wagons are high sided with inwardly sloping sides at the top of the wagon. This type of wagon seems to contain the coal and if loaded properly should not have any coal loaded above the top level of the wagon. Therefore in theory less spillage occurs with this type of wagon when the loading restrictions are adhered to.

1.2.7 However depending on the loading, coal can be spilled onto the ends of the wagon and couplings, and the HHA which has a railing at the bottom of the sloped ends can trap coal spilled (see photo in Appendix B). In this respect HTA and HYA wagons are less prone to collecting spillage because of the steeply sloped wagon ends with no railing to trap the spillage.

1.2.8 The HAA type two axle wagons are a smaller capacity and have lower sides and therefore more frequently seen with loads above the top of the wagon. They also have much greater surface areas at each end of the wagon and in their underframes to carry spillage on its journey. Therefore these types of wagons are perceived to be a higher risk for uncontrolled loading and for carrying coal after unloading.

Loading of the Wagons

1.2.9 The loading of these coal wagons at source is either from large vertical storage hoppers with the hopper doors controlled manually such as at ClydePort's facility at Hunterston on the Ayrshire coast, or by large front shovel loading machines ('pad loading') that scoop up the coal from stockpiles and dump it into the wagons on an adjacent track to the stock pile. Both methods can overload wagons, not by weight, but in terms of the height of coal sitting in the wagon.

1.2.10 There is also a possibility of leaving excess coal sitting on the 'rave' (the uppermost side of the modern wagons which is angled to the inside of the wagon). This can be due to leakage of hydraulic fluid from the shovel loaders creating a 'sticky' patch to which the fine coal adheres during the loading process. Very bad loading practice can leave fine coal on the couplings and wagon ends, however, with the modern bogie wagons the end panels are designed for this spillage to slide off during loading.

1.2.11 All four types of wagon discharge the coal through hoppers during a continuous slow movement over the discharge bins at their destinations. This process can lead to two further causes of spillage once the wagons commence their return journey. First the doors may not close due to a blockage in the closing mechanism, and secondly, coal dust and fines are left sitting on any horizontal structural member of the wagon frame or bogie.

1.2.12 So both the loading process and the discharge process can result in wagons leaving privately owned sidings and entering Network Rail's infrastructure with coal fines uncontained within the wagons and likely to fall off during the journey.

Spillage on Network Rail's Infrastructure

1.2.13 A more well known form of coal spillage is known as 'wind blown'. This is coal, even if correctly loaded, being blown from the wagon onto the line by either the prevailing wind or simply the air forces created by the train travelling at speed. This problem is, of course, exacerbated when the wagons are loaded with a height of coal above the loading specifications for each wagon type.

1.2.14 Where coal dust is sitting on the frames, raves and ledges of the wagon, the sudden movement of wagons tends to spill the coal dust onto the track and surrounding ballast, therefore spillage is commonly found at locations where the coal trains stop and start, at junctions where sharp deviations through turnouts occur, locations of poor track geometry and on curves where the super-elevation (or Cant) of the track is high.

1.2.15 Therefore, the problem can be sub-divided into three common spillage categories as follows:

- In the loaded direction, spillage of fines and dust from the wagon frames, raves and ledges
- In the unloaded direction, spillage of fines and dust left on the wagon under-frames or from doors that should have closed after the unloading operation
- Wind blown spillage

1.2.16 It is also important to note that there is a concentration of spillage in areas within range of the loading and unloading points and spillage becomes generally exhausted at a given point on the wagons journey away from the source.

2 Network Rail's approach to Coal Dust Spillage

2.1 Cost of Points Failures caused by Coal Spillage

2.1.1 Network Rail has collected information on points failures caused by coal spillage and used this to quantify the spillage problem and estimate the cost impact. In 2006/07 there were 240 points failures due to coal spillage on the part of the network covered by four management areas (East Midlands, Great Northern, North Eastern in LNE and West Midlands in LNW). Network Rail has estimated the cost impact on operations, maintenance and renewal costs associated with points as follows:

2.1.2 Network Rail has assumed that a typical 35 year asset life for a set of points is reduced by 25% when affected by coal spillage. Based on a unit renewal cost of £500,000 this results in an increased annual depreciation cost of £4,944 per set of points affected.

2.1.3 The cost to clear up the coal spillage to remedy each points failure is estimated to cost £2,400 per incident.

2.1.4 There were 6825 delay minutes associated with the 240 point failures caused by coal spillage in 2006/07. Network Rail has assumed a typical payment rate of £8 per minute for these delays.

2.1.5 The 4 areas referred to above carry about 57% of all coal traffic and so to estimate a total for the network as a whole Network Rail have simply pro-rated the costs up. This gives a network-wide cost impact on points of £3.2m per annum.

2.2 Cost of reduced Ballast life caused by Coal Spillage

2.2.1 Coal spillage also impacts on Network Rail's costs through reduced asset life for ballast (as it becomes contaminated by coal dust) and rail corrosion (due to sulphur content and moisture retention), and through track circuit failures (wet coal slurry shorting out the rails). Of these the most significant is the shortened ballast life and Network Rail have estimated the cost impact of this as follows:

2.2.2 Network Rail estimate that the typical asset life of ballast is 40 years but that this is reduced on the main coal routes.

2.2.3 They have assumed a sliding scale for reduced ballast life on coal routes between 32 years and 37 years. The estimates are based on a ballast life of 32 years for routes carrying more than 10 million gross tonnes of coal per annum and 37 years for routes carrying between 1.5 and 2 million gross tonnes; with other asset values in between for traffic levels between 2 and 10 million gross tonnes of coal per annum.

2.2.4 The data on coal traffic in 2006/07 shows the following lengths of track km carrying different levels of coal traffic (millions of gross tonnes per annum):

- 123 track km for more than 10 million gross tonnes of coal;
- 210 track km carry between 7 million and 10 million;
- 378 track km carry between 5 million and 7 million;
- 814 track km carry between 3 million and 5 million;
- 1087 track km carry between 2 and 3 million, and
- 799 track km carry between 1.5 million and 2 million

2.2.5 Based on a typical unit cost for ballast renewal of £350/m Network Rail have estimated the increased annual depreciation cost for the main coal routes in each of the traffic categories and assumed ballast life noted above. For example for coal traffic between 5 and 7 million gross tonnes per annum there is an assumed ballast life which is reduced to 34 years. The increased depreciation is therefore 378*((350/34)-(350/40))/1000=£0.58m

2.2.6 Summing a similar calculation for each of the traffic bands gives a total annual cost impact for reduced ballast life of £3.9m.

2.3 Total assumed cost incurred due to Coal Spillage

2.3.1 The current coal spillage charge is approx. £5m per year as estimated previously by consultants working for ORR at the 2001 freight charges review.

2.3.2 For CP4, using the data and cost estimates described above, Network Rail is forcasting a total estimated cost impact of coal spillage on points and ballast of £7.1m per annum.

2.3.3 This is made up of £1.1m for planned and reactive work each year and annual renewal depreciation of track of £6m pa.

2.3.4 Network Rail have not estimated the cost impact of track circuit failures in plain line or reduced rail life but these items are minor in comparison to points and ballast.

3 The Reporter's review of Network Rail's approach

3.1 General

3.1.1 The Reporter has had separate meetings with Network Rail and EWS to discuss the assumptions that both have made. Three site visits have also been carried out as follows:

- Killwinning, Hunterston, East Kilbride and Falkland, in Western Scotland
- Knottingley, Drax Branch, Whitley Bridge Jct and Kellingly in South Yorkshire
- Didcot and Foxhall Jct in the Western Territory

3.1.2 The Reporter has also had discussions with the Association of UK Coal Importers whose membership includes those bodies who are responsible for loading coal into rail wagons at the ports. These discussions have been useful to give the Reporter an insight into the problem and have involved positive discussions about likely solutions to the problem. This is discussed further in Section 4 of this report.

3.1.3 Network Rail have provided their detailed calculations to the Reporter and these have been reviewed and the assumptions re-assessed and validated through discussions with EWS and Network Rail engineers at local level.

3.2 Cost of Points Failures caused by Coal Spillage

3.2.1 As explained in the previous section, Network Rail have taken the points failures due to coal spillage during a 12 month period from the LNE (228 No.) and LNW (12 No.) Territories during the fiscal year 2006/07. The assumed costs of these points failures have been subject to a pro-rata calculation across the network to provide a network-wide cost of points failures due to coal spillage.

3.2.2 The Reporter has found that this approach has not taken into account the following:

- On LNE, there were only 97 failures that caused any delays out of the 228. The other 131 points failures had zero minutes delay and would therefore have been dealt with by the response teams. Therefore to clean up the points to get them working using the response team would cost less. Say 4 men for 2 hours per failure instead of the 8 men for 7 hours per failure.
- In discussions with Network Rail at local level, only 4 men for 3 hours was considered sufficient to clean up the points following a failure which caused a delay instead of the 8 men for 7 hours per failure used in the estimate.

3.2.3 The Reporter has not changed the delay cost and the Schedule 8 payments for freight rate of £8 per minute. The pro-rata calculation for delay costs is based on Tonnages x Km of coal carrying lines to pro-rata points failures across the coal network. We consider it would be more appropriate to use point ends rather than Km on these lines, however, this information is not available to the Reporter at this level of detail.

3.2.4 The result of the Reporter's review is that the 'clean-up' & delay minutes costs across the coal network should be reduced from £1,106,316 to £295,544 to more closely reflect what actually happens at ground level. The main reason for this is the revised man-hours assumptions made for responding and cleaning up point ends that have failed.

3.2.5 The following is a map showing the key locations and junctions that have been subjected to points failures due to coal spillage.

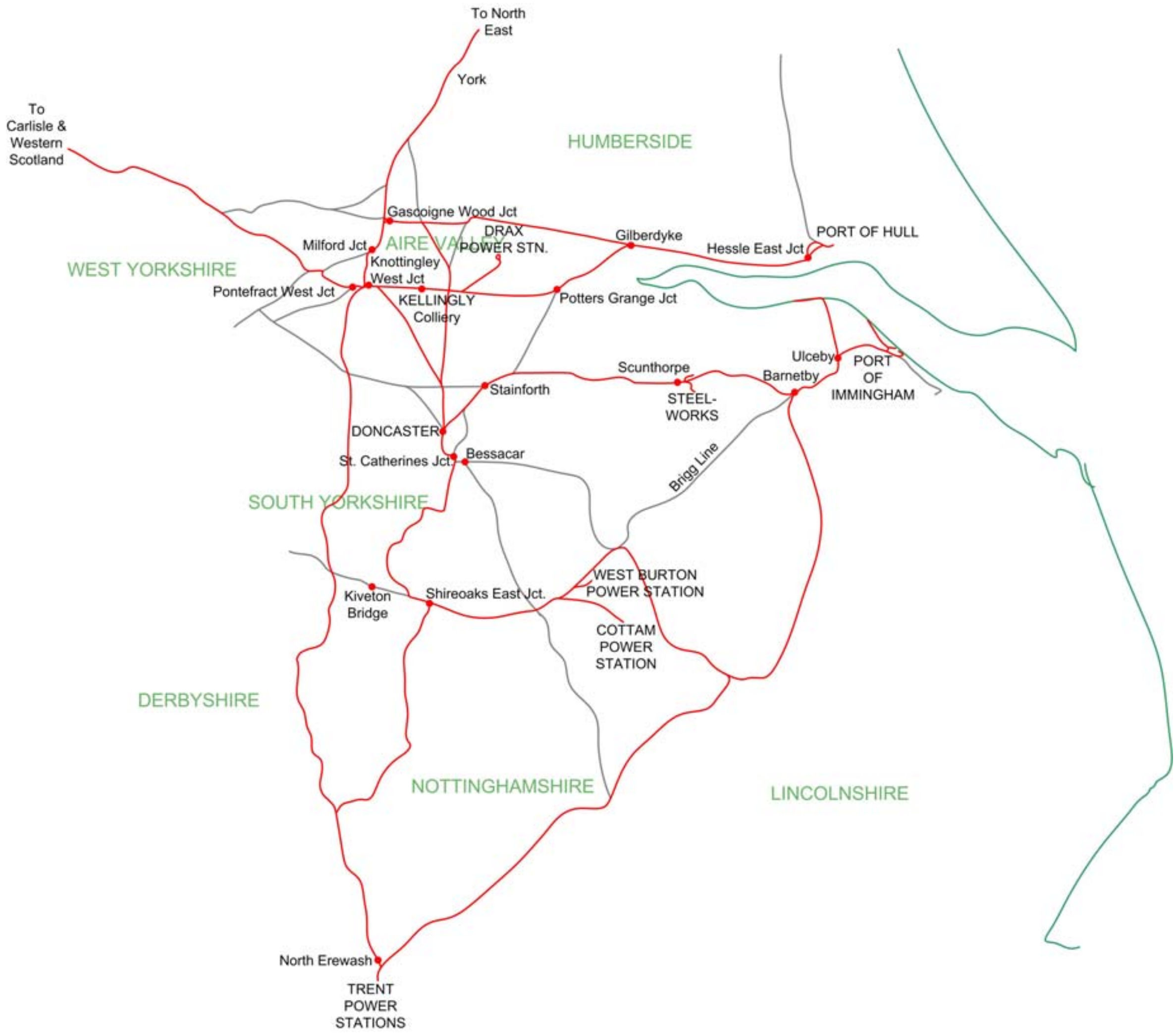


Figure 3.2.1 Key locations and junctions in the Yorkshire and Midlands Areas

Prevention of Points Failures due to coal spillage

3.2.6 Having considered the reactive costs for Point Failures, the Reporter has considered that a limited amount of preventative work on point ends that suffer from repeat failures because of the problem should be allowed for. From our examination of the 2006/07 points failures in LNE, we have counted the point ends that had repeat failures and recommend that there should be an annual treatment with specialised equipment such as the DISAB RailVac to reduce the risk of those points from failing.

3.2.7 The Reporter has identified 35 No. points ends that repeatedly failed in 2006/07 on the LNE Territory and has used a pro-rata calculation to determine that 64 No. point ends should be treated on the coal carrying network. We have assumed that a two point ends are treated with the RailVac per shift and the unit cost is £25K per shift.

3.2.8 This is based on the hire rates for a Road/Rail machine & RailVac machine attachment, a Road/Rail Trailer (to carry bags of spillage collected) plus manpower, possession protection and planning costs.

3.2.9 It is considered that such annual treatment will impact on asset service life of the S&C units treated, resulting in a 15% reduction of S&C service life.

3.3 Cost of reduced Service life caused by Coal Spillage

S&C Service Life reductions

3.3.1 Network Rail has made the assumption that S&C service life is reduced by 25% due to coal spillage based on a service life of 35 years. The Reporter has concluded that track service life for S&C is reduced by coal spillage, but by a lower percentile. We believe that the maximum ballast life under S&C after it has been contaminated by coal spillage is 31 years for Track Cat. 3 track. We have chosen Track Cat. 3 track for our calculations as this is the average track category carrying coal (see Appendix 3). Network Rail has used a switch and crossing asset life of 40 years for CP4, Therefore, for S&C the asset life reduction we have used in our annual depreciation calculations is 22.5% rather than 25%.

3.3.2 However, for the 64 No. point ends referred to in item 3.2.7 above we consider that the service life reduction will be a smaller percentile of 15% because of the RailVac treatment around these S&C units. This results in a track service life reduced from 40 years to 34 years instead of 31 years as is the case with the untreated points.

3.3.3 The Reporter has considered that the approach taken to apply Tonnages x Km of coal carrying lines to pro-rata S&C renewal volumes across the coal network is inappropriate. Therefore we have used a factor of 0.88 point ends per mile (0.55 point ends per Km) taken from Network Rail track statistics of 21,000 track miles and 19,000 point ends for the whole network.

3.3.4 Network Rail has applied a blanket assumption to all coal carrying lines that coal spillage affects the whole coal carrying network. This assumption is theoretically possible as wind blown coal dust could drop anywhere on the infrastructure that the wagons run. However, from the Reporter's limited sample of site visits, and discussions with local engineers, a conclusion has been drawn that the problem is significantly greater within range of the loading and unloading points.

3.3.5 As far as the effect on track service life is concerned, we believe that beyond certain distances from the source the wind blown spillage is negligible. Therefore we have assumed average distances based on our sampling and through discussions as follows:

- Spillage from the unloading point is exhausted after 25 miles on the outbound track
- Spillage from the loading point is exhausted after 20 miles on the outbound track

This reflects our findings that more spillage occurs on the outward track from the unloading point than from the loading point by a ratio of 5:4 (see Appendix D – Assumptions).

3.3.6 The result of this is that 486 No. Point Ends are considered to be affected by coal dust spillage. This is then multiplied by a unit cost of £435K per S&C unit taken from CP4 renewal rates at '06/'07 prices (as opposed to £500K per unit used in the NR calculations).

3.3.7 For the points failure sites not subject to the RailVac treatment, the depreciation cost per S&C unit is (£435,000 divided by 40 years) minus (£435,000 divided by 31 years), which equals £2,952 per unit. For the repeat point failure sites, the depreciation cost per S&C unit is (£435,000 divided by 40 years) minus (£435,000 divided by 34 years), which equals £1,919 per unit.

3.3.8 Therefore for the 64 repeat point failure S&C sites and the remaining 422 No. S&C units, the total cost is £1,455,186. This is a decrease on Network Rail's £2,081,684 by £626,498 .

Plain Line Service Life reductions

3.3.9 Network Rail has applied a sliding scale of reduced ballast life based on track km carrying different levels of coal traffic. Because the Reporter cannot determine from these different levels where the coal spillage zone (20 or 25 miles from source) is within each level, we have carried out a calculation to determine the coal carrying network average for Track Category. As a result Track Category 3 has been calculated (see Appendix C).

3.3.10 From ICM Version2 the track service life for ballast is 45 years for Track Category 3. The Reporter has concluded that track service life for plain line ballast is typically reduced by 10% from 45 years to 41 years due to contamination of the ballast.

3.3.11 The smaller percentage of reduction for plain line ballast service life compared to S&C is based on the relative levels of coal dust spillage per metre. The distribution of coal dust within the coal spillage zones tends to be spread more thinly on plain line track than S&C because of the relative lower speed of coal traffic and deviations through turnouts creates higher spillage rates per metre in S&C.

3.3.12 We witnessed heavy spillage on some sections of plain line track, but usually there was a special reason why it was heavy at these locations and when viewed in the overall length of coal carrying lines, these sites represented a small percentage when compared to the moderate levels of spillage in the remainder of the coal spillage zones.

3.3.13 To establish the lengths of the coal spillage zones, we have considered the loading locations (the ports) and the unloading locations (Power Stations) and taken the length of these zones to be 20 and 25 miles respectively on the outbound tracks (see Appendix D).

3.3.14 The result of this is that 515 miles are considered to be affected by coal dust spillage. This is then multiplied by a unit cost of £743 per metre taken from CP4 composite renewal rates at ‘06/’07 (as opposed to £350 per metre used in the NR calculations). The difference in renewal rates is reflected by the Reporter’s view that after 41 years the contaminated ballast will drive a total renewal of the track rather than just reballasting.

3.3.15 The depreciation cost for plain line total renewal per mile is (£1,195,757.13 divided by 45 years) minus (£1,195,757.13 divided by 41 years), which equals £2,952.49 per mile. Therefore for 515 miles, the total cost is £1,520,530. This is a decrease on Network Rail’s £3,880,000 by £2,359,469.

3.4 Total cost incurred due to Coal Spillage

3.4.1 A summary of the total cost assumptions for coal spillage are shown in Appendix D. A summary of the total cost comparison is shown in the table as follows:

	NR Assumptions (£)	Reporter Revised (£)
Cost of Points Failures	1,106,316	295,544
Cost of Rail Vac on repeat Points Failure sites	0	800,000
Cost of S&C service life reductions	2,081,684	1,455,186
Cost of Plain Line service life reductions	3,880,000	1,520,530
Total	7,068,000	4,071,261

Figure 3.4.1 Table showing summary of costs reviewed by the Reporter

4 Initiatives to reduce coal spillage

4.1 General

4.1.1 During the three site visits and interviews with EWS and the Association of UK Coal Importers, we were encouraged by a number of initiatives and live projects that have been put in place in recent months by several parties to the supply of coal to power stations.

4.1.2 There is a general recognition that coal is spilled from wagons and as a result unnecessary damage is done to the rail infrastructure. Sometimes this can result in a quick reaction when the spillage puts the infrastructure temporarily out of use, for example when points fail.

4.2 Network Rail initiatives

4.2.1 Network Rail has trialled the use of specialist equipment to remove the spillage from the ballast before too much finds its way beneath the underside of the sleepers. These industry size vacuum cleaners can be very effective, however at the moment they are expensive to hire and tend to be used when the volumes of material that need to be removed are greater than just surface coal lying on top of the ballast.

4.2.2 Another Network Rail initiative, the fitting of which we believe should be increased, is the switch roller baseplate. There are two maintenance versions approved for use and when fitted they reduce the friction of slide baseplates under point switches. Of more importance in an area subject to coal dust spillage, these rollers can overcome the additional resistance that would be caused when spillage lies on the slide baseplates.

4.2.3 During our visit to Knottingley we learned of the benefit of exchanging the clamp lock point actuator with a point machine. The point machine is situated a small distance away from the running rail, unlike the clamp lock which is mounted onto the rail and therefore subject to coal dust contamination.

4.2.4 LNE Territory commenced the production of a monthly report on the observed loading of coal trains in February 2007. Copies were made available to the Reporter and show general improvements over the 12 months.

4.3 EWS initiatives at Ports & Power Stations

4.3.1 We learned of several initiatives being used to reduce the volume of coal sitting on or around the wagons after loading or unloading. Wagon spraying facilities have been installed at Clydeport (Hunterston) and Bristol; at Tyneport a gantry has been erected and men sweep the raves of the GBRF wagons and there is a prototype gantry being trialed by EWS at Immingham.

Figure 4.3.1 Spraying and Wagon Top Sweeping Gantry at Immingham

5 Conclusions

5.1 General

5.1.1 The Reporter, having looked at the problem and taken a ‘snapshot’ look at Coal Spillage based on three site visits and discussions with local Network Rail engineers, coal freight handlers and carriers; has identified the following areas where a revised approach to coal spillage costs is appropriate.

5.1.2 These areas are as follows:

- The coal spillage problem is significantly higher within ‘Coal Spillage Zones’ which are within range of the loading or unloading points and particularly on the outbound track. Therefore the cost calculations should reflect this rather than treating the whole coal carrying network in the same way.
- The coal spillage problem appears to be consistently greater on the outbound tracks from the unloading points compared to the outbound tracks from the loading points. Therefore we have considered that it is appropriate to reflect this in the costs. The Reporter has assumed a ratio of 5:4.
- Clean Up cost estimates of coal spillage in points following failures have been reviewed and found that Network Rail’s figures are high. Also, where zero minutes delay has been caused by the failure we have considered these to be dealt with by the response teams without bringing in an additional resource.
- The Reporter has considered it to be good practice to carry out preventative maintenance on point ends subject to high rates of spillage causing repeat failures. It is recommended that a RailVac treatment is applied on these point ends once per annum.
- To establish the cost of point failures across the coal carrying network the Reporter does not consider it appropriate to apply the LNE/LNW point failures in 2006/07 and pro-rata using Tonnes x Km. We suggest that the calculation should be based on Tonnage and on the ratio of point ends to Km rather than Km alone.
- The service life reductions have been based on Track Category 2; we feel this does not reflect the true Track Category average for the coal carrying network. We have done some calculations and consider Track Category 3 to be more representative.
- The reduced track service life assumptions for Plain Line and S&C are considered to be slightly high. We have considered that averages for S&C are 22½%, and 15% for those given treatment with the RailVac instead of 25%. Plain Line has been revised

to an average of 10% instead of an average of 14% (Network Rail have used a sliding scale of between 8% and 20% depending on Tonnage).

- The Reporter has considered that average unit rates for Plain Line and S&C track renewal are applied rather than unit rates for reballasting. This reflects the fact that spillage if allowed to accumulate will drive a service life reduction resulting in the necessary replacement of rail, sleepers and ballast and not just ballast alone.

5.2 Future opportunities to reduce coal spillage costs

5.2.1 With volumes of coal being transported by rail set to increase in CP4, Halcrow believes that all parties involved in the movement of coal by rail should be doing more to reduce the spillage and thereby achieve cost reduction in the overall supply chain.

5.2.2 There are opportunities to reduce and control levels of spillage at source at the Ports and Power Stations. There are also opportunities for Network Rail to reduce points failures by introducing dry slides and roller systems on key switches which would reduce point oiling costs and reduce the risk of failures.

6 Recommendations

6.1 General Recommendations

6.1.1 The Reporter recommends that Network Rail carry out a further review of their coal spillage cost assumptions in the light of the findings herein.

6.2 Recommendations for further work

6.2.1 That further work is carried out by EWS together with the Coal Importers and Power Stations to develop and implement control measures to minimise over-loading of wagons, reduce spillage on the raves and wagon ends and to ensure that hopper doors are closed before empty wagons leave the unloading points.

6.2.2 That Network Rail review the benefits of introducing dry slides and roller systems on points subject to high coal spillage rates, the cost of which can be offset by reduced point oiling resources.

6.2.3 That Network Rail include a budget for the RailVac or similar treatment of the worst affected sites per annum in order to reduce the long term affects of coal spillage on asset service lives.

6.2.4 That Network Rail record the actual costs incurred in managing the problem of coal spillage in order to work with industry partners in reducing the charge levied on the coal train operators.

6.2.5 A review of the cleanliness of wagon loading/unloading should be undertaken at the end of 2009. If it can be demonstrated that initiatives at power stations and ports has resulted in cleaner wagons, then the charge should be reviewed.

7 Appendices

7.1 Appendix A: Meeting schedule

Date	Venue	Attendees
08/02/08	ORR Office	• Tim Griffiths, ORR • Iain Morgan, ORR • Phil Edwards, Halcrow • Richard Spoors, Halcrow
08/02/08	Network Rail's Office	• Bill Davidson, Network Rail • Phil Edwards, Halcrow • Richard Spoors, Halcrow
18/02/08	British Library	• Phil Edwards, Halcrow • Richard Spoors, Halcrow • Ian Smith, EWS • David Joyce, EWS
26/02/08	Site Visit to: Kilwinning & Clyde Coast	• Mark McConnell, TME Irvine, Network Rail • Stephen Crosbie, TME Paisley, Network Rail • Phil Edwards, Halcrow • Richard Spoors, Halcrow
29/02/08	Site Visit to: Knottingley & Doncaster Area	• Ian Kitchling, ATE Doncaster, Network Rail • Peter Cushing, Acting Territory Track Engineer,Network Rail • Michael TME Knottingley, Network Rail • Phil Edwards, Halcrow • Richard Spoors, Halcrow
04/03/08	Telephone Interview	• Nigel Yaxley, Managing Director, the Association of UK Coal Importers • Richard Spoors, Halcrow
06/03/08	Site Visit to: Didcot & Foxall Jct	• Steve Pearson, ATE Swindon, Network Rail • Tony Hopkins, TME Swindon, Network Rail • Richard Spoors, Halcrow

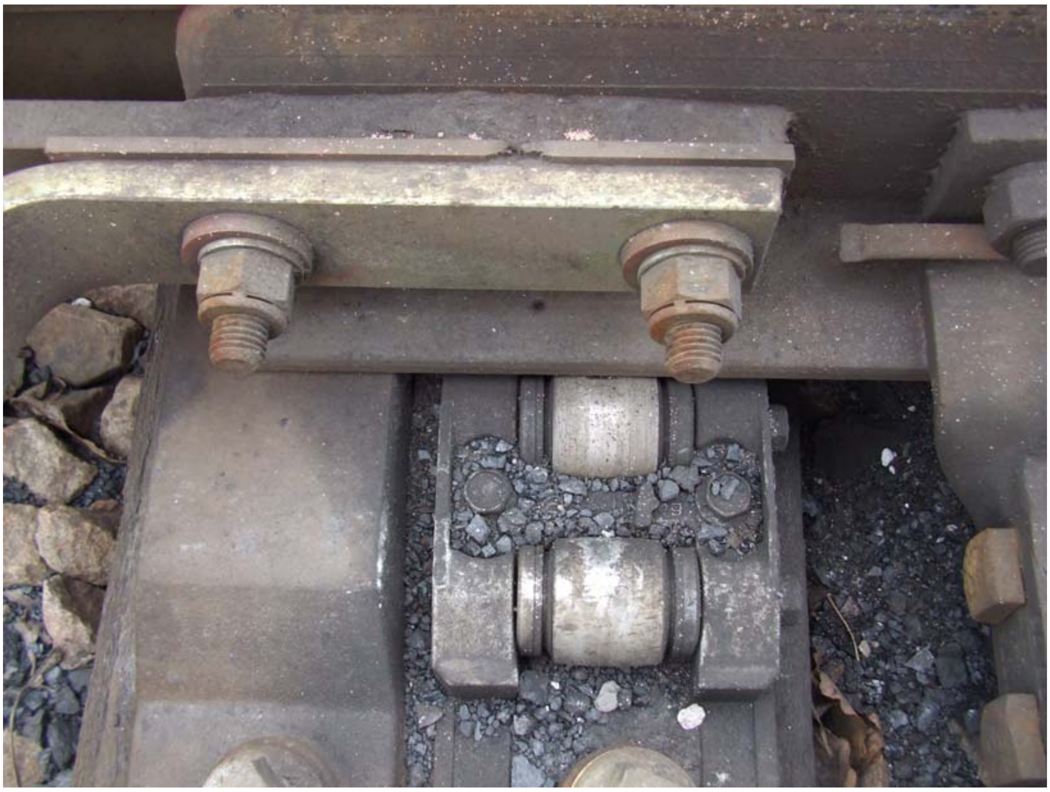
7.2 Appendix B: Photos

Above: Coal Spillage on Wagon end railing

Below: Overloaded HAA Wagon

Above: Coal Spillage on Oiled Point Ends

Below: Coal Spillage on Schwihag Rollers



Above: Coal Spillage in moveable Switch Rail heel end Below: Severe Coal Spillage

RailVac operations at Foxhall Junction, 2006 (courtesy Network Rail),

7.3 Appendix C: Track Category Analysis

Territory	Area	**Total**	1A	1	2	3	4	5	6	X	Ave. Track Cat.
TLNE	EM	**1765.9**	50.8	516.6	244.8	340	236	243	83.3	51.4	3
TLNE	GN	**2722.9**	203.8	403	361.9	557.5	353.9	700.6	87.6	54.7	3
TLNE	NE	**2988.9**	72.9	598	370.2	624.8	586.7	600.8	96	39.4	3
TLNW	CE	**2649.5**	51	166.2	218.9	663.9	712.3	615.3	168	53.9	4
TLNW	LC	**1571**	69.1	270.9	41	193.7	323	582.9	65.3	25	4
TLNW	WM	**1499.4**	36	204.6	300.3	334.4	326.2	182.3	72.6	43	3
TSCO	SE	**2265.5**	5.1	125.9	454.8	574.1	584.8	393.4	77.9	49.4	3
TSCO	SW	**1867**	0	265.5	287.1	375.6	313.1	516.5	91.1	18	3
TSEA	AN	**2298.4**	32.7	243.3	470.9	622.5	387.5	389.5	81.4	70.5	3
TSEA	WE	**2082.9**	8.9	269.6	456.2	821	338.9	104.4	41.9	42	3
TWES	CY	**2054**	0	23	209.3	503.3	500.8	599.9	171.9	45.7	4
TWES	TV	**1263.5**	156.1	459.9	276.7	94.2	70.5	138.8	44.4	22.8	2

7.4 Appendix D: List of Assumptions

Logic behind calculations for annual charge for reduction in asset life caused by coal spillage

1. Spillage caused by overloading is less than spillage from wagons after unloading. Assume this is in the ration 4:5

2. Assume spillage from unloading is exhausted after 25 miles. Spillage from loading affects 20 miles from the port facility.

3. Assume only one track is affected.

4. The average track category for calculations is Cat.3.

5. Assume ballast degradation is the driver for S&C renewals and plain line renewals

6. Use ICMv2 assumptions where possible

7. CP4 Track renewal rates at 06/07 prices S&C £435k/unit Plain Line £743/metre

8. Network Rail has 21,000 track miles and 19,000 turnouts

9. Assume 0.88 turnout per track mile

10. Assume this ratio is applicable to the journeys made by coal traffic from ports and power stations

11. Assume that wind blow coal spillage more than 25 miles from loading facilities is insufficient to be the driving factor in reducing ballast life.

12. Assume the coal supply industry is unable to reduce spillage in CP4 beyond the levels in February 2008

Table of Power Stations and Port Loading Facilities with associated track and S&C affected by coal spillage

Power Station/Port	Plain line within 25 miles of Power Stations and 20 miles of Loading Facilities	S&C Units within 25 miles of Power Stations and 20 miles of Loading Facilities
Aberthaw	20	17
Uskmouth	20	17
Longannet	25	22
Cockenzie	25	22
Lynemouth	25	22
Wilton	25	22
Ferrybridge	25	22
Eggborough	25	22
Drax	25	22
West Burton	25	22
Cottam	25	22
High Marnham	25	22
Ratcliffe	25	22
Fiddlers Ferry	25	22
Ironbridge	25	22
Drakelow	25	22
Rugeley	25	22
Didcot	25	22
Avonmouth	20	17
Hunterston	20	17
Immingham	20	17
Port of Tyne	20	17
Forth Ports	20	17
Total	515	486