JUDICIARY OF
ENGLAND AND WALES

**IN THE PRESTON CROWN COURT**

**OFFICE OF RAIL REGULATION v NETWORK RAIL INFRASTRUCTURE PLC**

**SENTENCING REMARKS OF**

**THE HONOURABLE MRS JUSTICE SWIFT DBE**

**WEDNESDAY 4 APRIL 2012**

The defendant, Network Rail Infrastructure plc (Network Rail), pleaded guilty on 29 February 2012 in the Lancaster Magistrates' Court to a breach of the duty imposed on them by section 3(1) of the Health and Safety Act 1974 to do all that was reasonably practicable to prevent the exposure to risk of non-employees. The charge alleged that Network Rail failed to provide and implement suitable and sufficient standards, procedures, guidance, training, tools and resources for the inspection and maintenance of fixed bar points. They were committed for sentence to this court.

At 20.12 on 23 February 2007, the 17.15 Virgin Pendolino passenger train from London Euston to Glasgow Central was travelling at 95 mph near to the village of Grayrigg, in Cumbria. There were 109 people on board: 105 passengers, the driver and three other crew members. The train reached a set of points, known as the Lambrigg 2B points. As the leading coach of the train reached the points, it was thrown upwards, rotated 180° from its original direction of travel, became detached from the other eight coaches, turned over and rolled down the embankment. The second coach came to rest at 90° to the direction of travel, with its front end overhanging the track and its rear end at the bottom of the embankment.

Coaches 3-5 left the tracks completely and came to rest on the embankment. Coaches 6-9, at the back of the train, came off the rails but remained upright.

As a consequence of these events, one passenger, Mrs Margaret Masson, was killed. She had been travelling in the front coach. Despite her 84 years, Mrs Masson was an active lady who kept house for herself and went out and about, seeing friends and enjoying life. She was an important and much loved member of her family. I have read a moving statement from her granddaughter, in which she describes the family's sense of sadness at the abrupt manner of her grandmother's death and the fact that it was avoidable.

In addition to Mrs Masson's tragic death, 28 other people (including the train driver) suffered serious injuries and 58 other passengers also sustained some injury. This was a very serious incident and could easily have led to greater loss of life than in fact occurred.

Following the accident, a series of detailed investigations were conducted into its cause. Those investigations revealed no evidence of any defect in the operation of the train or fault on the part of the train driver. Nor was there any problem with the signalling system or on the section of track on the approach to the Lambrigg 2B points. It rapidly became clear that the cause of the derailment had been the presence of serious defects in the points themselves.

In summary, essential components of the points mechanism (namely the fixed stretcher bars which regulate the distance between the switch rails) were variously missing, had become detached, had broken or were held in position only loosely. The purpose of the stretcher bars was to ensure that, when one switch rail was closed during the operation of the points, the other one opened and maintained a gap (known as the 'freewheel clearance') for the wheel

flange to pass through. That gap should have been maintained at a minimum of 50mm on the open side at the rear of the points with a 1.5mm clearance fit on the closed side. The effect of the defects in the stretcher bars was that the two switch rails became detached from each other and the freewheel clearance was reduced to between 10 and 20mm. Consequently, when the train entered the points, its wheels were guided into a narrowing gap between the rail tracks. The train wheels were mounted on an axle and could not adapt to the narrowing gap. Instead, they climbed over the rails and the derailment occurred.

The stretcher bars should have been held in position by threaded bolts, each fitted with a nut and a single coil spring washer. Metallurgical analysis showed that, over time, the retaining nuts had unwound from the bolts. Some of the nuts had become detached altogether; others had loosened significantly. Three factors in particular are believed to have contributed to this process. First, plain wrenches or spanners – rather than torque wrenches – had been used to tighten nuts manually. This caused variation of bolt tension with resultant variation in bolt preloading and clamping forces, leading to joint slippage. If torque wrenches had been used, it would have been possible to ensure that nuts were tightened to the required torque. Second, there had been repeated unlubricated tightening of nuts, which had led to damage to bearing surfaces, increasing friction and thereby reducing bolt preload. Third, the washers used had been ineffective in preventing the nuts from loosening once the bolt tension was lost.

The deterioration in the condition of the Lambrigg 2B points and their ultimate failure arose as a result of serious and multiple deficiencies in the systems of inspection and maintenance operated by Network Rail.

From 1994, Railtrack PLC (Railtrack) owned and operated the mainline railway infrastructure and had overall responsibility for its maintenance. Under Railtrack, the work of maintaining the railways was carried out by contractors employed by them.

On 10 May 2002, at a time when Railtrack were still responsible for the railway infrastructure, a train was derailed on the approach to Potters Bar railway station. Seven people were killed as result of that accident and many more were injured. Inadequate maintenance of a set of points, in particular the loose fastening of an adjustable (not a fixed) stretcher bar, led to the failure of the points and derailment of the train. Subsequent inspection of other sections of the East Coast Mainline after the Potters Bar derailment revealed that similar stretcher bars were also in an unsatisfactory state.

At the time of the Potters Bar derailment, there were in place no specific written guidelines, instructions or standards for the installation, inspection and maintenance of adjustable stretcher bars. The inadequate system of inspection and maintenance that was in place was not being complied with. Maintenance staff had not been properly trained in what was required.

In late 2002, Network Rail succeeded Railtrack as operator of the mainline railway infrastructure. From 2004, Network Rail ceased to use contractors to maintain the railways. Instead, they undertook the work of maintenance in-house. From that time, Network Rail was responsible for setting standards and procedures for the installation, inspection and maintenance of the railways. They were also responsible for actually undertaking that work. They were well aware of the systemic deficiencies that had caused the Potters Bar derailment and the need for the proper maintenance of points.

Standards and procedures relating to the inspection and maintenance of points were laid down by Network Rail and were set out in a number of documents issued to members of staff responsible for those functions. The documents specified the frequency and content of the inspections to be carried out, the level of employee who should undertake each type of inspection, the types of defect that required immediate attention and the records to be made following each inspection.

Investigations conducted since the Grayrigg derailment have revealed that the inspection and maintenance system in operation on the ground did not comply with the standards and guidance set out in the relevant documents. Mandatory elements of inspections (such as measuring the freewheel clearance and the track gauge) were omitted and records of inspections were not rigorously or accurately kept with the result that missed or incomplete inspections went undetected. There was no effective audit to ensure that inspections had been carried out.

On 7 January 2007, just over six weeks before the Grayrigg derailment, a routine inspection revealed that some of the nuts and bolts holding one of the stretcher bars at the Lambrigg 2B points had worked loose. The matter was reported and the nuts and bolts were tightened using a plain spanner, not a torque wrench. There was no subsequent investigation into the cause of the loosening, despite the fact that Network Rail's standards and procedures stated that such an inspection was mandatory. The points should have been subject to a routine inspection five days before the derailment. This was not carried out. The fact that the points had not been inspected on that occasion was not recorded as it should have been, as a result of

which the omission went unnoticed. The points should have been inspected weekly. At the time of the derailment, they had not been inspected for twelve days.

Those responsible for investigating the cause of the Grayrigg derailment concluded that lack of training and supervision played a large part in the events preceding the derailment. Network Rail's standards and procedures required that personnel responsible for carrying out inspections should have undergone appropriate training and should hold a certificate of competency. However, many of those responsible for inspection and maintenance work - even those in supervisory positions - had not been trained in the up to date procedures; few had current certificates of competency. Network Rail's standards and procedures also required track patrolling diagrams to be created in order to identify precisely the sections of track to be covered in each inspection and the route to be taken by each patrol. No track patrolling diagrams were available for the stretch of railway line which included the Lambrigg 2B points. As a result, members of staff had to organise their own inspection routes and there was an obvious risk that defects in the infrastructure would be missed.

The deficiencies in the system were exacerbated by the effect of enhanced permitted speeds (EPS), together with changes to train timetables on the West Coast mainline which were effected in December 2005 at a time when improvements to the line were being carried out. The changes, which were originally intended to be a temporary measure, were still in force in 2007. They meant that, instead of carrying out routine inspections of the railways mid-week, those inspections had to be conducted early on Sunday mornings, when the available manpower was limited. In winter, the hours of daylight during which inspections could be conducted were restricted to as little as 2½-3 hours. The curtailment of time within which inspections could be carried out was known to cause difficulties and had been the subject of

much discussion. The system remained unchanged as at February 2007. Since the Grayrigg derailment, the distance to be covered in individual patrols has been reduced so as to enable the patrols to fit more easily into the time available.

The investigations also revealed deficiencies in the written standards and procedures provided by Network Rail. These documents required the cause of any defect that was found on inspection to be investigated, but did not specify who was to be responsible for the investigation with the result that, after the loosened nuts were found on 7 January, no investigation took place. Although one set of procedures required that the clearance fit should be set, after 2006 it did not explicitly state the required setting of 1.5mm. The documents failed to require the use of torque wrenches to tighten nuts. The reference to the required torque values had been removed from the body of one of the main documents and appeared only in a section where it was less prominent. The documents did not specify that loose or worn nuts should not be re-tightened, but should instead be replaced by new nuts. The standard form used as a prompt for, and record of, certain inspections was out of date and unsuitable to be employed as a checklist, a fact which was not understood by those using it.

Following the Grayrigg derailment, 700 sets of points elsewhere on the railway network were inspected. No other set of points had stretcher bars missing. However, 6% showed defects in the stretcher bar assembly and 13% had loose bolts.

The systemic deficiencies which came to light after the Grayrigg derailment had persisted for some considerable time, at least since the EPS and timetable changes were introduced in December 2005, with corresponding reduction in access to the track for inspection purposes.

That is a period of 14 months. The defects in the Lambrigg 2B points had arisen and deteriorated over a shorter period, no more than a few weeks.

Network Rail have submitted a basis of plea in which they admit the failings I have described. They seek to put those failings into context. They say that fixed stretcher bar points of the same design as the Lambrigg 2B points had been in use at thousands of locations across the railway network over five decades and had performed successfully without repeated failures. They suggest that a perception may have grown up amongst their workforce that the risks associated with non-adjustable stretcher bars of this type were low. They suggest that this perception - mistaken as it turned out - adversely affected the operation on the ground of the specified procedures for inspection, reporting of faults and maintenance. They emphasise that detailed standards and procedures for the inspection and maintenance of points had been produced and were in force at the time of the Grayrigg derailment. Had the specified procedures been complied with, the derailment could have been avoided.

Network Rail acknowledge that the introduction of EPS after 2005 had the undesirable consequence that the number of daylight hours available for routine inspections was restricted, particularly in winter. They say that, nevertheless, there was sufficient time to carry out inspections in accordance with the prescribed standards and procedures. The time could be extended if necessary. They point out that experts have subsequently expressed the view that the processes adopted when EPS was introduced were “appropriate”. I am satisfied however that the regime of Sunday morning inspections conducted within a limited time frame must have placed an additional pressure on local inspection teams and may well have had an adverse effect on the thoroughness of some of the inspections carried out.

The defendant in these proceedings is a limited company and the only penalty which it is open to me to impose is a fine. When setting the amount of that fine, I am required by law to take into account "the circumstances of the case including, among other things, the financial circumstances of the offender …"

Plainly, Network Rail has access to large funds and will be able to meet any financial penalty I may impose. However, that is not the only consideration. Network Rail's parent company is a private sector "not for dividend" company. Any profit made by Network Rail is re-invested in the network. The majority of Network Rail's income comes from the public sector, either directly by way of government grants or indirectly through charges made to train operating companies which are in turn funded by train fares. Consequently, any fine which I impose will be paid from an income which is substantially derived from public funds and is likely to have the effect of reducing Network Rail's ability to generate profits which can be re-invested in the railway network, including maintenance and safety. It seems to me that I must take this factor into account when I come to consider the level of fine which it is appropriate for me to impose.

The Sentencing Guidelines Council has issued Guidelines on the proper approach to sentencing for Health & Safety offences causing death. Those Guidelines came into force in February 2010 and I am required to have regard to them before passing sentence in this case. The Guidelines provide that I should assess the seriousness of the offence by asking four questions.

Firstly, I must ask how foreseeable it was that serious injury would result from Network Rail's breach of duty. There can be no doubt that the defective condition of the Lambrigg 2B

points on 23 February 2007, which was caused by the failures I have identified, gave rise to an obvious and wholly foreseeable risk of serious injury or death to members of the public and staff travelling on trains on this section of the track.

Secondly, I must ask how far short of the necessary standard Network Rail fell. This was not a case of a single systemic failure or an error by one or two individuals. There were multiple failures, both individual and systemic, which in combination led to the derailment. There were significant omissions in the written standards and procedures that were in force. There was a failure to comply with the standards and procedures which were prescribed. It is no good having written standards and procedures in place if they are not carried out on the ground and if those employees carrying out the relevant work are not adequately trained and supervised. That was the case here. The critical importance of points and their potential for failure should have been evident after the Potters Bar derailment. The inspections carried out after that accident had shown that the condition of the points at Potters Bar was not an isolated problem. I accept that the nature of the failure at Grayrigg was different from that at Potters Bar. But many of the underlying systemic failures – lack of adequate standards and procedures, non-compliance with systems that were in place and failure properly to train maintenance staff – were the same. The need to investigate the cause of defects found in the course of inspections had been appreciated after the Potters Bar derailment. It had been prescribed in written standards. Yet no guidance had been given as to how this should be achieved. Given all these circumstances, I consider that Network Rail fell very far short of the standards required of a company with responsibility for the maintenance of railway tracks and the safety of rail users and railway staff.

The third question I must ask is how extensive the breach was across Railtrack's sphere of operations. The evidence is that the relevant failures extended over a considerable period of time and that they were by no means confined to the Lambrigg 2B points alone. Defects – albeit not of the same extent – were found in many other sets of points elsewhere on the railway network.

Finally, I must ask how far up the organisation did the breach of duty go. There is no doubt that there were very serious failings by local staff responsible for the day to day inspection and maintenance of the relevant section of track and by those responsible for managing and supervising those staff. However, their task was made far more difficult by the various omissions in the documents containing the standards and procedures and by the restrictions imposed as a result of the introduction of the EPS. Responsibility for those matters lay with those at senior management level within Network Rail.

Having considered those four questions, I conclude that the offence carries a high degree of seriousness.

The Guidelines identify a number of factors which, if present, are likely to aggravate the offence. The relevant aggravating factors in this case (over and above those which I have already taken into account) are, first, the fact that very grave personal injuries were caused to some people, in addition to Mrs Masson's sad death, and, second, the fact that Network Rail has previous convictions, of which the most relevant relates to the Potters Bar derailment. I accept that the circumstances of many of the other convictions are different from those in the present case. Nevertheless, I cannot overlook the fact that there have been a significant

number of occasions when Network Rail have breached their duty of care in one way or another.

The Guidelines also specify factors which are likely, if present, to afford mitigation. Relevant for the purposes of this case is, first, Network Rail's prompt acceptance of responsibility. Network Rail accepted responsibility for the Grayrigg derailment very promptly, in a statement issued by their then Chief Executive issued only three days after the derailment and apologising unreservedly for the failure of the infrastructure. They pleaded guilty to the offence charged at the earliest opportunity. They have settled the claims made by those injured in the derailment without the necessity for recourse to civil claims.

The second relevant factor is the fact that, since the Grayrigg derailment. Network Rail has co-operated fully with the investigations that have been carried out by various bodies.

The third relevant factor is the efforts made by Network Rail to remedy the defects that caused the derailment. I am satisfied that, since the Grayrigg derailment Network Rail has taken active steps to remedy the failures that caused it. I have already mentioned the inspections that were undertaken following the derailment. The findings of those inspections informed the actions that Network Rail took subsequently to improve the safety of points. The design of points has been improved by the use of 'hardlock' nuts and higher manufacturing specifications for stretcher bars and brackets. A new design of stretcher bar is currently being tested. New standards and procedures documents have been produced which are intended to clarify the responsibilities and requirements for the inspection and maintenance of fixed stretcher bar assemblies. I am told that measures have been taken to improve record keeping, staff training and competency assessments. There are plans for trainborne video inspection of

switches and crossings and the development of trainborne pattern recognition technology. All these measures, if implemented properly and consistently, should have the effect of preventing this type of accident from happening again.

I note that, since the Grayrigg derailment, the Office of Rail Regulation (ORR) has found it necessary to issue a number of Improvement Notices against Network Rail because of concerns that, at certain specific locations, their prescribed standards and procedures for track inspection patrols were not being followed on the ground. I am told also that the ORR is continuing to monitor progress on the implementation of some of the improvements that Network Rail is making. They are not satisfied that enough has yet been done. These facts illustrate the importance of maintaining the efforts made over the last few years if railway safety standards are to undergo a lasting improvement.

There is evidence that Network Rail's safety performance has improved in the five years since the Grayrigg derailment. The accident frequency rate for Network Rail's workforce is now the lowest it has ever been. In the last six years, the unfortunate Mrs Masson has been the only passenger to lose her life in a train accident. There have been no passenger or workforce fatalities in train accidents during the period from 2008 to the present time. These improvements, if maintained, afford reason to hope that, in the future, rail passengers will be able to have confidence that those responsible for rail safety are properly carrying out their responsibilities.

In addition to the Guidelines, the parties have drawn my attention to a number of cases, including the sentencing remarks of His Honour Judge Bright QC following Network Rail's plea of guilty to an offence arising out of the Potters Bar derailment. The fine imposed in that

case was one of £3 million. I have had regard to the level of fine imposed in that and the other cases and to the principles to be derived from them. However, each case is dependent on its own facts and circumstances.

I am acutely conscious that no fine, however large, can put a value on the life lost as a result of the Grayrigg derailment or the pain and suffering of those who were injured on that day. That is not its purpose. The fine is imposed in order to mark the seriousness of the offence and to emphasise the fact that those who bear the responsibility for ensuring the safety of the public must exercise proper care. Over 1.32 billion passenger journeys are made every year on Britain's railways and the importance of implementing safe and adequate systems for the inspection and maintenance of the infrastructure is paramount, in order to ensure that accidents like the ones at Potters Bar and Grayrigg do not occur again.

Having regard to all the circumstances of the case and to the aggravating and mitigating circumstances to which I have referred, I consider the appropriate fine if Network Rail had been convicted after trial would have been one of £6 million. However, Network Rail are entitled by law to credit for their guilty plea made at the earliest opportunity and I am therefore required to discount the fine by one third. The fine will therefore be one of £4 million.

The ORR have applied for their costs. The cost to the taxpayer of the investigation and prosecution has been agreed at £118,037. I order that Network Rail should pay those costs in full. The fine and costs totalling £4,118,037 must be paid within 28 days.