Sir,  
I have the honour to report for the information of the Minister of Transport, in accordance with the Order of the 23rd March, the result of my Inquiry into the circumstances of the accident which occurred at about 12.20 p.m. on Sunday, 22nd March, at Leighton Buzzard, on the London, Midland and Scottish Railway. I was accompanied at my Inquiry by Mr. J. P. Scott Main and Lieut. Col. E. Woodhouse.  

As the 12.30 a.m. express passenger train, London (Euston) to Glasgow and Edinburgh, running at high speed, was traversing the junction from the down fast to the down slow line, immediately south of the station, the engine and tender and the leading ten coaches of the train left the rails. This train is normally booked to run on the down fast line, but on the day in question it had to be diverted on account of engineering work, which was in progress on that line to the north of Leighton Buzzard.

The engine and tender overturned, and the three coaches immediately behind it were destroyed, the fourth being also very badly damaged. I regret to state that 3 passengers and 3 of the Company's servants (the driver, fireman, and a dining car cook) lost their lives. Three passengers were detained in hospital, while 12 others, who continued their journey, suffered from shock or injuries. Two of the Company's servants were also detained in hospital, while 9 others sustained shock or minor injuries. The train carried 183 passengers and some 20 dining-car and other members of the staff.

All four running lines were blocked. Medical aid was available within 20 minutes, and a number of men of the Company's staff at this station, trained in ambulance work, rendered assistance. All concerned are to be complimented upon the way in which the relief arrangements were carried out in difficult circumstances. In each of the 4 brake compartments of the train there were emergency tool and ambulance equipment. Those in the leading vehicle were probably not accessible; but the remaining sets appear to have been effectively brought into use, as also was the ambulance equipment provided in the signal box.

The train consisted of 14 vehicles, 12 of which were 8-wheeled bogie coaches; the remaining 2, marshalled ninth and twelfth from the engine, were 12-wheeled bogie dining cars. It was drawn by engine No. 6114, "Coldstream Guardsman," 3-cylinder 4-6-0 type, of the "Royal Scot" class, with 8-wheeled tender, weighing in full working order 127 tons 12 cwt. The overall length of the train, including the engine and tender, was about 942 ft., and its total weight, including passengers and baggage, about 595 tons.

The engine and tender were fitted with a steam brake, acting on all wheels, including those of the engine bogie, and working in conjunction with the automatic vacuum brake on the train, all wheels of which were braked, with the exception of the centre pairs of the bogies of the two 12-wheeled dining-cars. The effective brake power was approximately 85 per cent. of the weight of the train.

The weather at the time was bright and sunny with a very light south-westerly breeze, the velocity of which was probably not more than 10 m.p.h.

Description.

The main line at Leighton Buzzard, 40½ miles from London, runs in a north and south direction, and comprises four roads, designated in the following order from west to east:—Down Fast, Up Fast, Down Slow, Up Slow. The station is approached from the south over an easy right-handed curve about a mile in length, of a radius varying between 3 and 4 miles, which terminates near the 40th mile post. A short distance south of the station there is a double junction crossover connecting the fast and slow lines, with facing points in the down fast and up slow lines; in the down fast line there is a 7-chain length of tangent between the termination of the curve mentioned above and the facing points.

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After rising steadily from London to Tring the line falls through Cheddington, at mile 36, on a gradient of 1 in 333, to a point near the 38th mile post, and thence at 1 in 540 to Leighton Buzzard. From mile 38\% to the station, the line runs on an embankment varying in height between 4 and 30 ft., except for a length of 400 yards of cutting with a maximum depth of 10 ft., in which the Leighton Buzzard No. 1 box down distant signals are situated, in the neighbourhood of the 38\% mile post.

Signalling.—The double junction and signals in its vicinity are worked from No. 1 box, which is situated between the fast and slow lines and immediately south of the station. The approximate distances from this signal box are as under, all being measured in a southerly direction:

<table>
<thead>
<tr>
<th>Signal Type</th>
<th>Distance (Yards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down fast, and fast to slow, distant signals</td>
<td>1530</td>
</tr>
<tr>
<td>Up fast advanced starting signal</td>
<td>874</td>
</tr>
<tr>
<td>Down fast, and fast to slow, home signals</td>
<td>290</td>
</tr>
<tr>
<td>Junction facing points in down fast line</td>
<td>268</td>
</tr>
<tr>
<td>Junction trailing points in down slow line, and facing points in up slow line</td>
<td>142</td>
</tr>
<tr>
<td>Position in which the front of the engine came to rest</td>
<td>65</td>
</tr>
</tbody>
</table>

The down fast, and fast to slow, distant signals are carried on a bracket post to the left of the down fast line, the arms being 35 and 32 ft. above rail level. Both arms are workable and electrically repeated. The corresponding home signals are carried on a bridge spanning the two fast lines, their arms being over the line to which they apply, and 38 ft. and 35 ft. above rail level. Distant arms, worked from Leighton Buzzard No. 2 signal box, at the north end of the station, are carried below both the fast line home signal arms on this bridge. I tested the locking of the double junction and the relevant signals; it had not been altered since the accident, and was correct.

Trial made by the Company’s officers shortly after noon on March 31st, with an engine of the “Royal Scot” class, showed that from the footplate the sighting distances of the down fast distant and home signals are:

Driver’s side (left)—Distances 1,711 yards, homes 612 yards.
Fireman’s side (right)—Distances 1,703 yards, homes 1,326 yards.

From my own observations, however, from the footplate of this class of engine, I noted that, under the most favourable conditions, the arms tend to merge into the background, and that their indications cannot be determined with certainty at the extreme ranges mentioned above. The visibility of all signals concerned may nevertheless be regarded as good; viz., say half a mile in respect of the drivers’ view of the distant signals.

Leighton Buzzard No. 1 box was open when the accident occurred, the other nearest open boxes being Cheddington, to the south, and Stoke Hammond to the north; the distance between Cheddington and No. 1 box is 3 miles 1,671 yards. The levers of the down fast and slow starting signals, which are worked from No. 1 box, are so controlled by the block instruments that these signals cannot be lowered for a train until it has been accepted by the next open box ahead, namely Stoke Hammond in the present instance.

Permanent Way.—The permanent way is of heavy type, stone ballasted throughout, and maintained in first class condition. Commencing at a point 1 mile 70 yards south of the facing points of the double junction, the down fast line, for 1,450 yards, consists of 95 lb. R.B.S. 60 ft. rails, carried in 47 lb. chairs on felt pads, secured to the sleepers with 3 screws, laid new in 1927. Thence for 380 yards to the junction points, the road is laid with 95 lb. O.B.S. 60 ft. rails, in 46 lb. chairs, secured to the sleepers with 3 screws, laid new in 1917.

The double junction was brought into use in July 1927, and is laid with 95 lb. R.B.S. material. The switch rails are of standard “C” pattern, 28 ft. 6 ins. long; the heel being keyed in 3 chairs; they are of the under-cut type, planed straight for a length of 9 ft. 2 ins., the switch angle being approximately 1 in 40. Beyond the straight portion of the switches the road leading to the down slow line diverges on a right-handed curve, which continues through the diamond in the up fast line; it is then straight till the V-crossing in the down slow line is reached. The V-crossing in the down fast line has an angle of 1 in
10, the lead of the junction being 80 ft. 9½ ins. The angle of the obtuse crossings of the diamond in the up fast line is 1 in 6½, with V-crossings of 1 in 9 and 1 in 6½.

The cant through the junction varied between zero and ½ in., and curvature, on quarter chain chords, from 11 to 24½ chains. The gauge varied from ½ in. tight to ½ in. slack, and all check rail clearances were correct, viz. 1½ ins. The facing points in the down fast line have a 42 ft. locking bar, the position of the switches and bolt being detected by the home signals.

Speed Restriction.—The speed of trains travelling over this junction from the fast to the slow line is restricted to 20 miles per hour. To assist in the observance of this restriction the signalman at Leighton Buzzard No. 1 box has instructions that the down fast to slow home signal is not to be lowered for any passenger or fast freight train which has to be diverted over the junction, until its speed has been reduced accordingly. It follows that the corresponding distant signal would not be lowered for such trains, and I was informed that although it is workable, it has, in fact, never been cleared since the instruction in question was issued, in May, 1930.

Report.

The train left Euston to time, and was running normally and slightly ahead of schedule. Approaching Leighton Buzzard it had to be diverted from the down fast to the down slow, and, as will be explained hereafter, speed should have been reduced in accordance with the indications of the distant signals. This, however, was not effected until the last moment before reaching the junction, with the result that the engine entered the junction at a speed at which it could not be expected to traverse it safely, and, following derailment during its passage through the crossover, was overturned on to its right side.

Appendices I and II give in detail the damage sustained by the engine and tender, and by the coaches. The position of the train after the accident is shown on the plan accompanying this report.

Apparently the engine slid for at least 60 yards, for a portion of which distance it was partly supported by the 6-foot rail of the adjacent up slow line, and it came to rest lying roughly parallel to, and but little displaced to the right of, the down slow line, on which it should have travelled. The tender also overturned to the right, and followed the path taken by the engine, the couplings between them remaining intact.

The three leading vehicles of the train were completely wrecked, the bodies being torn from the under frames and smashed beyond repair. The first of these (No. 15458, 1st brake) swung to the left, its body coming to rest roughly at right angles to its direction of travel. The second (No. 15518, vestibule 1st) turned to the right, and also came to rest approximately at right angles to its original direction. The third vehicle (No. 315, kitchen car) came to rest on its side, to the right of the line, also at a considerable angle from its original direction. The fourth (No. 14733, vestibule 3rd) was apparently forced right out of the train; it came to rest at an angle of about 60 degrees with its original direction, on the left of the line, with its body badly damaged and its underframe distorted, its leading end having broken through the body of the leading coach.

It is evident that the momentum of the train was chiefly absorbed in wrecking the first four vehicles, as in rear of them the damage was relatively slight. All the coaches had steel underframes, and all except the ninth had the latest type of shock-absorbing buffers. Owing to the destruction of the track, all wheels of the fifth to the ninth vehicles, and the leading bogie of the tenth, were derailed; but these vehicles remained upright and in line, the fifth and sixth being considerably displaced to the right.

The train was lit throughout by electricity, with the exception of the wrecked kitchen car. The cylinders of this were pierced and all gas escaped; there were no signs of fire in the wreckage. Gas was also in use for cooking on the two dining-cars (ninth and twelfth vehicles), but the cylinders of these were undamaged. Two horseboxes, which were standing in a siding on the left of the train, were broken up by the impact of the first and fourth vehicles, while two others in the same siding were badly damaged.

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Damage to, and marks on, the track.—Both the line over which the train should have travelled, and the adjoining up slow line, were completely destroyed and displaced, as shown on the plan, for lengths of about 190 yards and 63 yards respectively. Considerable damage was also done to the sidings adjoining the slow lines, and in all an equivalent length of some 395 yards of permanent way was so damaged as to require entire replacement.

Commencing at the third sleeper north of the toe of the facing points in the down fast line, the whole road was forced bodily to the left, over a length of about 23 ft., the maximum displacement being 3/4 in. There was no perceptible movement of the chairs on the sleepers, nor was there any sign of abrasion on the gauge edge of the left-hand tongue rail. This displacement was clearly indicative of heavy lateral pressure, induced by centrifugal force as the engine traversed the junction at high speed; but it was not until it reached the 1 in 10 V-crossing in the down fast line that the first markings preliminary to derailment were noticeable.

As shown on the drawing, the nose of this crossing was slightly bruised, and there was an abrasion on the working edge of the corresponding cheek rail, commencing about 3 ft. south of the nose of the crossing and extending for about 17 ft., as far as the throat of the 1 in 9 V-crossing (of the diamond) in the western rail of the up fast line. A light mark was also noticeable on the top of this cheek rail, opposite the nose of the former crossing, and this may have been formed by a right-hand flange. But as there was no mark on the rail ahead of the crossing, it is clear that the corresponding left-hand flange which bruised the nose returned to its normal position, derailment at this point being thus just avoided.

At the obtuse crossing of the diamond, however, the right-hand cheek rail of the knee was lightly marked for a distance of about 3 ft. on the south side of the throat, and on the left-hand side, the nose of the facing point rail had been heavily struck by a flange. This was followed by a flange mark gradually crossing the head of the left-hand rail, reaching the outside of it about 11 ft. further on. From this point there were marks of a wheel travelling outside the left-hand rail, and nearly parallel to it; the outer jaws of two chairs were broken and there were flange marks on the crossing timbers as far as the 1 in 6½ V-crossing in the eastern rail of the up fast line.

Here two chair screws were marked, the left-hand jaw of the nose chair was broken and the nut of the nose bolt damaged. There was a heavy score on the outside of the wing rail, the end of which had also received a severe glancing blow. A little further on, three chairs carrying the splice rail were broken, and the rail itself was heavily marked on the up fast line gauge edge, the mark commencing 7 ft. from the nose of the crossing. In addition, the splice rail was bent about 2 inches. The nose of this V-crossing had been struck by flanges, at least one of which had climbed the rail there and dropped outside it a short distance in advance of the V. The gauge edge of the point rail of the crossing also bore marks of severe flange pressure from the nose towards the next joint in advance of it.

Thence the track, over which the train had travelled, was badly broken up, and the rails could not be identified subsequently, as they had been cut up into lengths convenient to handle to clear the site for re-laying. But a length of rail, believed to have formed part of the lead of the trailing points in the down slow line, was found with a long and exceedingly heavy abrasion on the outer side of its head, about 3/4 inch in width. This destruction of the down slow line extended nearly as far as the point where the engine came to rest, about 203 yards from the facing points in the down fast line.

In regard to the up slow line, the first indication of damage was on the 6-foot side. The jaw of the second slide chair of the facing points and the stud bolt were broken. The north end of the stock rails was forced about 9 inches to the right, and the destruction of the track extended thence to the point where the engine came to rest.

A remarkable feature was the fact that, as the engine slid on its side, a 33 ft. 10 ins. length of rail forced its way through the outside steam pipe supplying the right-hand cylinder and under the clothing sheets of the boiler. It had penetrated as far as the cab and was bent at right angles at the front end. Mr. Setchell, the
Chief Permanent Way Inspector, identified this piece of rail as having come from the 6-foot rail of the up slow track, and as having probably formed part of a 58-foot closer, the southern end of which must have been either one or two rail lengths (60 ft. or 120 ft.) north of the facing points in the up slow.

The pair of rails immediately north of the facing points were found intact though buckled, and had it been possible to make certain of the location of this closer, it would have proved the minimum distance over which the engine slid on its side. It was thought, however, that the closer had been laid in the former position, as described above, and the estimate of at least 60 yards is based thereon.

History and examination of the engine.—The engine had run approximately 178,000 miles since it was built by the North British Locomotive Company in 1927. It was last overhauled at Crewe and had run 10,721 miles since its return to traffic on the 21st January last. In accordance with the usual practice after an overhaul, it had been returned to Crewe from the 7th to 13th February for spring adjustment, its mileage since the latter date being 8,846. During the week previous to the accident it had run to or from Carlisle daily from the 16th to the 21st March, viz., a daily mileage of 301. It was stated that the engine had given no trouble, there was apparently no abnormality in the shed reports, and in fact no repairs of any kind were booked after its work on the 20th and 21st.

After the accident the regulator was found jammed in the closed position, the spindle having become bent during the extensive damage which took place on the footplate. The reversing gear was $\frac{2}{3}$ notches forward of mid-gear—the 12th notch corresponding to full forward gear—and the handle could not be rotated owing to obstruction by the damaged cab side. This position corresponds to about 20 per cent cut off, and is that in which the gear would be placed when the engine is steaming at high speed. Both water gauges were intact, but, as the right-hand clock box was fractured, the boiler had practically emptied itself while the engine was on its side. The brake valve was free to be moved, and the appearance of the brake blocks indicated forcible application, but, as the grease had not been burned off it was considered that the application could not have been of long duration. The blower and steam sanding valves were free to be operated. The brick arch was destroyed.

The engine was also examined at Crewe on the 31st March by Lt.-Col. Woodhouse, who found that there was no defect in the fire box, stays, tubes, fusible plugs, or smoke box steam pipes, such as might have diverted the attention of the men on the footplate. He also noted that there was no defect in the regulator mechanism, such as a disconnection, which would have prevented the regulator responding to movement of the handle. The profiles of all tyres were good; the trailing coupled axle was very slightly bent, probably the result of the accident. The flanges of the three left-hand coupled wheels were bruised in places and showed marks of heavy side pressure against the rail, aid of climbing; that of the right leading bogie wheel was also bruised in many places. The last named wheel also bore a heavy abrasion on the outside of the tread. The remaining wheels were not materially marked.

The centre of gravity of the engine was 5 ft. 10$\frac{1}{2}$ ins. above rail level and 4 ft. 1$\frac{1}{4}$ ins. ahead of the centre driving axle.

Reason for diversion of the train.—A notification that the down fast line north of Leighton Buzzard would be occupied by the Engineer's Department from 2.30 p.m. to 5 p.m. on 22nd March, and that all down trains would consequently travel over the slow line between Leighton Buzzard No. 1 and Bletchley during those hours, had been inserted in the Fortnightly Notice, issued from Crewe on 10th March and covering the period from 14th to 27th March. It was subsequently decided that this work, and the diversion of trains consequent thereon, should take place between 7.30 a.m. and 2 p.m. on 22nd March. Information to this effect was therefore inserted in the Special Notice regarding Permanent Way Works, for the period 20th to 27th March, issued from Crewe on 19th March, in which it was also notified that the programme previously arranged was cancelled.
The Fortnightly Notice also contained an intimation that on 22nd March the down fast line would be blocked between Tring and Leighton Buzzard, on account of engineering work, from 7.30 a.m. to 2 p.m., during which period all down trains would travel over the slow line from Tring to Leighton Buzzard. This work was not carried out, and no diversion from the down fast to the down slow line was necessary, but the notification was not cancelled in the Special Permanent Way Notice issued on 19th March.

Evidence.

(1) Ganger J. W. Keen stated that he had had charge of the length on which this double junction is situated for the past 3½ years, and that its maintenance had given no trouble; in this he was corroborated by Mr. T. W. Setchell. Keen had examined his length some four hours before the accident and found the facing points in good order.

They were also examined about an hour after the accident by Mr. Mottram, the District Signal and Telegraph Assistant, who found that they fitted properly and that the facing point lock and the detectors were in no way defective. He also had never experienced any trouble with the locking and mechanism.

(2) The train which preceded the 11.30 a.m. down express over the junction was the 11 a.m. down excursion, Euston to Coventry. Its driver, C. L. Guest, stated that he observed both distant signals in the warning position when approaching Leighton Buzzard, and that the down fast to slow home signal was not lowered till he had nearly brought the train to a stand, some 50 yards in rear of it. He estimated his speed through the junction as about 10 miles an hour, and noticed no unusual movement when passing over it. The guard of this train, W. B. Sear, gave similar evidence regarding the speed and absence of any unusual movement.

Driver Guest further stated that for the past two years, during which he has been working between Euston and Bletchley, he had never seen the Leighton Buzzard down fast to slow distant signal lowered, and also that on 22nd March he expected to be diverted from the fast to the slow line, not at Leighton Buzzard, but at Tring, in accordance with the Fortnightly Notice. He was not, however, unaccustomed to being diverted in the manner described without notice, so the change in route caused him no surprise, though he had not had the Special Permanent Way Notice referring to it.

(3) Signalman A. J. Sayell, who is the regular signalman at Tring Cutting box, was in charge of Cheddington box on 22nd March, and stated he had taken duty there every third Sunday for the past six years. According to his evidence, the 11 a.m. Euston-Coventry excursion train passed him at 11.55 a.m., and he received "Out of section" for it from Leighton Buzzard No. 1 at 12.1 p.m.

He had booked the 11.30 a.m. down express as passing his box at 12.16 p.m., and he stated that he received the "Obstruction danger" signal from Leighton Buzzard at probably 12.19½ p.m., though he had recorded it as 12.19 p.m. He said that such trains usually take 4 to 5 minutes to clear the section if they run through Leighton Buzzard on the fast line; but that this time is increased to 5 or 6 minutes if they are diverted there from the fast to the slow line.

Sayell watched the train pass, noticed nothing unusual, and estimated its speed as 60 m.p.h. Allowing, however, for normal booking discrepancies, even though the time of entry into the section, 12.16 p.m., is confirmed by the Leighton Buzzard register, it appears that at the most a period of only 3½ minutes sufficed for the train to traverse the distance of nearly 4 miles, for the accident to occur, and for the signalman at Leighton Buzzard No. 1 to realise what had happened and to transmit the "Obstruction danger" signal.

(4) Signalman R. Troughton was in charge of Leighton Buzzard No. 1 signal box. He is 58 years old, and has been a signalman for 31 years, during which time he has regularly operated this box one Sunday in three. For the past 10 years he has worked at Leighton Buzzard No. 2 box, at the north end of the station, on weekdays. On the day of the accident he came on duty at 9.0 a.m. after twelve hours rest. He had received the Special Notice regarding Perma-
ment Way Works, and, during the morning, had transferred four down trains, including the excursion already mentioned, from the fast to the slow line through the junction.

Troughton stated that after the passage of the down excursion at 12.2 p.m. he placed the home and starting signals to danger and observed that the arms responded. At 12.9 p.m. an up slow passenger train arrived on the up slow line; it had been diverted from the up fast to the up slow at Bletchley, to allow an up theatrical special to overtake it on the fast line. Troughton accepted the 11.30 a.m. down express when it was offered to him from Cheddington at 12.12 p.m.; his junction was then set normal, as the theatrical special was approaching on the up fast line. At 12.14 p.m. the up special passed his box, and at 12.16 p.m., as already mentioned, he received from Cheddington the “Entering section” signal for the express on the down fast. At the same time he offered the express forward to Stoke Hammond on the down slow, receiving acceptance for it at once.

Some two minutes later, at about 12.18 p.m., he reversed the whole of the double junction, to allow the up slow passenger train to cross from the up slow to the up fast line, and to be ready for the express. The alteration of facing points when a train is in the section approaching them, as in this case, is permitted by the Company’s regulations. As the up theatrical special had not then cleared the section, he kept his up fast advanced starting signal at danger, and the up slow passenger train drew ahead from the station and stopped at it.

Troughton stated that he kept his down fast to slow home signal at danger, the corresponding distant signal thus being necessarily in its warning position, and he said that he was standing at the south end of his frame looking out for the express, ready to lower the home signal when its speed had been sufficiently reduced.

He first saw the train when it was about half a mile away, and he noticed that it was not reducing speed. Consequently he did not lower the home signal. Indeed, it occurred to him, he stated, to restore the facing points to normal, so certain was he that the train could not run safely through the junction at the speed at which it was travelling; but he decided that he had not time to make the necessary lever movements, owing to the train being so near to the points. He heard the engine give 3 or 4 sharp whistles when it was about 30 yards from the home signals, and he considered that the speed at which the train entered the junction was about 55 miles an hour, though naturally it was difficult for him to form an accurate estimate. He observed the engine rocking from side to side when it was about half-way through the junction, and his impression was that it overturned on reaching the points in the down slow line.

Troughton further stated that immediately after the accident he noted that the repeaters of the down fast and fast to slow distant signals showed that both arms were in the warning position. He had had no occasion to lower either signal that morning. In fact, he had never lowered the latter, and, in regard to the former, he said that at the time he had collars on the levers of the down fast home and starting signals.

However, I questioned him closely as to whether he might not momentarily have forgotten that the train was to be diverted to the slow line, and whether, by mistake, he had not lowered the down fast signals, and subsequently restored them before he reversed the points at about 12.18 p.m. He assured me emphatically that this did not happen, and his statement is confirmed by the fact, revealed by the Stoke Hammond train register, that the train was accepted by the signalman there on the slow line. As a result of the control on the starting signals by the block instruments, such an acceptance would not free the down fast starting signal lever in No. 1 box, and hence Troughton could not have lowered his down fast distant signal, even had he attempted to do so while the junction points were normal.

(5) Troughton’s evidence was also corroborated by driver E. H. Wilkins and fireman G. D. Evans, who were working the up slow passenger train, which was waiting at the up fast advanced starting signal when the accident took place. Wilkins stated that his engine was about 50 yards north of that signal, that is to say he was roughly midway between the down fast distant and home signals.
being about 700 yards north of the former and 530 yards south of the latter. He was thus in a good position to see both of them.

He first noticed the express when it was closely approaching the distant signals, and he observed that both were in the warning position, but that the engine was steaming. He was so impressed by the speed at which the train was travelling, having regard to the indications of these signals, that he drew Evans' attention to it. Both agreed that the train passed them at 60 to 65 miles an hour; the engine was then under steam, and running normally, with the brakes off. Realising the situation and anticipating an accident, they looked back and watched the engine pass the home signals at danger, but they heard no whistle. Evans was of opinion that it was still steaming when it was about 200 yards from the home signals, but he thought that the regulator must have been closed just before reaching the signals, as he saw a puff of smoke from the chimney.

(6) The guard of the express, T. H. Hancox, was in the rear coach as the train approached Leighton Buzzard. He stated that he stood on the platform at the engine for a couple of minutes at Euston, and spoke to the fireman but not to the driver. Both men appeared to be in normal health. He walked back down the train, examined the couplings, and subsequently tested the brake from the rear van in the prescribed manner. He found it in order, 20 inches of vacuum being indicated on the gauge. The train started to time, and was about a minute in advance of schedule at Tring. Hancox did not notice any application of the brake after the departure from Euston till the train was approaching Leighton Buzzard, the speed then being, in his estimation, from 60 to 65 miles an hour.

He was making up his journal at the time, and was unable to say exactly where the train was when he noticed the brakes being applied, but it did not strike him that there was anything more severe than an ordinary service application. In this connection, with a train of 14 coaches, it would take several seconds for an emergency application from the engine to make itself felt in the rear vehicle. Hancox also said that following this application he noticed a series of jerks or surges in the train before it came to rest, but the impression he formed at the time was merely that the driver had made rather a rough stop. He heard no whistle. He was not aware that the train was to be diverted to the slow line at Leighton Buzzard, and so was not on the look-out for signals; nor had he particular reason to pay attention to the speed of the train as it approached the junction.

Hancox had had, and signed for, the Fortnightly Notice, but he said that on the day of the accident he had been under a misapprehension as to the period to which his copy applied, and so was not conversant with the fact that, according to that notice, the train ought to have been diverted to the slow line at Tring. He had not seen the Special Notice issued on March 19th, though in accordance with the usual custom there was a copy of it available in a tray on the desk at which he signed off duty on March 21st, but he omitted to look at it. On March 22nd he signed on duty at the Euston Station Master's office, since the Staff Office is closed on Sundays, and there was no copy of the Special Notice displayed there. Even if he had been aware of the contents of this Notice, Hancox said he would not necessarily have mentioned the routing to the driver.

(7) Two of the carriage examiners at Willesden, H. T. Foster and E. C. Perry, stated that the coaches forming the train had been thoroughly examined when they came into the carriage shed on the evening of March 21st, and that the brakes had been tested there that evening and again before the train left for Euston on the morning of the 22nd. Both men stated that the vehicles were in all respects in proper running order.

(8) Evidence as to the speed of the train and its behaviour immediately before the accident, was also given by ticket collector C. F. Cast and by seven of the dining car staff. Three of these witnesses were travelling in the fourth coach, four in the ninth, and one in the twelfth. Their opinions as to speed varied, but none thought that the train was travelling at more than about 35 miles an hour when they felt either a brake application, or a jarring or surging motion. More than one stated that the speed was reduced after passing Cheddington, and was slower than usual. But they all admitted that they were not paying particular attention to this, as they were engaged in their several duties, and none of them had formed a definite opinion of the position of the train when the
brake application or unusual motion was first felt. Even so far forward as the
fourth vehicle, the brake application and surging or swaying was not sufficiently
violent to disturb the appointments of the tables, which had been laid for lunch;
but further back, in the ninth vehicle, the jerking after the brake application
was severe enough to throw one of the cooks against the hot plate, while the other
was sufficiently perturbed to extinguish the gas range. Only one of these eight
men recollected hearing the engine whistle.

(9) Evidence regarding the issue of the Fortnightly and Special Notices
was given by C. J. Harding, Clerk in the Trains Office at Crewe, and by H. W.
Moy, timekeeper at Camden engine shed.

Harding explained that the Special (permanent way) Notices were issued
midway through the period covered by the Fortnightly Notices, as an amend-
ment to the corresponding section of the latter. Attention is drawn to their issue
in the Weekly Special Train Programme. In the case under consideration 25
copies of the Special Notice had been sent to Camden engine shed. A reserve
stock is held at Crewe, and requests for additional copies are promptly met;
but the procedure for acknowledging receipt of the Fortnightly Notices is not
in force as regards the Special Notices.

The Chief General Superintendent’s Circular No. 42 on the subject, dated
September 1930, lays down that a copy of every Notice supplied to engine sheds
relating to matters affecting the permanent way and working of the line is to
be posted in the Shed Notice case as soon as received, and also that “A copy
of every Notice relating to . . . . . . matters affecting the Permanent Way
and Working of the Line . . . . . . must be supplied to every driver and
passed fireman concerned before the day on which such Notice comes into opera-
tion and must be signed for by him in the Notice Signature Book provided.”

Moy was on duty when the Special Notices were delivered at Camden on the
morning of 21st March. As these Notices applied to 22nd March and later
dates, he put them on one side to be dealt with by the timekeeper on duty the following day. He did not draw the attention of the man who
relieved him to their existence, nor did he enter up in the Notice Signature book
a record of their receipt. He stated that it was not customary to do so. The
Special Notices were in consequence overlooked on 22nd March, and were not
issued to any of the Camden drivers until 23rd March. Moy said that, although
drivers’ signatures were always obtained for the Fortnightly Notices, it was not
the practice to obtain signatures for the Special Notices, although these are always
issued to the men. He was not aware of the instructions referred to. He also
stated that 130 copies of the Fortnightly Notice, applicable to the line south of
Crewe, were regularly received at Camden, and that the office staff, not the time-
keepers, were responsible for posting copies in the Notice case.

Mr. T. Tandy, District Locomotive Superintendent, Camden, confirmed that
it was the duty of the office staff to post up the notices; on 21st March the clerk
who usually did this was off duty. Mr. Tandy also said that the reason why a
smaller number of Special Notices than of Fortnightly Notices sufficed was that
as a rule they only affected a portion of the men to whom the Fortnightly Notices
were issued. Moreover, as the Special Notices usually applied to one day only, it
was regarded as sufficient if a copy was posted in the Notice case, without supply-
ing each driver with a copy.

The Notice Signature Books are periodically examined by Inspectors to
see that drivers’ signatures have been obtained for all notices up to date, the
receipt of which has been recorded. Head Office Inspector L. H. Slack was
unaware that at Camden the Special Notices were not so recorded.

(10) Mr. J. E. Anderson, Superintendent of Motive Power, Derby, gave
evidence regarding the service and records of driver T. H. Hudson and fireman
S. W. H. Rogers, who were in charge of the engine of the wrecked train, and
were both killed instantly. Hudson was 51 years of age, had 34 years’ service,
and had been a driver for 11 years. His record was excellent, and Mr.
Anderson, from personal knowledge, described him as a steady and exception-
ally reliable man.

Rogers was 38 years of age, had 17 years’ service, and had been a registered
fireman for the past 14 years. His record, also, was excellent. He was
Hudson’s regular fireman.
Mr. Anderson also stated that Hudson was thoroughly acquainted with the "Royal Scot" class of engine and with the road, as he had been in the "Royal Scot" link for over three years. He had driven engine No. 6114 previously, the last occasion being from Euston to Carlisle on 16th March, the Monday before the accident. He had worked from Carlisle to Euston or vice versa on the following three days, and had been off duty on Friday and Saturday, 20th and 21st March, as he had completed his week's mileage. On Sunday, 22nd March, he booked on duty at 10.55 a.m. at Camden, the engine having been prepared for him.

Hudson was last medically examined for eye-sight in November, 1929, and he had not been off duty through illness during the 12 months previous to the accident. The timekeeper at Camden engine shed, who had a few minutes conversation with him when he came on duty, and had known him for some 12 years, was of opinion that he was in his usual state of health, and there is no reason to suppose that he was unfit for duty in any way.

Another statement to the effect that Hudson and Rogers were apparently fit and well when the train left Euston was also made to me subsequent to the Inquiry by one of the passengers, Mr. K. E. Irving. He particularly noticed the former on the footplate, and conversed for two or three minutes with the latter on the platform, only leaving him when the train was about to start.

Mr. Irving was travelling in the fifth coach, and was under the impression that speed slackened to 50-60 m.p.h. as the train approached Leighton Buzzard. His account of the circumstances was particularly lucid. The first abnormality was a lurch to the right when running at the speed referred to and before any brake application was felt. A second or two later, he thought, the brakes were violently applied, and immediately after that the coach left the rails and came to a stand without shock or jerk, beyond that expected in a rough stop.

Conclusion.

There is no doubt that the distant and home signals concerned were respectively displaying their correct warning and danger indications when the express passed them; and in fairness to signalman Troughton I would add that I am satisfied that the evidence precludes the possibility of the erroneous lowering and subsequent reversal of the fast line signals.

I conclude, therefore, that the cause of this regrettable accident was the failure on the part of the enginemen to obey these signal indications. The fact, however, that they were both killed renders impossible direct evidence in regard to the circumstances in which this took place, and what happened on the footplate must remain a matter of surmise.

So far as guard Hancox is concerned, I should have expected him to have been on the look-out for the signals in question, and to have taken action, had he known that the train was to be diverted. It is unfortunate that he did not see the Special Notice concerned.

It is quite clear that the train entered the junction at a speed which could not possibly have afforded a safe passage. Accepted calculations show that, had it been of the order of 70 m.p.h., the engine might have been expected to overturn to the left on the right-handed curve with which the junction crossover commences.

That this did not happen indicates that the speed was not so high; but despite expressions of opinion to the contrary, given no doubt in good faith, I have come to the conclusion that it could not well have been lower than 55 to 60 m.p.h. There is the evidence of guard Hancox, and of the three observers, signalman Troughton, driver Wilkins and fireman Evans. There is also the fact, revealed by signalman Sayell's evidence, that after passing Cheddington the train covered the distance of nearly four miles in 32 minutes at the most.

Furthermore, the results, which involved the slide of the engine on its side for at least 60 yards, the extensive destruction of track, and the wreck of the four leading coaches, are conclusive. In this connection the accident affords another example of the value of the shock-absorbing buffers with which all the coaches but one were fitted.
In regard to the track and equipment of the junction, there can be no criticism. The works are of first-class construction throughout and were in good order. As I have said, overturning was apparently imminent as soon as the switches diverted the engine from the line of the tangent. The displacement of the track at this point was indicative of heavy lateral pressure on the left-hand switch rail, and is further confirmation of excessive speed.

The subsequent markings on the rails have been described and are shown on the attached plan. I conclude that, as the result of this initial lurch, derailment of the leading coupled wheels was just avoided as they traversed the first crossing (1 in 10) of the turnout, and there is no evidence that it took place until the obtuse crossing (1 in 64) of the diamond was reached. Whether the rapid application of the brake, as the engine entered the junction, had any bearing upon this is purely a matter of conjecture.

These wheels were apparently the first to leave the road, that on the right-hand side striking the nose of the point-rail, climbing it, and derailing 11 ft. further on. The latter then travelled outside and roughly parallel to the running rail, striking the outside of the wing rail of the 1 in 64 V-crossing ahead, and thereafter encountering and climbing the splice rail of this crossing 7 ft. beyond the nose. Thus the front of the engine must have been forcibly deflected to the left, just as the left-hand intermediate coupled wheel, 7 ft. 4 in. in rear, was approaching this crossing. In consequence this wheel mounted the nose, also becoming derailed to the left, a little further on, diminution of weight on the corresponding right-hand wheel having permitted escape from the check rail. Certain calculations made by the Company's officers go to show that this might be expected to have taken place at a speed of about 55 m.p.h.

Owing to the destruction of the track ahead of this crossing, it is of course impossible to say definitely how the overturning came about; but having regard to the markings which existed, the trailing coupled wheels appear to have followed those ahead in the course of derailment at the crossing, while the bogie may be presumed to have momentarily held the road and guided the engine in its passage towards the down slow line.

The markings, however, on the right leading bogie wheel, and the heavy abrasion on the rail of the lead of the trailing points in this line, seem to indicate that the bogie became derailed, and turned in a counter-clockwise direction, after passing through the crossing. Doubtless the leading right-hand coupled wheel, and probably the other coupled wheels on this side, also came into violent contact with the lead. I assume that the overturning was brought about in this manner, some portion of the engine apparently striking the 6-foot rail of the up slow line at the facing points in that line.

The abrasions found on the right-hand side of the engine at a height of about 5 ft. from rail level were consistent with a long slide on its side, resting on this rail of the up slow, until the rail broke, as already described, and became entangled in the boiler lagging.

In regard to the engine itself, a number of letters have been received on the subject of diversion of attention on the footplate; but most of the contingencies which occur to one's mind, such as the development of defects in the firebox, smoke box, or mechanism, can be eliminated as the result of the subsequent examination. The comparatively slight damage to the motion on the right-hand side apparently occurred after the engine overturned. Nor does there appear to have been failure of control gear—there was evidence that the regulator was closed just before the junction points were reached, and certainly the brake was in order throughout the train—nor was a gauge glass broken. The fact that the engine was steaming also rules out the possibility of a blow-back from the fire.

Indeed, notwithstanding the view which should have been obtained even of the home signals, there seems to be little doubt that it was not until the engine was within a few yards of this location, that the situation was realised on the footplate and the regulator closed, the brake applied, and the whistle blown. It is clear that time had been insufficient even to move the reversing gear from running position.
As I have said, it is only possible to speculate as to why men so experienced and capable should have thus failed under such ideal weather conditions. One explanation might be that Hudson was incapacitated through sudden illness and his condition may not have been noticed by Rogers until it was too late; alternatively, Rogers may have been taken ill and Hudson may have missed the signals through going to his assistance. Against such a theory, however, there is the evidence that both men were seemingly in their usual health when the train started, and such other evidence as is available affords no grounds for a contrary opinion.

Then there is the question of obstruction of Hudson's view by steam and smoke beating down on the cab window. Though the wind was from a westerly direction at the time, it was probably not of sufficient velocity to preclude this possibility, having regard to the speed of the train, and the fact that the engine was steaming lightly on the falling gradient. But, as Mr. Anderson said, Hudson was a man who knew "every inch" of the road, and, as the distant signals are located in the only cutting in this neighbourhood, it is very difficult to believe that on a fine day, even though his view of the signals may have been temporarily obscured, he could have remained for nearly a minute under the wrong impression that he was still approaching them.

There is no doubt, however, that "Royal Scot" engines suffer from this disadvantage, and though in consequence a driver would take precautions accordingly, and this feature heretofore has not, I understand, had untoward results, it may be that on this occasion change of direction of the train on the curve accentuated the difficulty of vision. I feel that this is not a contingency which can be entirely disregarded. For instance, it is conceivable that it may have contributed to misreading of the distant signal indication.

On the other hand, if this factor had no bearing upon the result, there is the possibility of actual diversion of attention, due to conversation on the footplate, following some minor incident in the working of the engine, or otherwise. There might have been some difficulty with the fire, examination of which may have momentarily affected eyesight. Grit in the eye may have needed Rogers' assistance, or failure of an injector might have required Hudson's assistance. I understand that the injector equipment on these engines gives little trouble, and the shed history reveals nothing abnormal in this respect.

Or again, it would not be an unreasonable explanation for conversation and diversion of attention, had the brick arch, or a part of it, failed. It cannot of course be established whether it was intact until the engine overturned, and it is not an occurrence which would immediately affect the working of the engine, or even be noticed.

None of these and similar explanations, however, can be regarded as conclusive, and there is the further contingency of psychological failure, namely, lapse or mind-wandering, following momentary lack of concentration. In this connection, the question arises as to Hudson's knowledge, or rather his ignorance, that the train was to be diverted.

While I do not regard the omission to issue to him a copy of the Special Notice, or to put it in the Notice case at Camden, as being of primary importance, I feel that had he seen this Notice, and thus been aware of the routing of his train, the need for special alertness when approaching Leighton Buzzard would have been impressed upon his mind, and the accident might thereby have been averted, assuming that he was not incapacitated before it took place.

There are, however, seven such junctions between London and Rugby, and diversion of trains thereby from fast to slow lines and vice versa, continually takes place for traffic reasons without previous advice by Notice, as it does in similar circumstances throughout the country. It is hardly necessary to add that a driver's first duty is to run to signal indications, for failure in that respect neutralises all safeguards.

**Remarks and Recommendations.**

It is difficult to imagine a better illustration in support of the conclusions of the recent Committee upon Automatic Train Control. Had equipment of this kind existed, operating in conjunction with the distant signal, I think that this accident would have been prevented.
In the absence of such direct means for assisting engine, every endeavour should be made to reduce the liability of obstruction of vision from the foot-plate, and the Committee also specifically referred to this point.

As a matter of fact, the driver, when sitting on the left-hand side of the cab of the "Royal Scot" class of engine, obtains a good view of the road ahead through a rectangular window of ample dimensions. But the high boiler pressure renders it possible to run with an early cut-off, even with a heavy train, and this results in a comparatively gentle beat, which, coupled with an exceptionally large smoke box volume, accentuates the liability for steam and smoke to drift along the top of the boiler, particularly when working lightly.

This feature is noticeable on this class of engine, and it is recognised, and has been considered, by the Company's officers. But improvement, I understand, has not yet passed beyond the stage of experiment with various forms of baffle plate round the chimney. Like the lip of the chimney itself, however, this does not appear to be effective, at any rate when running in steam. Nor does the operation of the blower, when running without steam, seem to improve matters. I recommend therefore that steps be taken forthwith to test thoroughly the arrangement of "down-draught" plates at the side of the smoke box, which have undoubtedly been found for some years to be efficacious on the Southern Railway and on the Continent.

In this connection, the Chief Mechanical Engineer informed me that wind tunnel experiments with a model are being undertaken, such as those which apparently resulted in the successful design of engine No. 10,000 on the London and North Eastern Railway. Having regard to the size of the smoke box of the "Royal Scot" class it would not seem to be inappropriate also to consider alteration of the front on similar lines.

It remains to add that I am informed that necessary steps have been taken to ensure compliance with the procedure laid down for the issue of Fortnightly and Special Notices to drivers. Obviously the same procedure should apply to both; otherwise information previously given may be definitely misleading if the men are not aware of its subsequent cancellation.

In my opinion guards should similarly receive, and sign for, all Special Notices, and there would appear to be advantage in the exchange, between guard and driver, of information as to routings, if and when they have occasion to speak to one another before departure, in connection with their other duties.

I have the honour to be,

Sir,

Your obedient Servant,

A. H. L. MOUNT,

Lt.-Colonel.

The Secretary,

Ministry of Transport.
APPENDIX I.

PARTICULARS OF DAMAGE TO "ROYAL SCOT" ENGINE 6114.

Boiler Mountings.
- Regulator handle bent.
- Supplementary steam valve casting broken.
- Right side combination clack box casting broken.
- Warming apparatus valve spindle handle bent and casting broken at flange.
- Steam pressure gauge and shut off cock missing.
- Firebox front boiler casing broken away.
- Right side hand rail badly damaged and support pillars broken.
- Driver's leg guard buckled.
- Right side of boilermaker legging buckled.
- Steam and pipes under boiler lagging right side broken.

Smokebox Fittings.
- Smokebox door handrail bent and buckled.
- Right side of smokebox buckled and damaged.

Frames and Attachments.
- Footplate framing right side torn and buckled.
- Right intermediate drag plate bent.
- Footplate support frame buckled and cracked right side.
- Right leading footplate step missing.
- Right trailing engine footplate step bent.
- Right intermediate fallplate broken at hinge and buckled.
- Right leading life-guard buckled.

Cab and Attachments.
- Gangway doors missing right side.
- Left side torn away from rivets.
- Driver's seat broken away.

Wheels, Tyres and Axles.
- Mechanical axle lubricator missing.
- Left leading coupled tyre badly cut on edge of flange about six inches long.

Motion.
- Return crank arm right side broken off and missing.
- Return crank rod missing.
- Right connecting rod bent.
- Right outside crosshead bracket arm and union link torn away and missing.
- Combining lever badly twisted.

Brake Gear—Engine.
- Steam pipe and connection to right bogie brake cylinder missing.
- Leading, middle and trailing brake hanger cross stretchers broken at ends, right side.
- Right trailing engine brake block broken.
- Left trailing brake block broken near pin hole.

Brake Gear—Tender.
- Both tender brake hanger stretchers and pull rods badly buckled.
- Both leading tender brake blocks broken.

Cylinders and Attachments.
- Right side cylinder steam pipe casting broken and right steam chest air valve broken away from steam pipe casting.
- Right right cylinder relief valves broken.
- Cylinder and steam chest exhaust cocks missing.
- Exhaust cocks lever rods bent.

Tender.
- Footplate framing bent right side.
- Both right tender steps broken.
- Tender intermediate footplate bent and broken, and support stays broken.
- Tender casing apparatus flexible pipe torn off, and bottom connection flexible vacuum pipe torn off.
- Left back tender step slightly bent.
- Left trailing axle box and lid broken.
- Right side axle-boxes broken and lids missing.
- Support stays and plates round coal bunker right side buckled and damaged.
- Tender brake hand-screw strained and fast.

Injectors and Fittings.
- Exhaust injector casing broken in several places and several parts missing.
- Heating apparatus steam pipe under footplate broken.

Sandboxes and Connections.
- Both leading and right leading sand pipes broken.
APPENDIX II.

PARTICULARS OF DAMAGE TO ROLLING STOCK, IN ORDER OF MARSHALLING.


315. Kitchen Car. Built Derby 1930. Body completely smashed. Underframe and bogies damaged beyond repair. Fitted with 4 gas cylinders 6' 4" x 2' 0" with safety valves. All cylinders displaced in housing, one badly holed at end and all pipes broken. All wheels off the road.


1320. Corr. Vest. Third. Built Derby 1930. Broken, 3 bottom stepboards, 1 truss bar and cross stays, 2 axleboxes, 1 triangular brake bar. Main steam pipe, vacuum hosepipe stopper and 1 doorlight. Damaged and displaced, 2 gangway frames, 3 top stepboards, 1 axleguard stay rod, 2 bearing spring suspension bolts and rubber and iron cones, 1 triangular brake bar, 1 safety hanger, part of roof at end and side panels. Dynamo and axle driving pulley damaged and belt minus, lavatory partition displaced and door panels broken. Electric cell damaged and displaced. All wheels off road.

3031. Corr. Third. Built Derby 1930. Leading end and gangway frame forced inwards and damaged, trailing end gangway frame damaged. Partition at trailing end displaced. 1 buffer, 1 axlebox face plate, 1 axlebox and vacuum hose pipe stopper broken, and 2 buffers bent. Trailing bogie distorted, 3 stepboards, cell boxes and Dynamo damaged, and belt minus. All wheels off the road.

7776. Corr. Third Brake. Built by Metropolitan-Cammell 1930. 2 gangways and electric cells damaged, 1 axlebox and bogie check chain broken, 3 bottom stepboards damaged and leg irons bent, 2 side bearing spring suspension bolts, 1 buffer and axleguard stay rod bent, 1 steam hosepipe torn off, and Dynamo belt minus. All wheels off the road.

1201. Corr. Vest. Third. Built Derby 1930. Both gangways damaged, trailing lavatory compartment partitions and luggage shelves badly displaced and damaged. End forced inwards, 3 buffer rods, 1 coupling, and 2 side bearing spring suspension bolts bent. 1 axlebox broken, Main steam pipe displaced, 1 cell box damaged and Dynamo belt minus, 2 stepboards damaged and leg irons bent, trailing bogie raked and passenger communication apparatus damaged. All wheels off the road.

10488. Corr. Dining Car. Built Wolverton 1904. Leading balcony end and kitchen partition badly smashed, and fittings in kitchen displaced, 2 buffers, 2 buffer castings, and passenger communication vacuum stand pipe broken, 1 buffer rod, 2 bogie stay rods, 3 triangular brake bars bent. Trailing gangway damaged, and outside balcony door grazed. All wheels off the road.


Four vehicles in rear, undamaged.

The following vehicles, which at the time were standing on the stop block siding between the up fast and down slow lines, were damaged on the displacement of the vehicles on the passenger train by impact, as follows:

3791. Horse Box. Built Wolverton 1863. Cupboard end smashed, partitions and folding doors damaged, and two buffers bent.

5873. L. & Y. Horse Box. (No build plate.) Body completely smashed, frame racked and headstock broken.

3954. Horse Box. Built Wolverton 1897. L. 42. 13-2-61. The body is completely smashed.

5987. Horse Box. Built Stoke 1906. 3 end corner pillars smashed and panels damaged, 6 stepboards and leg irons broken and bent, locker partition, locker and folding flap doors smashed, roof damaged, axleguards and stays, and hand brake lever bent.

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ACCIDENT AT LEIGHTON BUZZARD, 22ND MARCH 1931

PLAN SHOWING POSITION OF VEHICLES AFTER ACCIDENT

PLAN SHOWING DAMAGE TO PERMANENT WAY

SCALE

PLAN SHOWING TRACK DEFORMATION AND DESTRUCTION

EUS

GRADIENT DIAGRAM

PLAN SHOWING DAMAGE TO PERMANENT WAY

SCALE

LEIGHTON BUZZARD STATION