

## Near Miss with Track Worker

### Langley Station

Sunday 16<sup>th</sup> February 2020

HSE Info Exchange Reference Number: 117371

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## I Executive Summary

Transport for London ("TfL") conducts Formal Investigations into the most serious incidents that occur across its transport network. These investigations are undertaken by trained investigators in accordance with approved procedures. The outcomes of these investigations allow TfL to understand the cause of any such incident and implement suitable action to prevent reoccurrence.

The investigation was commissioned into a near miss incident at Langley Station in the early hours of Sunday 16th February 2020, when an employee of [REDACTED] in the role of Engineering Supervisor (ES), was placing worksite marker boards, as part of a planned possession. The first part of the possession was on the Up and Down Relief lines. The ES positioned a worksite marker board on the Up Main and was about to put out a worksite marker board on the Down Main when he became aware of the approaching train. The train travelling on the Up Main at approximately 110mph sounded its horn and applied the emergency brake before striking the worksite marker board. The ES, alerted by the train's horn, quickly realised that the train was travelling on the main lines. He threw the marker board he was holding into the cess area and then ran back to retrieve the other marker board, placed on the up main, before he ran into the cess area with the train then passing through approximately 5 seconds later.

The investigation was undertaken by Tom McGlew, SHE Business Partner, Surface Transport.

[REDACTED] conducted its own investigation report into this incident and have provided a copy of their report. In addition, [REDACTED] have provided staff training records, written statements, voice recordings and other key safety documentation. These documents along with RSSB and Network Rail documents and email correspondence were reviewed. The investigation also reviewed the Confidential Incident Reporting and Analysis System (CIRAS).

This investigation identified areas of improvement for:

- Non-Technical Skills of [REDACTED] employees
- Attendance at whiteboard meeting by [REDACTED]
- Attendance at PICOP meetings by [REDACTED]
- [REDACTED] Fatigue Management process
- TfL SHE Supplier Assurance activity

The FIR makes a total of eight recommendations to address the improvements identified. Three of the eight recommendations were made by [REDACTED] in its report with 2 of these now completed.

## 2 Preface

The purpose of the Formal Investigation is to determine the causes of the incident and to identify any measures necessary to prevent a reoccurrence. The investigation is not to establish blame or liability.

## 3 Terms of Reference

The investigation should:

- Establish the sequence of events that led to the incident.
- Identify why the incident occurred in terms of immediate cause, causal factors and root causes.
- Identify any actions already underway to address the root causes.
- Develop reasonably practicable recommendations to address the root causes.
- Consider previous or similar incidents.

The investigation should pay particular attention to:

- Establishing an accurate description of the specific position the ES was in and actions he took once he observed the train approaching; and, establish the underlying causes regarding this course of action
- Compliance with RSSB Rule Book safety rules, and the competence, training and certification of those involved
- The safety culture of the managing organisation, monitoring and supervision; and particularly, interpretation and compliance with NR/L3/OHS/019-IP Level 3 Work Instruction Planning and Delivering Safe Work – Implementation Principles for Infrastructure Projects.
- Quality of possession planning within the context of NR/L3/OHS/019-IP, familiarisation and on-site safety briefing
- Management of the incident response, including evidence gathering, local and organisational actions; sharing of information and reporting; and the contractor's compliance with the requirements to report dangerous occurrences on the railway to the ORR, as outlined in RIDDOR regulations.

- Management of the contractual arrangements with respect to safety management between [REDACTED] and London Overground Projects

#### 4 Summary of Incident

Time	00:23
Date	16 <sup>th</sup> February 2020
Organisations involved and their business units /departments	[REDACTED]
Location	On the Main lines at Langley Station, Station Road, Langley, Berkshire, SL3 6DB
What Happened	An Engineering Supervisor (ES), employed by [REDACTED], was in the process of positioning marker boards on the track, when a train entered the possession, striking a marker board and requiring the ES to move to a position of safety. The ES had placed the board on the wrong track.  There were no injuries and no damage to the train. One Marker Board was damaged.
Consequences	Damage to engineering marker board, delay to passenger services on London to Reading line.
Incident Report Number	117371
Enforcement Authority Involvement	The incident was reported to the ORR

#### 5 Location of the Incident

The incident took place on the main lines at 16m 00 chain (Paddington to Reading) at Langley Station, Station Road, Langley, Berkshire, SL3 6DB.

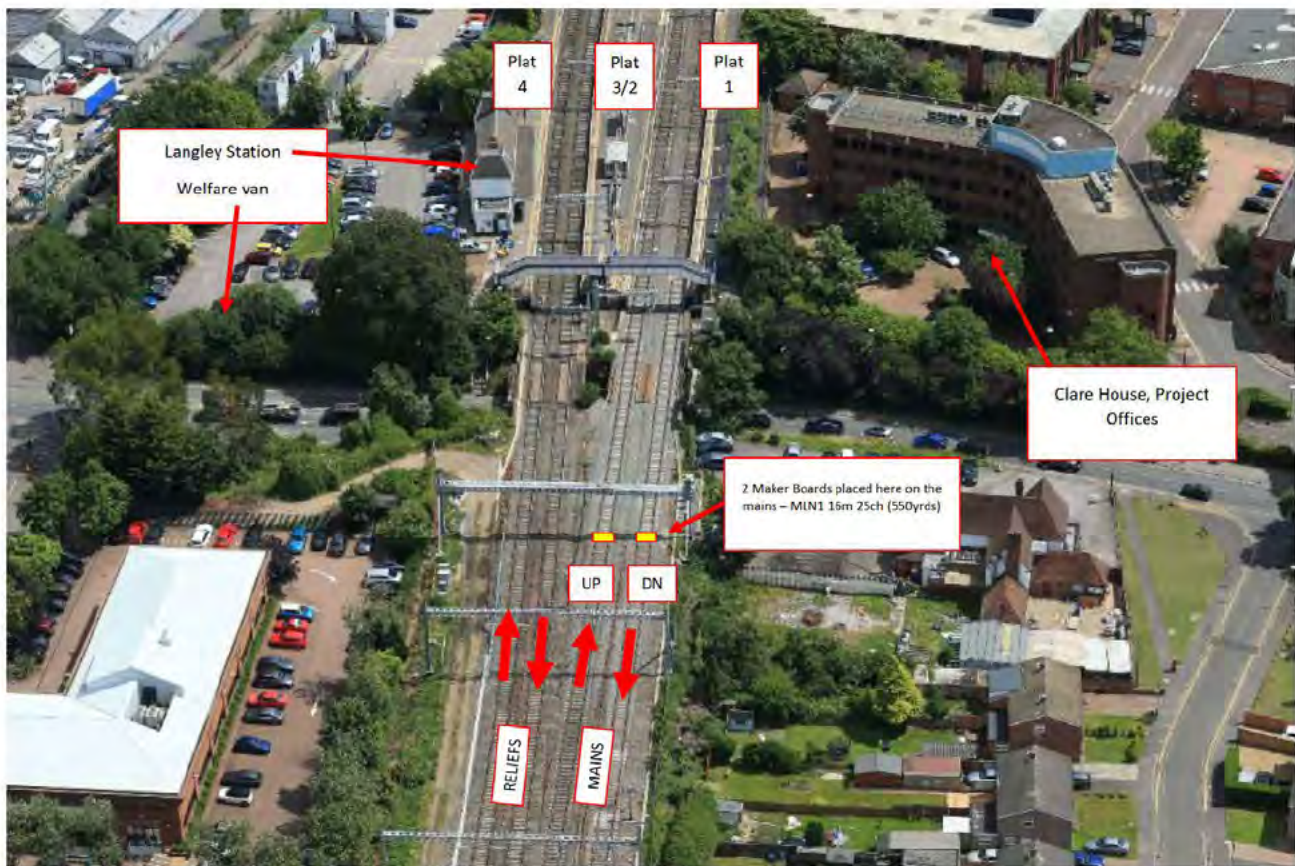


Fig No. 01: Langley Station complex showing Mains and Relief lines

## 6 Weather and Environmental Conditions

This activity was undertaken at night during a night-time possession from 00:01 to 08:00hrs. Over the course of the weekend (Friday 14th to Sunday 16th February 2020) the whole of the UK was being subjected to the effects of Storm Dennis. There were wind gusts of up to 60mph with spells of heavy rainfall. The temperature was approximately 8 degrees Celsius. The incident took place shortly after midnight so during the hours of darkness.

## 7 Pre-Incident Details

The works at Langley Station commenced in May 2018. The works were to install three new lift shafts and a new footbridge. The scope of works under the LOCROS contract involved the construction of Access for All (AFA) works, which comprises of works at four separate stations; Taplow, Langley, Iver and Hanwell.

On 6th December 2019, [REDACTED] Service Planner booked the possession for 16th February 2020. The booking referenced the details on the up and down Relief lines (00:01 – 08:00hrs) and on the up and down Main lines No Booked Service (NBS) only.

On 12th/13th December 2019, [REDACTED] Service Planner requested Safety Critical Staff for the possession for 16th February 2020 to be supplied by Network Rail Asset Protection (ASPRO). This is the process that should be followed in accordance with NR's interpretation of Standard NR/L2/OHS/019 – Safety of People at Work on or Near the Line.

On 30th January 2020, [REDACTED] Service Planner requested Safety Critical Resources via [REDACTED] Resource Operations due to NR ASPRO being unable to provide an ES/SWL2 at Taplow and Langley stations on 16th February 2020. [REDACTED] Service Planner noted it would be ideal if the Engineering Supervisor used previously (ES) or another colleague were available, as both had been on site at Langley and involved with possession works, some 3 weeks before this incident.

On 4th February 2020, the ES (used previously) was selected as the ES /Safe Work Leader 2 (SWL2). This was two weeks before the incident.

Between 10th and 14th February 2020, the week prior to working at Langley, the ES was working at Flordon, Norfolk generally leaving home at 06:00hrs and arriving back home at 18:30hrs.

On the 12th February 2020, a Person in Charge of Possession (PICOP) meeting was held at Reading. During these meetings the details of the planned possession are discussed with the various work parties involved. LOCROSW was represented by a Network Rail Asset Protection (NR/ASPRO) Works Delivery Site Supervisor. In previous weeks a [REDACTED] employed representative had attended, but he had moved on from the project due to project works nearing an end. Due to the relatively simple nature of the planned works [REDACTED] considered it unnecessary for a [REDACTED] representative to attend the meeting.

## 8 Incident Timeline

Time	Event
13-02-2020 – approx. 11:00hrs	Engineering Supervisor (ES) contacted [REDACTED] Planner to request a copy of the Safe Work Pack (SWP). [REDACTED] Planner thought this had already been sent to ES and upon checking found this not to be the case. [REDACTED] Planner then forwarded the SWP onto ES.
15-02-2020	
08:45 – 12:30	ES ran various family errands throughout the morning

12:30hrs	█████ Langley Site Supervisor called ES to discuss the works planned for later that night and they discussed the weather (Storm Dennis), and if this would have an effect on the planned works. It was agreed to meet later, on site, to assess the conditions.
12:40hrs	ES arrived back home.
12:40 – 14:00hrs	ES prepared himself some food, spent some time playing with his children and relaxed before then going to bed at 14:00hrs.
14:00 – 17:00hrs	ES slept.
17:00 – 20:20hrs	ES woke up, relaxed watching television and spending time talking and playing with his children prior to then getting ready to go to work.
20:20 – 20:50hrs	ES got himself changed and ready for work and left the house at 20:50hrs, knowing the journey would take around 1 hr 45mins, he also needed to fill up with diesel on the way to work.
20:50 – 22:45hrs	ES drove from home (Sudbury near Colchester) to site at Langley and stopped during the journey to fill up with fuel. ES noted that the driving conditions were bad with very wet and windy weather. This caused the high sided transit van he was driving to be blown around by the wind.
22:45 – 22:50hrs	ES arrived on site at Langley, he went into the back of his van to get changed and then made a call to the PICOP who didn't answer his mobile.
22:50 – 22:55hrs	ES went into the project offices in Clare House, where he signed in and had a discussion with the █████ Langley Site Supervisor where they re-assessed the weather situation. It was decided by the █████ Langley Site Supervisor that the planned works (Scaffolding works and cable pulling activities) would not proceed that night and instead they would continue with other High Street Environment works – such as snagging.
22:55hrs	ES then introduced himself to the ASPRO Controller of Site Safety (COSS) where they discussed the works planned for that shift. ES said to ASPRO COSS that if he felt unsafe in any way then he was to ensure he rang ES to let him know.
23:00hrs	ES then went to pick up 8 engineering marker boards required for the works and ASPRO COSS offered to take 2 of them, which he did. Both

	ES and ASPRO COSS then made their way down to the welfare van.
23:00 - 23:10hrs	<p>ES and ASPRO COSS went into the back of the welfare van where ES briefed ASPRO COSS on the works and informed him that there were no planned train movements, however that could change and if that were the case then ES would inform ASPRO COSS of this. ES also informed ASPRO COSS that there was also no on track plant planned for this shift either.</p> <p>ES informed ASPRO COSS that his work limits which were for the up and down relief (16m 00ch – 16m 45ch), and that the mains were open and for ASPRO COSS to be mindful of the changing weather conditions (Storm Dennis).</p>
23:15hrs	ES asked ASPRO COSS to fill out the Work-site Certificate RT3199 and informed him that he couldn't start work.
23:20hrs	<p>ES then got in his van and drove around from Clare House to Langley Station car park (2-minute journey), where he met the COSS working for [REDACTED]. They discussed where the COSS [REDACTED] was planning on working that shift and the activities they were planning on undertaking.</p> <p>COSS [REDACTED] noted that he may have people working on the platform near the mains (Platform 1 &amp; 2) with signs and ES noted that due to the adverse weather that he requested The COSS [REDACTED] not to do this as they could "potentially act like a kite", the COSS [REDACTED] agreed not to allow these works to proceed unless the weather changed and the winds dropped significantly.</p>
23:30hrs	<p>ES briefed the COSS [REDACTED] on the SWP including the work limits which were for the up and down reliefs and mains (16m 00ch – 16m 45ch), where there were no planned train movements nor any on track plant planned.</p> <p>ES asked ASPRO COSS to "sit tight" and that he would call ASPRO COSS when he got to the worksite.</p>
23:35hrs	The Nominated Person (NOM) - in charge of isolation on the electrics - approached ES. ES briefed the NOM in the same way as he did with ASPRO COSS and got him to sign in. ES then went through the work limits which were on the reliefs and the mains (16m 00ch – 16m 45ch).
23:35 – 00:10hrs	ES was on his own in the back of his van, checking his paperwork and waiting for a call from the PICOP.

16-02-2020	
00:10hrs	ES received a call from the PICOP to inform him that he had signal protection for part 1 of the possession for the Up and Down relief line and that ES had permission to start setting up the worksite.
00:10 – 00:12hrs	ES then took his iPad (and left the hard copy of the drawings in the van) along with 4 No. worksite marker boards and went to access the work area by using the Langley Station Platform No.4. ES went onto the footbridge to access Platform No. 2. ES then made his way onto the track via the access gate at the end of the platform; he left 2 of the worksite marker boards on the edge of the platform by the gate and took the other 2 with him. He then proceeded to walk along the 4 foot on the down main towards the high mileage end.
00:12 – 00:13hrs	<p>ES noted that he saw the designated earthing point (DEP) had been set up at 16m 20ch and decided to place the 2 No. marker boards at 16m 25ch, which was just outside the isolation limits, with the intention of asking the PICOP to shorten the worksite later.</p> <p>ES noted that he decided to do this as it is allowed in the rule book and also was mindful that this would save him walking a further ½ mile (400m there and 400m back) than to go to 16m 45ch, as well as the additional time this would save.</p> <p>This had reduced the worksite length by 20ch (approx. 400m).</p>
00:14 – 00:16hrs	ES then walked back along the down 4 foot towards the station/low mileage end to retrieve the remaining 2 ES marker boards from Platform 2. He then continued walking along the 4 foot on the up main towards 16m 0ch.
00:16hrs	ES then reached the DEP at approximate 16m 05ch (via the track locator). He proceeded to place a marker board on the up main at 16m 00ch.
Between 00:22:56 and 00:23:13 hrs	Incident Occurred – As ES was bending down to put out the last worksite marker board on the down main line he heard a train sounding a repeated blast on its horn (2P85 2358hrs Reading to London Paddington). ES stood up and turned around and looked to see what was going on. ES saw the trains headlights, which looked like they were approaching on the up main line, however due to the

darkness, it looked like the train was travelling onto another line/platform.

ES then very quickly realised that the train was coming into his worksite.

The train struck a marker board at the 16m 25ch at 00:22:56 hours.

ES then threw the marker board he was holding into the cess area and then quickly ran back to the up main line to retrieve the other marker board he'd placed. He grabbed the marker board and then ran back into the cess on the down road into a position of safety.

Approximately 5 seconds later at 00:23:13 hours the train passed by ES, where it then came to a stop further up the line – ES's position in relation to the train was approximately half way down the train length (i.e. half the train had passed him with the other half not having passed him).

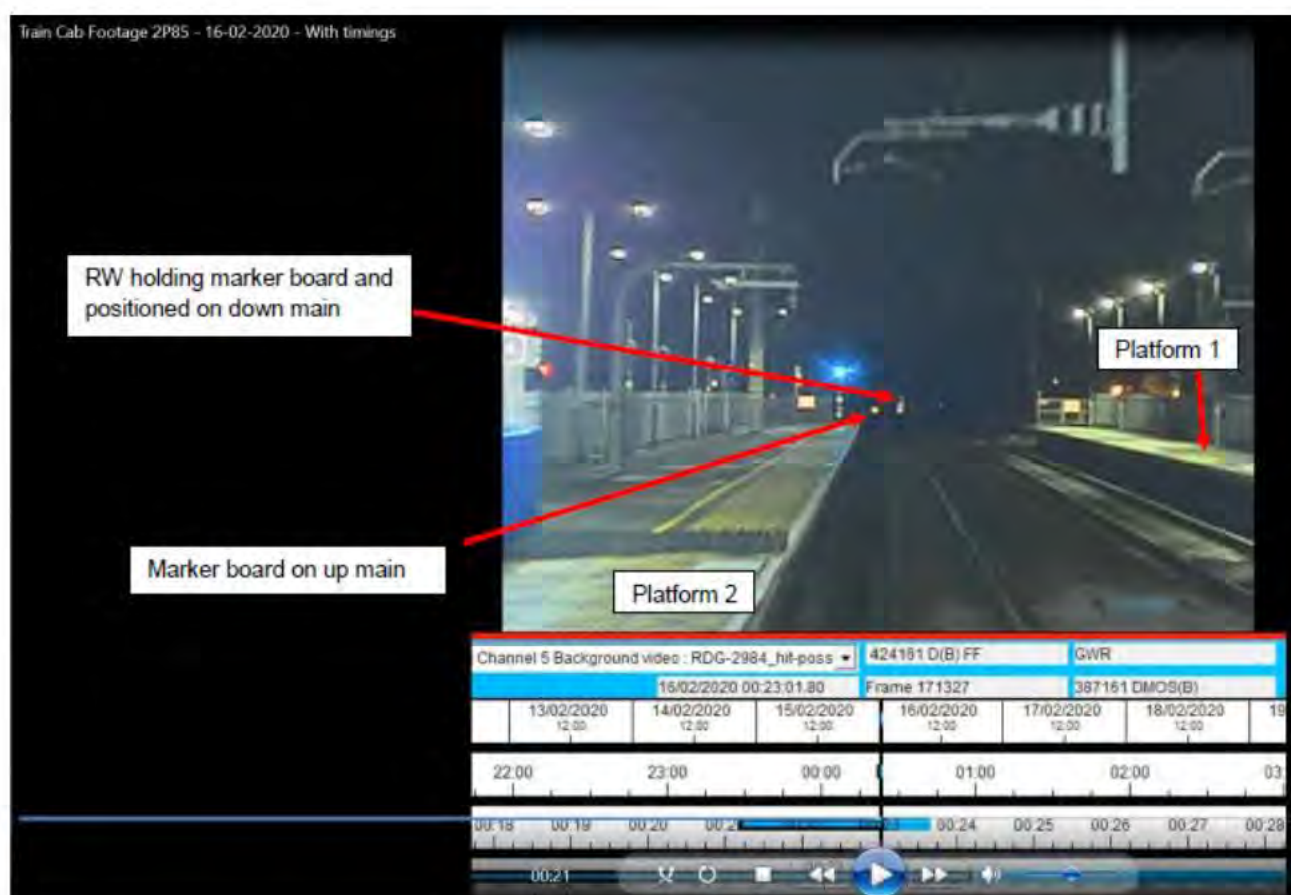


Fig.02 - Photo/still taken from CCTV footage from inside the train (2P85 2358hrs Reading to London Paddington) – Marker boards at 16m 00ch

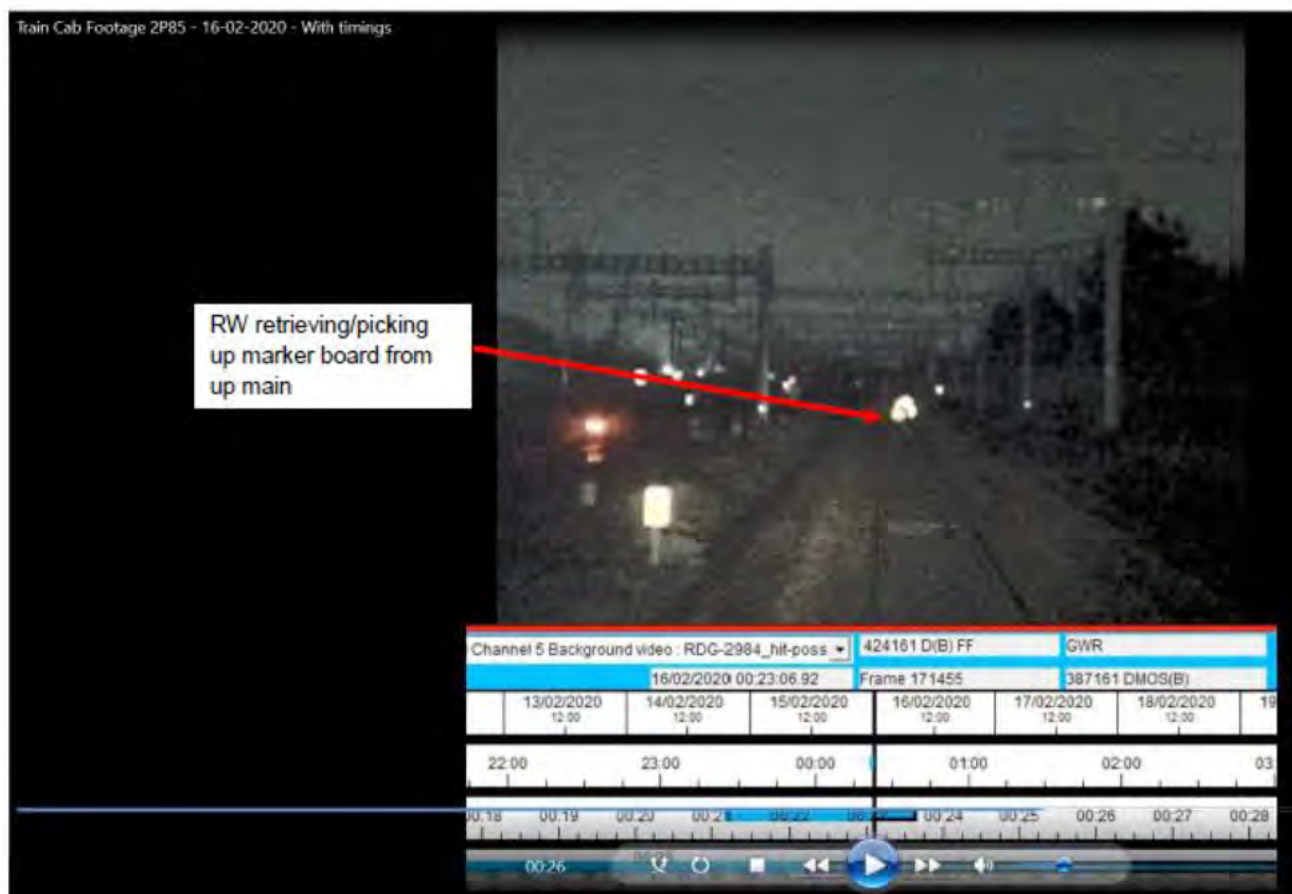


Fig. 03 - Photo/still taken from CCTV footage from inside the train (2P85 2358hrs Reading to London Paddington) – marker board and ES at 16m 00ch on up main

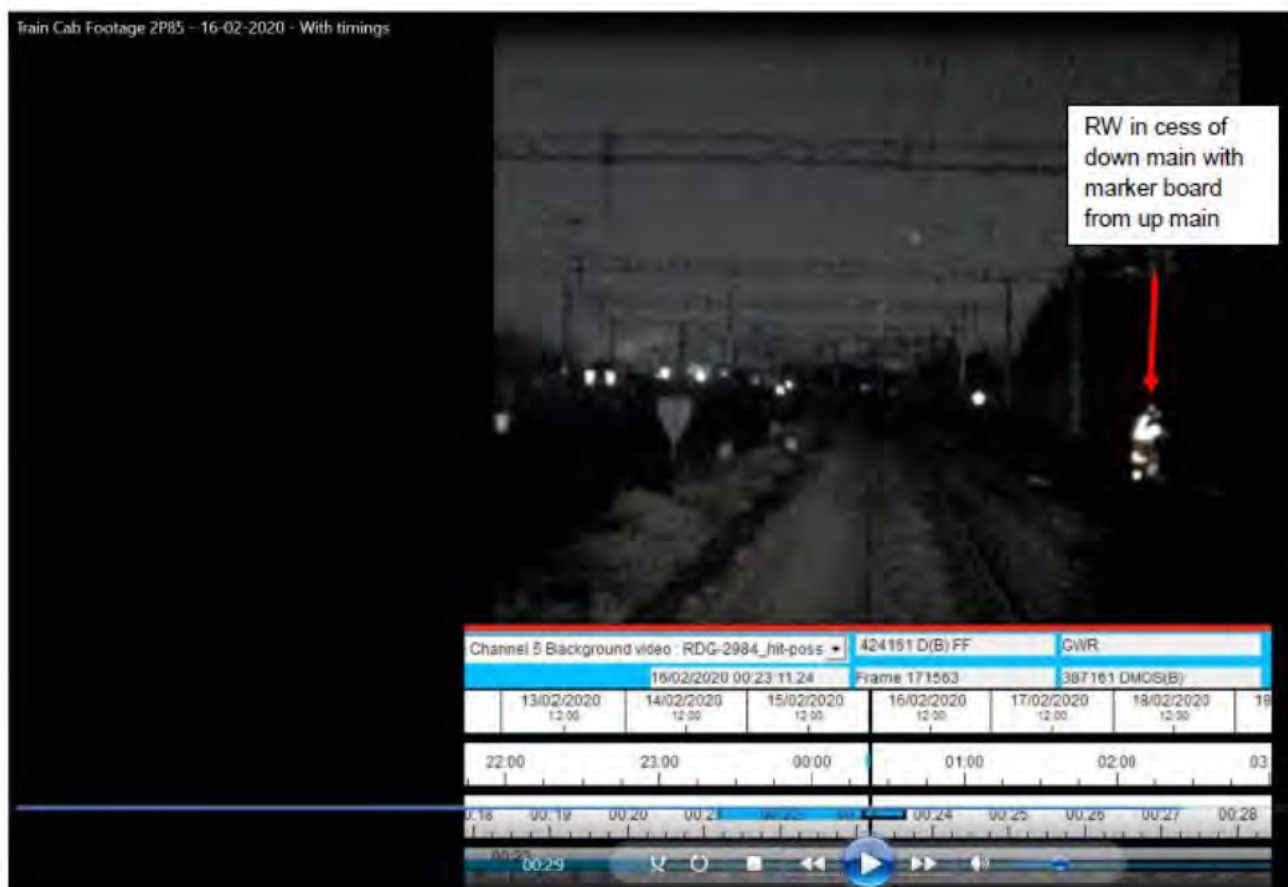


Fig.04 - Photo/still taken from CCTV footage from inside the train (2P85 2358hrs Reading to London Paddington) – ES in cess of down main

## 9 Incident Management and Recovery

There were no issues with regards to incident management. Work stopped immediately and the incident reported and escalated accordingly.

00:23	<p>ES rang the PICOP and informed him of the incident. PICOP attempted to calm ES down and asked if he was ok and if anyone else was with him, to which he informed PICOP that no one else was involved.</p> <p>PICOP informed ES that he needed to ring the Signaller, ES noted he did not have the Signallers number to hand and asked PICOP to text the number to him. ES had dropped his phone during the incident.</p> <p>During this time, another train (9N52 23:58 Paddington to Maidenhead) was brought to a halt in platform 1 (was travelling on the down main line) as a precaution by the signaller.</p>
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00:24hrs	<p>ES rang [REDACTED] Site Supervisor (whilst he was still in the cess of the down mains) and informed him of the incident noting “please tell me the reliefs are the ones I set up first last time?” (note this was referring to when he previously performed ES duties at Langley in wk 44). [REDACTED] Site Supervisor noted that this was not the case. ES realised he had put the marker boards on the mains instead of on the reliefs.</p> <p>[REDACTED] Site Supervisor stayed on the phone with ES to keep him calm and asked him to return to the station.</p>
00:20 – 00:34hrs	<p>ES then walked along the cess of the down to get to the platform. ES couldn't get up onto platform 1 so looked across both roads and then crossed them to get to platform 2.</p> <p>ES then walked along the platform and proceeded to make phone calls to both the PICOP and signaller.</p>
00:38hrs	[REDACTED] Site Supervisor rang the [REDACTED] On-Call-Manager and informed him of the incident.
00:44hrs	The [REDACTED] On-Call-Manager rang [REDACTED] SHES Advisor and informed him of the incident.
00:45hrs	NR Trainee Operations Delivery Manager (ODM) and NR Mobile Operations Manager (MOM) arrived on site and then proceeded to take a statement from ES.
00:48hrs	SHES Advisor rang Optima to provide For Cause post incident Drug & Alcohol testing.
01:30hrs	SHES Advisor and [REDACTED] On-Call Manager then arrived on site and waited with ES as NR Trainee Operations Delivery Manager (ODM) and NR Mobile Operations Manager (MOM) took an initial statement from ES.

## 10 Immediate Actions Taken

ES rang the Signaller. The Signaller blocked all lines.

The Signaller informed ES to wait at Langley Station. ES returned to the back to the welfare van at Langley Station Car park, where he was then met by colleagues who were trying to help calm him down.

A drug and alcohol test was undertaken of ES.

## 11 Reporting Timeline

16-02-2020	
00:44hrs	████ On-call Manager contacted █████ SHES Advisor who attended site at 01:30hrs.
01:30 – 02:40hrs	████ SHES Advisor took voice recorded statements from ES, █████ Site Supervisor & ASPRO COSS.
03:04hrs	████ SHES Advisor reported the incident on Airsweb (████ internal reporting system).
10:20	████ SHES Advisor emailed TFL SHE Manager with updates around the incident.
17-02-2020	Outline of the incident was reported to: ORR RAIB

## 12 Areas, Subjects and Assets Investigated

The following sources of evidence in this investigation:

- information provided by witnesses;
- █████ Accident investigation Report
- information taken from the train's on-train data recorder (OTDR);
- forward-facing closed-circuit television (FFCCTV) recordings taken from the trains involved;
- site photographs
- Rail Safety and Standards Board (RSSB) Rule Books
- site and planning paperwork;
- training and competence records;
- NR/L3/OHS/019-IP Level 3 Work Instruction Planning and Delivering Safe Work – Implementation Principles for Infrastructure Projects
- Responses to questions put to █████ and
- a review of previous RAIB investigations

### 12.1 [REDACTED] Fatigue policy

[REDACTED] have a Rail Fatigue Management Policy that aligns with the Network Rail standard NR/L2/OHS/003 – Fatigue Management.

### 12.2 Rail Safety and Standards Board Limited – Rule Books

Rule Book HB12 Issue 7 Duties of (ES) or (SWL) in a possession was cross referenced as part of the investigation. The investigation did not find any deviation from the rules.

## 13 Human Factors

### 13.1 Training

ES's training record was submitted and all appears to be in order for the role he was undertaking at the time of the incident. The individual was acting as Engineering Supervisor (ES) and his competence is certified [REDACTED]

[REDACTED] have developed an in-house training package titled Cultural Development Programme. This course touches on many areas similar to the Rail Safety Standards Board Non-Technical Skills training programme. Topics covered include, and not limited to, *Why People Take Shorts Cuts and Personal Risk Perception*. It is not clear if ES has attended this course.

### 13.2 Instruction

[REDACTED] have stated in an email that the individual in his role as ES would not be involved in the work activity/site activities and would not have been required to undergo site induction.

### 13.3 Drug and Alcohol Testing

The individual was tested in line with [REDACTED] For Cause policy. The test was conducted by Optima, a third-party company, at 02:30. The test result returned was negative at 03:00.

## 14 Similar Incidents

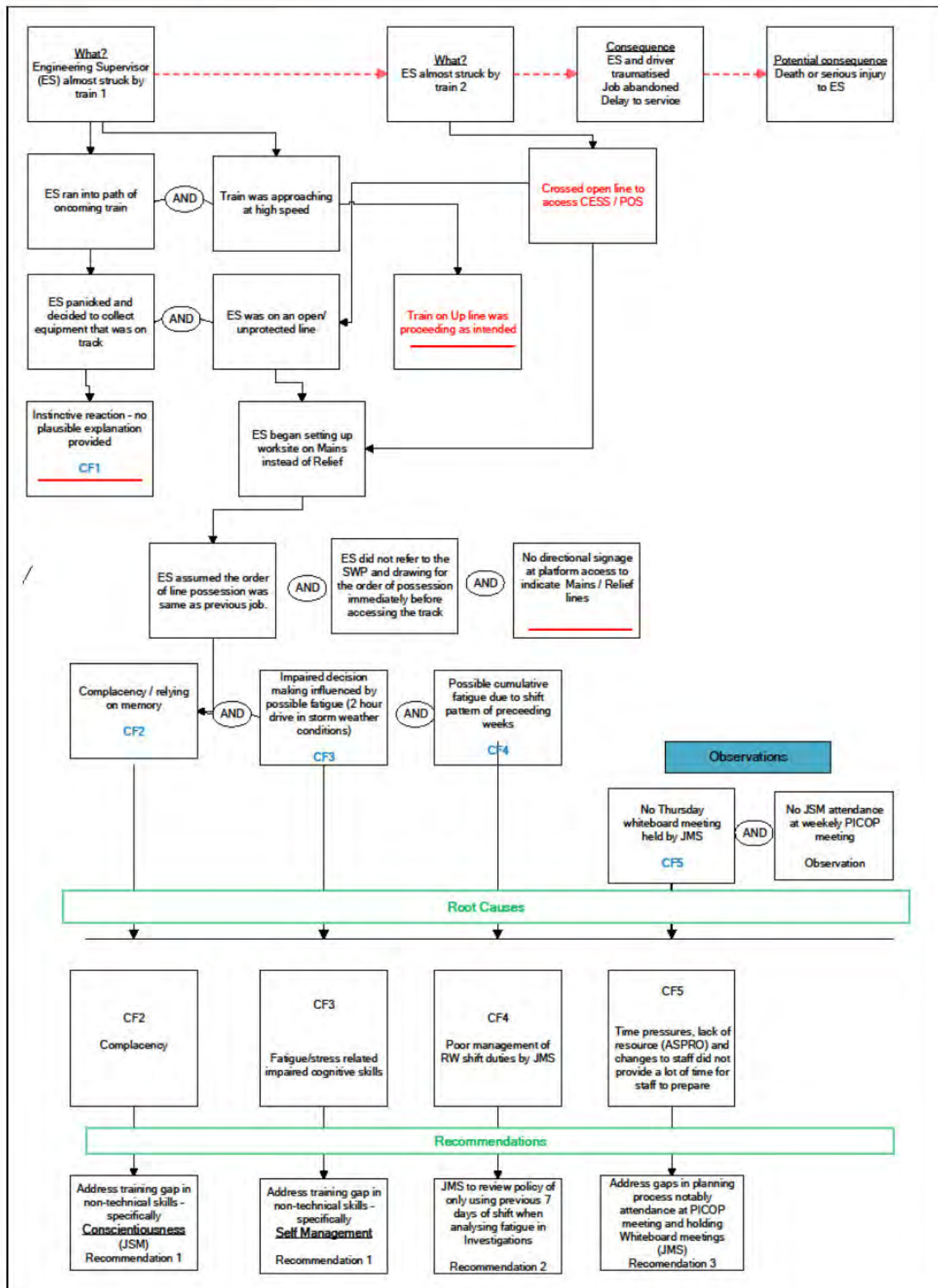
No evidence found of [REDACTED] being involved in similar incidents. There have been several near misses with track workers and instances of this happen with some frequency but for different reasons to this incident.

RAIB recommendations from previous incidents have included:

- the need for people responsible for the safety of others to have appropriate local knowledge of the area in which they are to work.
- the importance of reaching a clear understanding during face to face safety critical communication
- the importance of sounding the warning horn, which on this occasion probably averted a fatal accident



## 15 Root Cause Analysis



## 16 Conclusions

It is evident from the voice recordings of the statement from the ASPRO COSS on the evening and the conversation between the PICOP and ES; that ES knew it was the Relief line that was the first possession to be taken on the night. ES noted, during a phone conversation with [REDACTED] investigator on 25<sup>th</sup> February, that when he went to set out the boards that for some reason, he felt that he was setting the site out exactly as he did on 26<sup>th</sup> January, when the Main line was taken first.

ES never took the drawings or hard copy of SWP with him to the worksite but these were available on his iPad. We can assume that he never checked this before leaving the platform. The possession order is on page 44 of the 61-page SWP, which was verified by ES on 14<sup>th</sup> February. According to ES's statement he slept for three hours during the afternoon of Saturday 15<sup>th</sup> February. It also noted that ES had worked a day shift on Friday 14<sup>th</sup> February, presumably arriving home at around 6pm. He would have slept Friday night, taken a 3-hour nap on Saturday afternoon and began the 2 hours approx. drive to work at 20:50.

Of the journey to work that evening, ES in his written statement states "the weather was very bad, raining a lot and high winds, which influenced the van I was driving as it was quite high". [REDACTED] assessed ES for fatigue as part of their investigation and the resulting score was 8.6 which implies fatigue is not a factor in this incident. The fatigue assessment did not factor in the greater physical and mental demand of driving a high-sided vehicle, in storm conditions and in the dark. Factor this with the sleep cycle of the previous 5 days, when he had been on day shifts and his body clock at the time of the incident 00:25 would usually have been preparing itself for sleep. Perhaps this is one reason why the complacency and lack of diligence in checking safety critical information occurred. His guard dropped. Fatigue might also explain the instinctive reaction that compelled ES to retrieve the Marker Board putting himself in great danger only seconds before the Reading train passed him. The assessment of risk was wholly absent and ES did not offer explanation as to why he took this course of action.

In the week leading up to the incident, another [REDACTED] ES, was moved on from the Langley project. It was decided by [REDACTED] that as the remaining planned work was of a 'simple' nature, no attendance was required at the PICOP meeting on 12<sup>th</sup> February. Although this is not direct cause, it was noted by [REDACTED] in their investigation and a process implemented to ensure attendance at future PICOP meetings and ensure Whiteboard meetings take place.

### 16.1 Immediate Causes

ES placed Marker boards on open road and when he saw a train approach, he attempted to retrieve the board to avoid collision.

### 16.2 Causal Factors

Causal Factor 1 – Instinctive Reaction.

ESs initial reaction appears to be an instinctive reaction to retrieve the marker board from the path of the train. Unfortunately, his statement doesn't clarify why he did this and therefore no plausible alternative reason suggests itself.

Causal Factor 2 - Complacency.

Immediately after the incident ES asks the [REDACTED] Site Manager to confirm that the Reliefs were the same lines he set up last time. The Site Manager tells him they were not. ES left the site drawings in his van on the night and, according to his statement, ES failed to check his work pack on the afternoon before starting work, which according to his partner was very unusual. In the two voice recordings between PICOP and ES, the order of possession is clearly stated by PICOP and ES agrees. ES had the drawings available on his iPad but doesn't state at anytime that he referred to them. This suggests ES failed to check the SWP, did not refer to the site drawings and laid out the boards in the same order as previous work visit on this site.

One other point to note is ES reduced the worksite by 400m only when he was out on the track. He does not tell anyone about this beforehand. Had [REDACTED] held a whiteboard meeting or if ES attended the PICOP meeting, then perhaps ES, reviewing the plan, could have requested the worksite reduction before work commenced and with prior agreement. See Recommendation 01

Causal Factor 3 – Fatigue/stress related impaired cognitive skills

In his statement ES (page 28 of 53 of [REDACTED] Accident Investigation Report) said the weather was very bad with rain and high winds which influenced the high sided van he was driving. The driving time from home was approximately 1 hour and 45 minutes. This journey, made in the dark would, arguably, have increased the mental workload on ESs concentration as well as increasing the physical workload to control the van because of the high winds. This suggests a poor perception of risk on the part of ES and the effect this prolonged drive in poor weather conditions may have on his ability to function through a night shift.

ES had finished a day shift on Friday 14<sup>th</sup> and arrived home at approximately 6pm. He presumably woke on Saturday morning and then took a nap between 1400 and 1700 hours. It was also noted during the [REDACTED] investigation that ES did not check his SWP on the Saturday afternoon, which according to his partner, ES always did prior to a night shift. See Recommendation 01

Causal Factor 4 – Management of ES shift duties by [REDACTED]

[REDACTED] document Rail Fatigue Management Policy Statement states that [REDACTED] is committed to enforcing an effective Fatigue Management and Hours of Work Policy in accordance with the requirements of:

- Network Rail Company Standards
  - NR/L2/ERG/003 – Management of Fatigue - Control of Working Hours for Persons Undertaking Safety Critical Work (current Issue).
  - NR/GN/INI/001 – Guidance on the Management of Door to Door Work & Travel Time (current issue).
- London Underground Standard SI 548 Safety Critical Work - Category 1 (current Issue).

As part of the [REDACTED] investigation, it used the Health and Safety Executive (HSE) Fatigue Risk Index (FRI) calculator to assess the impact of fatigue in this incident. The fatigue rating of ES was 8.6. This score, concluded [REDACTED] meant fatigue was not a contributory factor in this event. In reaching this score, [REDACTED] had only entered the previous 7 days of shift, commute and rest data. [REDACTED] have confirmed the drive to work that evening in poor weather conditions were not factored into the assessment.

As part of this TfL investigation [REDACTED] provided, upon request, the previous 31 days shift, with some commute and rest pattern data of ES.

From Jan 20-Jan 31:

- There is a prevalence of day by day rotation between day and night shifts.
- Also, examples of doing just a few hours day to then go home and 'rest' to do a night shift.
- 21<sup>st</sup> January – day shift finishing at 13:00 before starting an emergency signal job later that night at 23:30.
- 27<sup>th</sup> January ES turns up at 07:00 Kentish Town and is told to go home, to then come in for the night shift. This would have involved a 3-hour round trip from home. ES would be 'prepared' for a day shift- i.e. to be awake all day and so would be well rested at the point of 07:00. This would make it extremely difficult to go home and properly rest in time for the

night shift. Likely to lead to frustration at 'wasted time' and it would be difficult to make proper use of this unexpected time off

- 27<sup>th</sup> January arrives on site at 23:00 but is told to go home as job is cancelled. 1 hour 40-minute commute each way. Noting that he was in Kentish Town earlier at 07:00.
- 27 – 28<sup>th</sup> January 2-night shifts followed by one rest day and then on to a day shift.

Whilst some assumptions were made regarding commute times TfL Human Factors team drew the following conclusions of the data provided:

#### Unpredictability of shifts

- Predictability of shifts is low. This would impact on ES's ability to plan and prepare for them in terms of achieving enough rest and family commitments. They may have minimally sufficient 'hours' off but difficult to properly use this time for rest and relaxation. This may also lead to increased frustration and stress- which in turn can impact on concentration levels, etc.
- Unpredictability and last-minute changes mean that someone wouldn't know if they need to be fully rested so they can do a good full shift, or whether they don't need to be as they will be told to go home and rest.
- So - options seem to be a) to always be fully rested for the start of a planned shift (which will make it very difficult to then subsequently rest if plans change and so likely to be fatigued later) or b) don't worry about being fully rested prior to shift start as it is likely they will need to go home and rest for a subsequent night shift.
- When there is only a single night shift following a run of day shifts, and this single night is followed by a rest day, it may be understandably tempting to stay awake all the way through, as the circadian rhythms would not be programmed to sleep leading up to this night shift.

See Recommendation 2

#### Causal Factor 5 -Time pressures / Lack of Planning

On the 30<sup>th</sup> January [REDACTED] began the process of resourcing internally for an ES/SWL2 as ASPRO were unable to provide an ES/SWL2 at Taplow and Langley stations in week 47. [REDACTED] Planner thought if ES or another [REDACTED] ES were available, this would be ideal because both had been involved with possession works at Taplow and Langley station during week 44.

On the 12<sup>th</sup> February a PICOP meeting was held in Reading. In previous weeks a Murphy employed representative had attended, but the individual had moved on from the LOCROSW project due to project works nearing an end. The [REDACTED] report states that due to the relatively simple nature of the planned works it was not considered necessary for a [REDACTED] representative to attend the PICOP meeting. However, both this meeting and the failure to hold a Whiteboard meeting were a missed opportunity, as the possession order for the works would have been outlined at this meeting and, perhaps, this would have impressed upon ES that the order of possession was different to his previous job at Langley.

ES received the SWP for the Langley job on 13<sup>th</sup> February after he had to request it from [REDACTED] Planner who had omitted to send it previously. ES verified the 61-page document the same day, presumably as he worked on his day shift. Recommendation 03

## 17 Observations

Although not linked to the cause of the incident, the investigation observes that:

### 17.1 Observation 01 – CIRAS / TfL Supplier Assurance / Safety Culture

The Confidential Incident Report and Analysis Service (CIRAS) report database holds two reports made during 2019 concerning fatigue management at [REDACTED] CIRAS reports 01572 (dated March 2019) and 02036 (dated October 2019).

[REDACTED] investigation into these reports confirmed that no internal reports or concerns had been received from employees on this matter and there are several methods by which to raise any concern.

It should be noted however, that during interviews following this incident (see [REDACTED] report page 16) [REDACTED] states that the job security worries that he was experiencing in late 2019 had now disappeared. It is plausible to suggest that because of job security concerns, employees were worried about reporting directly to managers and therefore fatigue concerns were being raised safely and confidentially through CIRAS.


TfL undertakes safety, health and environment assurance activity with [REDACTED] every quarter. CIRAS reports raised against a supplier are not currently a feature of the assurance questionnaire. By way of comparison CIRAS reports received are a KPI for bus operating companies on the TfL Safety



Performance Index (SPI). In fact, TfL pays for the CIRAS membership on behalf of the bus operators. CIRAS reports are also interrogated as part of the Bus Operator Assurance Questionnaire.


See Recommendation 04

### 17.2 Observation 02 – Safe Working Pack format.

 use, on-Track, a third-party software package to produce the SWP. The SWP submitted for this job and verified by ES is a 61-page document. The first reference to the order and timings of the possession (RT9909) appear on Page 41, in a table and in small font. Why such vital safety information i.e. the possession information is hidden away so far in a key document is puzzling.

Network Rail Standard NR\_L3\_OHS\_019-IP Level 3 Work Instruction Planning and Delivering Safe Work – Appendix 3 states:

When checking the SWP, the person in charge should consider and confirm that the SWP;

-  is not unnecessarily long or contains information not relevant to the work;

See Recommendation 05

### 17.3 Observation 03 – Implementation of NR Standard NR/L2/OHS/019 – Planning and Delivering Safe Work

In 2017 NR revised the NR/L2/OHS/019 - *Planning and Delivering Safe Work* standard. During the latter part of 2017 and early 2018, email and letter correspondence was sent between Peter Herridge (PH) TfL - Station Enhancement Manager – Elizabeth Line and Mike Gallop (MG) – Network Director Route Asset Management. In a letter (dated 20<sup>th</sup> February 2018) from PH to MG, TfL disagreed with NR's proposal to provide the Responsible Manager (RM) and Person in Charge (PIC) to manage worksites; which TfL state is contrary Network Rail's own standards and CDM.

Although this was not a causal factor in this incident; the PIC on the night for this role was ES and not ASPRO. Some two weeks before the incident ASPRO had a resourcing issue and were unable to provide the ES/SWL2 at Taplow and Langley stations in week 47. This resourcing issue was also raised previously as a concern by TfL. Due to the personnel numbers required for working over multiple sites simultaneously the resources provided by NR were likely to be drawn from agency personnel who are less familiar with the route and works being undertaken than the contractor's own staff.

TfL has raised their concerns with this interpretation and implementation of the NR/L2/OHS/019 standard by NR and though not ideal continue to work to the standard.

#### 17.4 Observation 04 - No track information signage at the track access point from the Platform.

Whilst this is no substitute for planning and preparation by the individual, signage at the track access point on the platform could have served as a final reminder of the track layout. NR does plan to install track information boards as part of upgrade work to Road Rail Access Points and Compounds but there are no plans for track signage boards on station platforms.

#### 17.5 Observation 05 – Lack of site induction

■■■■ did not undertake a site briefing with ES. Although all the relevant information was contained with the SWP, ■■■■ SHES Director confirmed in a telephone call on 12th August 2020 that ES should have received a site induction.

See Recommendation 08

## 18 Recommendations

Recommendation 01	
Purpose	To improve the individuals non-technical skillset which include risk perception, promoting a positive attitude towards rules and procedures and avoiding taking short-cuts.
Action	To ensure the individual attends the ■■■■ in-house training package titled Cultural Development Programme and Never Harm sessions. (this cover themes similar to RSSB Non-Technical Skills course)
Action Owner	■■■■ SHES Advisor
Action Target Date	30 November 2020
Validation	Evidence of attendance by RW. ■■■■ confirmed by email that ■■■■ will attend as soon as possible.  Update: Email from ■■■■ SHES Director - ■■■■ ■■■■
Validator	Usman Ahmed - TfL SHE Business Partner
Validation Target Date	31 December 2020

Recommendation 02	
Purpose	To better assess the effect of cumulative fatigue as a contributory factor following an incident. ■■■■ analysis of fatigue in this incident was limited to analysing the previous 7 days of shift. ■■■■ shift pattern for the previous 31 days showed several examples of poor shift management that, although do not contravene NR Fatigue Management standard do not appear to be good practice.
Action	Review ■■■■ decision to only use the previous 7-days shift data, prior to incident, when assessing the contribution of fatigue. TfL have a working group looking at fatigue and one of its recommendations is to review at least one month's roster information leading up to incident.
Action Owner	■■■■ SHES Director
Action Target Date	30 November 2020
Validation	<p>Formal written response from ■■■■ SHES Director acknowledging this recommendation and detail of what action it decides to take as a result.</p> <p>Update: Email from ■■■■ SHES Director:</p> <p>Having reviewed our investigation process and industry guidance we are comfortable that a review of the previous 7 days fatigue risk rating is appropriate.</p> <p>Should this initial review raise any concerns we would potentially extend it further back.</p>
Validator	Matthew Stimson - Senior Project Manager LOCROS
Validation Target Date	31 December 2020

Recommendation 03	
Purpose	Review of process for when possessions are planned around the requirement for mandatory whiteboard sessions.
Action	Review of process for when possessions are planned around the requirement for mandatory whiteboard sessions.

Action Owner	████ Senior Project Manager
Action Target Date	20 March 2020
Validation	N/A
Validator	N/A
Validation Target Date	Completed 20 March 2020

## Recommendation 04

Purpose	To strengthen the RfL supplier assessment process specifically around safety culture and employee engagement. CIRAS reports made by employees can be an indicator of the organisation's safety culture. Specifically probing a supplier about CIRAS as part of the Supplier Assessment process, would also align with Surface Bus Operators Safety Assurance Questionnaire.
Action	Include questions in SHE Supplier Assessment Questionnaire requiring details of any CIRAS reports received since the last assessment.
Action Owner	Wayne Donald – TfL Senior SHE Assurance Manager
Action Target Date	28 February 2021
Validation	Sample to be included as part of RfL SHE Supplier Assurance programme.
Validator	James Richards – Head of SHE Surface – TfL
Validation Target Date	31 <sup>st</sup> March 2021

## Recommendation 05

Purpose	To ensure safety critical such as key possession information is made more prominent within the █████ Safe Working Pack and to ensure this is cascaded to staff.
Action	Review the format of current SWP template to ensure key safety critical information is more prominent

Action Owner	████ SHES Director
Action Target Date	30 September 2020
Validation	<p>Formal written response from █████ acknowledging this recommendation and detail of what action it decides to take as a result.</p> <p>Update: Email from █████ SHES Director:</p> <p>The SWP are in a standard format which means that each person dealing with them (planner, responsible Manager, Engineering Supervisor, PIC) is aware where the information they require is. This is further supported by a collaboration tool which is built in to the tool which ensures the key members liaise over the content to confirm that it is clear to all involved.</p> <p>Furthermore we have regular visits with OnTrac who run the platform to discuss feedback, issues, concerns etc.</p> <p>Given the above we do not currently plan to revise the layout of the SWP however it will be kept under review</p>
Validator	Matthew Stimson - Senior Project Manager LOCROS
Validation Target Date	31 October 2020

Recommendation 06	
Purpose	Red alert to be created and sent out across TfL and NR and the Murphy business regarding the initial details of the incident
Action	Red alert to be created and sent out across TfL and NR and the █████ business regarding the initial details of the incident
Action Owner	████ SHES Director (Transportation)
Action Target Date	20 February 2020
Validation	N/A

Validator	████ SHES Director (Transportation)
Validation Target Date	Completed 20 February 2020

Recommendation 07	
Purpose	To share the lessons of this incident using the personal experience of the individual involved.
Action	Discuss with ES whether he is prepared to deliver a toolbox talk using train footage to describe the incident and its impact on him.
Action Owner	████ SHES Advisor
Action Target Date	24 April 2020
Validation	CLOSED: █████ produced an in-house presentation with ES talking about the incident and how it had affected him.
Validator	████ SHES Advisor
Validation Target Date	24 April 2020

Recommendation 08	
Purpose	To ensure all █████ employees receive a formal site induction and briefing at the work location.
Action	Formal written response from █████ acknowledging this recommendation and detail of what action it decides to take as a result.
Action Owner	████ SHES Director (Transportation)
Action Target Date	30 <sup>th</sup> November 2020
Validation	<p>Confirmation of response from █████ detailing action to be taken.</p> <p>Update: Email from █████ SHES Director:</p> <p>This was an omission in this case. As Principal Contractor we are clear that we are required to ensure everyone working on our site has a suitable induction.</p> <p>This has been recommunicated across all project teams and sample checks completed by the SHES Team, showing full compliance.</p>

Validator	Matthew Stimson - Senior Project Manager LOCROS
Validation Target Date	31 <sup>ST</sup> December 2020

## 19 Appendices

### 19.1 Formal Investigation Panel Members

Name	Title	Organisation
Daniel Alston	FIR Panel Chair	TfL
Usman Ahmed	SHE Business Partner - LO	TfL SHE
Matthew Stimson	Senior Project Manager LOCROS	TfL
Jim Medway	Senior SHE Manager	TfL SHE
Tom McGlew	Lead Investigator	TfL SHE
Helen Hutton	SHE Advisor/Subject Matter Expert	TfL SHE
Jyoti Palit	SHE Incident Investigations Manager	TfL SHE

### 19.2 Persons Interviewed (by [REDACTED])

Title	Organisation
[REDACTED] (interviewed by [REDACTED])	[REDACTED]
[REDACTED] (interviewed by [REDACTED])	NR ASPRO

### 19.3 Consultation

Title	Organisation
SHES Director (Transportation)	[REDACTED]
Access Planner   London Overground Project	TfL

Delivery	
SHE Business Partner	TfL
Senior Human Factors Engineer	TfL
Senior Project Manager LOCROS	TfL

#### 19.4 Documentation

Title	Reference	Revision
Accident Investigation Report dated 5 <sup>th</sup> March 2020		00
Duties of the person in charge of the possession (PICOP)	RSSB GERT8000-HB I 1	Iss 07
Duties of the engineering supervisor (ES) or safe work leader (SWL) in a possession	RSSB GERT8000-HB I 2	Iss 07
Planning and delivering safe work - Implementation principles for infrastructure Projects	NR/L3/OHS/O 19-IP	Iss 01

#### 20 Abbreviations and Glossary

PICOP	Person in Charge of Possession
COSS	Controller of Site Safety
Chain	Unit of length equal to 20.117 metres
SWL 2	Safe Work Leader 2