

Rail Accident Report



Derailment of a passenger train near Walton-on-Thames, Surrey 4 March 2024

Report 04/2025
February 2025

This investigation was carried out in accordance with:

- the Railway Safety Directive 2004/49/EC
- the Railways and Transport Safety Act 2003
- the Railways (Accident Investigation and Reporting) Regulations 2005.

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Preface

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Where RAIB has described a factor as being linked to cause and the term is unqualified, this means that RAIB has satisfied itself that the evidence supports both the presence of the factor and its direct relevance to the causation of the accident or incident that is being investigated. However, where RAIB is less confident about the existence of a factor, or its role in the causation of the accident or incident, RAIB will qualify its findings by use of words such as 'probable' or 'possible', as appropriate. Where there is more than one potential explanation RAIB may describe one factor as being 'more' or 'less' likely than the other.

In some cases factors are described as 'underlying'. Such factors are also relevant to the causation of the accident or incident but are associated with the underlying management arrangements or organisational issues (such as working culture). Where necessary, words such as 'probable' or 'possible' can also be used to qualify 'underlying factor'.

Use of the word 'probable' means that, although it is considered highly likely that the factor applied, some small element of uncertainty remains. Use of the word 'possible' means that, although there is some evidence that supports this factor, there remains a more significant degree of uncertainty.

An 'observation' is a safety issue discovered as part of the investigation that is not considered to be causal or underlying to the accident or incident being investigated, but does deserve scrutiny because of a perceived potential for safety learning.

The above terms are intended to assist readers' interpretation of the report, and to provide suitable explanations where uncertainty remains. The report should therefore be interpreted as the view of RAIB, expressed with the sole purpose of improving railway safety.

Any information about casualties is based on figures provided to RAIB from various sources. Considerations of personal privacy may mean that not all of the actual effects of the event are recorded in the report. RAIB recognises that sudden unexpected events can have both short- and long-term consequences for the physical and/or mental health of people who were involved, both directly and indirectly, in what happened.

RAIB's investigation (including its scope, methods, conclusions and recommendations) is independent of any inquest or fatal accident inquiry, and all other investigations, including those carried out by the safety authority, police or railway industry.

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Derailment of a passenger train near Walton-on-Thames, Surrey, 4 March 2024

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Summary

At around 05:40 on Monday 4 March 2024, a passenger train struck a section of redundant rail that had been left foul of the track on the approach to Walton-on-Thames station. At the time of the collision with this rail, the train was travelling at around 85 mph (137 km/h). The front coach derailed, and the train came to a stand around 500 metres beyond the point of derailment.

The redundant rail had inadvertently been left there by a team that had completed work in the area over the previous weekend. Checks undertaken after the work was completed did not identify that a section of redundant rail was in a potentially hazardous position before the railway was handed back for normal operation. This was because no person in charge had supervised the work and because a track handback engineer had not been effectively briefed as to what work had been undertaken before they inspected the track.

RAIB found that the arrangements in place for planning and delivering the work did not effectively manage the risk of a section of rail being left foul of the running line and that the process for inspecting the railway after the work was completed did not provide staff with clear guidance on which areas should be checked. Additionally, the relevant railway rules and standards do not clearly define the roles and responsibilities required to safely deliver work on complex work sites like the one involved in the accident.

As a result of its investigation, RAIB has made two recommendations. The first is addressed to Colas Rail (in consultation with Network Rail), to review its processes related to collecting redundant material when working on or near the line. The second is addressed to Network Rail (in consultation with the Rail Safety and Standards Board) to review the rules and standards relating to how tasks delivered in complex work sites should be co-ordinated and supervised and to create a coherent process for confirming that the line is safe for the passage of trains after the work is complete.

Additionally, two learning points have been identified. The first reinforces the importance of infrastructure maintainers arranging adequate site lighting. The second concerns the importance of railway organisations ensuring that guidance material relating to superseded standards is removed from resource libraries when new standards are issued.

Introduction

Definitions

- 1 Metric units are used in this report, except when it is normal railway practice to give speeds and locations in imperial units. Where appropriate the equivalent metric value is also given.
- 2 The report contains abbreviations and acronyms, which are explained in appendix A. Sources of evidence used in the investigation are listed in appendix B.

The accident

Summary of the accident

- 3 At around 05:40 on Monday 4 March 2024, train reporting number 2L10, the 04:54 South Western Railway passenger service from Basingstoke to Waterloo, struck a 2.5 metre section of redundant rail. This occurred on a road-rail vehicle access point (RRAP) on the approach to Walton-on-Thames station. At the time, the train was travelling at around 85 mph (137 km/h). The leading wheelset derailed to the left, but the train remained upright and came to a stand around 500 metres beyond the point of collision (figure 1).

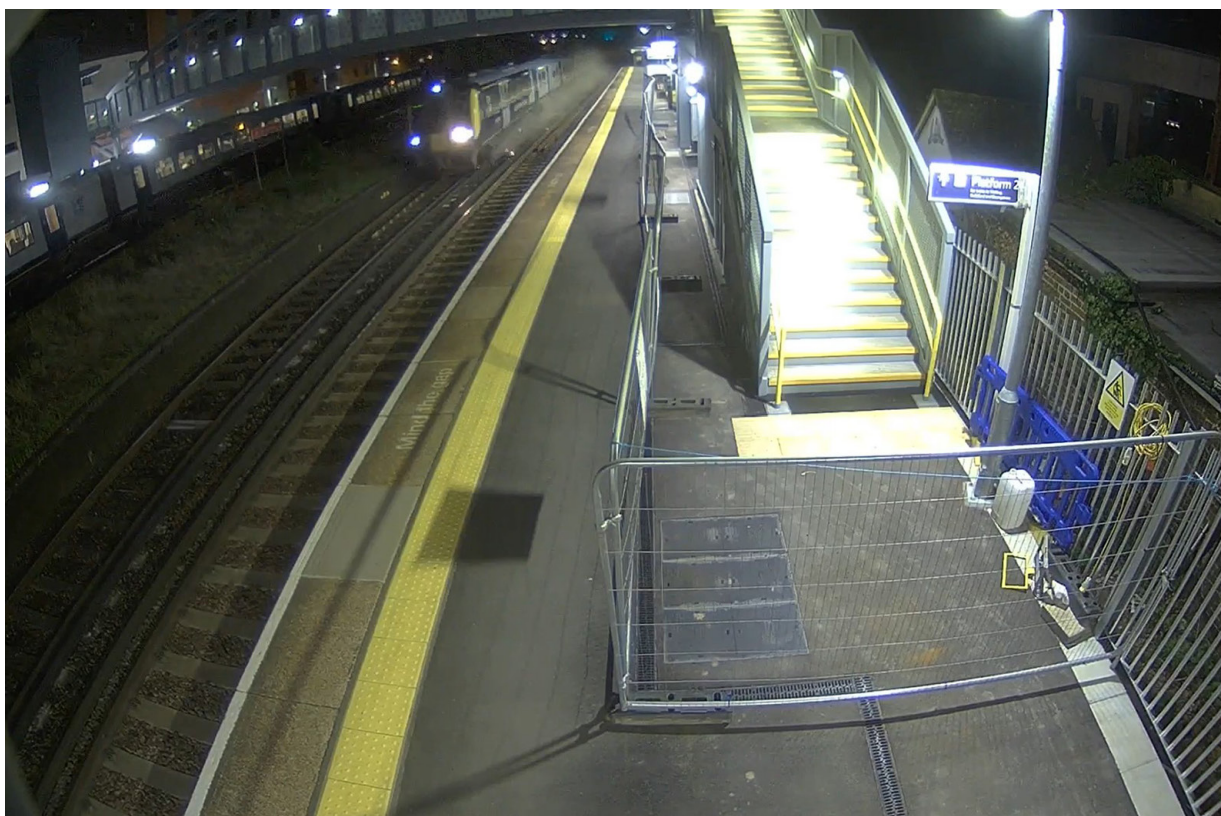


Figure 1: Image from Walton-on-Thames station CCTV showing train 2L10 running derailed as it passed the out-of-use platform at Walton-on-Thames station (courtesy of South Western Railway).

- 4 The train was carrying approximately 100 passengers when the accident occurred. There were no injuries, but the train and several hundred metres of railway infrastructure were damaged. It was the first passenger service along the Up Fast line following engineering works that had been completed over the previous weekend.

Context

Location

- 5 Walton-on-Thames station is located 17 miles 6 chains (27.5 km) from London Waterloo station (figure 2). The RRAP where the collision occurred is around 400 metres west (the 'country' side) of Walton-on-Thames station (figure 3). At this location, there are four railway lines: the Up Slow and Up Fast lines, carrying trains heading towards London, and the Down Fast and Down Slow lines, carrying trains away from London. The maximum permitted speed on all lines at the location is 90 mph (145 km/h). Traction current is supplied to all four lines by a nominal 750 Volt DC conductor rail electrification system, which uses a single conductor rail, known as the third rail.

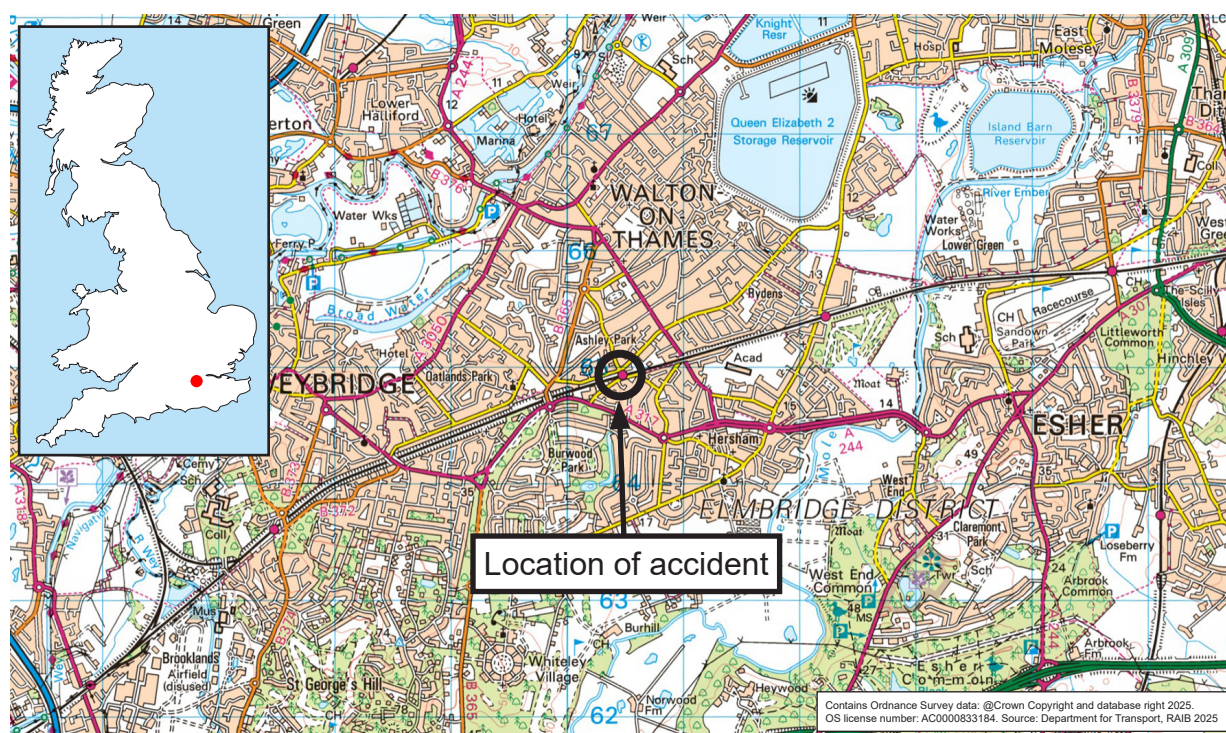


Figure 2: Extract from Ordnance Survey map showing the location of the accident near Walton-on-Thames station.

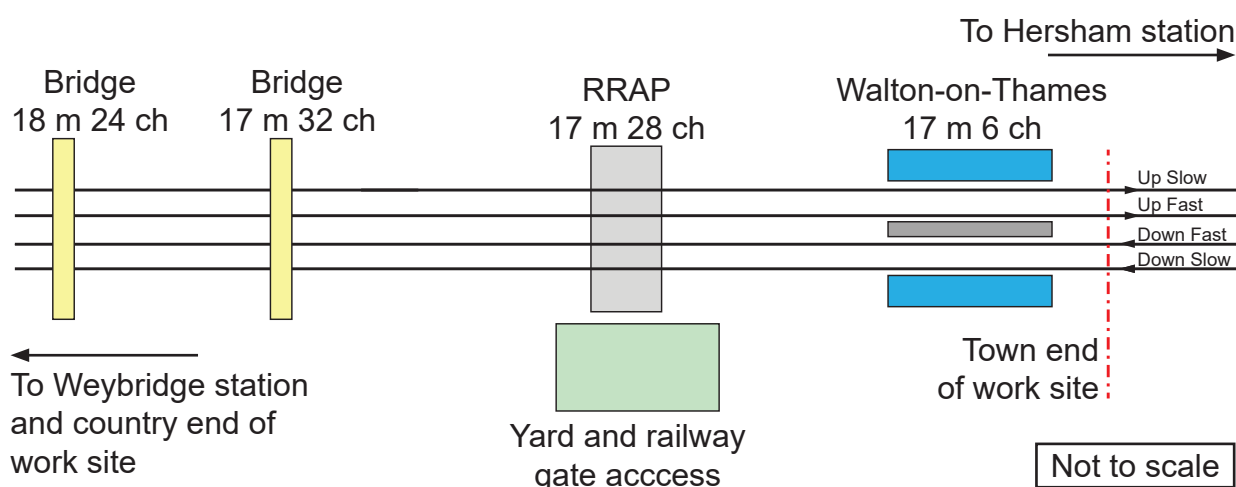


Figure 3: Location of work site, including RRAP and other local features.

Organisations involved

- 6 Trains 2L10 and 2F02 (see paragraph 15) were operated by First MTR South Western Trains Ltd, trading as South Western Railway (SWR). SWR employed both train drivers.
- 7 Network Rail owns and maintains the railway infrastructure. The area where the accident occurred is managed by Network Rail's Wessex route which (along with the Kent and Sussex routes) forms part of Network Rail's Southern region.
- 8 Maintenance and renewal work on Network Rail's infrastructure is broadly separated into the following forms of delivery:
 - a. Maintenance delivery. This is the day-to-day maintenance of the infrastructure, which involves regular inspection of assets, maintenance and condition monitoring to maintain or improve its condition. This work is normally undertaken by Network Rail staff.
 - b. Capital Delivery (previously known as Infrastructure Projects). This includes the delivery of major enhancements, renewals and upgrades to the infrastructure. This work is often delivered through contracting partnerships with commercial organisations.
- 9 Network Rail contracts Balfour Beatty Rail to operate seasonal treatment multi-purpose vehicles (MPVs) including train 8Y82 (see paragraph 16). Balfour Beatty Rail employs the driver of this train.
- 10 Colas Rail UK Ltd (referred to as Colas Rail in this report) is part of the Colas Rail Group and is a railway infrastructure company whose services include track installation, maintenance and renewal.
- 11 The South Rail Systems Alliance (SRSA) is a collaborative partnership between Network Rail and commercial suppliers. The alliance is designed to provide a method of delivering track design and renewal projects, with Network Rail and contractors working closely together from planning to completion. The SRSA partnership operates across Network Rail's Western, Wales, Wessex, Kent, Sussex and Anglia routes. Colas Rail joined the alliance as a principal contractor in 2019. In April 2024, Southern region changed the way it delivered renewal projects with a new integrated delivery model which included new commercial partners, replacing Colas Rail (see paragraph 156).
- 12 A number of other organisations were involved at the work site near Walton-on-Thames station by supplying individuals to perform specific roles and tasks for Colas Rail, the principal contractor. These organisations included:
 - a. ASH construction group Ltd (ASH), an engineering and maintenance company which was the primary labour supplier for SRSA
 - b. Quattro Plant Ltd (Quattro), which provided on-track plant (OTP, rail mounted machines which can only be used in possessions, such as road-rail vehicles (RRVs)) and qualified operators
 - c. Dynamic Rail Ltd (Dynamic), which supplied the machine controllers
 - d. Cleshar Contract Services Ltd (Cleshar), which supplied staff undertaking safety-critical roles.
- 13 All the organisations involved freely co-operated with the investigation.

Trains involved

- 14 Train 2L10, the 04:54 SWR service from Basingstoke to London Waterloo, was a class 450 (Desiro) electric multiple unit (EMU) formed of eight coaches.
- 15 Train 2F02, the 04:30 SWR service from Woking to London Waterloo, was a class 444 (Desiro) EMU.
- 16 Train 8Y82 was a de-icing MPV operated by Balfour Beatty which travelled over the network on the night of 3 March 2024 to the early morning of 4 March.

Road-rail vehicle

- 17 The RRV used on the work site near Walton-on-Thames station was a Crane/Excavator (figure 4) and was fitted with a log clamp (model NR 1945). This type of equipment is generally used to collect logs but can also be used to collect redundant rail. The RRV can also be fitted with chains and a camlock (a type of rail lifting clamp that is attached to the railhead to securely lift rail), which were also used to collect the redundant rail (figure 5).



Figure 4: RRV used at the work site near Walton-on-Thames.



Figure 5: The left-hand image shows a schematic drawing of the type of log grab used at the work site near Walton-on-Thames and the right-hand image shows an example of the chains similar to that used.

Possession and work site

- 18 The section of railway involved in the accident was closed to normal railway operations over the weekend of 2 to 3 March 2024 as part of a possession. The limits of the possession were at 8 miles 40 chains (near to Raynes Park station) and 19 miles 50 chains. Within this possession, a work site (a portion of line where work will take place) was established near Walton-on-Thames station from 15 miles 68 chains (near Hersham station) to 19 miles 50 chains (near Weybridge station), concurrent with the end of the possession (figure 6).

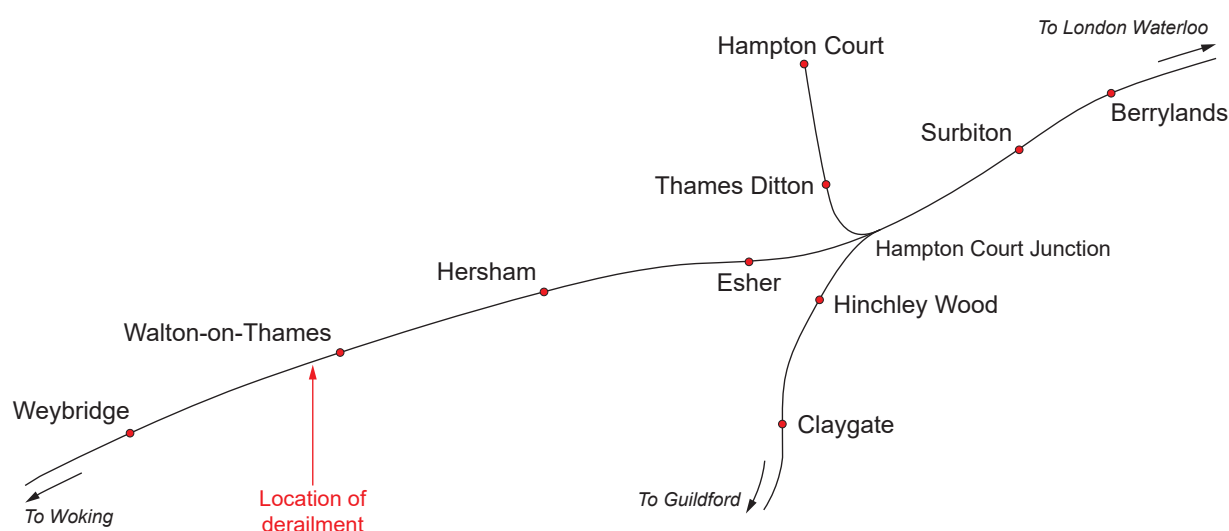


Figure 6: Overview of the location of the accident and nearby stations.

- 19 Within the work site were several locations where work was to be undertaken. These locations included: location 1, between two bridges at the country end of the work site; and location 2, which lay between the RRAP and Walton-on-Thames station (figure 8).

- 20 The majority of the staff working within the work site near Walton-on-Thames were rostered to work one of two shifts, either on Saturday morning (01:00 to 13:00 on Saturday 2 March) or the evening shift (13:00 on Saturday to 01:00 Sunday 3 March).
- 21 The person in charge of the possession (PICOP) gave the engineering supervisor (ES) in charge of the work site permission to set it up at 02:40 on Saturday 2 March. The work site was handed back for the safe passage of trains at 00:04 on Sunday 3 March. This was around 29 hours before the accident occurred (paragraph 3).

Staff involved

Staff involved in the planning of the work

- 22 The following staff were involved in the planning of the work near Walton-on-Thames but were not present at the work site during the weekend of 2 to 3 March 2024:
- A project leader, with over 9 years of railway experience, employed by Colas Rail who defined the scope of work intended to be undertaken at the work site and briefed this information to the staff undertaking on-site management. The project leader was also the responsible manager for the safe work pack (SWP) that was provided to staff working on site.
 - A contractor's engineering manager (CEM), who was responsible for approving the method statement covering the collection of the redundant rail. The CEM had 26 years' railway experience and had worked as a fully qualified CEM for 2½ years.

Track maintenance staff involved in the work during the evening shift

- 23 An overview of the staff involved is shown in figure 7. The following staff were involved in the work from 13:00 to 23:00 on 2 March:
- The site supervisor, employed by Colas Rail, had over 20 years of railway experience, and had held the competency of a controller of site safety (COSS), the person responsible for ensuring that a safe system of work (SSoW) is set up to protect staff from the movement of trains, for 5 years (see paragraph 31). They had 2 years of experience as a site supervisor.
 - A team leader (TL1) who was primarily responsible for cutting the redundant rail. TL1 had joined ASH 9 years before the accident and had held a COSS competency for 4 years.
 - A team leader (TL2) who was primarily responsible for overseeing rectification work associated with the tamping. TL2 had joined ASH 2½ years before the accident and had held a COSS competency for around 1½ years.
 - The ES, employed by Cleshar, had over 30 years of railway experience and had held a COSS competency for 20 years.
 - A machine controller, employed by Dynamic. A machine controller must be appointed when OTP such as an RRV will be used in rail mode, or where it is being placed on or removed from the railway. The machine controller had begun working on the railway at weekends in 2016 and qualified as a machine controller around this time. They worked as a crane operator in a non-railway construction role on weekdays.

- f. A machine operator, employed by Quattro, who had less than 1 year of railway experience but was fully qualified in the role.
- g. The plant operations scheme (POS) representative employed by Colas Rail. A POS representative is the single point of contact on site for Colas Rail on matters relating to OTP. The POS representative had over 21 years of railway experience and had held the competency of a POS representative for over 10 years.

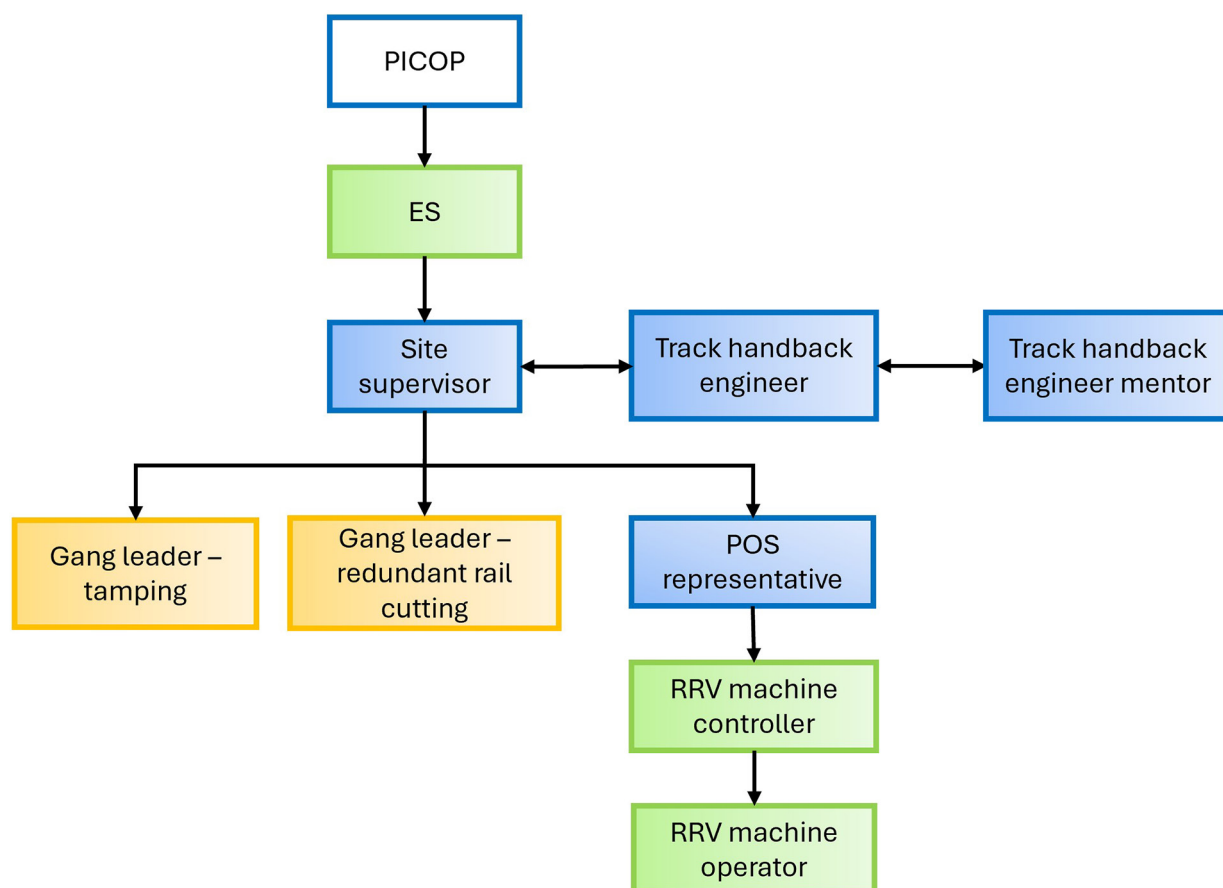


Figure 7: An organogram showing the reporting arrangements between the different staff involved in the work near Walton-on-Thames the weekend before the accident.

Staff involved in inspecting the track following the work

24 The following staff had responsibilities for inspecting the track from 21:30 to 23:30 on 3 March, following the completion of work.

- a. The track handback engineer (referred to in this report as the handback engineer), employed by Colas Rail. While the handback engineer on site at Walton-on-Thames was fully qualified, they were not permitted to inspect and hand back track for line speeds greater than 60 mph (97 km/h) without a mentor being present. This was because Colas Rail procedures required higher authority levels than those possessed by the handback engineer for track handback following engineering work that had changed the track geometry at higher line speeds. The handback engineer had over 9 years of track experience working in a variety of safety-critical roles and had over 2 years' experience as a handback engineer.

- b. The track handback engineer mentor (the handback engineer mentor) was qualified to hand back the track at the 90 mph (145 km/h) line speeds present at Walton-on-Thames. The handback engineer mentor had over 30 years of on-track experience in a variety of safety-critical roles and over 5 years experience as a handback engineer.

External circumstances

- 25 Some of the work undertaken to collect the redundant rail within the work site, and the later inspection of the track by the handback engineer, was conducted during the hours of darkness (see paragraph 114).

The sequence of events

Events preceding the accident

Planning work on or near the line

- 26 When work is to take place on or near the line¹ on Network Rail managed infrastructure, an SSoW must be set up to protect staff from the movement of trains. This is managed in accordance with two main publications:
 - a. The Rule Book, Railway Group standard GERT8000, which is managed by the Rail Safety and Standards Board (RSSB). The Rule Book is a collection of modules and handbooks that contains operating rules for railway staff, including those who work on the track and manage possessions (see paragraph 64).²
 - b. Network Rail standard NR/L2/OHS/019, 'Safety of people at work on or near the line', issue 12 dated June 2023 (standard 019). This provides the mandatory requirements for Network Rail staff and its contractors for the safe planning and implementation of work on the track. The standard details the processes to be used, and the roles involved, in planning, verifying, authorising and implementing an SSoW. Standard 019 includes a number of modules which define specific processes. Module 2, 'Planning and working in a possession', sets out requirements for the planning and delivery of work sites within a possession.
- 27 As part of Network Rail's initiative to improve safety, a process called 'Planning and Delivery of Safe Work' was introduced in March 2017. The programme made significant changes to standard 019 and introduced the role of person in charge (PIC).
- 28 The planning process in standard 019 results in the production of an SWP, which details the arrangements for the work, including the SSoW to be used to protect staff from train movements and information on how to manage the risk associated with the task being undertaken and the site. The SWP contains links to other safety related planning documents that enable staff to understand and control risks to themselves and others (including the general public) when delivering the work (see paragraph 117).
- 29 Standard 019 defines further roles involved in the planning process and their responsibilities:
 - a. The responsible manager, who will appoint a competent planner and a PIC for each item of work.
 - b. The planner, who assesses the proposed work and produces an SWP with input from the PIC. The planner will submit the documentation to the responsible manager who will check and authorise the SWP before it can be used.

¹ Someone is on or near the line if they are on the railway line itself, or they are within 3 metres of a railway line and not separated from it by a permanent fence or structure.

² The Rule Book and its associated handbooks are available from RSSB (www.rssb.co.uk).

- 30 Once an SWP has been created by the planner, it should be passed to the PIC to verify. This requires the PIC to check all the information in the SWP and sign the front sheet to confirm that the SWP is correct.
- 31 The PIC (who has overall responsibility for safety) and the COSS (who is responsible only for protecting staff from train movements, and not for task safety) will often be the same member of staff, and all staff undertaking PIC duties must hold a valid COSS competency. If the PIC plans to delegate their COSS duties to someone else holding a valid competency, then they must get the COSS involved to check the SSoW arrangements. If the details are correct, the COSS will endorse the document by signing the front sheet. This must be done before the PIC can sign off the SWP as verified.
- 32 After being verified, the SWP is sent to the responsible manager to authorise. By authorising the SWP, the responsible manager confirms agreement with the SSoW selected and that the SSoW is suitable for the location, and that the task risks are adequately controlled. They are also signing to confirm that the PIC understands the work and that there are staff with suitable competencies in the team to undertake the work safely.
- 33 The planner then sends the authorised SWP to the PIC, in preparation for the start of the work. The member of staff undertaking the role of the PIC on site should be the same member of staff who has been involved in the planning process. If, due to an unforeseen reason, the PIC involved in planning is not available, a new PIC can be appointed by the responsible manager. Standard 019 states that '*PIC allocated elsewhere*' and '*poor resourcing*' are examples of unacceptable justifications for a different PIC to be used.

Planning the work for 2 to 3 March 2024

- 34 In January 2022, Colas Rail completed track renewal work on the Down Slow line between Weybridge and Walton-on-Thames stations as part of its work within SRSA. This work resulted in sections of redundant conductor rail being left in the four-foot (the space between the running rails) of the Down Slow line and the adjacent cess (the area at the side of the railway, immediately off the ballast shoulder) and the six-foot (the space between the Down Slow and Down Fast running lines). Between January 2022 and March 2024, other track renewal work had also been completed near this location, resulting in sections of redundant running rail also being left at various places in the four-foot, six-foot and cess.
- 35 For Colas Rail to complete the handover to Network Rail, a joint inspection of the line was required to ensure that contractual obligations had been met. The handover inspection process is referred to as a Taking Over Certificate (TOC) inspection.

- 36 The TOC inspection was completed in February 2024 and identified the locations where the redundant conductor rail had been left after the work in January 2022. On 22 February 2024 (around 2 weeks before the accident), the Colas Rail project lead was tasked to plan the remedial work which included carrying out tamping on the Down Slow line and collecting redundant material (including redundant conductor rail). This plan was to define the scope and allocate resources. It was also intended that the project lead would work with a planner to generate an SWP for the work being undertaken within the work site as a whole. On 29 February 2024, the project lead sent an email to Colas Rail managers, including the morning shift site supervisor and the handback engineer, which outlined the scope of the intended work. The project lead, as the responsible manager, also reviewed the SWP generated by the planner.

The morning shift

- 37 At around 02:40 on Saturday 2 March 2024, the ES received permission to begin setting up the work site. From around 03:30, a tamper (a type of on-track machine which restores the vertical (height) level and horizontal (lateral) alignment of railway track) began to move from the Walton-on-Thames end of the site towards Weybridge station.
- 38 From around 05:00, the handback engineer (working at this point as a site supervisor) walked through the site from an access point near Weybridge station to the RRAP with several staff employed by ASH. This was done with the objective of familiarising themselves with the site and directing the work associated with the tamping on the Down Slow line. Witness evidence shows the handback engineer noted only one piece of rail, in the Down Slow four-foot, and asked the ASH team to move this into the Down Fast four-foot. The handback engineer subsequently left site at around 06:00.
- 39 Around 08:00, another ASH team accessed the track from the RRAP. This team walked to location 1 and began to use angle grinders to cut up sections of redundant rail in and around the Down Fast line (figure 8). An RRV was on-tracked onto the Down Fast line at the RRAP and moved to location 1 while towing a trailer. This RRV was then used to lift the sections of cut redundant rail from the four-foot of the Down Fast and the four-foot and cess of the Down Slow using a log grab to lift the rails into the trailer. The RRV and trailer were then moved back to the RRAP, off-tracked from the railway and then used in road mode to move the redundant rail into the yard.
- 40 The RRV was then on-tracked onto the Down Slow line, again with a trailer, and moved back to location 1 to begin clearing other materials. At the same time, the ASH team began to cut other sections of redundant rail in and around the Down Fast line at location 2.
- 41 After the RRV was off-tracked and the other redundant material had been deposited in the yard, the RRV was on-tracked on the Down Fast line and moved to location 2 without the trailer. The RRV was then used to collect the cut sections of redundant rail from the four-foot of the Down Fast line and the ten-foot (the space between two pairs of running lines) using the log grab. The redundant rail was placed in a pile on the RRAP.

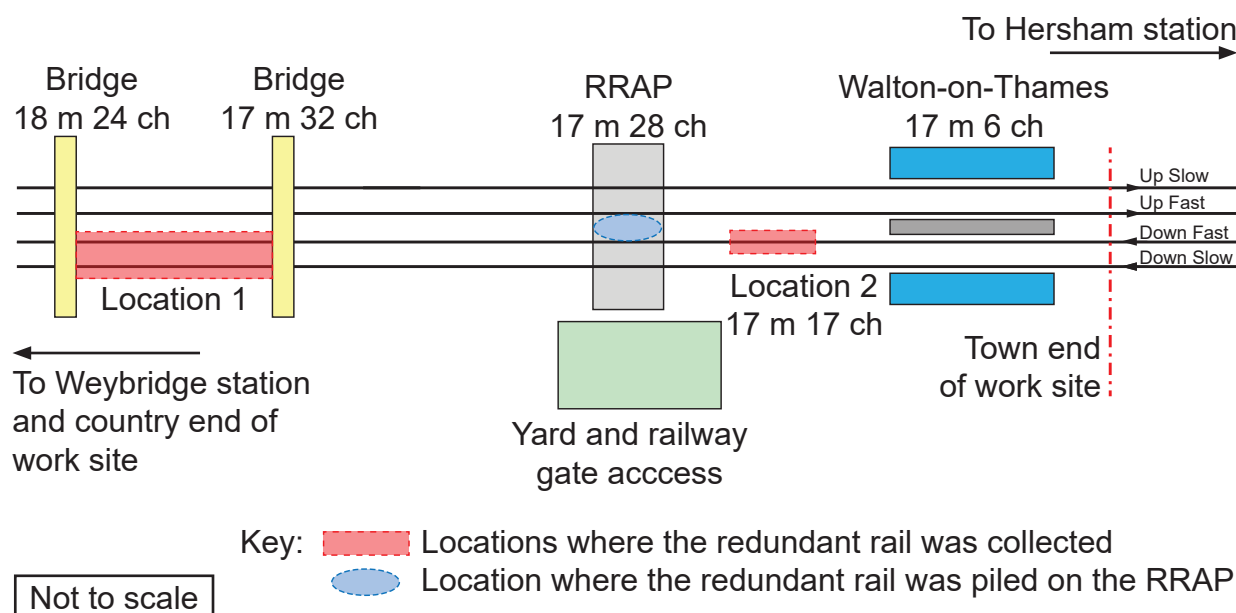


Figure 8: Diagram of work site, showing the approximate locations where the redundant rail was collected (red shaded rectangle area) and piled on the RRAP (blue shaded oval area) during the morning shift at the work site near Walton-on-Thames station.

- 42 There is conflicting witness evidence around which part of the RRAP the redundant rail sections were piled, with some witnesses reporting that the rails were deposited in either the ten-foot or the four-foot of the Down Fast. The RRV was then off-tracked and used in road mode to move the sections of redundant rail piled on the RRAP into the yard.

Evening shift

- 43 TL1 and TL2 continued their work from the morning shift (as they were rostered from 08:00 to 20:00). From around 13:00 on Saturday 2 March 2024, the incoming machine operator and machine controller relieved the morning shift. They continued to collect redundant rail in location 2. At around 13:45, the site supervisor for the evening shift arrived on site. At around this time, TL1's group ran out of cutting disks for their angle grinders and TL1 sent a member of the group to collect some disks from another work site near to Berrylands station.
- 44 Sometime between 13:30 and 15:00, the machine operator and machine controller off-tracked the RRV at the RRAP and collected four sections of redundant rail from the up cess using the log grab, lifting two at a time. They drove the RRV across the RRAP to take the redundant rail from the up cess to the yard.
- 45 At around 15:00, the site supervisor instructed the machine operator and machine controller to connect a brush to the RRV to clear the ballast from the flangeways (the gap between the running rail and the surface of the RRAP) of the Down Slow and Down Fast lines within the RRAP. TL2 was also instructed to supervise this by the site supervisor. At around 16:00 TL2 inspected the RRAP flangeways. TL2 stated that, after they inspected the flangeways, they looked across the RRAP in daylight and could see no redundant rail near the RRAP at this point. After the inspection of the flangeways, the RRV brushed the Down Slow line in the down direction (moving towards the country end of the work site).

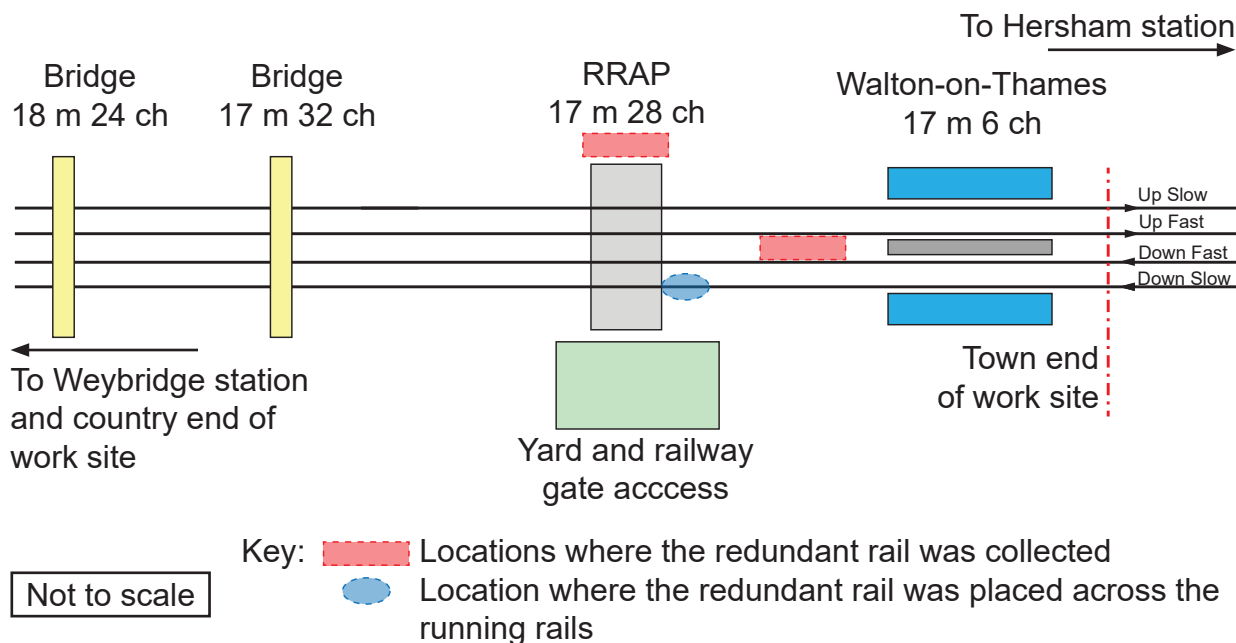


Figure 9: Diagram of work site, showing the approximate locations where the redundant rail was collected (red shaded rectangle areas) and placed on the railhead (blue shaded oval area) during the evening shift at the work site near Walton-on-Thames station.

- 46 Sometime after this, the replacement cutting disks arrived and TL2 instructed two members of their team to continue cutting the redundant rails in location 2. TL2 and their group then moved to support other staff working on the Down Slow line towards the country end of the work site. By 18:20 the available daylight began to fade.
- 47 The RRV had completed its brushing work by 18:30. The site supervisor then instructed the machine controller and machine operator to move the RRV to the RRAP and reattach the log grab so that they could continue to collect redundant rail from location 2. Upon arriving at the RRAP, the machine controller and machine operator off-tracked the RRV and moved it into the yard. They attempted to reconnect the log grab but were unable to do so because they could not recall the correct way to connect the relevant hydraulic hoses.
- 48 At around 19:30 TL2 and the staff at location 2 left site. At around 20:00, the work on the Down Slow at the country end of the work site was also completed and the site supervisor walked back to the RRAP. The machine controller and machine operator reported they were still unable to reconnect the log grab to the RRV and so the site supervisor instructed them to use a camlock and chains to collect the remaining redundant rail sections in location 2.

- 49 The machine operator and machine controller subsequently on-tracked the RRV and went to location 2 to start collecting sections of redundant rail from the four-foot of the Down Slow and the ten-foot. Each section of cut rail was lifted individually using a camlock and placed in small groups across the running rails of the Down Slow. The machine operator and machine controller then used the chains which were wrapped around groups of six redundant rails and moved them from location 2 to the edge of the RRAP, where they were stacked on the running rails of the Down Slow. When all of the rail sections had been moved from location 2 to the edge of the RRAP, the RRV was off-tracked and the redundant rails were moved into the yard. When this task had been completed, the machine operator and machine controller remained in the yard with the RRV awaiting the handback engineer to confirm they had completed their checks.

Handback engineer checks

- 50 The handback engineer came back on site at the RRAP at around 21:30. The site supervisor briefed the handback engineer about the work that had taken place on the evening shift, including the locations from where the redundant rail had been recovered. However, this briefing did not discuss the collection of redundant rails that had also been completed in the ten-foot or the up cess.
- 51 After this briefing, the handback engineer began the inspection, walking from the RRAP to the town end of the work site, near to Walton-on-Thames station (figure 10). Witness evidence shows that the handback engineer undertook this visual inspection walking in the four-foot of the Down Slow line to check the track geometry. In parallel, the handback engineer also looked for redundant rail in the Down Slow line and looked across to the Down Fast line for any redundant rail that had been left foul of the running line. Witness evidence also shows that this part of the inspection was completed without the handback engineer mentor being present and that the handback engineer used a handheld torch to illuminate the track around them (see paragraph 156).

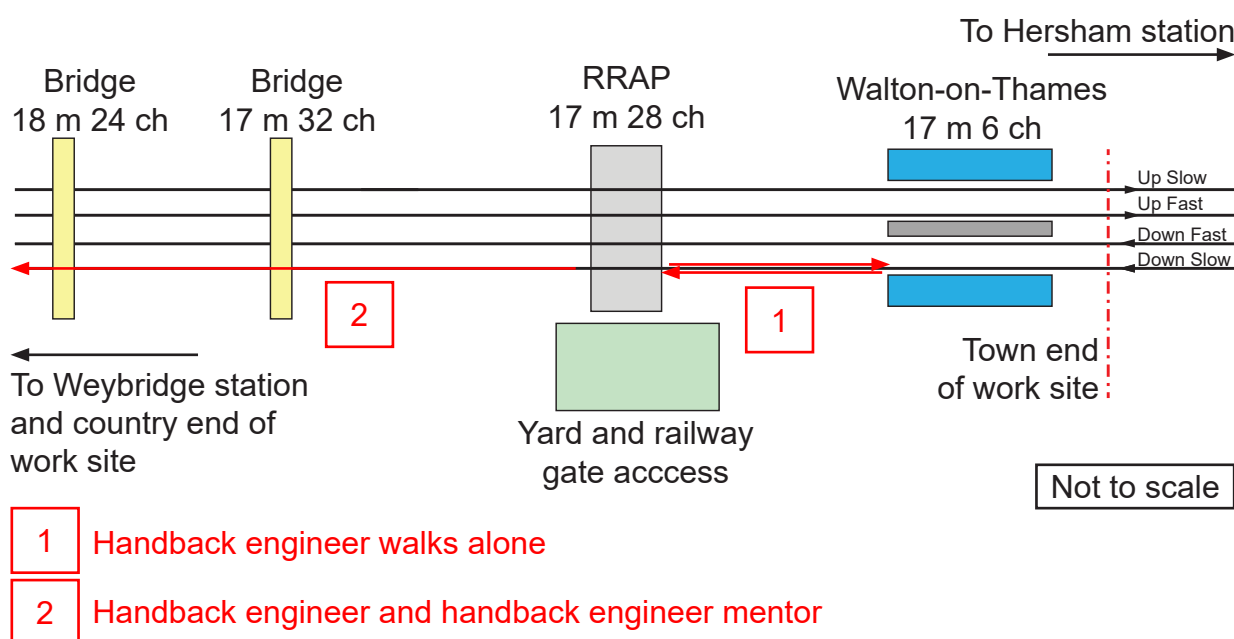


Figure 10: Diagram of work site, showing the routes walked by the handback engineer and handback engineer mentor from 23:00 on 2 March.

- 52 After completing the inspection of the track between Walton-on-Thames station and the RRAP, the handback engineer met the handback engineer mentor at the RRAP. Witness evidence indicates that when explaining the scope of work to the handback engineer mentor, the handback engineer only described the work related to the tamping that had been undertaken on the Down Slow line. There was no discussion about the locations where the collection of redundant rail had been completed. The handback engineer and handback engineer mentor then walked from the RRAP to the country end of the work site. On completion of the inspection, both left the track via an access point near Weybridge station. Although the handback engineer later stated that they continued to walk in the four-foot of the Down Slow line and looked across to the Down Fast line, the handback engineer mentor reported they had only inspected the Down Slow line and did not look across to the Down Fast line.
- 53 At around 23:40 on Saturday night, the handback engineer called the ES to state that the track handback inspection was complete and they were clear of the site at 23:41. The ES subsequently called the PICOP to hand back the work site at 00:04 on Sunday 3 March.

Railway operations in the morning of 4 March

- 54 Forward-facing closed-circuit television (FFCCTV) and station CCTV show that train 2F02, while travelling at around 83 mph (134 km/h), struck an object on or around the RRAP on the Up Slow line at around 04:37 on Monday 4 March 2024. This object is believed to be the section of redundant rail subsequently struck by train 2L10 (see paragraph 58).
- 55 At around 04:39, the driver of train 2F02 called the signaller using GSM-R (Global System for Mobile Communications – Railway) and stated they believed the train had struck something after passing Hersham station, located over 1 mile 35 chains (2.3 km) from the location of the RRAP. Recordings of this radio call show that the driver reported that the object was sitting on top of the conductor rail on the cess side (the left-hand side of the train in its direction of travel). The driver stated that, in their opinion, the object was not substantial and was possibly a tree branch. Other staff on the train reported to the driver that something may have been wrapped around the train's shoe gear and this was subsequently communicated to the signaller. The driver reported they intended to check for damage to the train at the next scheduled stop at Surbiton station.
- 56 At 04:55, the signaller contacted the driver of train 8Y82, which at this point was travelling towards the RRAP in the up direction on the Up Slow line, behind train 2F02. The signaller relayed the report that had been provided by the driver of train 2F02 and instructed the driver of train 8Y82 to proceed at caution from Hersham station. The signaller instructed the driver to call back if they noticed anything untoward and if nothing of note was seen, then to continue their journey. No end location for this check was specified by the signaller.

- 57 At 05:00, the driver of train 2F02 informed the signaller that the train had sustained damage to a right-hand bodyside window (the six-foot side). The object the train had struck was believed by the driver to have been on the cess side, the opposite side to the broken window. The driver confirmed they would contact the SWR fleet control to report this. At 05:05, the driver of train 2F02 made a further phone call to the signaller and told them that SWR maintenance staff had advised that the train could continue its journey. During the call, the signaller informed the driver of train 2F02 that the driver of train 8Y82 had not reported seeing anything untoward when they passed the location.

Events during the accident

- 58 At around 05:37, train 2L10 approached the RRAP travelling at around 85 mph (137 km/h) on the Up Fast line. It struck a section of scrap rail on the RRAP and the train's leading wheelset derailed to the left (see figure 11).
- 59 The driver made an emergency brake application between 1 and 2 seconds after the derailment. The train came to a stand, upright, around 500 metres beyond the point of collision.

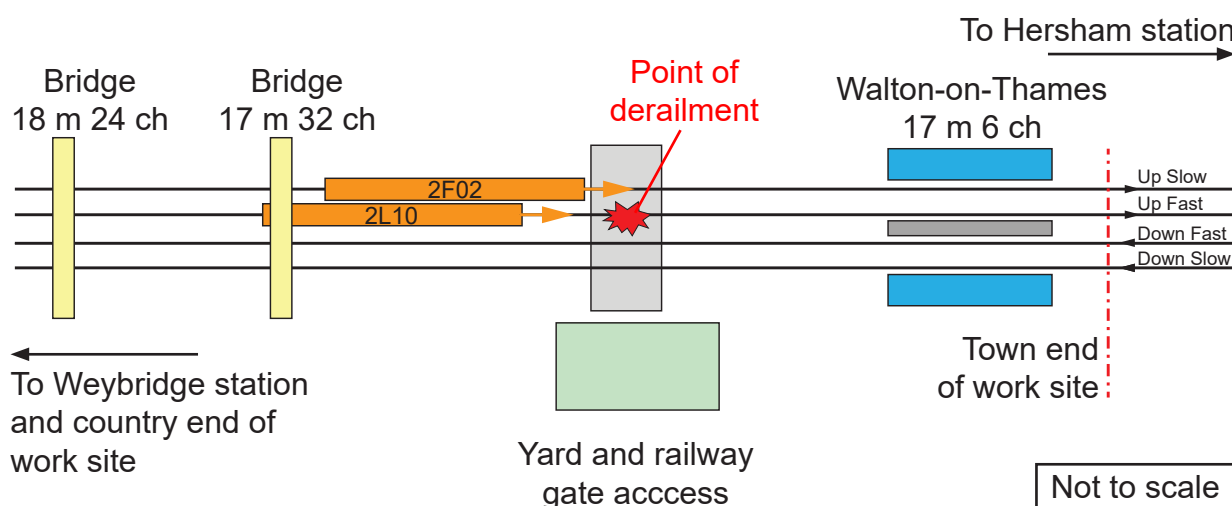


Figure 11: Diagram of work site, showing the directions of travel of trains 2F02 and 2L10 and the point of derailment of 2L10.

Events after the accident

- 60 At around 05:38, the driver of train 2L10 used the GSM-R cab radio to make a railway emergency call. They reported that the train was “taking out conductor rail” and requested an emergency switch off of the traction electrification supply. The signaller arranged an emergency switch off of the up lines, which was in place at 05:43. The signaller then requested the driver to check if the down lines had been affected.
- 61 At 05:58, the driver of train 2L10 called the signaller to request permission to inspect the front bogie of the train and confirm whether the train had derailed. The signaller arranged a line blockage of the Up Slow line and at 06:03 the driver confirmed that the train had derailed. The signaller then arranged for all four lines to be blocked to trains.

- 62 At 06:44, the passengers of train 2L10 were safely evacuated directly from the train onto the disused island platform at Walton-on-Thames station. By 17:10, train 2L10 had been rerailed and it then travelled to Northam depot for inspection and repair. Following track repairs, all lines were reopened to normal working at 04:05 on 5 March 2024.

Background information

Rules and procedures relating to the checks that should be undertaken before handing back a work site possession to the railway for the passage of trains

- 63 There are four documents that provide direction on how a possession should be handed back for the safe passage of trains. These are:
- Rule Book GE/RT8000 Handbook 9 'IWA or COSS setting up safe systems of work within possessions', issue 7 dated September 2019
 - Rule Book GE/RT8000 Handbook 12 'Duties of the ES or Safe Work Leader in a possession', issue 9 dated September 2022
 - Network Rail standard NR/L2/OHS/019, 'Safety of people at work on or near the line', issue 12 dated June 2023 (paragraph 26)
 - Colas Rail standard ENG-A3-012, 'Inspecting and handing back worksite following engineering work', issue 2 dated July 2023.

GE/RT8000, Rule Book handbooks 9 and 12

- 64 Handbook 9 requires that, on completion of work, the COSS will contact the ES to advise them that the work group is clear of the line and that protection for staff is no longer needed. As written, this information relates to the staff being supervised by the COSS, rather than the equipment being used by the group.
- 65 Handbook 12 requires the ES to ensure that COSSs who no longer need to work on or near the line sign out of the work site using form RT 3199 '*Work-site Certificate*'. Once all the COSSs have signed out of a work site, the ES will call the PICOP and inform them that the line is clear for the safe passage of trains. As there is no requirement for the ES be present on site to confirm the statement provided by the COSS, the affirmation (from the ES to the PICOP) is based upon the information given. It is implicit in this that a COSS will have checked that both staff and equipment are clear of the line.

NR/L2/OHS/019, 'Safety of people at work on or near the line'

- 66 Network Rail standard 019, under the heading '*At the end of the shift*', states: '*When work is finished the person in charge shall confirm all equipment and people that can affect safety of the line has been removed from the track prior to hand back [and] the line is safe for the passage of trains.*'
- 67 Network Rail Technical Authority (responsible for setting technical guidance within Network Rail) reported that this wording is intended to instruct a PIC that they must ensure that all people, equipment and material within their responsibility are clear of the line at the end of their shift. Network Rail form RT9909 '*COSS Record of Arrangements Form*' (part of the SWP) includes a declaration by the PIC to confirm that '*the work at site is complete and clear for the passage of trains*'.

- 68 Network Rail Technical Authority also reported that the requirement for the PIC to communicate with the ES is not included in standard 019 itself but was included in the standard change briefing material associated with the latest issue of the standard (issue 12). However, RAIB found that, while this material included the requirement for a PIC to confirm that the line is safe for the passage of trains, it did not include any instructions for the PIC or ES on what should be communicated after this was done.
- 69 Following an accident in Watford Tunnel in October 2014 ([RAIB report 12/2015](#)), RAIB made a recommendation to Network Rail intended to create an explicit process for handing back a work site (see paragraph 151). Network Rail has since reported to the Office of Rail and Road (ORR, the safety authority for the mainline railway in Great Britain) that it had implemented this recommendation through the introduction of the PIC role.

ENG-A3-012 'Inspecting and handing back worksite following engineering work'

- 70 In addition to the requirements within the Rule Book and standard 019, Colas Rail's track handback procedure states that the handback engineer is responsible for undertaking a diligent inspection of the '*affected mileage*' (see paragraph 123) and must complete a '*Track Conformance Certificate (Form A-G)*'. The associated form includes a confirmation from the handback engineer that '*Tools, equipment, scrap, particularly rail off-cuts, and any other item that could compromise the safe passage of trains if placed on or near the line have been cleared away or secured.*'
- 71 While there was no explicit requirement in the Colas Rail standard for the handback engineer to speak to the ES after this inspection, witness evidence shows Colas Rail expected their handback engineers to do this, and to effectively undertake the role of the PIC in this respect. This expectation was understood by the ES and handback engineer at Walton-on-Thames.

Analysis

Identification of the immediate cause

72 Train 2L10 derailed because it struck a section of redundant running rail which was lying foul of the Up Fast line.

73 An inspection of the RRAP by RAIB after the accident showed clear evidence that a section of redundant running rail had been struck by train 2L10 on the Up Fast line and that this had resulted in the derailment (paragraph 58, figure 12).

74 No other substantial object was found on or near the RRAP after the accident. This suggests that the section of redundant rail was also the object struck earlier by train 2F02. The driver of train 2F02 reported striking the object near to Hersham and there were no witness marks present on or near the Up Slow line on the RRAP to show exactly where train 2F02 struck this object. However, FFCCTV from train 2F02 shows a collision occurring with a substantial object, which results in arcing with the conductor rail, either on, or on the immediate approach to, the RRAP (paragraph 54). Data from the electronic logs for the power supplies to the conductor rail also shows that power tripped at around the same time as train 2F02 was passing the RRAP.

75 While the driver of train 2F02 reported that the object their train struck was sitting on top of the conductor rail on the cess side (the side of the train furthest from the Up Fast line, paragraph 55) the breaking of a bodyside window on the other side of the train, next to the six-foot (paragraph 57) suggests that the collision resulted in the object moving in the direction of the Up Fast line.



Figure 12: The witness marks (red dashed circles) caused by the section of rail impacting the rubber surface of the RRAP around the Up Fast line. Tyre marks on the RRAP surface, probably caused by the RRV on the 2 March, are also visible on the Up Slow and Up Fast lines.



Figure 13: The section of running rail having been reassembled from the fragments found on and near the RRAP after the collision.

Responses to the earlier collision between train 2F02 and an object

- 76 CCTV imagery shows train 2F02 struck an object near the RRAP around 54 minutes before the derailment of train 2L10 (paragraph 54). The possibility that a different response by staff to this initial incident may have prevented the later derailment has been considered but it was unlikely to have done so.
- 77 The driver of train 2F02 reported the initial collision to the signaller but believed the object that had been struck was not substantial and was probably a tree branch on or near the conductor rail on the cess side of the train (left-hand side in the direction of travel). The driver, having inspected the train at Surbiton station, reported to the signaller that the train had sustained damage to a bodyside window on the six-foot side of the train (right-hand side in direction of travel). The driver also reported the location of the incident after passing Hersham station. It is possible that the train driver did not report the correct location of the collision due to the challenge of identifying landmarks while travelling at high speed and in darkness.
- 78 Based on the information provided by the driver of train 2F02, it would not have been apparent to the signaller that the object that had been struck presented an immediate derailment risk to other trains. Regardless of this, the signaller instructed the driver of train 8Y82, approaching on the Down Slow line, to proceed at caution after passing Hersham station (paragraph 56). However, this location was 1 mile and 35 chains (2.3 km) beyond the RRAP in train 8Y82's direction of travel.

- 79 Had the driver of train 8Y82 been provided with the correct location of where train 2F02 had collided with an object (on or near the RRAP), the lighting conditions at the location, strength of headlight beam from the train, distance from the Up Slow to Up Fast lines, and dark colour of the rail against the RRAP surface make it unlikely that the driver would have been able to detect the section of redundant rail. This means that it is unlikely that this would have prevented the accident from occurring or reduced its consequences.

Unlawful activity

- 80 Track workers were present near the access gate to the RRAP until around 02:00 on 3 March 2024 and train services did not resume until the early morning of 4 March. Although a key was found in the access gate padlock following the accident, British Transport Police found no evidence that an external party had unlawfully accessed the railway during this time and moved redundant rail so as to cause the derailment.

Identification of causal factors

- 81 The accident occurred due to a combination of the following causal factors:
- One of the teams that had carried out the work near to Walton-on-Thames the previous weekend had inadvertently left a section of redundant rail foul of the track after completing the work (paragraph 82).
 - The checks undertaken before handing back the railway for normal operation did not identify that a section of redundant rail had been left on the track following the work (paragraph 93).

Each of these factors is now considered in turn.

Work completed on and around the RRAP

- 82 One of the teams that had carried out the work near to Walton-on-Thames the previous weekend had inadvertently left a section of redundant rail foul of the track after completing the work.**

- 83 RAIB has not been able to identify which element of the work undertaken during the weekend of 2 to 3 March 2024 resulted in the redundant rail being left foul of the track. Neither the planning process nor the SWP (see paragraph 116) required a system to record where each section of redundant rail was cut and collected from. RAIB has therefore analysed the tasks that were undertaken at Walton-on-Thames to determine the most likely cause of the section of redundant rail being left on the RRAP.
- 84 FFCCTV from the Automated Intelligent Video Review (AIVR) system shows sections of redundant rail lying near the RRAP in the four-foot of the Up Fast line (figure 14) when a train passed through the location of the work site on 20 February 2024. Network Rail has confirmed that there had been no rail collection at this location between 20 February and 3 March. Post-accident examination of the site showed that this redundant rail was not present, suggesting that it was removed from near the RRAP during the weekend of 3 to 4 March, although such an activity had not been planned and witnesses did not report this work had been completed during the possession.

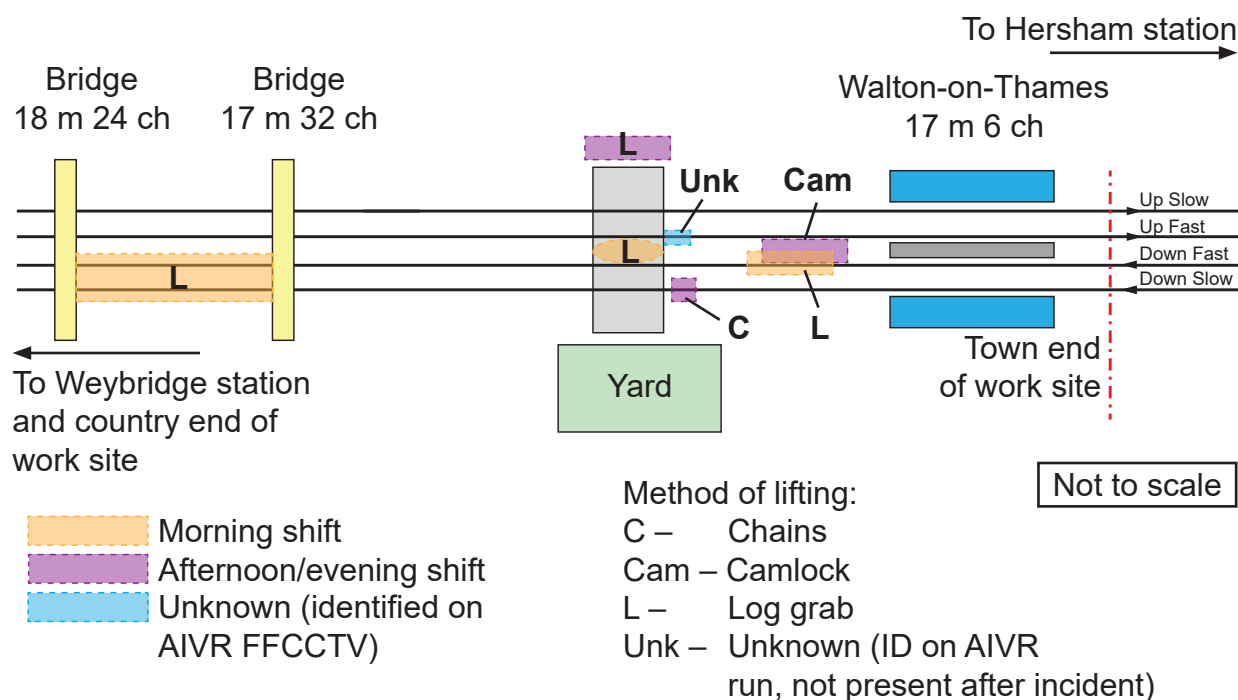


Figure 14: Diagram of the work site showing the different locations, times and methods of lift used to collect the redundant rail.

- 85 The section of rail that was struck by train 2L10 could alternatively have originated from those rails cut by ASH staff at location 2 in the evening shift, which were collected later by the RRV (paragraphs 40 to 46). However, as the closest position to the up lines involved in this activity was the ten-foot and as this activity occurred on the down (town) side of the RRAP, RAIB considers it is unlikely that the section of redundant rail struck by the trains had been left behind at location 2 following these activities.
- 86 The section of rail could also have been dropped and left near the line by the staff controlling the RRV as they lifted and moved the cut rail from location 2 to the edge of the RRAP (paragraph 49). However, if a single rail had been lifted and transported (either by log grab or camlock) it is likely that staff operating and supervising the RRV would have noticed if it was dropped. RAIB, therefore, also considers that this is also unlikely to have been the source of the redundant rail struck by the trains.
- 87 Between 13:30 and 15:00, the RRV was used to collect redundant rail from the up cess and to move these into the yard (paragraph 44). Tyre marks found on the RRAP after the accident indicate the RRV travelled across the Up Fast and Up Slow lines at some point during the work, suggesting that the RRV crossed to the up cess. Witness evidence shows that the log grab was used to lift two rail sections at a time. After this task, at around 16:00, the RRV was used to brush the flangeways of the RRAP on the down lines and this work was supervised by TL2 in daylight. Consequently, it is likely that any section of redundant rail that had been dropped and left on or near the RRAP before this time would have been seen and removed by staff. RAIB, therefore, considers that it is unlikely that the section of redundant rail which was struck was dropped and left on or near the RRAP during this activity.

- 88 After around 20:00, witness evidence shows that redundant rail sections were placed on the running rails of the Down Slow line in darkness (paragraph 49). These sections were subsequently lifted using chains wrapped around three or four rail sections simultaneously before being moved from the RRAP into the yard. Network Rail standard NR/L2/TRK/3419, 'Lifting, Storing and Transporting Track Materials', issue 1 December 2021 states that chains could be used to transport scrap rail.
- 89 When undertaking this type of activity, Network Rail standard NR/L2/RMVP/0200/P503, 'Lifting operations', issue 1 dated June 2022 requires that:
- chains should not come into direct contact with rails
 - the specific process used should mitigate the risk of rail lengths moving laterally as well as longitudinally
 - rail should not be landed onto infrastructure assets.
- 90 None of these requirements were complied with during this lifting operation. Network Rail Technical Authority also stated that using chains wrapped around multiple lengths of scrap rail simultaneously was not a safe lifting method because the sections of redundant rail would not be secured from sliding out of the chains. It is therefore possible that a single section of redundant rail could have become dislodged using the lifting method adopted in this instance.
- 91 The staff responsible for planning the work had not anticipated that it would continue into the hours of darkness (see paragraph 113) and hence had not arranged site lighting for the RRAP. Network Rail guidance 'Don't get left in the dark; lighting and safety' states that (as a minimum) areas including '*site access points, loading/distribution areas, and tracking machines on/off site*' must be provided with temporary lighting (such as lighting towers) to carry out the task safely and efficiently. However, staff on site continued to work without site lighting or the approved lifting method.
- 92 Had a section of redundant rail been dropped at this time, then the dark colour of the rail against the dark coloured surface of the RRAP would have made it difficult to spot. It is also possible that the section of rail fell onto the rubber surface of the RRAP, thus reducing the sound of any impact, which would also have been masked by the noise of the RRV. Witness evidence shows that this was the last activity involving the RRV to be undertaken during the weekend before the work was completed. Taken together, this suggests that the section of rail struck by the train was most likely dropped during this activity.

Checks undertaken after completion of the work

93 The checks undertaken before handing back the railway for normal operation did not identify that a section of redundant rail had been left on the track following the work.

- 94 This causal factor arose due to a combination of the following:
- a. The task of collecting the redundant rail was not supervised by a PIC responsible for ensuring that all equipment and people that can affect safety of the line have been removed from the track. It is probable that this factor was linked to the cause of the accident (paragraph 95).

- b. The handback engineer was not effectively briefed on activities associated with the collection of the redundant rail, reducing the effectiveness of the track handback inspection. It is probable that this factor was linked to the cause of the accident (paragraph 102).

Each of these factors is now considered in turn.

Supervision of the work undertaken during the possession

95 The task of collecting the redundant rail was not supervised by a PIC responsible for ensuring that all equipment and people that can affect safety of the line have been removed from the track. It is probable that this factor was linked to the cause of the accident.

- 96 The work undertaken near Walton-on-Thames involved separate tasks being completed by groups of staff working in different locations within the single work site. While it is implicit in the relevant rules that the COSS for a work group will check that the line is clear for the safe passage of trains as part of handing back to the ES (paragraph 65), Network Rail standards make the PIC responsible for ensuring that all equipment and people that can affect safety of the line have been removed from the track (paragraph 66). However, witness evidence was that no PIC with overall responsibility for the work site or the task of collecting redundant rails was appointed at Walton-on-Thames during 2 to 3 March 2024.
- 97 Had a PIC been appointed for either the work site or the task, then it is probable that they would have spotted that a section of redundant rail had been left foul of the up lines after the work as part of ensuring that the line was safe for trains. A PIC responsible for directly supervising the collection of the redundant rail would also have been better placed to brief the handback engineer on the activities associated with the collection of the redundant rail (see paragraph 102).
- 98 The SWP was reviewed and approved by a competent PIC employed by Colas Rail before the work started. However, this PIC did not then attend the Walton-on-Thames site. Witness evidence indicates that Colas Rail routinely used a PIC to review SWPs without any intention of them attending site and that it would then assign a different PIC, once on site. As the SWPs used by staff at Walton-on-Thames during the weekend were not retained by Colas Rail following the accident (see paragraph 140b), RAIB has been unable to determine from documentary and witness evidence who, if anyone, was appointed as PIC.
- 99 A PIC was often appointed on SRSA sites from among the qualified COSSs available. However, in the case of Walton-on-Thames, all the COSSs were employed by ASH and there was witness evidence that ASH staff would only take responsibility for supervising other staff employed by their company. This means that they would not take responsibility for the RRV work, which was not being undertaken by ASH staff. Witness evidence was also that, while TL2 was responsible for overseeing the group responsible for cutting the redundant rail, TL2 did not directly supervise all elements of this task. This meant that a PIC was not appointed for the task of supervising both the cutting and moving of the redundant rail.

- 100 While a site supervisor was present on site, the individual believed their role was to represent the principal contractor (Colas Rail) on site and their responsibility was to co-ordinate activities to ensure that the work was delivered. Witness evidence shows there was no expectation from Colas Rail management staff or the person undertaking the site supervisor role at Walton-on-Thames that this role would perform the same function as a PIC and that it was not intended to directly supervise safety-critical work.
- 101 Witness evidence was that before the handback process was completed the ES spoke to the site supervisor, the handback engineer and the COSS to establish that staff were clear and that the line was safe for the passage of trains. The ES did not attempt to identify or talk to a PIC responsible either for supervising the site or collection of the redundant rail. This was because the ES was unaware of any requirement to do so (such a requirement is not made in the relevant handbook, paragraph 65) and no member of staff had identified themselves as acting in the capacity of the PIC for the work.

The inspection of the work site during track handback

102 The handback engineer was not effectively briefed on activities associated with the collection of the redundant rail, reducing the effectiveness of the track handback inspection.

- 103 The Colas Rail track handback procedure (paragraph 63 and see paragraph 123), contains the requirement to check the '*affected mileage*'. The handback engineer understood this to mean that they should check the lines that had been directly worked upon or traversed by on-track machinery (including, in this case, the tamper and RRV). As such, the track handback checks undertaken after the work at Walton-on-Thames was completed were reliant upon the handback engineer's understanding of the work that had been completed. This was in turn based upon the information provided to them by other members of staff.
- 104 Witness evidence was that the briefing between the site supervisor and handback engineer (paragraph 50) included an outline of the work undertaken on the down lines, but did not mention the collection of redundant rail from the up cess. This was because the site supervisor did not directly supervise the work undertaken to collect the redundant rail and was reliant on information provided by multiple members of staff. Because this information was missing from the briefing, the handback engineer only focused on the lines they had been briefed about, and therefore limited their visual inspection to the Down Slow and Down Fast lines.
- 105 The handback engineer's understanding of the activities within the work site may have also been affected by an informal telephone briefing provided by the project lead sometime between 29 February and 3 March. Witness evidence was that the scope of the work discussed in this call was to collect redundant conductor rail in and around the Down Slow line. It is possible that this may have also led the handback engineer to believe the affected mileage for their final inspection related only to the down lines. However, an email shared with the handback engineer and other Colas Rail staff on site contained ambiguous information which resulted in differing understanding of the scope of work (see paragraph 112).

- 106 When the handback engineer conducted a track walk in the early hours of 2 March 2024, while undertaking the role of site supervisor (paragraph 38), they only noted one section of redundant conductor rail in the Down Slow line on the approach to the RRAP from the Weybridge station end of the work site. This may have further reinforced their belief that only the down lines were to be affected by the work.
- 107 The handback engineer mentor arrived after the handback engineer and was reliant on the briefing from the handback engineer for their understanding as to what work had taken place (paragraph 50). Witness evidence shows that the handback engineer did not mention to the handback engineer mentor any of the work to collect redundant rails on the site and this likely meant that the handback engineer mentor's inspection was also focused on the down lines. The handback engineer mentor had a different interpretation of the Colas Rail standard on track handback and stated that, had they been aware of the other work activities, they would have checked all adjacent lines, as well as the down lines. It is possible, in this case, that this may have resulted in them spotting that a section of redundant rail had been left foul of the up lines after the work.
- 108 A review of the forms used by the handback engineer during the inspection shows that the process is primarily focused on ensuring infrastructure conformance. As part of this process, the handback engineer completed a track geometry certificate (form A), a system components certificate (form B) and a stress condition record (form C). Each form required the handback engineer to provide detailed technical information. In contrast, the site condition and speed restriction certificate (form F) included a brief declaration alongside other information. The declaration included: *'Tools, equipment, scrap, particularly rail off-cuts, and any other item that could compromise the safe passage of trains if placed on or near the line have been cleared away or secured'*. The greater detail needed in other areas of the form may explain why the handback engineer was primarily focused on the work of the tamper and why they did not brief the handback engineer mentor about the recovery of the redundant rails which had also taken place.

Identification of underlying factors

Planning of the work

109 The arrangements detailed in Colas Rail's planning and work documentation did not effectively manage the risk of a section of rail being left foul of the running line.

Scope of the work carried out

- 110 The project lead was first notified of the need to plan and resource (assign competent staff and equipment) the possession on 2 to 3 March 2024 following the TOC inspection in February 2024 (paragraph 36). Documentation and correspondence relating to the TOC inspection have not been retained by Colas Rail, but witness evidence indicates that a list of rectification work was identified from it and provided to the project lead. To better identify the scope of the work, the project lead reviewed FFCCTV footage from a Network Rail inspection train which had travelled on the Down Slow line in January 2024.

- 111 The project lead intended for the team working at Walton-on-Thames to resolve issues associated with the 2022 track renewal work on the Down Slow, so that this contract could be completed. As such, the project lead stated that their intent was that the team only needed to collect redundant conductor rail in and around the Down Slow line, not adjacent to other lines.
- 112 Despite this, on 29 February the project lead sent an email to Colas Rail staff, including the morning shift site supervisor and the handback engineer (figure 15). This email included the following reference to redundant materials:
- *'Access the machine with the trailer – All scrap to come out, if it's con-rail scrap it's ours' and 'Removing scrap rails, this is the main one – Scrap Con-Rail.*
 - *'Example of scrap rail, present in 6ft and adjacent road' [...]*
 - *'Remove any scrap from site Dunnage / Con-Rail blocks / Sleepers (?)'*



Figure 15: Photo of the FFCCTV from the inspection train used in the email from the project lead to other Colas Rail staff as an 'example of the scrap rail, present in 6ft and adjacent road' (courtesy of Network Rail).

- 113 The email to the site supervisor and handback engineer was ambiguous about which types of rail were to be removed and this may have caused confusion for staff on site as to the intended scope of the work. This is supported by witness and physical evidence that shows both redundant conductor rail and substantial amounts of redundant running rail were removed from several locations in addition to the removal of redundant conductor rail around the Down Slow line. This also affected the handback engineer's understanding of the lines that needed to be checked when the handback inspection was undertaken (paragraph 102).

- 114 The ambiguity around scope caused significantly more redundant rail to be collected on site than was intended and consequently work at Walton-on-Thames took longer than anticipated. This delay was further exacerbated by issues and delays encountered on site. The combined effect was that some of the work near the RRAP was conducted in darkness (with no site lighting) and this significantly increased the risk that a section of rail would not be detected if inadvertently dropped or left on site. The delays in the work also affected the presence of the POS representative who left site at 16:00 (as scheduled) with lifting of redundant rail sections continuing after this. Although this role is largely duplicated by that of the machine controller, the POS representative may have challenged the use of the unapproved methods used to collect and move the redundant rail and the lack of available lighting (paragraph 90).

Planning and controlling the work carried out

- 115 Colas Rail had identified the risk of leaving redundant material foul of the running line and sought to mitigate this through their track handback procedure (paragraph 123). In addition to this process, Network Rail and Colas Rail procedures sought to ensure that tasks (such as track renewals) were delivered in such a way as to reduce the likelihood of redundant material being inadvertently left behind following the work.
- 116 The project lead was also responsible for reviewing the SWP for the work at Walton-on-Thames. The SWP documentation included a brief description of the intended works as: *'Follow up works (tamping)'*. The documentation made no reference to collecting redundant materials (including rails) or how task risks were expected to be controlled.
- 117 The Network Rail standards relating to Capital Delivery are in some areas different to those relating to maintenance, for example, the processes by which task risks are specified and controlled (see paragraph 119). Network Rail standard, NR/L2/OHS/044, 'Planning and managing construction work', issue 5 dated January 2017, sets out standards for producing two types of documents that should aim to control risk during Capital Delivery work:
- a. A Work Package Plan (WPP) aims to identify the risks to those who might be affected by the works (for example, members of the public) and to include control measures to protect those affected.
 - b. Task Briefing Sheets (TBSs) which should be created for each task in a WPP. The TBSs allow those who are undertaking the work to understand its scope and how to carry out the work without risk to themselves or others.
- 118 Colas Rail had produced a WPP and associated TBSs for the track renewal of the Down Slow line in 2022. No WPP or associated TBSs were completed for the work at Walton-on-Thames on 2 to 3 March 2024, as the project lead (in February 2024) decided to amend the WPP associated with the original work in 2022 to include the follow-up work identified in the TOC inspection (paragraph 34).
- 119 The amended WPP included a brief outline of the work to be undertaken which repeated the details within the email sent to Colas Rail staff (paragraph 111). The WPP did not identify the risk that the redundant material being collected could be left foul of the running line and pose a hazard to railway traffic. No TBSs were created or referenced in the WPP, meaning that the documentation issued to those carrying out the work did not consider this risk either.

- 120 Capital Delivery projects are often planned months in advance, allowing a more detailed planning approach to be taken. However, due to Colas Rail exiting from the Southern region part of the SRSA contract, the timescales for planning the work undertaken at Walton-on-Thames were much shorter than for a task such as a large-scale renewal. Witness evidence suggests that the rectification work planned at Walton-on-Thames was seen as relatively straightforward and that the level of scrutiny applied may not have been to the standard normally undertaken for larger tasks. However, a sample TBS for the collection of redundant rail, provided by Colas Rail, also did not identify the risk of inadvertently leaving redundant material on site and foul of running lines.
- 121 Network Rail's own Task Risk Control Sheets (TRCSs) are published standards and are available for reference by principal contractors (including Colas Rail) to inform their risk control measures. Network Rail Technical Authority stated that, although these standards are available as references, principal contractors often created their WPP and TBS in isolation. Colas Rail stated that staff creating WPPs and TBSs would only need to refer to TRCSs if a suitable method statement had not been previously completed.
- 122 Network Rail standard NR/L3/MTC/RCS0216/OT19, 'Scrap Removal – Manual and Mechanised', issue 2 dated March 2023, outlines the controls and risks that Network Rail would seek to control for this activity. Network Rail staff planning maintenance activities also use TRCS to describe risks associated with the work, the controls for those risks and the person (roles) responsible for implementing the controls. The intention of TRCS is that they can be referenced in SWPs and used to control the risks associated with common tasks. However, the Network Rail TRCS also does not consider the risk of inadvertently leaving redundant material on site and foul of the running lines.

Handing back the railway for safe passage of trains

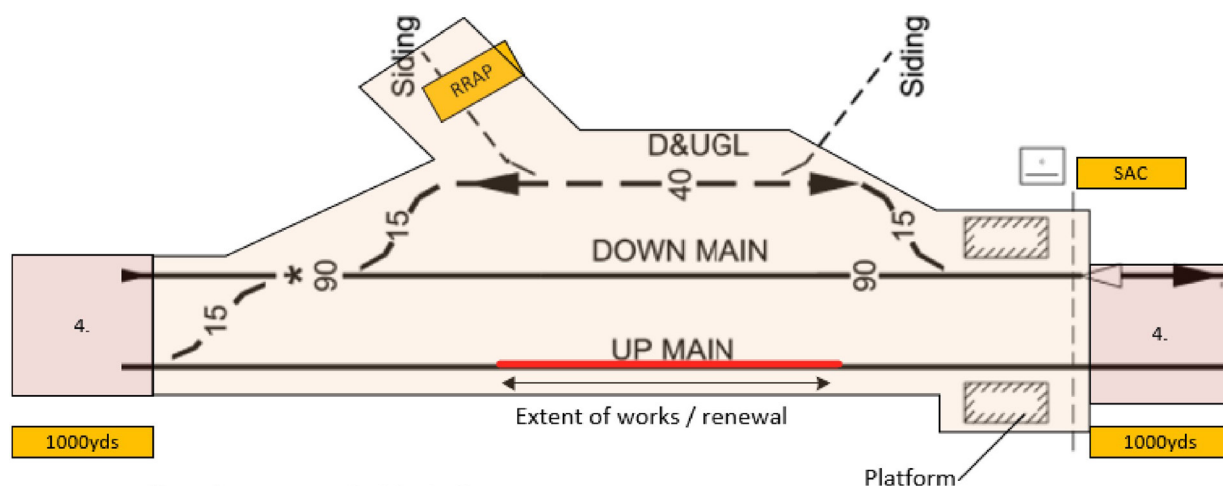
123 Colas Rail's track handback process did not provide clear guidance on which areas should be checked after the work was complete, to ensure the area was safe for the passage of trains.

- 124 Witness evidence shows that when the handback engineer was applying the Colas Rail's track handback procedure at Walton-on-Thames they believed the inspection related only to lines directly affected by the work which had been undertaken. The scope and nature of the inspection was therefore reliant on the understanding of supervisory staff knowing the actual location of the work that had been carried out. The Colas procedure states that *'Prior to undertaking handback duties, the Handback Engineer shall [...] Familiarise with the scope of works for the shift'* [sic]. However, the procedure gives no further information about who should be consulted or how this should be achieved.
- 125 The procedure also states that handback engineers must inspect the *'affected mileage'*, which is defined as follows (figure 16):

" 'Affected mileage' is the area impacted by the works and includes;

- *Road Rail Access Points used by machines for on / off tracking.*
- *Tracks used to travel to and from access points.*
- *Stations platforms within the mileage of the works.*
- *Adjacent tracks within the mileage of the works.*

[...] ‘Track Handback Engineer to inspect all tracks, cess, six foot, RRV access points including 1000 yards either side of the affected mileage or up to marker boards – whichever is less’.



Affected Area Example (shaded):

1. RRAP: Used for on / off tracking machines in siding.
2. All tracks travelled by machines travel including through S&C to and from site.
3. Staff accessing / egressing through platforms from SAC may affect platform areas tidiness or materials left on the platform.
4. Track Handback Engineer to inspect 1000yds either side of affected mileage or upto marker boards – whichever is less.

Figure 16: Diagram in Colas Rail procedure ENG-A3-012 'Inspecting and handing back worksite following engineering work', issue 2 dated July 2023, which provides an example to handback engineers of how to determine the 'affected mileage' (courtesy of Colas Rail).

126 The instructions to handback engineers define the ‘*affected mileage*’ to include ‘*adjacent tracks within the mileage of the works*’ and to include ‘*Any cess, [...] six fouts, ten fouts and wideways within the mileage of the works*’. As written, this definition suggests that the handback engineer at Walton-on-Thames should have checked all lines within the vicinity of the RRAP and not just the down lines, which they understood had been directly involved in the work (paragraph 103).

127 Witness evidence shows that this requirement was subsequently interpreted within Colas Rail as only requiring handback engineers to check lines directly affected by the work. While this interpretation would also have required the handback engineer to check the up lines, the handback engineer was unaware that the RRV had been used to collect redundant rail from the up cess and so was not aware that checks on the up lines or the up side of the RRAP were required.

128 Colas Rail stated that it believed that activity in the ten-foot at location 2 (paragraph 41) would have required a check of the Up Fast line and the ten-foot in the area where the redundant rail was located. Colas Rail reported that if the handback engineer believed that only the down lines were affected, they were only required to have inspected the RRAP from the down side cess and look across to the up side of the RRAP.

Roles and responsibilities of staff involved in complex (Capital Delivery) work sites

129 Network Rail standards do not clearly define the roles and responsibilities required for safe delivery of work on sites of work involving multiple persons in charge.

Supervision of work at Walton-on-Thames compared with the current 019 standard

- 130 Witness evidence from those involved in supervising and delivering the work on site and within other management roles relevant to the work shows that confusion existed amongst staff in relation to the principles underpinning the role of the PIC and how this role was practically fulfilled during the possession at Walton-on-Thames. These areas included:
- how the responsibilities of the role differed from that of a COSS and how multiple COSSs could be supervised by a single PIC
 - how the role related to task and staff supervision on site and the associated management structures (for example, how it interfaced with roles such as the site supervisor and team leader)
 - how the role should be applied on work sites that involved multiple groups working at different locations
 - how the role should apply when different companies (for example, principal contractors and labour suppliers) are working together on site
 - how the role worked when multiple shifts were taking place.
- 131 Network Rail Technical Authority (which oversees standard 019) reported that the standard was initially written with the concept that there will usually be only one PIC and COSS in a group. Network Rail Technical Authority reported that, under the current issue of standard 019 (issue 12), a PIC can supervise multiple groups, but they must be able to directly supervise and observe all staff that are delivering the work. Network Rail explained that while this concept was not explicit within the standard, it was included in standards change briefing material associated with the latest issue (paragraph 68).
- 132 While working with a single PIC and COSS may be common in maintenance delivery, where there is often only one group involved in undertaking a task, Capital Delivery work, such as renewals, can often be more complex with the PIC and COSS arrangements being accordingly less straightforward. This complexity and the lack of an explicit discussion in standard 019 about the arrangements to be adopted probably explain why confusion about the PIC role appears to exist.

Previous version of standard 019 for infrastructure projects

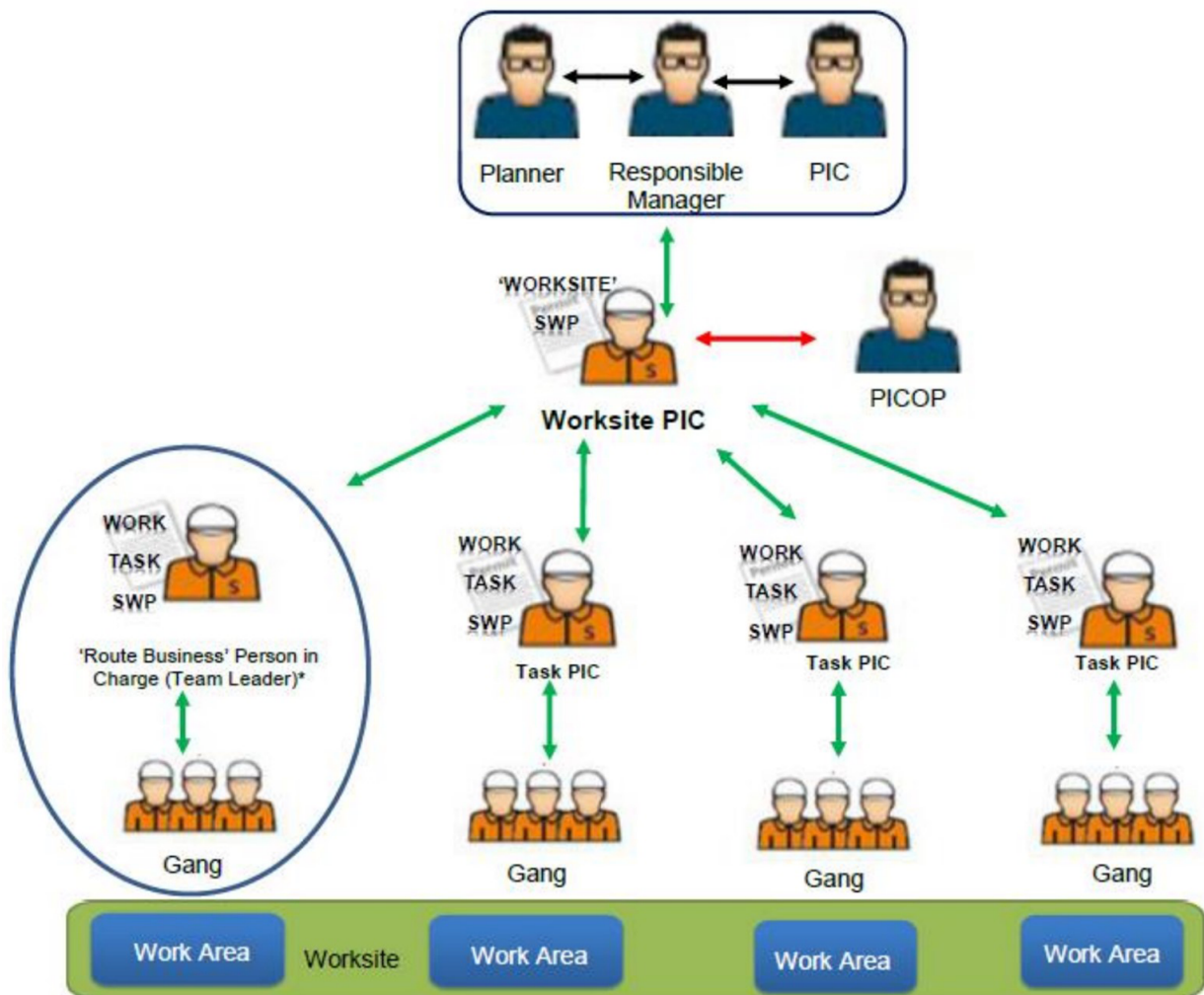
133 A previous version of standard 019, NR/L3/OHS/019-IP, 'Planning and delivering safe work – Implementation principles for Infrastructure Projects', issue 1 dated June 2018, outlined reporting arrangements for work sites that had multiple work areas (activities at different locations within the work site). This module introduced the concept of a 'task' PIC who would report to an (overall) 'worksite' PIC (figure 17). These roles were defined within the standard alongside other competencies as follows:

- *'Task PIC - The representative responsible for leading a task in a work area within a worksite in a possession. Acting as the key contact during the planning process and delivery of the work task, they will arrange the collation and provision of the relevant safe work pack for their task and work area. [...] A trained and certified SWL1 [...] will be the appointed Task PIC with overall accountability and responsibility for that site of work and is issued with the safe work pack.'*
- *'Worksite PIC - The representative responsible for the overall accountability and responsibility for deconfliction and integration within the engineering worksite in which they are leading. [...] A trained and certified SWL2 competent individual will be appointed as the Worksite PIC with overall accountability and responsibility for that engineering worksite.'*

134 Network Rail Technical Authority stated that this version of the standard was withdrawn (around June 2023) following consultation with its own staff and external contractors, including maintenance and Capital Delivery representatives, who wanted to move to a single version of standard 019.

135 Following the withdrawal of NR/L3/OHS/019-IP and before the accident, several rail system alliances (including SRSA, Central Rail System Alliance and Rail Systems Alliance Scotland) had identified a need for a variation to issue 12 of standard 019 around the delegation of COSS duties. The variation request was submitted to the Technical Authority in April 2024, by Network Rail's North West and Central region on behalf of the alliances.

136 The variation noted that *'Whilst the standard does not stipulate that the PIC cannot delegate COSS Duties to multiple COSSs, it is understood that this is the document's intent.'* It then outlined how the alliances (undertaking Capital Delivery work) wished to appoint a single PIC (usually permanent staff, employed by principal contractors) to control and manage the overall activities within a work site with multiple COSSs (temporary staff, employed by labour suppliers) reporting to them. Under this proposal, each COSS would be responsible for a specific task (or area) and the PIC would act as a single controlling mind to monitor and supervise progress of the work and co-ordinate activities across the work site. The request noted that it was not possible to involve temporary staff (provided by labour supplier organisations) in the SWP planning process and, hence, they could not be appointed as PICs. Additionally, it stated that multiple PICs on site would *'confuse the hierarchy of control that enables safety on [Capital Delivery] worksites'*.



Task & Rule Book Communications		Task Related Communications	
Rule Book Communications		Process Related Communications	

Figure 17: A figure from NR/L3/OHS/019-IP showing an example scenario where multiple activities are being carried out within a work site possession (courtesy of Network Rail).

137 The variation request highlights the ongoing confusion surrounding the interpretation and practical application of the role of the PIC and COSS relating to the planning, supervision and delivery of work in Capital Delivery work sites and that this was making it difficult to comply with standard 019 while also achieving effective task supervision for work at multiple locations within a work site.

Factors affecting the severity of consequences

- 138 The outcome of this accident could have been much more severe if the train had derailed to the right-hand side. This might have caused the train to collide with the out-of-use platform at Walton-on-Thames resulting in very serious consequences, as occurred in Potters Bar in 2002.³

Observations

Assurance

139 Although not causal to the accident at Walton-on-Thames, RAIB observes that some working practices applied by the team that carried out the work were not compliant with safe working rules and relevant standards.

- 140 During its investigation into this accident, RAIB found evidence of a number of non-compliances with operating rules and procedures within Colas Rail's Tonbridge depot. There is no evidence that these were causal to the accident. The non-compliances found were:
- a. Witness evidence showed that COSS and site supervisors were routinely not being provided with safety-critical planning documentation (such as SWPs, WPPs and TBSs) before the start of their shift. Given that Colas Rail's working practices were to appoint a COSS as a PIC at the start of the shift, this also meant that the PIC was not being briefed on the SWP at least a shift in advance, as required by standard 019. Staff responsible for supervising and leading the work at Walton-on-Thames were therefore unable to adequately brief the staff delivering the work.
 - b. Network Rail's standard 019 requires planners and responsible managers to check and verify that all SWPs have been returned by the staff on site and to review the causes where an SWP used on site was not returned. Documentary evidence provided by Colas Rail showed that it was not doing so. This resulted in several safety-critical documents being lost after the accident.

Guidance documents

141 Network Rail's Safety Central website contains guidance and briefing material which are no longer current due to the associated standards and rules being withdrawn or superseded.

- 142 Network Rail publishes guidance and training material associated with its safety standards (such as standard 019) on its 'Safety Central' website. This is a virtual resource library for health and safety information, and best practice. RAIB's investigation found that the website contains standards, guidance or other material that has been withdrawn or superseded without being marked that this was the case. RAIB also found instances of older guidance documents being marked as 'in draft' and no obvious equivalents in current guidance. Both have the potential to cause confusion on the correct processes and practice to be applied to safety-critical work activities.

³ Rail Safety and Standards Board, 'Formal Inquiry: Derailment of train 1T60, 1245 hrs Kings Cross to Kings Lynn at Potters Bar on 10 May 2002', March 2005 available from www.railwaysarchive.co.uk/documents/RSSB_PottersBarFinalReport2005.pdf.

Previous occurrences of a similar character

- 143 Since 2015, RAIB has produced a number of reports, safety bulletins and digests regarding accidents and incidents involving objects left on track following engineering work. These include:
- a. Collision between a train and a wooden sleeper, near Somerleyton, Suffolk ([safety bulletin 03/2015](#)).
 - b. Train struck and damaged by equipment cabinet door in Watford Tunnel ([RAIB report 12/2015](#)). Recommendation 2 from this report is discussed at paragraph 149.
 - c. Near miss between a tamper and steel pile near Kirkham, Lancashire ([safety digest 11/2017](#)).
 - d. Passenger train striking rail on the track at Cradlehall, near Inverness ([safety digest 05/2018](#)).
 - e. Collision between a train and an object left on the track at Kings Langley, Hertfordshire ([safety digest 06/2024](#)).
 - f. Train damaged by collision with an object at Highdyke, Lincolnshire, ([safety digest 02/2024](#)).
- 144 In March 2018, RAIB issued Urgent Safety Advice to Network Rail regarding safety of the line after engineering work ([Urgent Safety Advice 02/2018](#)) following the incident at Cradlehall. The advice noted that, in the preceding 4 years, there had been a number of incidents where railway lines had been returned to service in an unsafe condition following engineering works. In light of these incidents, RAIB advised Network Rail to take urgent action to review the effectiveness of the steps it had already taken to address this risk, and to implement any additional measures that are required to ensure the safety of the line following engineering works.
- 145 In response to RAIB's Urgent Safety Advice, in May 2019 Network Rail revised standard 019 and amended the SWP form to include a declaration by the PIC, upon completion of the work, to confirm that the work area is clear for the safe passage of trains. Additionally, Network Rail provided analysis on train strike events which it claimed showed a reduction in the number of incidents since the implementation of the revised standard 019.

Summary of conclusions

Immediate cause

146 Train 2L10 derailed because it struck a section of redundant running rail which was lying foul of the Up Fast line (paragraph 72).

Causal factors

147 The causal factors were:

- a. A team that had carried out the work near to Walton-on-Thames the previous weekend had inadvertently left a section of redundant rail foul of the track after completing the work (paragraphs 82 and 156, **Recommendation 1, Learning point 1**).
- b. The checks undertaken before handing back the railway for normal operation did not identify that a section of redundant rail had been left on the track following the work (paragraph 93, **Recommendation 2**). This causal factor arose due to a combination of the following:
 - i. The task of collecting the redundant rail was not supervised by a PIC responsible for ensuring that all equipment and people that can affect safety of the line have been removed from the track. It is probable that this factor was linked to the cause of the accident (paragraph 95).
 - ii. The handback engineer was not effectively briefed on activities associated with the collection of the redundant rail reducing the effectiveness of the track handback inspection. It is probable that this factor was linked to the cause of the accident (paragraph 102).

Underlying factors

148 The underlying factors were:

- a. The arrangements detailed in Colas Rail's planning and work documentation did not effectively manage the risk of a section of rail being left foul of the running line (paragraph 109, **Recommendation 1**).
- b. Colas Rail's track handback process did not provide clear guidance on which areas should be checked after the work was complete to ensure the area was safe for the passage of trains (paragraph 123, **Recommendation 2**).
- c. Network Rail standards do not clearly define the roles and responsibilities required for safe delivery of work on sites of work involving multiple persons in charge (paragraph 129, **Recommendation 2**).

Additional observations

149 Although not linked to the accident on 4 March 2024, RAIB observes that:

- a. Some working practices applied by the team that carried out the work at Walton-on-Thames were not compliant with safe working rules and relevant standards (paragraphs 139 and 156).
- b. Network Rail's Safety Central website contains guidance and briefing material which is no longer current due to the associated standards and rules being withdrawn or superseded (paragraph 141, **Learning point 2**).

Previous RAIB recommendations relevant to this investigation

150 The following recommendations, which were made by RAIB as a result of its previous investigations, have relevance to this investigation.

[Train struck and damaged by equipment cabinet door in Watford Tunnel \(RAIB report 12/2015\), Recommendation 2](#)

151 The recommendation reads as follows:

Recommendation 2

The intent of this recommendation is for Network Rail to make explicit its processes for handing back a work site to reduce the risk arising from the railway not being safe and clear for the passage of trains.

Network Rail should implement a means to meet the rule book requirement for the designated person (Engineering Supervisor or Safe Work Leader) to confirm to the PICOP that the railway is safe and clear for the passage of trains when that designated person is not present on site.

152 In March 2016, Network Rail reported to ORR that for the ES to confirm to the PICOP that the line is clear for the passage of trains, the ES would require confirmation from both the COSS and the task leader (of the activity). The COSS would declare that the protection from trains is no longer required and the task leader would confirm they have completed the work correctly and have left the infrastructure safe for the passage of trains (including removal of equipment and materials). At this point, Network Rail planned to introduce the safe work leader (SWL) role as part of their wider Planning and Delivering Safe Work programme. The SWL role was planned to combine the task leadership and COSS responsibilities to provide a single controlling mind and source of information to the ES. However, ORR reported that it did not accept that Network Rail had taken sufficient action to close the recommendation at this time.

153 In 2018 Network Rail subsequently reported to ORR that it had implemented this recommendation through the introduction of the PIC role and the amendments to the SWP form made after the incident at Cradlehall (paragraph 145). However, ORR has reported as part of this investigation that it still did not accept that Network Rail had taken sufficient action to close the recommendation at this point.

154 In 2021, a passenger train travelling at 123 mph (198 km/h) struck a hand trolley on the track after the completion of overnight maintenance work, near Challow, Oxfordshire ([RAIB report 11/2022](#)). In November 2024, Network Rail reported to ORR that it had revised its line clear verification process in response to recommendation 1 in this report. As part of its response to this recommendation, Network Rail stated to ORR that this revision may also allow them to close Watford Tunnel recommendation 2.

155 ORR reported that it had responded to Network Rail that the line clear verification process applies in areas where axle counters are used for train detection by the signalling system. As such, it would not apply in areas where the signalling system uses track circuits for train detection (such as Watford Tunnel and Walton-on-Thames). Additionally, ORR had noted that the revised standard focused on trolleys being left on the line and would not prevent train collisions with unsecured location cabinet doors or material (such as redundant rail) that could be mistakenly left after work had been completed. ORR has reported it is now re-engaging with Network Rail to discuss the implementation of the necessary actions.

Actions reported as already taken or in progress relevant to this report

Actions reported that address factors which otherwise would have resulted in an RAIB recommendation

156 Network Rail has reported that the following actions were taken or are planned to be taken following this accident:

- a. Network Rail, SRSA and Volker Rail (the new primary contractor for Southern region renewals via the Southern Renewals Enterprise, SRE) have developed a process to ensure that TOC inspections are completed within stated timescales to avoid redundant material (including redundant rail) being left on site for too long after completion of renewal work.
- b. SRSA staff planning engineering work have been briefed to ensure that adequate lighting is booked throughout the duration of the works.
- c. SRSA has created an electronic system that monitors and retains the evidence associated with safety-critical documentation including SWPs and track handback.

Other reported actions

157 Network Rail has reported that the following actions were taken or are planned to be taken following this accident:

- a. SRE has taken steps to ensure that staff undertaking the role of PIC are present on site to supervise and oversee work.
- b. Network Rail's Southern region and SRSA have ensured that all areas with a higher risk of materials being left behind are photographed.
- c. SRSA has completed an assurance check of documentation associated with the handback process to ensure that staff are completing this correctly.

Recommendations and learning points

Recommendations

158 The following recommendations are made:⁴

- 1 *The intent of this recommendation is for Colas Rail to have a robust process in place to deliver work in such a way as to avoid the risk of redundant material being dropped or left on track.*

Colas Rail, working in consultation with Network Rail, should undertake a risk-based review of its planning and processes (including work package plans and task briefing sheets) to ensure that appropriate methods of work are in place to ensure the safety of the line when redundant material is to be collected from on or near the line. This review should particularly consider the risk of redundant material being dropped or left on the track in a position where it may be struck by trains.

Colas Rail should develop a timebound programme to make any appropriate changes identified to its rules, policies, and procedures (paragraphs 147a and 148a).

This recommendation may be applicable to other contractors.

- 2 *The intent of this recommendation is for Network Rail to have adequate processes in place to ensure the co-ordination and supervision of work on complex Capital Delivery worksites.*

Network Rail, working in consultation with the Rail Safety and Standards Board, should review GERT8000, the Rule Book, and standard NR/L2/OHS/019, 'Safety of people at work on or near the line' to determine how co-ordination and supervision of activities should be undertaken on a site of work which involves the interaction of multiple persons in charge.

This review should explicitly consider how individual task and overall work site safety is managed by a single controlling mind where there is one or more of the following:

- multiple sites of work within a site of work
- multiple shifts and handovers of responsibility

⁴ Those identified in the recommendations have a general and ongoing obligation to comply with health and safety legislation, and need to take these recommendations into account in ensuring the safety of their employees and others.

Additionally, for the purposes of regulation 12(1) of the Railways (Accident Investigation and Reporting) Regulations 2005, these recommendations are addressed to the Office of Rail and Road to enable it to carry out its duties under regulation 12(2) to:

- (a) ensure that recommendations are duly considered and where appropriate acted upon; and
- (b) report back to RAIB details of any implementation measures, or the reasons why no implementation measures are being taken.

Copies of both the regulations and the accompanying guidance notes (paragraphs 200 to 203) can be found on RAIB's website www.gov.uk/raib.

- different teams with staff employed by different companies (including prime contractor and labour suppliers).

The review should also consider the interaction required between controllers of site safety, persons in charge and engineering supervisors and how these roles work together to ensure that the line is safe for the passage of trains following work.

Network Rail should develop a timebound programme to make any appropriate changes identified to its rules, policies, and procedures (paragraphs 147a, 148b, 148c).

Learning points

159 RAIB has identified the following important learning points:⁵

- 1 Infrastructure maintainers are reminded of the importance of arranging adequate site lighting when work is planned to be conducted in darkness. This is particularly important for locations (such as access points) where there is a higher risk of objects (including redundant material and tools) being left and subsequently posing a risk to the passage of trains (paragraph 147a).
- 2 Railway organisations responsible for issuing safety-related standards are reminded of the importance of ensuring that, when they issue new standards, they have robust processes in place to make sure that briefing, training and other guidance material relating to the superseded standard is removed (or clearly marked as withdrawn or superseded) on virtual resource libraries and information repositories designed for use by operational staff (paragraph 149b).

⁵ 'Learning points' are intended to disseminate safety learning that is not covered by a recommendation. They are included in a report when RAIB wishes to reinforce the importance of compliance with existing safety arrangements (where RAIB has not identified management issues that justify a recommendation) and the consequences of failing to do so. They also record good practice and actions already taken by industry bodies that may have a wider application.

Appendices

Appendix A - Glossary of abbreviations and acronyms

Abbreviation / acronym	Full term
AIVR	Automated Intelligent Video Review
CEM	Contractor's engineering manager
COSS	Controller of site safety
ES	Engineering supervisor
FFCCTV	Forward-facing closed-circuit television
MPV	Multi-purpose vehicle
ORR	Office of Rail and Road
PICOP	Person in charge of the possession
PIC	Person in charge
POS Representative	Plant Operations Scheme representative
RAIB	Rail Accident Investigation Branch
RSSB	Rail Safety and Standards Board
RRV	Road-rail vehicle
RRAP	Road-rail vehicle access point
SRE	Southern Renewals Enterprise
SRSA	South Rail Systems Alliance
SSoW	Safe system of work
SWL	Safe work leader
SWP	Safe work pack
SWR	South Western Railway
TOC	Taking over certificate
TBS	Task briefing sheets
TL1	Team leader 1
TL2	Team leader 2
WPP	Work package plan

Appendix B - Investigation details

RAIB used the following sources of evidence in this investigation:

- information provided by witnesses
- information taken from the train's OTDR
- CCTV recordings taken from Walton-on-Thames station and FFCCTV from trains 2L10 and 2F02
- site photographs and measurements
- weather reports and observations at the site
- analysis of signalling and electrical supply data
- audio recordings of conversations between train drivers and the signaller
- railway standards, rules and instructions
- Network Rail, SRSA and Colas Rail company procedures and records
- safe work pack and task risk control documentation
- a review of previous RAIB investigations that had relevance to this accident.

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