



**Railway Accident
Investigation Unit
Ireland**



INVESTIGATION REPORT

**Near miss with an Iarnród Éireann CCE Worker
near Gormanston Station, 21st July 2021**

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Report structure

The report structure is taken from guidelines set out in “Commission Implementation Regulation (EU) 2020/572 of 24 April 2020 on the reporting structure to be followed for railway accident and incident investigation reports” having regard to “Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety”.

Reader guide

All dimensions and speeds in this report are given using the International System of Units (SI Units). Where the normal railway practice, in some railway organisations, is to use imperial dimensions; imperial dimensions are used, and the SI Unit is also given.

All abbreviations and technical terms (which appear in italics the first time they appear in the report) are explained in the glossary.

Descriptions and figures may be simplified in order to illustrate concepts to non-technical readers.

Preface

The RAIU is an independent investigation unit within the Department of Transport which conducts investigations into accidents and incidents on the national railway network, the Dublin Area Rapid Transit (DART) network, the LUAS light rail system, heritage and industrial railways in Ireland. Investigations are carried out in accordance with the Railway Safety Directive (EU) 2016/798 enshrined in the European Union (Railway Safety) (Reporting and Investigation of Serious Accidents, Accidents and Incidents) Regulations 2020 and the Railway Safety (Reporting and Investigation of Serious Accidents, Accidents and Incidents Involving Certain Railways) Act 2020.

The RAIU investigate all serious accidents. A serious accident means any train collision or derailment of trains, resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other similar accident with an obvious impact on railway or tramline safety regulation or the management of safety. During an investigation, if the RAIU make some early findings on safety issues that require immediate action, the RAIU will issue an Urgent Safety Advice Notice outlining the associated safety recommendation(s); other issues may require a Safety Advice Notice.

The RAIU may investigate and report on accidents and incidents which under slightly different conditions might have led to a serious accident.

The RAIU may also carry out trend investigations where the occurrence is part of a group of related occurrences that may or may not have warranted an investigation as individual occurrences, but the apparent trend warrants investigation.

The purpose of RAIU investigations is to make safety recommendations, based on the findings of investigations, in order to prevent accidents and incidents in the future and improve railway safety. It is not the purpose of an RAIU investigation to attribute blame or liability.

Report Summary

On the morning of Wednesday 21st July an Iarnród Éireann (IÉ) Chief Civil Engineer's (CCE) Department employee (to be referred to as CCE Worker for the remainder of this report) was performing the role of *Track Safety Co-ordinator* (TSC) for a group of construction staff upgrading a retaining wall adjacent to a *track access point* at the northern end of Gormanston Station, County Meath; the worksite was away from the railway line in a *position of safety*.

The weather that morning was hot and sunny and the CCE Worker decided to go onto the railway line to place two *temperature gauges* on the track to check the track temperature; a task that was not requested to be carried out by any member of management.

At the same time, the 09:30 hours (hrs) Northern Ireland Railways (NIR) Enterprise Service from Connolly Station Dublin to Belfast Lanyon Place (Train A124), was approaching Gormanston, travelling non-stop through to its first scheduled stop, Drogheda. Train A124 was travelling at 88 miles per hour (mph) (142 kilometres per hour (km/h)).

At approximately 10:04 hrs the CCE Worker went back onto the railway line, into the *five foot*, to collect the temperature gauges, when he looked towards Gormanston Station and saw Train A124 approaching, he cleared line four seconds before Train A124 travelled past him.

Causal factors associated with the incident are:

- CaF-01 – The CCE Worker made a decision to carry out track inspection, by his own volition, without the request from his manager; possibly because it had been habituated in the previous days due to the hot weather conditions;
- CaF-02 – The CCE Worker did not ensure that he could adhere to the requirements of CCE-RA-15050 and the IÉ Rule Book prior to accessing the track; possibly due to a lack of concentration;
- CaF-03 – The CCE Worker did not look or listen for trains prior to accessing the track the final time; as he was likely distracted by the noise from the improvement works.

Contributing factors to the incident are:

- CoF-01 – The CCE Worker is a long-term employee, and his experience and confidence may have meant that he momentarily lost concentration and wasn't as alert as he should have been on the day of the incident.

Systemic factors associated with the incident are:

- SF-01 – CCE did not have a risk assessment for rail temperature monitoring, indicating how, when and where, monitoring should occur;
- SF-02 – CCE documentation does not require any pre-planning documentation for CCE Departmental staff, to be completed prior to going on or near the line, with checklists to manage risks that might be encountered; or, which would highlight to CCE Department staff that it is unsafe to go on or near the track without a proper Safety System of Work (SSOW).
- SF-03 – Despite the IÉ Rule Book being robust in its protection of staff going on or near the line, the current CCE-RA-15050 of document does not reflect this robustness in ensuring that the risks associated with CCE staff members working on their own are captured and managed.

As a result of the incident, the RAIU made the following safety recommendation:

- Safety Recommendation 2022002-01 – The IÉ – Infrastructure Manager (IM) CCE Department should develop a formalised process, through their Safety Management System (SMS) suite of documents, for IÉ-IM CCE staff walking/ working alone, which should be completed prior to any member of CCE staff going on or near the line; at a minimum consideration should be given to:
 - Whether it is necessary to go on or near the line to conduct the walk / work;
 - What local knowledge is required to walk /work safely;
 - Whether all the requirements of the IÉ Rule Book / SSOW can be met;
 - What special protection arrangements are required either at night or during the day.

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RAIU Investigation

RAIU decision to investigate

- 1 In accordance with the Railway Safety (Reporting and Investigation of Serious Accidents, Accidents and Incidents Involving Certain Railways) Act 2020 (No. 18 of 2020) with reference to S.I. 430 of 2020 Regulation 5 (5), the RAIU investigate serious accidents, the RAIU may also investigate and report on accidents and incidents which under slightly different conditions might have led to a serious accident.
- 2 On the afternoon of the 21st July 2021, a member of the IÉ safety team reported that a CCE member of staff was involved in a near miss with the Dublin to Belfast Enterprise Service close to Gormanston Station that morning.
- 3 The RAIU completed a Preliminary Examination Report and the RAIU's Chief Investigator (CI) made the decision to conduct a full investigation into the incident, given its impact on railway safety (S.I. 430 2020 Regulation 6(2)(b)) as under slightly different circumstances the events may have led to a serious accident, as the CCE member of staff would have been fatality or seriously injured if he had been struck by the train.
- 4 In terms of categorisation, the EU Agency for Railways categorisation for this occurrence would be considered an: Incident – To persons due to rolling stock in motion.
- 5 The RAIU's CI allocated RAIU Senior Investigators, trained in accident investigation, to conduct this investigation, as appropriate. In this instance, no external parties were required to assist with the investigation.

Scope of investigation

- 6 The RAIU must establish the scope of the investigation to ensure that only pertinent information is recovered and reviewed. Therefore, for this investigation, the RAIU have defined the following scope:
 - Establish the sequence of events leading up to the incident;
 - Establish, where applicable, the causal, contributory and systemic factors;
 - Examine the relevant elements of the IÉ Rule Book;
 - Examine the relevant *risk assessments* and registers;
 - Review the SMS documentation in relation to *risk* and *hazard* identification;
 - Review any previous occurrences where IÉ staff were almost struck by trains.

Communications & evidence collection

7 During this investigation, the RAIU collated and logged the following evidence:

- Forward-facing closed circuit television (FFCCTV) from Train A124;
- *On-train data recorder* (OTDR) information;
- Train operations working timetable;
- Witness evidence from parties involved in the incident;
- CCE risk assessment “Permanent Way General Maintenance”, RA15050, Version 3, operative since the 2nd February 2021;
- Other documentary evidence from IÉ-IM standards, procedures and other documentation;
- IÉ-IM and RAIU reports of investigations into similar occurrences.

The Incident

Parties & roles associated with the incident

Parties involved in the incident

- 8 IÉ–IM is the infrastructure manager who owns and operates the railway infrastructure in Ireland and operates under a Safety Authorisation certificate issued by the Commission for Railway Regulation (CRR). The IM Safety Authorisation is issued in conformity with Commission Regulation (EU) 1169/2010; the authorisation was renewed on the 24th March 2018 for a period of four years. The IÉ-IM department involved in the incident and relevant to this investigation are:
- IÉ-IM CCE Department; The Chief Civil Engineer (CCE) directs the Technical Support, Business Support and Safety sections within the Civil Engineering Department of IÉ. This Department carries out the inspections and maintenance of track and structures and is divided into three different geographical areas, with offices based at Dublin, Athlone and Limerick Junction
- 9 Northern Ireland Railways operate the Enterprise Services in conjunction with IÉ–Railway Undertaking (RU)¹.

Roles involved in the incident

IÉ-IM

- 10 The CCE Worker was the person on track at the time of the incident and is a member of the CCE Department's staff. He has been employed by IÉ for over nineteen years. His normal role is as a *Patrol Ganger*, a role which he held for four years at the time of the incident. On the day of the incident, he was working as TSC responsible for the *safe system of work* at Gormanston. All competency and assessment records were in-date and valid for the works the CCE Worker was carrying out at the time of the incident.

NIR

- 11 Driver A124 was a competent NIR driver.

¹ IÉ-RU owns and operates mainline and suburban railway services in Ireland and operates under a safety certificate issued by the CRR. The RU Safety Certificate is issued in conformity with European Directive 2004/49/EC and S.I. 249 of 2015; the Safety Certificate was renewed on 23rd March 2018 for a period of five years.

Summary of the incident

- 12 On the morning of Wednesday 21st July 2021, the CCE Worker was performing the role of TSC for a group of construction staff upgrading a retaining wall adjacent to a track access point at the northern end of Gormanston Station, County Meath; the worksite was adjacent to, but, protected from the railway line, see Figure 3.
- 13 The weather that morning was hot and sunny and the CCE Worker decided to go onto the railway line to place two temperature gauges on the track to check the track temperature; a task that was not requested to be carried out by any Infrastructure Manager, Dublin² staff.
- 14 At the same time, Train A124 was approaching Gormanston at 88 mph (142 km/h), travelling to its first scheduled stop, Drogheda.
- 15 At approximately 10:04 hrs the CCE Worker went back onto the railway line to collect the temperature gauges, when he looked towards Gormanston Station and saw Train A124 approaching.
- 16 On seeing the CCE Worker, Driver A124 sounded the horn and applied the emergency brake.
- 17 The CCE Worker moved into a position of safety within four seconds of Train A124 passing and was not struck by the train and was not injured in the incident.

² As opposed to IÉ-IM, Infrastructure Manager Divisional staff are responsible for all aspects of the management of production activities within a Division (made up of a number of regions and several CCE Locations); and accountable for all the aspects of track safety, structures safety, plant & machinery safety and occupational safety of all the production operations and supplier operations associated with the CCE Locations under his control.

General description of the railway

Infrastructure

18 Gormanston Station is located at the 24 *milepost* (MP) on the Dublin to Belfast Line, see Figure 1.



Figure 1 – Location of the incident, inset 24 MP

19 The line is *continuous welded rail of double track* configuration running through Gormanston Station, with Platforms 1 and 2, see Figure 2. The platforms are situated on a slight line of curvature. Platform 1 (convex platform) is approximately 253 metres in length and is served by the *Up Line*. Platform 2 (concave platform) is approximately 203 metres in length, served by the *Down Line* (measurements taken from the top of platform ramps).

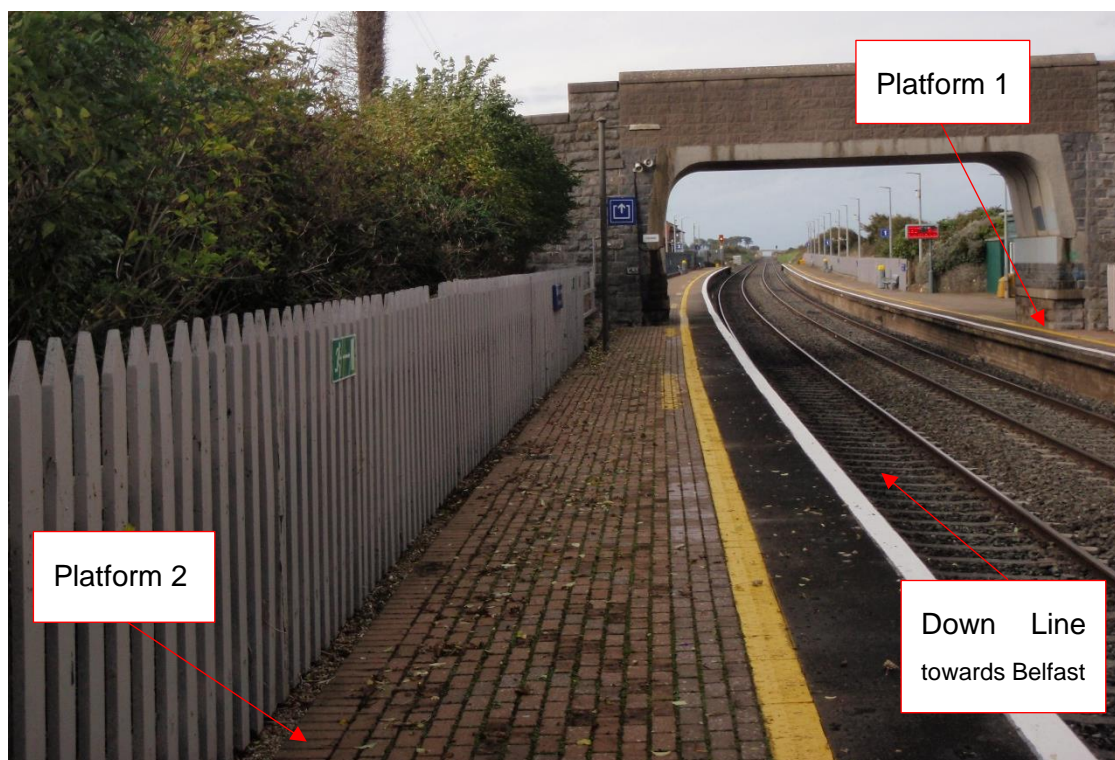


Figure 2 – Gormanston Station

- 20 There is a car park on the western side of the station adjacent to the Platform 2. North of the car park, there is a track access point, for plant accessing the railway. At the time of the incident, there was improvement works being undertaken and the site was protected with security fencing, see Figure 3.



Figure 3 – Track access location

Rolling Stock

- 21 Train A124 was the 09:30 hrs passenger service from Connolly to Belfast.
- 22 The service was being operated by a three-car NIR Class 3000 Diesel Multiple Unit (DMU), No. 3004. A train of this type has a maximum permitted speed of 90 mph (145 Km/h) and is 70.6 m in length, see Figure 4 for an example of the train involved.
- 23 No factors in relation to the rolling stock were found to have contributed to the incident.



Figure 4 – NIR Class 3000 three-car DMU

Signalling and communications

- 24 The route involved in the incident is fitted with two, three and four aspect colour light signals. Track Circuit Block (TCB) regulations apply to this route and train detection in the area concerned is achieved by track circuits.
- 25 The section of track involved in the incident, is controlled by the North East Centralised Traffic Control (CTC) Signaller located in CTC, Connolly Station, Dublin.
- 26 The means of communication between the train drivers and the signaller on this route is through train radio.
- 27 No factors in relation to the condition of the signalling and communications systems were found to have contributed to the incident.

Operations

- 28 Trains travelling towards Dublin, are travelling on the Up Line, in the Up Direction. Trains travelling towards Belfast are travelling on the Down Line, in the Down Direction.
- 29 The maximum permitted line speed for the section of line through Gormanston Station in the Up and Down Directions is 90 mph (145 km/h) as set out in the current Working Timetable.
- 30 Automated safety announcements are made at Gormanston Station to warn passengers of approaching trains; this is the case for both trains stopping at the station and non-stop trains. Announcements were made on the day of the incident; however, it should be noted that IÉ staff should not use these announcements in relation to safe access to the track.

Fatalities, injuries & material damage

- 31 The CCE Worker did not suffer any injuries as a result of the incident.
- 32 There was no material damage as a result of the incident.

External circumstances

- 33 The weather was sunny and fine; weather data taken from the nearest Met Éireann Weather Station, which was Dublin Airport, 13 km South/South West of the site, recorded that there was no rainfall for the day. The maximum temperature was recorded at 26°C, and the minimum temperature was 11°C. The temperature at the time of the occurrence was approximately 26°C. The mean wind speed was recorded at 4.7 Knots (8.7 km/h)

Evidence

CCE Worker

- 34 As mentioned previously, the CCE Worker is a Patrol Ganger and can perform the role of TSC (paragraph 10). The CCE Worker is a long-time IÉ employee (nineteen years); his normal role as a Patrol Ganger means that he is very experienced and familiar with walking/ working alone on the track.
- 35 The CCE Worker was briefed on the CCE risk assessment, “Permanent Way General Maintenance” on the 20th April 2021; this document is relevant to the investigation and outlined in paragraphs 39 and 40.
- 36 The CCE workers duties on the 21st July 2021 were in relation to performing of TSC for the ongoing improvement works at Gormanston track access location. The worksite was separated from the railway by means of security fencing, see Figure 3, and there was no requirement for the TSC to access the railway line as part of the improvements works.
- 37 The week previous to the date of the incident, the CCE Worker had been checking track temperatures at various locations due to the unusually hot weather, to prevent any track buckling or damage.
- 38 A temperature gauge, is dial measuring device, placed on side of the rail; the magnetic base holds it in place, and measurements are taken after twenty minutes, see Figure 5.



Figure 5 – Temperature gauge

CCE Risk Assessment

- 39 The RAIU requested the CCE documents relevant to the placement of temperature gauges and associated inspections; the RAIU were provided with the CCE Department (Dublin Division) risk assessment entitled “Permanent Way General Maintenance”, RA15050, Version 3, operative since the 2nd February 2021 to be referred to as CCE-RA-15050 for the remainder of this report. CCE-RA-15050 is a high-level generic risk assessment for staff involved in permanent way general maintenance and identifies common risks for engineering works including overhead lines and the DART.
- 40 CCE-RA-15050 identifies forty-seven hazards; five are relevant to this investigation (i.e. risks associated with struck by rolling stock resulting in death or injury), these are:
- Hazard No. 2: Responsibility for your own safety – with risk controls including: “Whenever you go on or near the line, arrangements must be made to ensure you are not endangered by train movements”; “you are responsible for your own safety and ensuring you are not endangered by trains”; “whenever you are to work on or near the line a TSC must first be appointed” (you may appoint yourself as TSC).
 - Hazard No. 3: Safety must be your First Concern – with risk controls including: “Safety must be your first concern”; “do not endanger yourself or others”; “keep prevention of accidents or fires in mind at all times”.
 - Hazard No. 5: Going on or near the line – with risk controls including: “You must not go *on or near any railway line* unless your duties require it”; “you are responsible for your own safety”; “You must know the permissible speed of trains and direction(s) they normally approach”; “You must constantly be alert, look up frequently and not be distracted by someone or something nearby”.
 - Hazard No. 8: Going on the lineside – with risk controls including: “You must not go *lineside* unless your duties require it”; “Look and listen carefully for approaching trains”; “Avoid going on or near the line”.
 - Hazard No. 9: Working on or near the line – with risk controls including “You must not work on or near the line unless under the direction of a TSC” and the TSC will work under a *safe system of work*.
- 41 CCE-RA-15050 does not directly refer to the placement/retrieval of temperature gauges (including when and where to conduct monitoring) and IÉ-IM did not provide the RAIU with any task specific risk assessment or safe system of work to be associated with the task carried out at the planning stage.

IÉ Rule Book

Introduction

- 42 The relevant sections of the IÉ Rule Book in this investigation are Subsection 2.0, Personal Safety of Section B, Part One which are outlined in paragraphs 43 to 46; and, Subsection 6.0 Instructions to Track Safety Co-ordinators of Section B, Part Two which are outlined in paragraphs 47 to 49.

Personal Safety

General description

- 43 Subsection 2.0, Personal Safety of Section B, Part One, of IÉ's Rule Book has the following topics related to this incident: Responsibility for your safety; and, What you must do when working on or near the line.

Responsibility for your safety

- 44 According to subsection 2.2, Responsibility for your safety, one of two arrangements must be made to ensure you are not endangered by train movements, depending on the nature of your duties, for simplicity, these duties are classified as walking or working. Walking includes carrying out walking ALONE on or near the line BUT not at the same time carrying out any form of work activity such as patrolling, examining, inspecting, oiling or cleaning within 2 m of the nearest rail. Working includes all activities not described above as walking.
- 45 In relation to this investigation, irrespective of whether the CCE Worker was required to carry out the track inspection; under the IÉ Rule Book, the CCE Worker was working as he was carrying out a track inspection.

What you must do when working on or near the line

- 46 According to subsection 2.4, What you must do when working on or near the line, the IÉ Rule Book requires the appointment of a TSC.

Instructions to Track Safety Co-ordinators

When it is safe for you to work alone

47 Paragraph 6.12.2, When it is safe for you to work alone, of Subsection 6.12, What you must do when working alone, of the IÉ Rule Book states that you may work alone provided:

- The work involves only patrolling, examining or inspection, or work of a minor nature as authorised in the Department Instructions.
- You will be able to remain sufficiently alert for the approach of trains and be able to reach a position of safety at least 10 seconds before a train arrives.
- Alternatively, you must arrange for the line(s) concerned to be blocked to all movements.

What you must do during the work

48 Paragraph 6.12.3, What you must do during the work, of the IÉ Rule Book, states that the TSC must: be alert constantly, look up frequently and avoid allowing the work you are doing, or anything else, to affect your seeing or hearing approaching trains.

Sighting distance

49 Sighting distance charts are provided in Subsection 6.11, of the Instructions to Track Safety Co-ordinators (see Figure 6). These include the: speed (maximum speed of approaching train); distance (of which an approaching train can be seen); time (warning time).

SIGHTING DISTANCE CHART (IN METRES)

Permissible Speed (M.P.H.)	SIGHTING DISTANCES IN METRES TO PROVIDE MINIMUM WARNING TIME						
	15 sec	20 sec	25 sec	30 sec	35 sec	40 sec	45 sec
100	700	900	1200	1400	1600	1800	2100
90	700	900	1100	1300	1500	1700	1900
75	600	700	900	1100	1200	1400	1600
60	500	600	700	900	1000	1100	1300
40	300	400	500	600	700	800	900
20	200	200	300	300	400	400	400

Figure 6 – IÉ Rule Book sighting distance chart

50 The maximum speed through Gormanston Station is 90 mph (145 km/h); with the minimum distance provided for this speed being 700 m.

51 IÉ-IM calculated that the sighting distances at the point of the near miss to be 1900 metres (m) for trains approaching on the Up Line and 385 m for trains approaching on the Down Line (see Figure 7). In this incident, the CCE Worker was on the Down Line, as a result the sighting distances were almost half the required length and as such, the CCE Worker should not have been on the line without alternative protection arrangements.

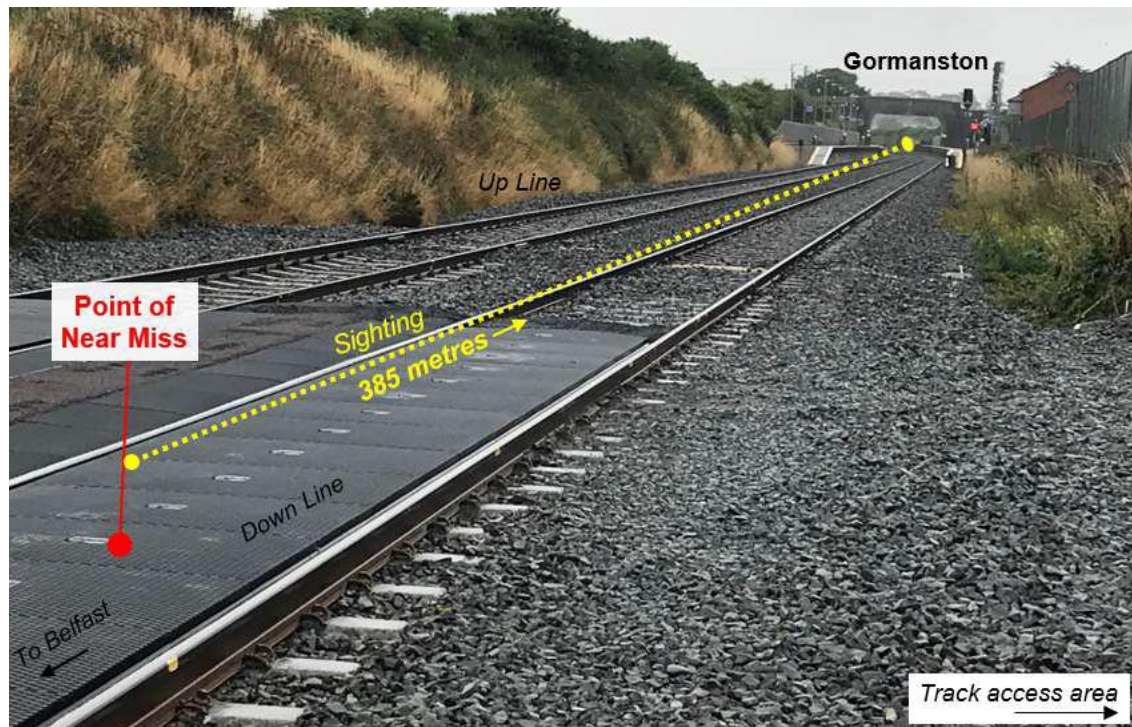


Figure 7 – Sighting distance

Image taken from IÉ Report R1103-2021-39

Events before, during & after the incident

Events before the incident

- 52 In the days before the incident, the CCE Worker had been checking rail temperatures throughout the Dublin area as there was a hot weather warning spell in place on the IE network.
- 53 At approximately 08:45 hrs on the 21st July 2021, the CCE worker arrived at Gormanston Station and set up the system of work for the improvement works to the track access location situated north of Gormanston Station Car Park; the work involved a digger, a dumper, three contractors and an engineer; the worksite was separated from the line with security fencing and there was no requirement for any of the personnel to go onto the line. The site was both noisy and there was a considerable amount of dust due to the work involved.
- 54 At 09:42 hrs, the temperature was hot (approximately 24°C (paragraph 33)). The CCE Worker decided, without instruction from any staff from Infrastructure Manager, Dublin, to place temperature gauges on both lines to measure the ambient heat of the rails, these would remain for approximately twenty minutes.
- 55 To do this, the CCE Worker, left his position of safety and accessed the railway line through the security fencing at 09:42:14 hrs. He approached the Down Line, looked in the Up and Down directions; walked across to the Up Line and placed a temperature gauge on the line and then placed a temperature gauge on the Down Line. On completion, the CCE Worker then walked back to the security fencing (to a position of safety) where he could observe the construction site through the fencing (the time was 09:42:46 hrs); the task took approximately thirty-two seconds.
- 56 Approximately twenty seconds after the CCE Worker was in a position of safety a non-stop train passed through the Gormanston Station on the Up Line, towards Dublin.
- 57 At 09:48:25 hrs, the CCE walked back onto the Down and Up Lines to check the temperature gauges, and returned to a position of safety, where he remained until approximately 10:01:36 hrs. During this time one train served the Up Line Platform and two non-stop trains passed through Gormanston Station on the Down Line.
- 58 At 10:01:36 hrs the CCE Worker approached the railway line, looked in the Up and Down directions and lifted the temperature gauges from the rails, again completing the task in approximately thirty seconds before returning to a position of safety.

Events during the incident

59 At 10:04:48 hrs, the CCE Worker again returns to the line to carry out another visual inspection, and steps onto the Down Line, see Figure 8, without looking in the Up and Down directions. It should be noted, that at this time there was a lot of noise from the works being undertaken.



Figure 8 – CCE stepping onto the Down Line

60 The CCE Worker then takes a number of steps towards Gormanston Station, and towards the approaching Train A124, see Figure 9.



Figure 9 – CCE Worker walking towards Gormanston Station and approaching train

61 The CCE Worker sees Train A124 and clears the line at 10:04:55 hrs (see Figure 10); with Train A124 passing four seconds later at 10:04:59 hrs.



Figure 10 – CCE Worker walking off the railway line

62 Train A124 was travelling at 88 mph (142 km/h) when Driver A124 saw the CCE Worker, sounded the horn and applied the emergency brake; the CCE Worker can be seen leaving the railway, see Figure 11. As Train A124 passes the CCE Worker, the CCE Worker acknowledges the train, see Figure 12.



Figure 11 – CCE Worker exiting line



Figure 12 – CCE Worker acknowledges train

Events after the incident

- 63 The train came to a stop a distance beyond the track access point and Driver A124 reported the events to the controlling signalman at CTC who in turn reported to the relevant personnel. When it was established that there were no injuries or damage, Driver A124 was given permission to proceed on his journey.
- 64 The CCE Worker momentarily looked at the stopped Train A124 before exiting the railway line through the security fencing and returning to the worksite
- 65 Management contacted the CCE Worker, who was temporarily stood down from his duties pending investigation, underwent post-incident drugs and alcohol testing in line with company procedures (tests were negative).

Similar Occurrences

Introduction

66 The RAIU conducted investigations into two near miss incidents with IÉ staff in 2019, namely:

- Near miss with an Iarnród Éireann Patrol Ganger near Woodlawn, Galway, 4th June 2019, RAIU Report No: 2020 – R002, published on the 27th May 2020;
- Near miss with an Iarnród Éireann SET Worker at Rush and Lusk Station, 20th June 2019, RAIU Report No.: 2020 – R003, published on the 27th May 2020.

Near miss with an Iarnród Éireann Patrol Ganger near Woodlawn

67 At approximately 10:04 hrs on the 4th June 2019, the 09:30 hrs passenger service from Galway to Heuston train departed Woodlawn Station. On route to Ballinasloe Station, on a curved section of track, the driver saw a person in high visibility clothing walking on the line in the five foot with his back to the oncoming train. The driver placed the train brake in the emergency position and sounded the train horn to warn of the train's approach. The person identified was an IÉ-IM Patrol Ganger who then stepped off the track into the cess, approximately four seconds before the train passed. The driver brought the train to a stop and reported the incident. The weather at the time of the incident was raining with high gusts.

68 The immediate cause³ of the incident was that Patrol Ganger was in a position of danger as the requirements of the IÉ Rule Book could not be met in full for his patrol length. Contributory factors to the incident were:

- CF-01 – The location of the incident did not have the required sighting distances available for a patrol ganger to conduct the inspection within the parameters set out in the IÉ Rule Book;
- CF-02 – The Patrol Ganger was walking in the same direction as the oncoming train;
- CF-03 – There was adverse weather conditions at the time of the incident, which may have affected the Patrol Ganger's ability to hear the train.

³ Old investigation terminology, immediate causes of the occurrences including contributory factors relating to actions taken by persons involved or the condition of rolling stock or technical installations.

69 Underlying causes⁴ to the incident were:

- UC-01 – The IÉ-IM CCE Department Risk Assessment and Section B, Part Two of the IÉ Rule Book are not practical in the provision of protection to patrol gangers at locations with inadequate sighting distances;
- UC-02 – There appears that IÉ-IM have, over a long period of time, accepted a certain element of risk in relation to track patrolling given that known dangers are not being adequately mitigated by patrol gangers or their managers.

70 A root cause⁵ associated with the incident is:

- RC-01 – The mitigation measures set out in CCE-SMS-006, Hazards and Risk Assessments, is not robust in the protection of patrol gangers, given that the mitigation measures are not practical for the routine patrolling task.

71 As a result of this incident, the RAIU made two safety recommendations:

- Safety Recommendation 202002-01 – IÉ-IM should review its track inspection methods to see if technological/ mechanised systems and/ or other safety measures could be implemented to eliminate/ minimise track worker exposure to railway hazards whilst undertaking the task of track patrolling;
- Safety Recommendation 202002-02 – IÉ-IM should, through their risk assessment process, conduct a review of the patrol lengths, with the objective of identifying all patrol lengths with associated risks, and introducing adequate mitigation measures to eliminate these risks. Consideration should be given to the introduction of technologies (such as anti-collision devices) for use by patrol gangers, with the objective of warning patrol gangers of oncoming trains.

⁴ Old investigation terminology, underlying causes were causes related to skills, procedures and maintenance.

⁵ Old investigation terminology, root causes were causes related to framework conditions and application of the SMS.

Near miss with an IÉ SET Worker at Rush and Lusk Station, 20th June 2019

- 72 At approximately 09:50:31 hrs, on the 20th June 2019, a member of IÉ-IM Signalling, Electrical and Telecommunications (SET) Department's staff (to be referred to as SET Worker) accessed the railway line at Rusk and Lusk Station and began walking on the railway line (Up Line). The SET Worker was accessing the railway line to inspect electrical equipment associated with a nearby SET location case.
- 73 Seven seconds later the SET Worker sees the 08:00 hrs Belfast to Connolly passenger train approaching on the Up Line and starts to walk towards the other railway line (not occupied by the train, the Down Line). At 09:50:42 hrs, while standing in the middle of the Down Line, he raises his hand above his head to acknowledge the presence of the train, he is not in a position of safety. Two seconds later (09:50:44 hrs) the SET Worker walks across to the Down Platform and leans his elbow down on the platform and raises his other hand to acknowledge the train for a second time, he is not in a position of safety.
- 74 As the SET Worker watches the Belfast to Connolly train pass (09:50:46 hrs), the SET Worker sees the 09:29 hrs Pearse to Drogheda empty train approaching on the Down Line. The SET Worker walks, at pace, towards the ramp of the Platform and begins to climb up on the ramp of the Down Line Platform, he stumbles during the climb. At 09:50:53 the SET Worker clears the track, although he is not in a position of safety. One second later, at 09:50:54, the train travels past the SET Worker. At 09:50:56, the SET Worker is more than 1.5 m from the track, in a position of safety; he does not suffer any injuries as a result of the incident.
- 75 The immediate cause of the incident was that the SET Worker placed himself in a position of danger by not adhering to the requirements set out in the IÉ Rule Book or the SET Risk Assessment to carry out the task; a task which could have been conducted without walking on the track. Contributory factor to the incident was:
- CF-01 – The SET Worker made a last-minute decision to conduct the inspection from track level without first considering his safety;
 - CF-02 – There was no consideration taken at the pre-planning of the inspection of how the inspection was going to be conducted;
 - CF-03 – The SET Worker may have lost situational awareness, momentarily, due to normally working at night and had an incorrect expectation that it was safe to access the track; this may have been exacerbated due to the fact that he had not intended to walk onto the track.

76 The underlying factor to the incident was:

- UF-01 – There is no formal documentation, for SET Department staff, to be completed prior to going on or near the line, with checklists to manage risks that might be encountered; or, which would highlight to SET Department staff that it is unsafe to go one or near the track without a proper SSOW.

77 The root cause associated with the incident was:

- RC-01 – Despite the IÉ Rule Book being robust in its protection of staff going on or near the line, the current SET Safety Management System (SMS) suite of documents does not reflect this robustness in ensuring that the risks associated with SET staff members working on their own are captured and managed.

78 As a result of the incident, the RAIU made two safety recommendations (one of which is related to an additional observation:

- Safety Recommendation 2020003-01 – The IÉ-IM SET Department should develop a formalised process, through their SMS suite of documents, for IÉ-IM SET staff walking/working alone, which should be completed prior to any member of SET staff going on or near the line; at a minimum consideration should be given to:
 - Whether it is necessary to go on or near the line to conduct the walk / work;
 - What local knowledge is required to walk /work safely;
 - Whether all the requirements of the IÉ Rule Book / SSOW can be met;
 - What special protection arrangements are required either at night or during the day.
- Safety Recommendation 2020003-02 – IÉ-IM should brief all staff of their requirements, under the IÉ Rule Book, to wear their high visibility clothing correctly⁶.

79 At the time of the publication of this report, IÉ-IM have stated that “the SET Department commenced and successfully trialled a system in the form of self-checking application whereby any member of staff working alone required to go onto a live line had to, when lineside first engage with the app to identify hazards and take the appropriate safety measures prior to commencing⁷”.

⁶ The similar occurrences are noted as Additional Observations and further discussed in paragraphs 100 to 104.

⁷ IÉ Report No. R1103-2021-39, Report of Investigation: Category 1 near miss with a member of staff at Gormanston on the 21st of July 2021.

Analysis

IÉ Safety Documentation

CCE Risk Assessment

80 CCE-RA-15050 identifies hazards associated with permanent way general maintenance, identifying risks associated with being struck by rolling stock, and identifying risk controls such as being responsible for your own safety; and it particular, the document states that:

- You must not go on or near any railway line/ lineside (or avoid going on the line) unless your duties require it (Hazard No. 5 & 8, paragraph 40):
- You must know the permissible speed of trains and direction(s) they normally approach (Hazard No. 5, paragraph 40);
- You must constantly be alert, look up frequently and not be distracted by someone or something nearby (Hazard No. 5, paragraph 40).

81 The actions of the CCE Worker in relation to CCE-RA-15050 will be discussed in paragraph 88.

82 CCE-RA-15050 does not directly refer to the placement/retrieval of temperature gauges (including when and where to conduct monitoring) and there is no task specific risk assessment or safe system of work associated with the task out at the planning stage and as such the CCE Worker had no formal guidance to refer to (paragraph 41).

IÉ Rule Book

83 In relation to the IÉ Rule Book, as the CCE Worker was working, as he was inspecting the track alone (paragraphs 44 and 45), a TSC was required (paragraph 46), which can be self-nominated, provided the TSC can:

- Remain sufficiently alert for the approach of trains and be able to reach a position of safety at least 10 seconds before a train arrives; alternatively, you must arrange for the line(s) concerned to be blocked to all movements (paragraph 47);
- Alert constantly and look up frequently (paragraph 48);
- Avoid allowing the work you are doing, or anything else, to affect your seeing or hearing approaching trains (paragraph 48);
- Be cognisant of the sighting distances (paragraph 49).

84 The actions of the CCE Worker in relation to the IÉ Rule Book is discussed in paragraph 88.

CCE Worker

Competency

- 85 The CCE Worker was competent for the tasks to be undertaken on the day of the incident, in terms of the setting up a system of work for the maintenance works to be undertaken at the track access location north of Gormanston (paragraph 10).
- 86 The CCE Worker is a long-time IÉ employee with his normal role as a Patrol Ganger meaning that he is very experienced and familiar with being alone on the track (paragraph 34).
- 87 In addition, as a qualified TSC he was permitted to access the railway line alone, but not permitted to work alone on this occasion (paragraph 44 to 46).

Actions of the CCE Worker on the day of the incident

- 88 On the day of the incident, it appears that the CCE Worker did not:
- Avoid going on the line as his duties for the day did not require that he accessed the track (paragraph 40);
 - Consider the tasks he was undertaking alone i.e. as track inspection is work, it cannot be carried out alone (paragraph 46);
 - Consider the sighting distance on the Down Line, which was significantly less than that required from the IÉ Rule Book i.e. the minimum distance should be 700 m for the permissible train speeds at the location, however, the sighting distance was only 385 m (paragraph 50);
 - Allow himself the ability to reach a position of safety at least 10 seconds before a train arrived (paragraph 47), evidenced by the fact that he was only clear of the line four seconds prior to the arrival of Train A124 (paragraph 61);
 - Look up frequently, as he did not look in the Up or Down directions prior to walking onto the line (paragraph 48 and 59);
 - Remain alert and avoid allowing the work affect seeing or hearing a train (paragraph 48), in that the maintenance works was noisy and likely affected his ability to hear approaching trains.
- 89 Had the CCE Worker implemented the requirements of CCE-RA-15050 and the IÉ Rule Book in relation to the task, he would have realised it was not safe to work alone on the line at this location.

- 90 However, had a task specific risk assessment or safe system of work associated with the task out to be carried out prior to going on the line (at the planning stage including the when and where of temperature monitoring), the CCE Worker would have been prompted to make all the required checks associated with CE-RA-15050 and the IÉ Rule Book (paragraph 82).

Conclusion

IÉ Safety Documentation

CCE Risk Assessment

- 91 CCE-RA-15050 identifies hazards associated with the risks of being struck by a train and applies relevant risk control measures; most importantly in the case of this incident, CCE-RA-15050 states that persons must not go on or near the line unless their duties require it and they must remain alert, frequently look up and not be distracted (paragraph 80).
- 92 CCE-RA-15050 does not directly refer to the placement/retrieval of temperature gauges (including: the when, and, the where) there was no risk assessment or safe system of work associated with the task (paragraph 82). Despite the fact that if the CCE Worker implemented the requirements of CCE-RA-15050 and the IÉ Rule Book in relation to the task he was conducting, he would not have been permitted to walk onto the track (paragraph 89); however, had a task specific risk assessment or safe system of work associated with the task out to be carried out prior to going on the line (at the planning stage), the CCE Worker would have been prompted to make all the required checks associated with CE-RA-15050 and the IÉ Rule Book (paragraph 82).

IÉ Rule Book

- 93 The IÉ Rule Book identifies responsibilities and requirements related to working on or near the line and appears to be robust in the protection of IÉ staff when adhered to in full (paragraph 83) as it sets out a number of requirements in relation to what to do/know:
- Before going on or near the line - permissible speeds, sighting distances;
 - Actions to be taken on the line - alert constantly and looking up frequently;
 - Actions to be taken on seeing a train – position of safety (10 seconds).
- 94 Had the requirements of the IÉ Rule Book been adhered to in full, the CCE Worker would not have gone on or near the line to conduct the track inspection as the above requirements, set out in the IÉ Rule Book could not have been met.

CCE Worker

- 95 The CCE Worker was competent to conduct the task to be undertaken on the day of the incident in terms of the improvement works; and as a qualified TSC could access the line alone, when required to do so (paragraphs 85 and 87). In addition, as a long-time IÉ employee with his normal role as a Patrol Ganger, he is very experienced and familiar with being alone on the track (paragraph 86).
- 96 On the day of the incident, the CCE decided, by his own volition, to carry out temperature checks and visual inspections of the rail, probably as the task had become habituated in the previous days due to the hot weather warning spell, and the morning being hot at 24°C.
- 97 Had the CCE Worker carried out some pre-planning or task specific risk assessment into the task he was about to undertake, including whether he had received direction to carry out rail monitoring; the CCE worker would likely have come to the understanding that he was not required to and could not carry out the works as the requirements of the IÉ Rule Book could not be met.
- 98 As such, when the CCE Worker went onto the track, he was not adhering to the requirements of the IÉ Rule Book and CCE-RA-15050 in that the task was work (and could not be carried out alone); the sighting distances could not be met (385 m as opposed to 700 m); the ability to be in a position of safety at least 10 seconds before the arrival of a train (he achieved four seconds); he was unable to remain alert (due to the noise from the improvement works), paragraph 88).
- 99 The CCE Worker likely had a lapse in concentration, which prompted him to onto the track without applying the requirements known to him; the distraction from the noise may have affected his ability to hear Train A124.

Additional observations

100 The RAIU carried out two investigations into near misses with IÉ staff members in 2019/20. They are some similarities with the incidents:

- All staff were long-term employees of IÉ with the Patrol Ganger near Woodlawn on the 4th June 2019 having twenty years' service; the SET Worker at Rush and Lusk Station, on the 20th June 2019 having thirty years' service, and the CCE Worker near Gormanston on the 21st July 2021 having nineteen years' service;
- All staff were working/walking alone;
- The location of the near miss at Woodlawn did not have the required sighting distances, as with the Gormanston incident; although it is noted that he was walking the line for patrolling duties;
- Noise, due to adverse weather conditions may have affected the Patrol Ganger's ability to hear oncoming trains (paragraph 68), in terms of the incident at Gormanston there was noise from the construction site;
- In terms of the SET Worker, he made a decision, also of his own volition, to access the track to conduct an inspection, when track access was not required (paragraph 75);
- There was no formal documentation to be completed by SET staff prior to going on or near the line and SET documentation at the time did not reflect the robustness of the IÉ Rule Book (paragraphs 76 and 77). This similarity, in terms of the accessing the track, without pre-planning, is noteworthy.

Causal, contributing and systemic factors

101 The CCE Worker entered onto the railway line, placing himself in a position of danger, when Train A124 approached and almost struck him.

102 Causal factors associated with the incident are:

- CaF-01 – The CCE Worker made a decision to carry out track inspection, by his own volition, without the request from his manager; possibly because it had been habituated in the previous days due to the hot weather conditions;
- CaF-02 – The CCE Worker did not ensure that he could adhere to the requirements of CCE-RA-15050 and the IÉ Rule Book prior to accessing the track; possibly due to a lack of concentration;
- CaF-03 – The CCE Worker did not look or listen for trains prior to accessing the track the final time; as he was likely distracted by the noise from the improvement works.

103 Contributing factors to the incident are:

- CoF-01 – The CCE Worker is a long-term employee, and his experience and confidence may have meant that he momentarily lost concentration and wasn't as alert as he should have been on the day of the incident.

104 Systemic factors associated with the incident are:

- SF-01 – CCE did not have a risk assessment for rail temperature monitoring, indicating how, when and where, monitoring should occur;
- SF-02 – CCE documentation does not require any pre-planning documentation for CCE Departmental staff, to be completed prior to going on or near the line, with checklists to manage risks that might be encountered; or, which would highlight to CCE Department staff that it is unsafe to go on or near the track without a proper SSOW.
- SF-03 – Despite the IÉ Rule Book being robust in its protection of staff going on or near the line, the current CCE-RA-15050 of document does not reflect this robustness in ensuring that the risks associated with CCE staff members working on their own are captured and managed.

Measures taken by IÉ-IM since the incident

105 IÉ-IM conducted an internal investigation into the occurrence, Report of Investigation: Category 1 near miss with a member of staff at Gormanston on the 21st of July 2021 (Report No. R1103-2021-39). The report found that the immediate cause of the incident was: The member of staff did not initially observe or hear the train approaching and placed himself in a position of danger when stepping onto the railway line without first checking it was safe to do so. Causal factors were identified as the member of staff: made a decision to conduct unplanned track temperature activities at Gormanston when there was no requirement to do so; and, had a momentary lapse in concentration; in addition, the requirements of the IÉ Rule Book were not complied with. Root causes determined that the requirements set out in the IÉ Rule Book and CCE-RA-15050 were not complied with or implemented.

106 IÉ-IM completed a number of actions as a result of the incident:

- IÉ-IM Safety Department issued a company-wide ‘Safety Alert’ notice on the 22/07/2021 highlighting the key safety message as a result of the near miss occurrence (see Figure 13);
- The CCE Worker participated in a post-incident de-briefing with the Infrastructure Manager, Dublin and his Regional Manager to discuss and analyse the events of the near miss; focus was on:
 - Discussing and addressing the safety issues identified in the incident;
 - Re-briefing on the TSC duties, both full and solo;
 - A guided patrol walk with the CCE Worker;
 - A rules examination from the assessment document for TSC / Patrolman.
- The Infrastructure Manager, Dublin issued direction to members of his management team relative to when and where members of staff are required to monitor rail temperatures, the “advice stressed on the requirement of pre-assessment of any works requiring red zone protection along with other direction regarding recent incidents”;
- The CCE Safety Department developed a task specific risk assessment for placing rail thermometers on tracks under red zone working conditions: The Application of Rail Thermometers, Ref No. RA15100, Version 2 operative since the 1st April 2022;
- The circumstance around the incident were discussed at the Dublin “Permanent Way Inspectors” meeting on the 5th March 2021, where relevant staff attended on

online meeting, where a presentation was given on “Significantly reducing the risk of track workers being struck by trains”.

107 IÉ-IM also made one safety recommendation as a result of the incident:

- The CCE in conjunction with the Safety Manager CCE should arrange a review of the current process that the CCE Department have in place for an individual member of staff to assess the risks before going on or near the line when working alone, and in particular for work of a minor nature. The review should also explore the electronic self-checklist type application successfully introduced by the SET Department between 2019 & 2021. Following these the relevant risk assessments should be revised and updated as necessary.

Iarnród Éireann Infrastructure

SAFETY ALERT

'Near Miss' incident - Gormanston

At 10:04hrs on Wednesday 21/07/2021, an IÉ employee was involved in a 'near miss' incident, with a northbound train at Gormanston Station on the Dublin to Belfast line.

Always remember

- Never go 'on or near the line' unless your duties require you to.
- Always consider the surrounding environment may affect your ability to hear or see an oncoming train.
- Never place yourself in a location without ensuring you can reach your position of safety within the required time.
- Always ensure you have the required sighting distance for oncoming trains in line with Rule Book requirements.

Key Message:
The railway is a high risk environment.
You must be vigilant at all times for oncoming trains from each direction.

Ref: IM/SA/07/2021 Issued by the IÉ IM Safety Department 22/07/2021

Figure 13 – Safety Alert issued after the incident

Safety Recommendations

Introduction to safety recommendation

- 108 In accordance with the European Union (Railway Safety) (Reporting and Investigation of Serious Accidents, Accidents and Incidents) Regulations 2020), recommendations are addressed to the national safety authority, the Commission for Railway Regulation (CRR). The recommendation is directed to the party identified in each recommendation.

Absence of safety recommendations due to measures already taken

Compliance with the IÉ Rule Book

- 109 IÉ-IM Safety Department issued a company-wide 'Safety Alert' notice (Figure 13) on the 22nd July 2021 highlighting key safety messages from the IÉ Rule Book. As a result, the RAIU do not consider a safety recommendation is warranted in relation to the application of the IÉ Rule Book (CaF-02).
- 110 In terms of the CCE Worker, he has been re-briefed with focus on the events of the incident, as a result, the RAIU do not consider any safety recommendations are warranted in terms of the CCE Worker (CaF-01, CaF-02, CaF-03, CoF-01).

Risks associated with rail temperature monitoring

- 111 It is noted that IÉ-IM have published a The CCE Safety Department developed a task specific risk assessment for placing rail thermometers on tracks under red zone working conditions (paragraph 106).
- 112 In addition, the Infrastructure Manager, Dublin issued direction to members of his management team relative to when and where members of staff are required to monitor rail temperatures (paragraph 106).
- 113 This provides guidance to infrastructure staff and prevents staff conducting rail temperature monitoring without cause, as a result the RAIU consider further safety recommendations in relation to railway temperature monitoring are not warranted (CaF-01, SF-01).

Safety Recommendations as a result of the incident

114 The CCE Worker placed himself in a position of danger despite being experienced and aware of the requirements of the IÉ Rule Book as there was no additional “prompt” for him to consider his own safety (CaF-01, CaF-02, CaF-03, CoF-01, SF-02, SF-03); as a result, the RAIU make the following safety recommendation⁸:

Safety Recommendation 2022002-01

The IÉ-IM CCE Department should develop a formalised process, through their SMS suite of documents, for IÉ-IM CCE staff walking/ working alone, which should be completed prior to any member of CCE staff going on or near the line; at a minimum consideration should be given to:

- **Whether it is necessary to go on or near the line to conduct the walk / work;**
- **What local knowledge is required to walk /work safely;**
- **Whether all the requirements of the IÉ Rule Book / SSOW can be met;**
- **What special protection arrangements are required either at night or during the day.**

⁸ It should be noted that the RAIU have previously directed the recommendation at the SET Department in IÉ-IM i.e. safety recommendation 2020003-01, “The IÉ-IM SET Department should develop a formalised process, through their SMS suite of documents, for IÉ-IM SET staff walking/ working alone, which should be completed prior to any member of SET staff going on or near the line; at a minimum consideration should be given to:

- Whether it is necessary to go on or near the line to conduct the walk / work;
- What local knowledge is required to walk /work safely;
- Whether all the requirements of the IÉ Rule Book / SSOW can be met;
- What special protection arrangements are required either at night or during the day”.

Additional Information

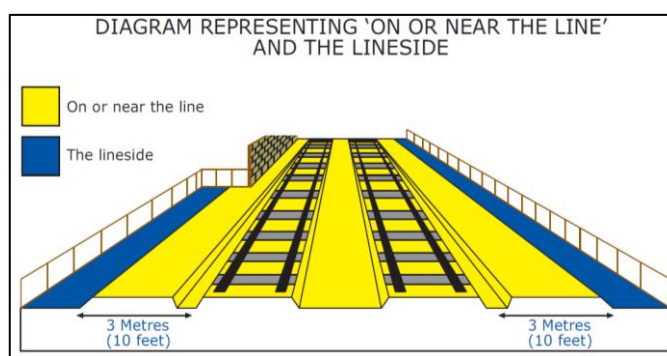
List of abbreviations

CCE	Chief Civil Engineer
CRR	Commission for Railway Regulation
CTC	Centralised Traffic Control
CWR	Continuous Welded Rail
DMU	Diesel Multiple Unit
hr	hour
ICR	Intercity Railcar
IÉ-IM	Iarnród Éireann Infrastructure Manager
IÉ-RU	Iarnród Éireann Railway Undertaking
km	kilometre
m	metre
MP	Milepost
mph	Miles per hour
PWI	Permanent Way Inspector
RAIU	Railway Accident Investigation Unit
SET	Signalling, Electrical and Telecommunications
SSOW	Safe System of Work
TCB	Track Circuit Block
TSC	Track Safety Co Ordinator

Glossary of terms

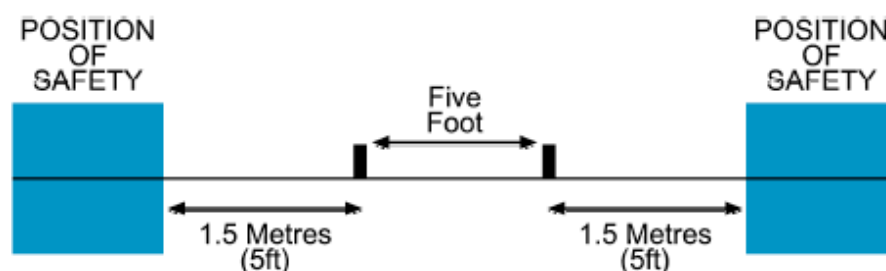
Accident	An unwanted or unintended sudden event or a specific chain of such events which have harmful consequences including collisions, derailments, level crossing accidents, accidents to persons caused by rolling stock in motion, fires and others.
Ballast Shoulder	The ballast (crushed stones, nominally 48 mm in size and of a prescribed angularity) placed at the ends of the sleepers, timbers or bearers to give lateral stability to the track.
Causal factor	Any action, omission, event or condition, or a combination thereof that if corrected, eliminated, or avoided would have prevented the occurrence, in all likelihood.
Cess	The part of the track bed outside the <i>ballast shoulder</i> .
Contributory Factor	Any action, omission, event or condition that affects an occurrence by increasing its likelihood, accelerating the effect in time or increasing the severity of the consequences, but the elimination of which would not have prevented the occurrence.
Down Direction	Towards Belfast.
Down Line	Line where trains are travelling towards Belfast.
Emergency brake	A brake which can be operated by the driver, applying the maximum braking, which should only be used in emergency situations and cannot be released once applied, until the train has come to a stop.
Five foot	The area between the two running rails (it is 5 feet 3 inches (1,600 millimetres ((mm)).
Green Zone	Is where work is arranged to take place without anyone/any group going on or near any line or siding, including in a possession, on which trains (or movements) may pass through safeguarded, separated or fenced work sites.
Incident	Any incident, other than an accident or serious accident, associated with the operation of trains and affecting the safety of operation.

Investigation	A process conducted for the purpose of accident and incident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and, when appropriate, the making of safety recommendations
Lineside	Anything within the boundary of the railway but not within 3 m (10 feet) of any track.
Lookout	A competent person whose duty is to watch for, and to give appropriate warning, of approaching trains.
Milepost	Marks distances.
On or near the line	Being within a specified distance of a defined part of track, generally 3 m (10 feet) of the outside edge.



On-train data recorder	Device that records data about the operation of train controls and performance.
Patrol Ganger	A person who is trained and competent to undertake patrolling duties on a specified length of track on behalf of IÉ in line with IÉ-IM standard, Track Patrolling, CCE-TMS-361.
Permanent Way Inspector	Responsible for programming and completing Permanent Way Maintenance and CCE renewal as required by standard in the area assigned.

Position of safety A place allowing a clearance of at least 1.5 m (5 feet) between you (including anything you are wearing or carrying) and the nearest rail of any line on which a train is approaching.



Red Zone A site of work if it is on or near line and it has not been possible to set up a Green Zone.

Risk Assessment SET-SMS-001 define a risk assessment as “a structured assessment to identify the likelihood of a risk event, the severity of the adverse consequences should the event come about, and the mitigating risk control actions required”. A risk is defined as “being identified as the chance that harm will result from a hazard; the combination of the severity of the hazard with the likelihood of its happening, the probable consequence of potential harm or damage resulting from an unmanaged hazard”.

Safe System of Work A set of procedures according to which work must be carried out. Safe systems of work are required where hazards cannot be eliminated, and some risk still exists. When developing your safe systems of work, consider how the work is carried out and the difficulties that might arise and expose you or your workers to risk. Then develop a set of procedures detailing how the work must be carried out to minimise or reduce the risk of accident or injury.

Systemic factor Any causal or contributing factor of an organisational, managerial, societal or regulatory nature that is likely to affect similar and related occurrences in the future, including, in particular the regulatory framework conditions, the design and application of the safety management system, skills of the staff, procedures and maintenance.

T3 Possession A possession taken for an agreed period without the facility to run passenger trains in the area during that period until such time as the holder of the possession decides to relinquish it

Temperature Gauge	A gauge used to measure the temperature of the rail during hot weather conditions; it is fixed magnetically to the rail for a period of twenty minutes in order to take a rail temperature.
Track access point	Point on a track used as access for maintenance staff and machinery.
Track Safety Co-ordinator	IÉ Rule Book, Section B, Part Two, Subsection 6.0 Instructions to Track Safety Co-ordinators, clearly defines the roles and responsibilities of the TSC.
Up Direction	Towards Dublin.
Up Line	Line where trains are travelling towards Dublin.

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