AN COIMISIÚN UM RIALÁIL IARNRÓID
**COMMISSION FOR RAILWAY REGULATION**

# RAILWAY SAFETY PERFORMANCE IN IRELAND 2023

CRR
AN COIMISIÚN UM RIALÁIL IARNRÓID
COMMISSION FOR RAILWAY REGULATION

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# Foreword

The Commission for Railway Regulation (CRR) is pleased to publish its Annual Safety Performance Report for 2023. This report supplements the CRR's Annual Report to the Minister and provides further detail on the safety performance of the railway organisations operating in Ireland. In 2023, thirteen railway organisations fell within the CRR's remit for Compliance, Supervision and Enforcement activities. All of these organisations were actively engaged in the carriage of passengers.

2023 passenger journeys for heavy rail saw a continued upward trajectory in numbers carried since the relaxation of all COVID restrictions with a 28.5% increase from 2022 numbers; this resulted in total passenger journeys for heavy rail being 46.07 million. 2023 passenger journeys for light rail had a 24.6% increase from 2022 numbers, with the total passenger journeys for light rail being 48.2 million. It is evident that increases in 2023 for both light and heavy rail are substantial and positive in terms of the uptake of passenger services. These notable increases are most likely due to a change in return-to-work patterns for office working post COVID and a potential modal shift towards public transport which is notably positive for the sector. It is now clearly evident, based on the data, that passenger numbers have recovered well post COVID. Significant investment in rail is foreseen over the coming years in terms of new trains, stations and services and there is continued optimism that Ireland's railways will prosper in the coming decades.

The Iarnród Éireann (IÉ) network safety performance continued to be broadly consistent with previous years and with current European statistics. Tragically in 2023 there were 11 fatal occurrences on the national railways where the fatal injury involved a train in motion and where trespass or misadventure was involved. All of these 11 instances occurred on the Iarnród Éireann heavy rail network. 11 fatalities fall within the 10-year data range albeit at the upper end of this range. IÉ notify all fatalities to the CRR and subsequently the CRR Compliance, Supervision and Enforcement Department reviews each one. If there are notable trends or issues arising these are also raised at the respective Safety Performance Review Meetings (SPRMs) with IÉ Infrastructure Manager (IÉ-IM) and IÉ-Railway Undertaking (IÉ-RU). The CRR are also kept updated on the outputs of the IÉ-IM and IÉ-RU working group, which was established to review if any additional risk mitigations could potentially be put in place.

In relation to SPAD/SPAS events on the light rail network, high risk or unusual SPAD/SPAS events are reviewed by a CRR inspector with a relevant TDLR staff member to ensure that sufficient causal investigation is undertaken and that TDLR manage the related safety risk. Each SPAD event on the IÉ network receives a separate review by the CRR, as SPAD events due to their nature can potentially be high consequence events. In 2023, there was a marked increase in collisions with animals, with 124 instances of these occurring. Collisions with deer continue to be the primary animal involved. This is an increase of approximately 38% vs 2022. This increase has been reviewed with IÉ-RU and IÉ-IM within SPRMs, and IÉ continue to engage with the Irish Deer Commission. The monitoring and review of common areas of deer collisions are actively reviewed by IÉ-IM, with additional risk mitigations being implemented with respect to boundary fencing and other measures.

Of note in 2023 were five instances of broken rails on the IÉ network. Of these, one was a broken rail occurrence near Emly Level Crossing XC164 on the 22nd of February 2023, and another was a broken rail at Newbridge on the 23rd of February 2023. Both of these broken rails were associated with different rail processes. The Emly broken rail was due to issues with the site welding processes, and the Newbridge broken rail was due to a fracture through a flash butt welded joint. As part of the CRR's post occurrence activities, periodic meetings were held with IÉ-IM in relation to these potential high consequence events.

The CRR has been updated on the additional risk mitigations developed and in turn periodic updates have been provided on the IÉ technical investigations associated with these failures. It is of note that the figure of 5 broken rails in 2023 is outside of the previous 10 years of recorded broken rail data. The Railway Accident Investigation Unit (RAIU) undertook investigations for both occurrences and the CRR have been tracking the addressing of their associated recommendations.

In 2023, a number of near misses took place in the heavy rail sector that are worth highlighting. A near miss took place involving a CCE member of staff and a train on the 3rd of March 2023, in Clonnydonnin. A near miss also took place between a track maintenance worker and a train on the 12th of October 2023, and on the 6th of December 2023 a near miss took place with a permanent way member of staff in Bray head tunnel. It is of note, that all of these occurrences took place during red zone working, where works were being undertaken while train services were in operation, and under slightly different circumstances may have resulted in serious injuries or potentially a fatality. These occurrences which the CRR follow up on within the respective SPRM's have led to IÉ-IM reviewing methods which may allow for a reduction in red zone working to be undertaken. The potential reduction of these works and development of additional risk mitigations continue to be an area of attention for the CRR. All of these three occurrences serve as a reminder to all staff to ensure safe systems of work are established and followed, particularly when they are working in an environment where live trains are within the vicinity.

Safety performance on the LUAS network was in the main broadly consistent with previous years. There were two occurrences of note within the light rail sector for 2023, these involved tram breaches of non-energised sections by Transdev Dublin Light Rail (TDLR) which had the potential to place those working within these isolations at risk. The CRR have followed up on reviewing details with TDLR management to review which risk mitigations are being developed and implemented in order to prevent a re-occurrence.

While there was an increase in the number of tram contacts with pedestrians or bicycles, 7 in total, the general trendline of the last 10 years is showing a decrease. 2022 had a record low of 4 total events which is a substantial reduction from the 2019 peak value of 26. There was a significant decrease in Road Traffic Collisions with a total figure of 9 in 2023, which is at the lowest level of the trendline range.

There was, however, a record number of Signals Passed at Stop (SPAS), with a total of 31, while this was only a minor increase vs 2022 data it is notably up from 2021. Figures are broadly in line with performance observed in 2017 and 2018. Each SPAD/SPAS event is reviewed by a CRR inspector with a relevant TDLR staff member to ensure that sufficient causal investigation is undertaken and that TDLR manage the related safety risk. TDLR senior management also meet the CRR periodically to review SPAS trends in detail to ensure TDLR are undertaking sufficient actions to address undesirable trends. In terms of tram derailments 2023 was a joint record low by TDLR with 0 derailments, down from a total of 3 derailments in 2022. Emergency brake applications had an approximate 28% increase vs 2022, which indicates that tram drivers are encountering higher levels of pedestrian incursions and road vehicle red light infringements. The CRR continue to review emergency brake applications with TDLR senior management within SPRM's.

On a positive note, there were no passenger or worker fatalities on our railway in 2023. This performance statistic when contrasted to available EU member states recent data reflects very positively. The CRR acknowledges the assistance of all who have provided data that has enabled the publication of this report.

Emmett Davis
Principal Inspector – Compliance, Supervision and Enforcement Department

# Executive summary

This Annual Safety Performance report of the CRR is prepared for stakeholders and the general public as per the functions described in Section 10 of the Railway Safety Act 2005. The data used to compile this report is provided periodically throughout the year by the various regulated railway organisations. This data is requested to be provided as per a data specification provided by the CRR. This report aggregates this data and compares year on year performance along with commentary on safety performance indicators.

The CRR is the railway safety regulator in Ireland and is responsible for having oversight of railway safety for all active railway organisations, which in 2023 included IÉ-IM, IÉ-RU, Transdev Dublin Light Rail (TDLR) (Luas Operator), Rhomberg Sersa Ireland (RSIE), Translink (NIR), Transport Infrastructure Ireland (TII), Bord Na Móna (BnM) (where their railway interfaces with public roads), the Railway Preservation Society of Ireland (RPSI) and a number of smaller heritage railways.

The safety performance of the Irish railway sector remains positive, particularly when considered in the European context. Whilst the 2023 data shows a return to approximately pre-COVID carrying passenger levels, following three years of COVID-19 related variations, main indicators such as major accident, accident and fatality rates remain low whereas other key performance indicators or accident precursors such as collisions, SPAD's, broken rails and fire/smoke incidents have increased or remained high.

There were no passenger fatalities in 2023, however, there were 11 fatal occurrences on the conventional railway network where trespass or suspicious death was indicated. All the above 11 fatalities occurred on the IÉ network. In response to the observed increase fatalities IÉ have established a Suicide Prevention Stakeholder group to look at preventative measures related to railway related self-harm incidents.

IÉ saw a further increase in the number of train collisions, 124 in 2023, which is up considerably on what was an already high number (90) in 2022. The data demonstrates this increase is being driven by collisions with deer on the line. IÉ have been engaging with the Irish Deer Commission and are sharing data on deer strikes with them, with a view to improve the risk management of deer adjacent to the railway. This topic has been reviewed with IÉ at SPRMs. It is noted that while the rate of collision is proportionate to deer population increases, and the exoskeletal structure of deer poses a lower derailment risk in comparison to that of bovine animals, a group of deer being struck do present a heightened risk of derailment when compared to a single deer collision event hence relevant risk mitigations as necessary are continually evaluated.

However, improvement has yet to be realised in terms of a decreasing collision rate. Similarly, despite recent efforts to address an increase in SPAD, the annual number has remained high at 11, down 1 from 12 in 2022. Eight of these involved IÉ-RU trains while another Railway Undertaking, RSIE had three SPAD.

A number of other indicators have also increased, such as broken rails and fire/smoke incidents. Five broken rails were reported in 2023, and the RAIU undertook full investigations into two such instances. The number of fire/smoke instances on IÉ-RU rolling stock also increased considerably (from 6 in 2022 to 19 in 2023).

TDLR's safety performance indicators saw a decrease in road traffic collisions between trams and vehicles and the overall numbers remain significantly lower than pre-pandemic levels with the Road Traffic Collision rate per million tram kilometres being the lowest since data reporting began in 2010. The majority of collisions involved either a car breaching a red light or involved cars undertaking conflicting movements with trams. Tram SPAS have increased again year-on-year to 31, which is an unprecedented high. Tram contact with a pedestrian/cyclist has increased to 7 which is 3 more than was reported in 2022. Four of the seven incidents required hospitalisation for the injured party.

Looking at performance in the context of Europe, Ireland continues to perform well in terms of the number of accidents vs European Union Agency for Railways (ERA) data up until 2022, (via the Safety and Operability report as published directly on the ERA website). Ireland performs less well when it comes to the ratio of precursor events to accidents. Such events are, SPAD, wrong-side signalling failures, track buckles and broken rails. Recent ERA reports noted concerns regarding variations in accident precursor data collection practice between Member States. It is foreseen that further harmonisation of the data collection will be implemented in the future to improve data consistency and quality.

In 2023, the RAIU concluded 5 investigations. These 5 investigations resulted in 47 new safety recommendations. Most safety recommendations, 42, were directed to IÉ and 5 were directed to TDLR. The RAIU also commenced 3 investigations in 2023, all of which involved IÉ. Each RAIU recommendation is made with a view to improving safety on the Irish railway system and should be addressed in a timely fashion by the entities responsible to ensure the network not only remains safe but continues to improve in terms of safety.


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# 1. INTRODUCTION

## 1.1 Introduction

This is the fifteenth Annual Safety Performance report produced by the CRR, prepared for the use of stakeholders and the general public. This report presents a number of high-level statistics and safety performance indicators, with associated commentary on their significance. These safety performance indicators are based on the Common Safety Indicators (CSI) defined in EU Directive 2016/798 for conventional heavy rail systems. For light rail systems (such as the Luas) and Heritage Railways (those solely for historical or tourist use) additional indicators are used to analyse the risks deemed to be particular to those sectors in Ireland. (See sections 2.5-2.7 for further detail).

## 1.2 Overview of report

Safety trends in Ireland for all railway systems are presented and discussed in Chapter 2. In Chapter 3, an overview of relevant representations received by the CRR in 2023 is presented, while in Chapter 4 the safety performance of the Irish heavy rail system is reviewed in the context of European Union member states. This chapter also includes a brief overview of significant accidents that occurred worldwide in 2023. Finally, Chapter 5 concerns the RAIU) and recommendations made arising out of their investigations. The status of each recommendation is presented along with details of the actions taken to date.

## 1.3 The CRR

The CRR was established on the 1st of January 2006 under the Railway Safety Act 2005. It is the independent railway safety and market regulator for heavy rail and the independent safety regulator for light and tourist railways in Ireland, a role largely defined in the European Union Regulatory framework for the Single European Railway Area. Under the Railway Safety Directive (EU Directive 2016/798/EC), as transposed in S.I. No.476 of 2020, the CRR is the National Safety Authority for heavy rail in Ireland. The CRR is also the railway safety regulator for the light rail systems, heritage systems and the public highway interfaces with industrial rail systems. These systems are regulated under the provisions of the aforementioned Railway Safety Act and are not within scope of the European Union Regulatory framework for heavy rail.

As stated in their 2024 – 2027 Statement of Strategy, the CRR mission is to ensure safe, secure, accessible and sustainable railway systems through effective and efficient regulation. It advocates the participation of all stakeholders in the further development of Ireland's rail sector so that it is a safe and efficient mode of transport that benefits our society.

Further details on the role and function of the Commission may be found on the CRR website www.crr.ie.

## 1.4 Statistical Qualification

The CRR produces this report to provide stakeholders and the public with information about safety performance of the various Irish railway organisations. The CRR intends for this information to be accurate. Any errors should be brought to the CRR's attention so that corrections can be made where necessary.

It is important to note that the figures used in this report are intended to illustrate broad trends and are not meant to be read as exact calculations. Rounding has been used, and this could affect the overall data. The data used to compile this report is provided to the CRR periodically throughout the year by the various railway organisations. This report presents aggregated data and compares year on year performance together with commentary on several safety performance indicators.

While the CRR has made every effort to ensure the accuracy of the data, it takes no responsibility for third party data presented in this report.

# 2. RAILWAY SAFETY TRENDS IN IRELAND

## 2.1 Introduction

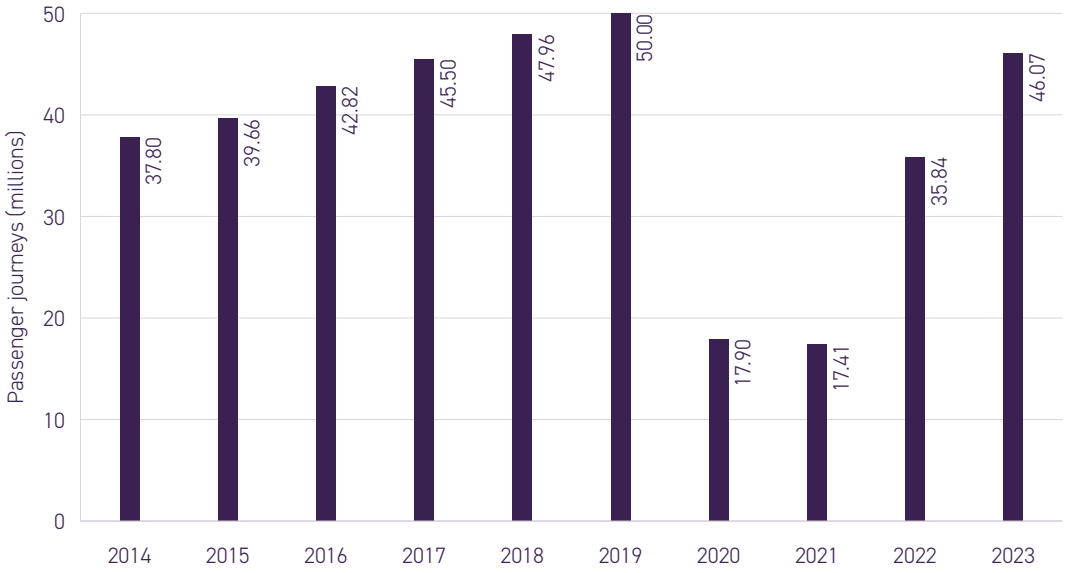
The safety performance of the Railway Organisations in Ireland is presented below and is ordered with regard to the four principal railway sub-sectors that the CRR regulates: heavy rail, light rail, public interfaces (of industrial railways), and heritage railways.

## 2.2 Iarnród Éireann Railway (Ireland's Conventional System)

### 2.2.1 Operational statistics

At the end of 2023, the IÉ-IM reported that its network extended to a total of 2,125 km of operational lines, 53 km of which is electrified and 526 km which has train protection system coverage (Continuous Automatic Warning System (CAWS), Automatic Train Protection (ATP) or CAWS and ATP)[1].

Figure 1
IÉ passenger journeys, 2014 – 2023




Passenger journeys continued to increase in 2023 and were more in line with pre-pandemic levels. Whilst 2023 was the first year entirely free of COVID-19 related restrictions there was still a reduction with respect to 2019 levels. In contrast to the Luas (which recorded record passenger numbers in 2023) the passenger demand for heavy rail has been slower to return, likely due to the differences in passenger profile for both services. It is anticipated that this figure will increase year-on-year going forward.

Figure 2 shows that IÉ passenger train kilometres continued to rise towards pre-pandemic levels. Similarly with passenger journey numbers, the increase in Train kms has not been as quick to return since COVID-19 as the Light Rail (Luas), most likely due to the differences in passenger profiles and demand.

1. IÉ-IM Annual Safety Report 2023. Note figures as reported within the 2023 Network Statement do not align in full with the 2023 IÉ-IM Annual Safety Report 2023. The CRR have highlighted where differences have been noted at the time of drafting and IÉ-IM have noted where the respective updates are to be implemented in future versions to ensure alignment of both reports.

Figure 2
Passenger train-km on the IÉ-IM network

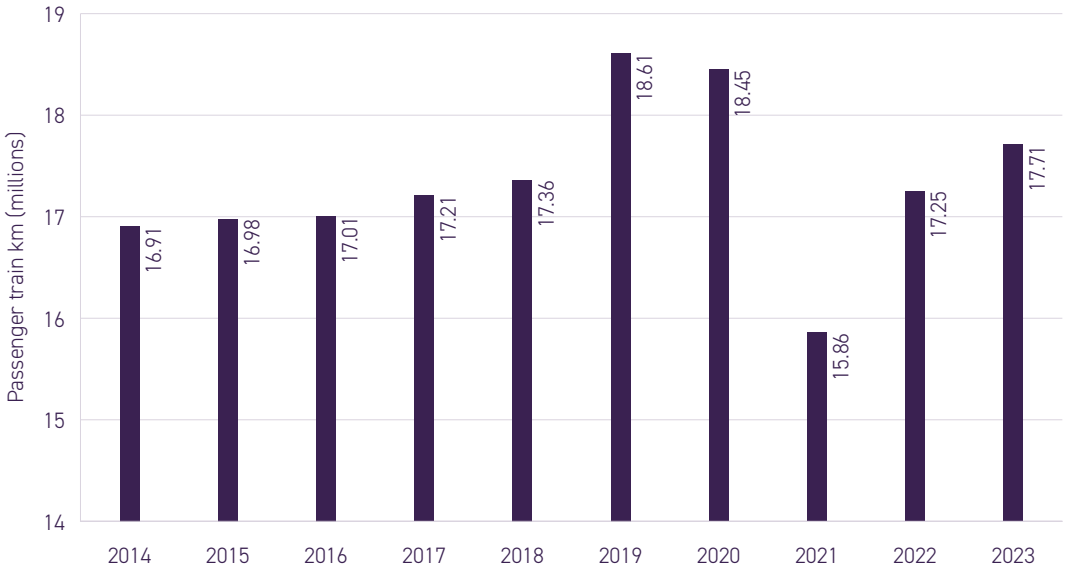
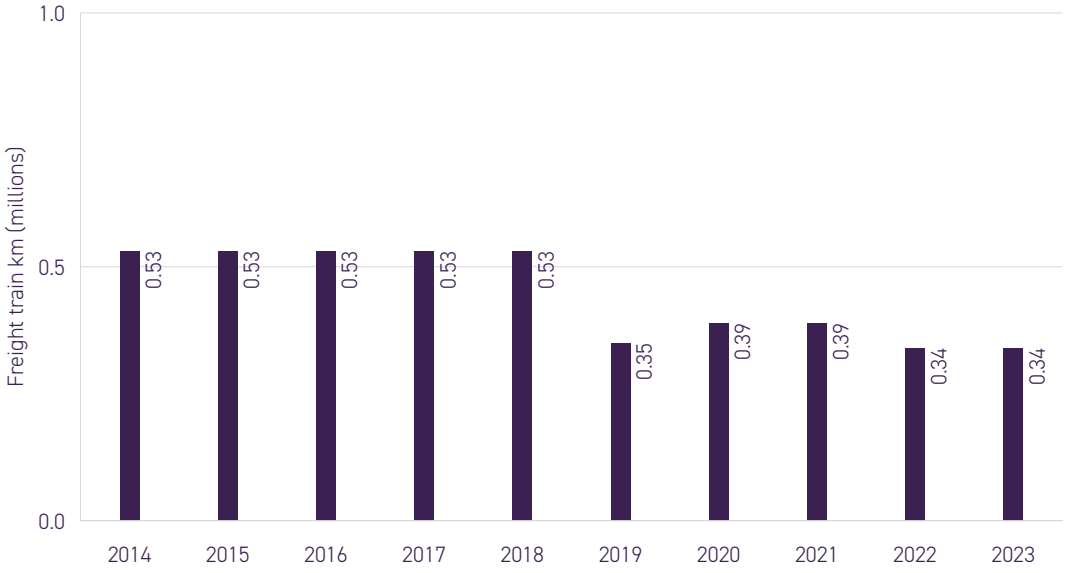
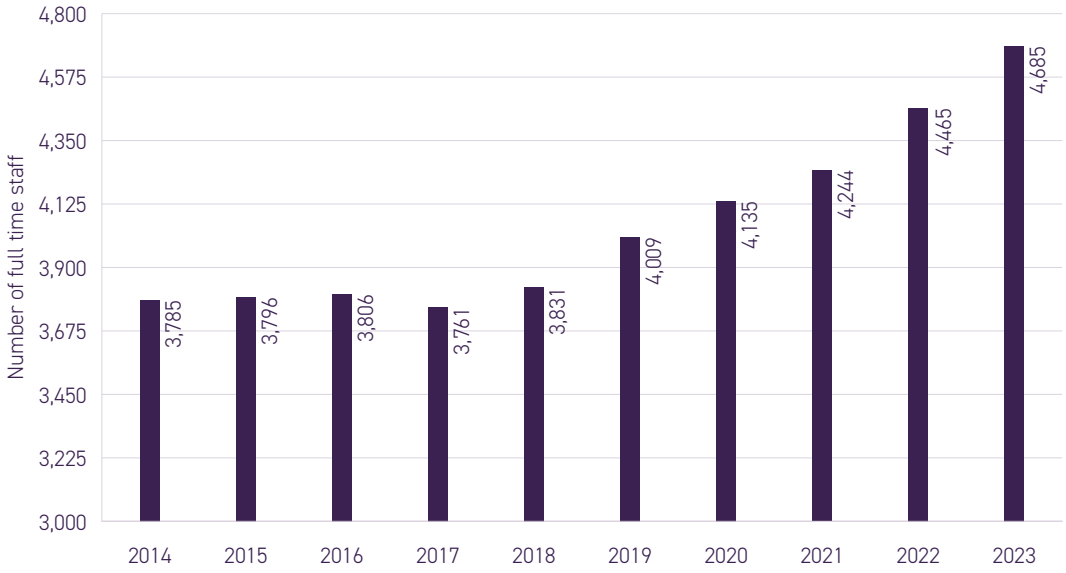



Figure 3
Freight train-km on the IÉ-IM network




Freight kms remains at a historically low level. IÉ are currently working towards increasing freight utilisation on the network through its Rail Freight 2040 Strategy and therefore it is expected that this figure will increase over time.

Figure 4
Personnel engaged in full time employment with IÉ (2014 – 2023)




IÉ is composed of two railway organisations, IÉ-IM and IÉ-RU. The number of full-time staff increased by 5% in 2023. A notable and sustained increase in staff has been observed over the last 5 years with total headcount increasing by over 20%.

### 2.2.2 Iarnród Éireann fatality and injury statistics

Table 1 illustrates the fatalities and lost-time injuries reported for employees, and fatalities and injuries to third parties on the IÉ railway network for the last ten years. It should be noted that there are some discrepancies between reported figures in the 2023 CRR Annual Report and this CRR Safety Performance Report 2023, namely; 'Injury to customer or visitor to premises' and 'Employee lost time accident involving train movement or train accident'. In the case of 'Injury to customer or visitor to premises', the number of injuries in 2022 has been revised up to 203, this is due to the fact that some injuries are not reported by visitors and customers until sometime after the incident and as such the figures may be revised after submission to the CRR for reporting.

Table 1
IÉ operational fatality and injury statistics by year (2014 – 2023)

| Category | '14 | '15 | '16 | '17 | '18 | '19 | '20 | '21 | '22 | '23 | Trend |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Railway operations: passenger fatal injuries** | | | | | | | | | | | |
| Fatal injury to passenger due to a train accident, not at level crossing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to passenger due to a train accident at level crossing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to passenger travelling on a train, other than in train accident | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to passenger attempting to board or alight from train | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Railway infrastructure: third party fatal injuries** | | | | | | | | | | | |
| Fatal injury to third party at a level crossing involving a train | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | |
| Fatal injury to third party at a level crossing not involving a train | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to employee at a level crossing due to train in motion | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to employee due to train in motion (other than at a level crossing) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to employee not due to train in motion | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Railway infrastructure: employee fatal injuries** | | | | | | | | | | | |
| Fatal injury to employee at a level crossing due to train in motion | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to employee due to train in motion (other than at a level crossing) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Fatal injury to employee not due to train in motion | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| Category | '14 | '15 | '16 | '17 | '18 | '19 | '20 | '21 | '22 | '23 | Trend |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Railway operations: fatal injuries to other persons** | | | | | | | | | | | |
| Fatal injury due to train in motion not at level crossing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Fatal injury to customer or visitor, no train involved | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |  |
| Fatal injury involving train in motion on railway or level crossing where trespass or suspicious death was indicated | 6 | 2 | 5 | 12 | 9 | 4 | 7 | 5 | 6 | 11 |  |
| **Railway operations: non fatal injuries to passengers** | | | | | | | | | | | |
| Injury to passenger travelling on train due to a railway accident not at level crossing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Injury to passenger travelling on train due to railway accident at level crossing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Injury to passenger attempting to board or alight from train | 45 | 48 | 79 | 57 | 74 | 76 | 42 | 32 | 62 | 65 |  |
| Injury to passenger travelling on train, other than due to a railway accident | 18 | 15 | 31 | 33 | 46 | 38 | 9 | 0 | 30 | 45 |  |
| **Railway infrastructure: third party non fatal injuries** | | | | | | | | | | | |
| Third party at level crossing injury involving a train | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |  |
| Level crossing user injury not involving a train | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 2 | 2 |  |
| **Railway infrastructure: non fatal injuries to other persons** | | | | | | | | | | | |
| Injury to customer or visitor to premises | 205 | 146 | 192 | 321 | 199 | 288 | 122 | 96 | 172 | 223 |  |
| Injuries to other persons including unauthorised persons | 0 | 1 | 2 | 6 | 0 | 2 | 0 | 0 | 2 | 3 |  |

| Category | '14 | '15 | '16 | '17 | '18 | '19 | '20 | '21 | '22 | '23 | Trend |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Railway operations: non fatal employee injuries** | | | | | | | | | | | |
| Employee lost time accident involving train movement or train accident | 21 | 3 | 1 | 15 | 13 | 7 | 8 | 0 | 0 | 20 |  |
| Employee lost time accident while working on railway not due to train in motion | 43 | 32 | 30 | 30 | 13 | 35 | 16 | 8 | 11 | 11 |  |
| **Railway infrastructure: non fatal employee injuries** | | | | | | | | | | | |
| Employee lost time accident involving train movement or train accident | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Employee lost time accident while working on railway not due to train in motion | 25 | 6 | 23 | 22 | 26 | 24 | 20 | 33 | 20 | 20 |  |
| Employee lost time accident while working at level crossing not due to train in motion | 2 | 0 | 3 | 1 | 1 | 0 | 3 | 0 | 2 | 2 |  |
| **Entity in charge of maintenance and maintenance workshops: non fatal employee injuries** | | | | | | | | | | | |
| Employee lost time accident involving train movement or train accident | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Employee lost time accident while working on railway not due to train in motion | 18 | 13 | 11 | 10 | 12 | 15 | 4 | 11 | 7 | 5 |  |

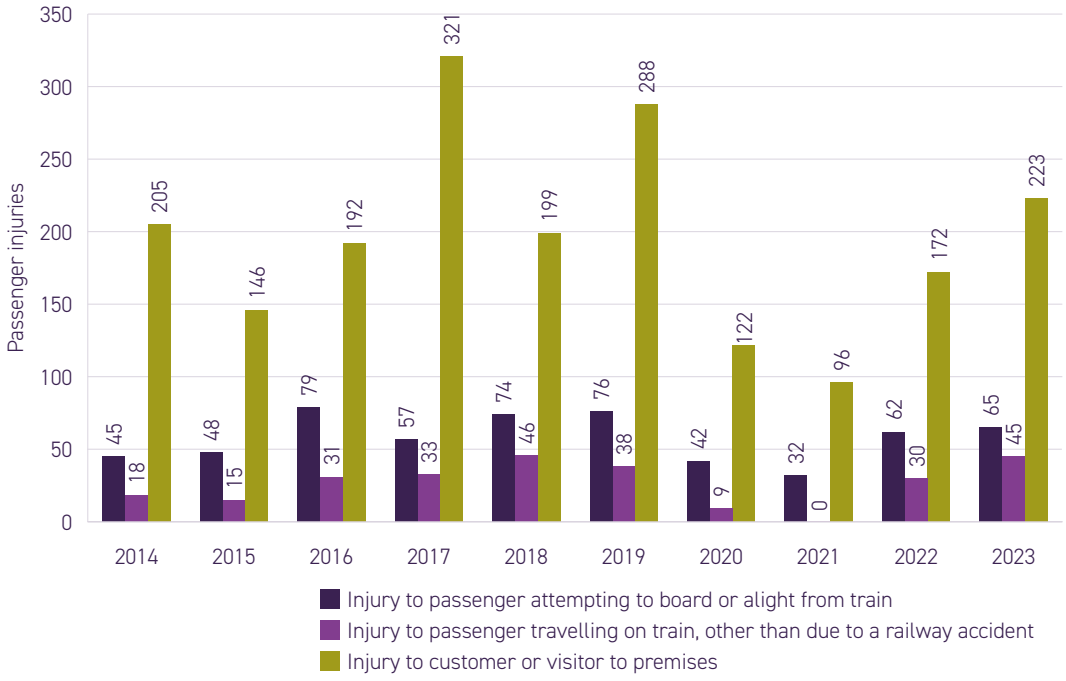
### 2.2.2.1 Fatal injuries

In 2023, there were 11 fatalities involving railway infrastructure and operation where trespass or suspicious death was indicated. This was a notable increase over the previous 5 years where the number has been consistently in mid-single digits. This metric is a Key Performance Indicator of IÉ and monitored quarterly by the CRR. Action was taken by IÉ to address the negative trend once it became apparent in 2023 by establishing an IÉ Suicide Prevention Stakeholder group, to look at preventative measures related to railway related self-harm incidents.

### 2.2.2.2 Passenger injuries (customer and visitor injuries)

In line with European trends, the largest proportion of incidents occur to persons during time spent at stations as opposed to time spent on trains and in 2023 this was no different. 45 injuries were reported by passengers travelling on a train in 2023, which is a 50% increase on 2022. Injuries to a customer or visitor to premises also increased by 10% year-on-year and remains the largest single category of injuries with slips, trips and falls of various sorts being the dominant cause of these injuries. IÉ-RU initiated some passenger safety actions in 2023 on foot of increasing trends which included proactive use of social media to alert customers to Platform Train Interface risks and winter readiness plans for all stations.

Figure 5
Passenger injury statistics by year




Note: Injury to passengers travelling on a train due to a railway accident at/not at level crossing is not represented due to being consistently 0 in the last 10 years

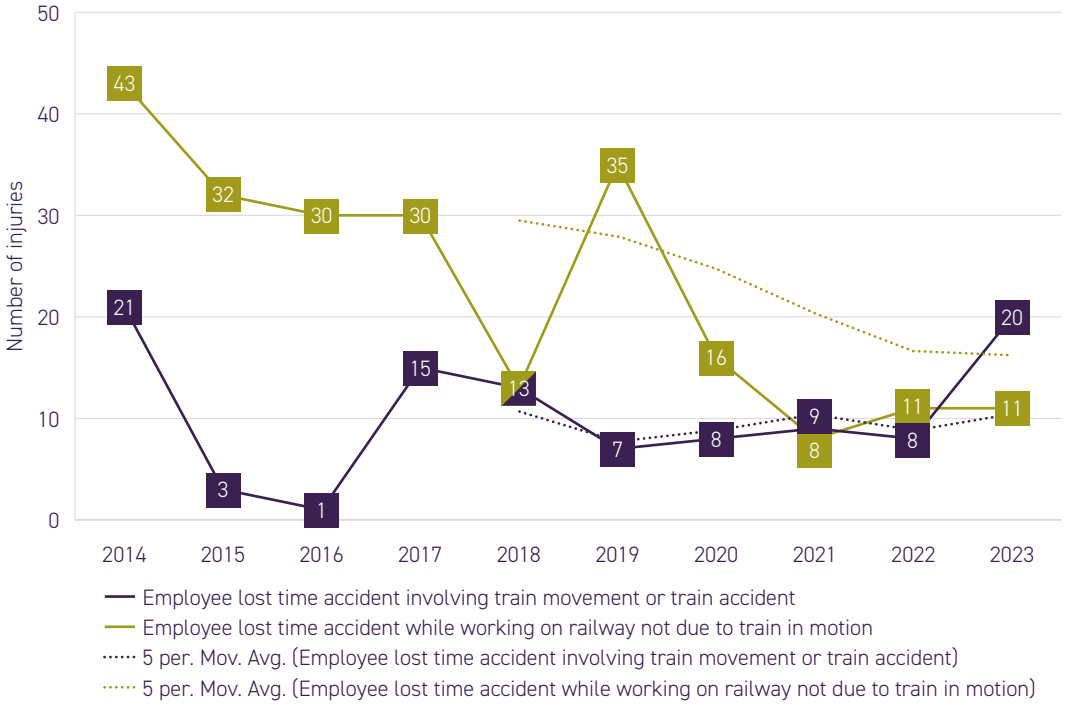
In general, the numbers of injuries in all categories are in line with pre-2020 trends and as such an improvement (or worsening) in safety performance over the last 4 years cannot be determined.

### 2.2.2.3 Employee injuries

Employee injuries are categorised in the first instance by the sector of the railway system in which they work:

- Railway Operations
- Infrastructure Management
- Entity in Charge of Maintenance for Railway Vehicles (ECM)[2].

Figure 6
Employee injury statistics by year (Railway Operations)




Following receipt of updated statistics in 2023 for the years 2021 and 2022, the safety performance trends with respect to Railway Operations is considered less positive. It was reported by IÉ that the discrepancies were due to errors in collating combined statistics between both IÉ-IM and IÉ-RU (a single organisation usually submits all statistics on behalf of both organisations). Additionally, an increase in lost time accidents involving train movements or train accidents in 2023 indicates worsening performance by IÉ in this category and when considered over a 5-year period the performance has not improved.

Railway Infrastructure accidents (Figure 7) have not improved over recent years. The Infrastructure Manager has taken some action, for example there has been a roll out of new technology to improve safety reporting by management.

The IÉ-RU Entity in Charge of Maintenance has had further reduction in accidents, which continues a downward trend.

2. ECMs are railway organisations that are certified to undertake maintenance of rolling stock.

Figure 7
Employee injury statistics by year (Railway Infrastructure)

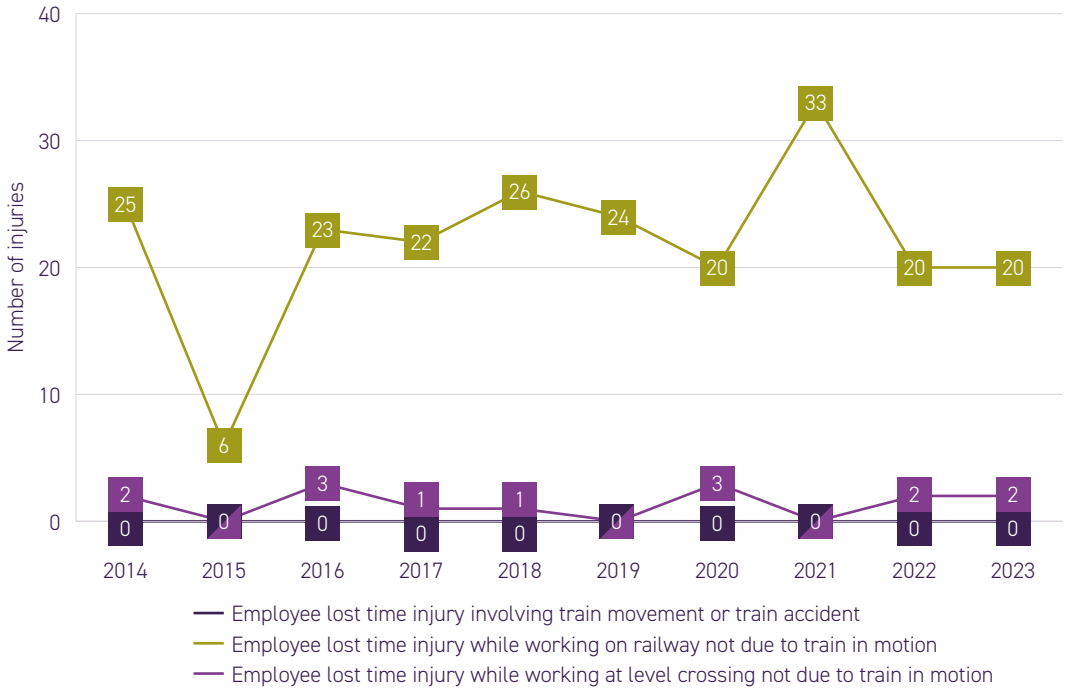
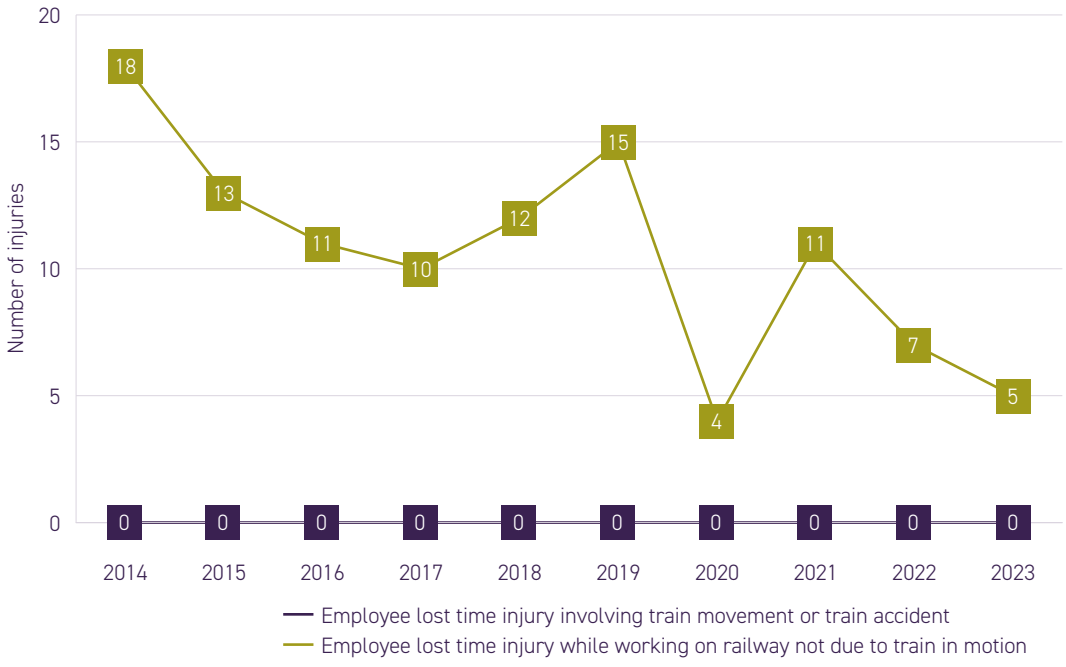



Figure 8
Employee injury statistics by year (IÉ-RU ECM)

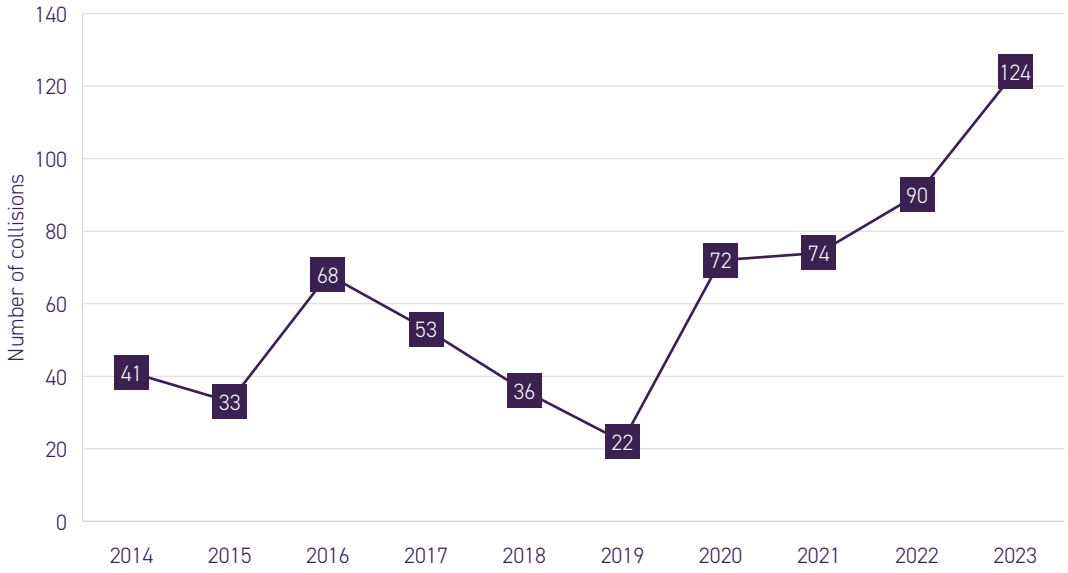


### 2.2.3 Iarnród Éireann operational incident statistics

#### 2.2.3.1 Train collisions

Train collisions can pose a significant risk to passengers, train crew, third parties, and the environment. There are several categories of train collision, e.g., collision with other trains, collision with road vehicles, with animals, with obstacles, etc. Figure 9 illustrates the overall trend for collisions over the last 10 years. Figure 9 is supported by Table 2 and Figure 10 to aid understanding of the data. In Figure 10, two categories, 'Total Collisions with Obstacles on the line' and 'Train Collisions with large animals', have been separated to provide a better understanding of the risk. The overall data shows another significant Increase in collisions to a record high level.

Figure 9
Total collisions by year



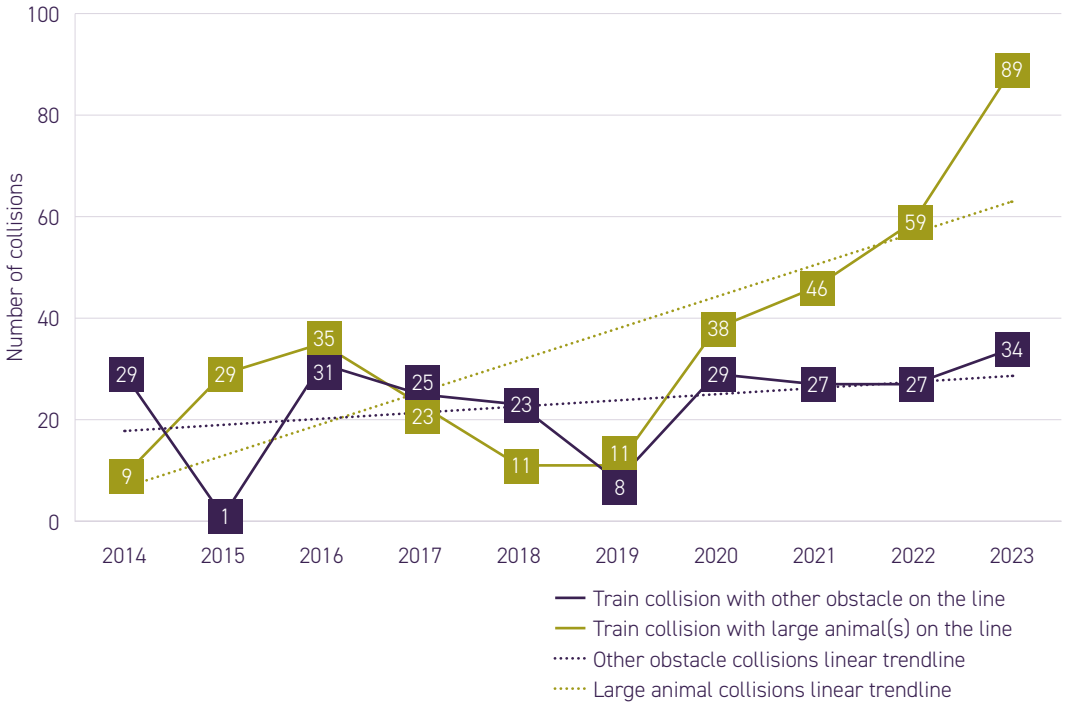

The data provided shows 2023 had a record high number of collisions. Large animals are the category of obstacle driving this increase over the past number of years.

The specific large animal driving this increase has been deer and IÉ have stated that the increase in collisions with deer is commensurate with the overall increasing deer population in Ireland. For context, of the 89 collisions with large animals that occurred, 84 were attributed to deer. IÉ's primary mitigation has been the erection of deer fencing. This is an activity that is carried out on an annual basis. In addition, IÉ continue to engage with the Irish Deer Commission and are sharing data with them with a view to better manage the risk of deer adjacent to the railway line.

Table 2
Train collision statistics detail by year, part 1

| Category | '14 | '15 | '16 | '17 | '18 | '19 | '20 | '21 | '22 | '23 | Trend |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Train collision with passenger or goods train on running line | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Train/railway vehicle collision in station or possession movement | 1 | 1 | 1 | 2 | 1 | 1 | 4 | 1 | 4 | 0 | |
| Train collision with a motor vehicle at a level crossing | 2 | 0 | 0 | 3 | 1 | 2 | 1 | 0 | 0 | 1 | |
| Train collision with pedestrian at a level crossing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Train collision with attended gates at a level crossing | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Train collision with road vehicle obstructing the line (not at a level crossing) | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Train collision with other obstacle on the line | 29 | 1 | 31 | 25 | 23 | 8 | 29 | 27 | 27 | 34 | |
| Train collision with large animal(s) on the line | 9 | 29 | 35 | 23 | 11 | 11 | 38 | 46 | 59 | 89 | |
| Total | 41 | 33 | 68 | 53 | 36 | 22 | 72 | 74 | 90 | 124 | |

Figure 10
Train collision statistics detail by year, part 2

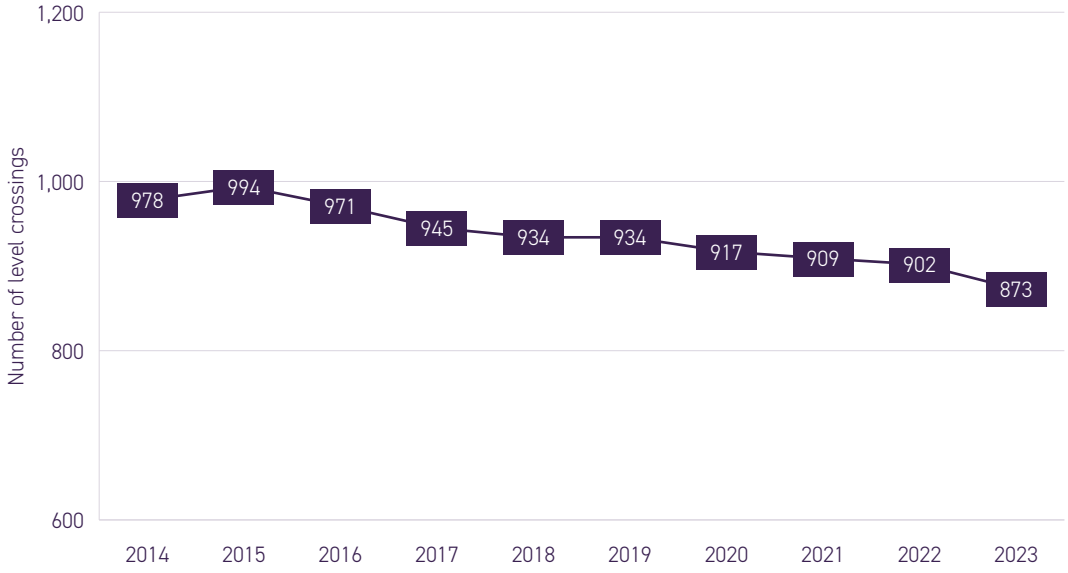


### 2.2.3.2 Level crossings

Level crossings remain a significant risk to the railway system and to level crossing users of all types. There were no fatal accidents at a level crossing in 2023, however, there was one incident involving a collision between a vehicle and a train which resulted in injuries.

A key risk mitigation by IÉ is the removal and upgrading of level crossings in its network. Shown in Figure 11, is the decrease in the number of level crossings; down from 978 in 2014 to 873 in 2021.

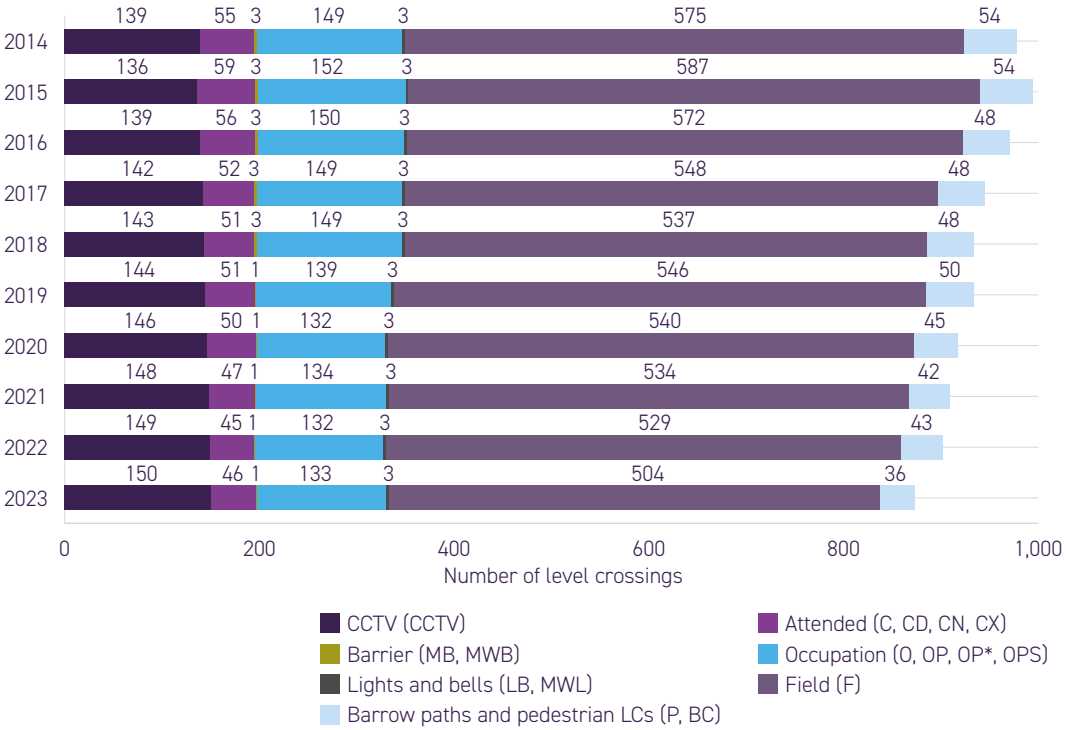
Figure 11
Number of level crossings by year




The breakdown of level crossings by type and year in Ireland is shown in Figure 12. Occupation level crossings on public roads, that is those that require the road user to manually open and close gates, remain the highest risk type of level crossing, closely followed by similarly gated 'Field type' level crossings which are those a farmer might use if they have private land on both sides of a railway. IÉ-IM have continued to install further DSS 'Decision Support System' equipment on their highest risk user worked level crossings. The DSS is a set of visual and audible warnings installed at the crossing to warn users of an approaching train. A broadly similar system ('Miniature Stop Lights (MSLs)') is being installed at crossings in the UK by Network Rail.

Figure 12 also demonstrates how the higher risk Occupation and Field type crossings have reduced in number while the lower risk CCTV type has increased in line with IÉ's risk management strategy. In the ten years to the end of 2023, CCTV type crossings have increased whilst other, higher risk, crossings have reduced. In addition to this, the rate of removal of crossings is also increasing slightly over a rolling ten years. As a result, the share of total crossings on the network which are CCTV type has increased from 14% to 17% over 10 years.

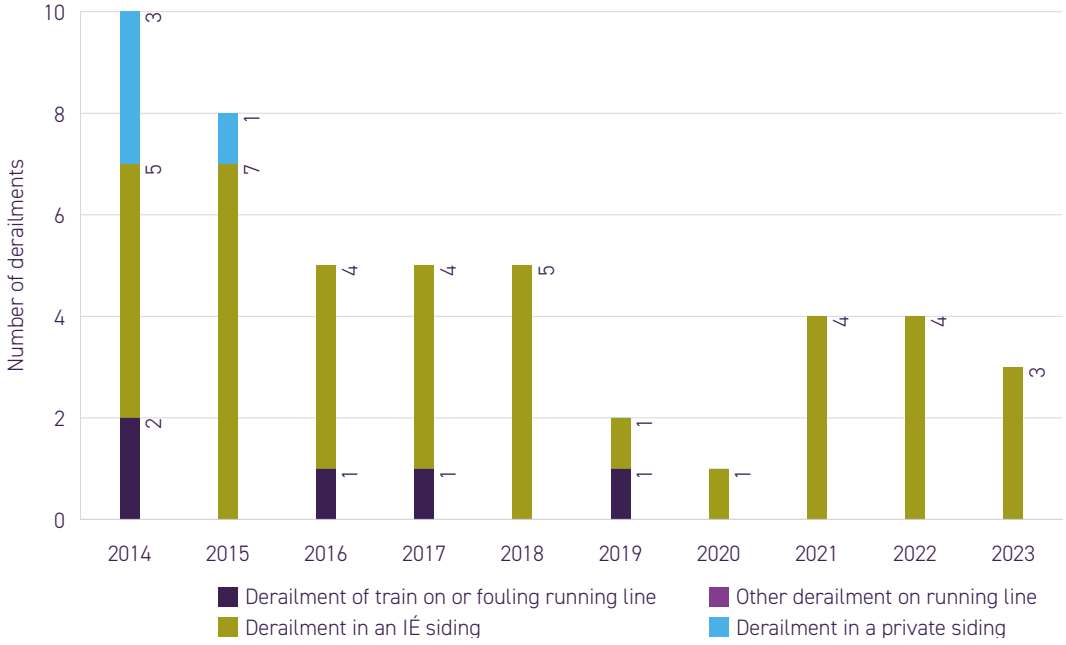
Figure 12
Level crossings by type in Ireland




### 2.2.3.3 Train derailment

There were three train derailments in 2023, which is one less than 2022 (Figure 13).
The derailments were all located in sidings. The causes of these derailments are still under investigation by the investigations team of the railway organisation and the Compliance, Supervision and Enforcement team of the CRR undertake post occurrence activities and oversight of these railway organisation investigations via periodic meetings. As all derailments were in sidings and not on live railway, as a result these derailments have a lower associated risk profile.

Figure 13
Train derailments by year



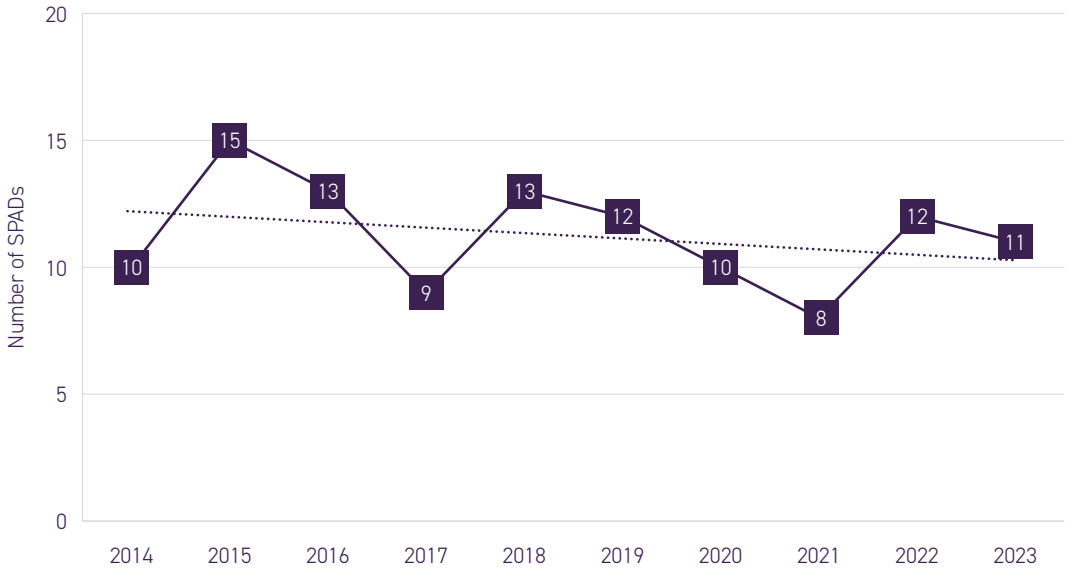
### 2.2.3.4 Signals Passed at Danger (SPAD)

IÉ-IM define a SPAD as an event where a part of a train proceeds beyond the limit of its authorised movement. SPAD are a particular precursor event that the CRR monitors during its supervisory meetings with IÉ-IM, IÉ-RU and other railway undertakings. In 2023, the number of SPAD decreased to 11 (from 12 in 2022). The trend remains on a downward trajectory when considered over a number of years, but the slope has flattened somewhat in the last 2 years.

SPAD occurrences are investigated by the infrastructure manager and the railway undertaking involved. IÉ apply their own qualitative evaluation to each SPAD to assess the associated safety risk. Of the 11 SPAD on the IÉ-IM network, 8 involved IÉ-RU trains. Two of the IÉ SPAD that occurred in 2023 were risk ranked as 'high', one more than in 2022. High risk SPADs are a critical accident precursor that have the potential to be high consequence events. SPADs are a limitation of the current system design and the CRR currently reviews all SPADs as post occurrence activities on the heavy rail network. High risk SPADs would receive additional focus within post occurrence activity reviews due to them having potential high consequences.

RSIE, another regulated entity which carries out on track maintenance, was involved in 3 SPAD in 2023 on the IÉ network. These are detailed further in section 2.3.

Figure 14
IÉ SPAD by year



### 2.2.4 Iarnród Éireann rolling stock incidents

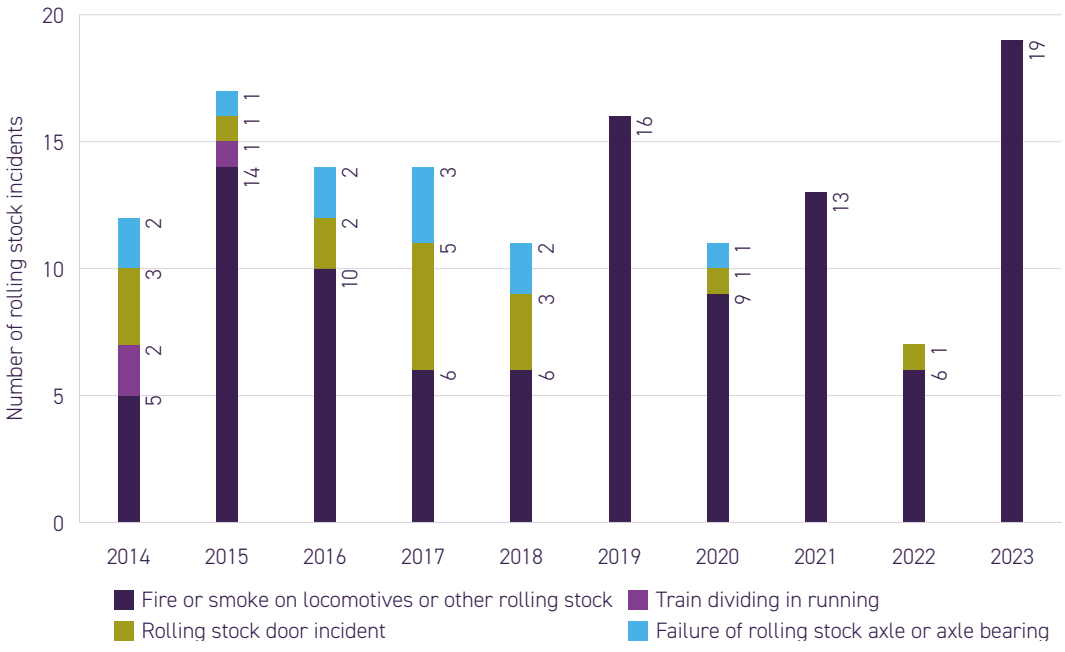
IÉ operates several different fleets in provision of rail services and there were no changes to these in 2023. The IÉ-RU fleet include:

- Diesel Multiple Units (29000, 22000, 2800, 2600 classes), maintained in Portlaoise, Drogheda and Limerick
- Electrical Multiple Units (8100, 8200, 8500 classes), maintained in Fairview, Dublin
- Locomotives (201, 071 classes), maintained in Inchicore, Dublin
- Passenger carriages (Mark IV and DeDietrich), maintained in Inchicore, Dublin and York Road, Belfast
- Freight wagons (of various types), maintained in Limerick.

There are a number of key safety performance indicators pertaining to rolling stock (Figure 15), specifically:

- Fire or smoke incidents
- A train dividing (parting) while in service
- Failure of rolling stock axle bearing
- Door issues.

Figure 15
Rolling stock incidents by year



Fire and smoke related incidents increased significantly in 2023 to its highest level in some 20 years. Additionally, when considered over a 10-year period, the average number of smoke/fire incidents per year is showing an upward trend. Three of the nineteen incidents were categorised as fires, and all occurred on 29000 DMU's. Incidents of smoke were attributed to 29000's in the main, however, 5 incidents occurred on 22000's. There were several causes identified across all instances which ranged from maintenance errors to component failures; however, a common trend was fuel and oil leaks coming into contact with hot powertrain components. The CRR are reviewing this fire and smoke trend with the Chief Mechanical Engineer (CME) and are in the process of establishing a new reporting mechanism for the CME to report separate notifications of all fire/smoke events to the CRR. The overall aim is for each of these events to be reviewed separately with regards to risk profiling and in terms of supervision of the CME ascertaining the cause of each separate event with a view to preventing future occurrences. A further notable development is that the CME have begun a bow tie analysis of smoke/fire events with the overall aim of mitigating future events by identifying all contributory linkages and causal factors. The CRR's Compliance, Supervision & Enforcement department will have regard for the bow tie analysis and its respective outputs in terms of the CME developing additional risk mitigations for minimising the number of fire and smoke events as part of their overall review of the trend.

### 2.2.5 Iarnród Éireann Infrastructure Incidents

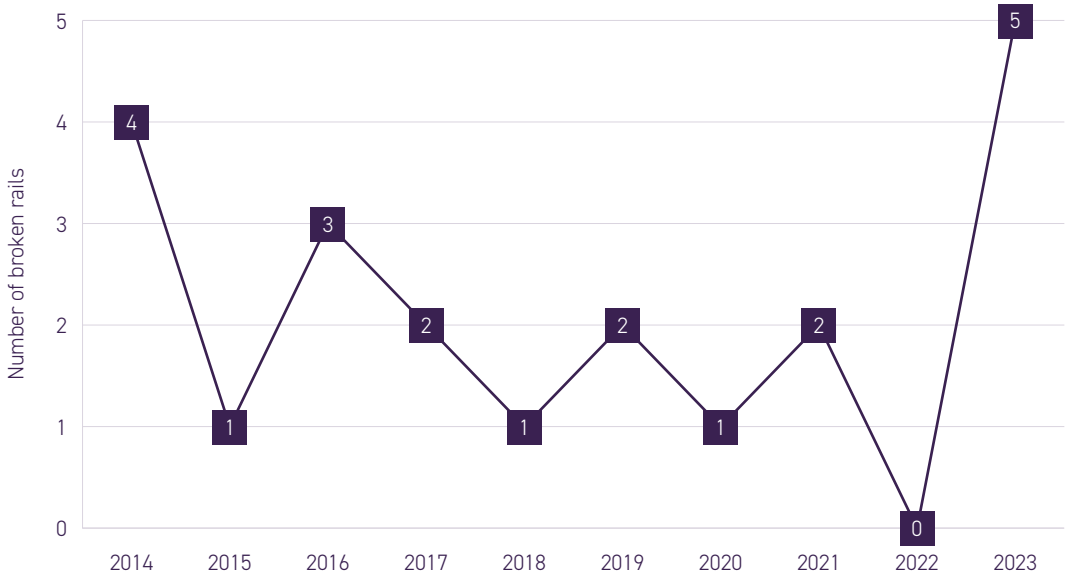
The IÉ-IM network, as detailed in its Network Statement, currently extends to approximately 1,680 route kilometres (km) or 2,400 km of operational track and includes c. 4,440 bridges, c. 1,100 point-ends, c. 970 level crossings, 145 stations, 3,300+ cuttings and embankments, 372 platforms and 13 tunnels. (Note: figures taken from most recent IÉ-IM data submission). The network is used for passenger and freight services. It has infrastructure designed for long distance fast services, commuter services, urban high frequency services, and freight transport.

The railway network in Ireland is abundant in legacy structures such as bridges, tunnels and station buildings, many of which are in excess of 100 years old. Given their long history and operational environment, these assets may be vulnerable to failure if not adequately maintained, resulting in significant damage to property or loss of life. Despite the multitude of challenges associated with managing such a wide range of critical assets, all must be inspected and maintained at their prescribed frequencies to ensure the risk of failure is minimised. It is important to note that this risk of failure can only be minimised (not entirely eliminated) and minimising failure risk and its subsequent effect is critical to ensuring a reliable and safe railway service; data relating to some of these is now presented.

### 2.2.5.1 Broken rails and fishplates

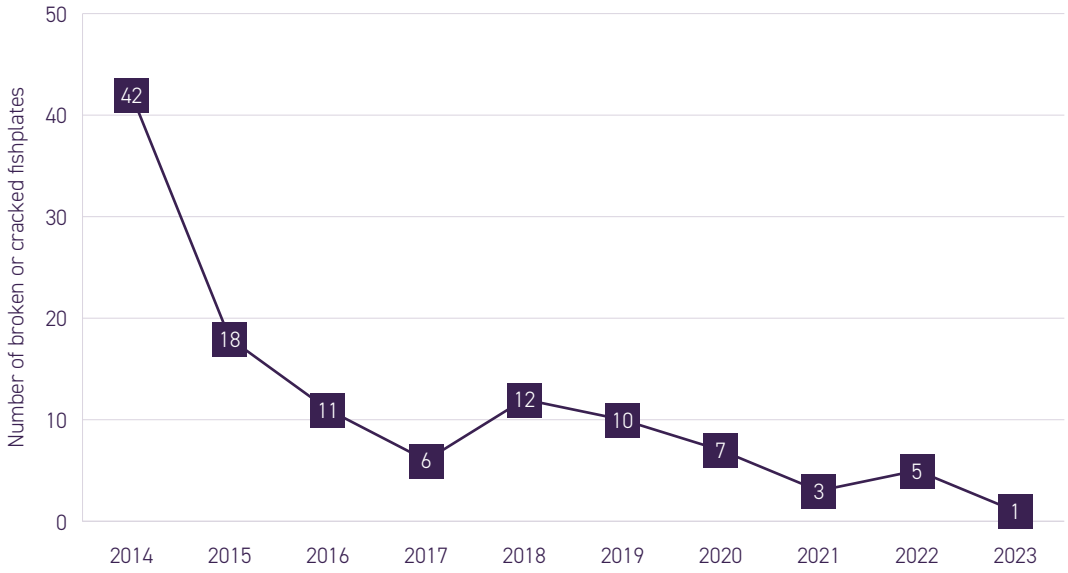
As has been noted in previous reports, the large decrease in broken fishplates over the 10-year period can be attributed to the installation of continuous welded rail (CWR) initiated under the Railway Safety Investment Programme (1998-2013) which has continued since, albeit in smaller quantities. IÉ-IM personnel visually inspect the entire track and its associated assets at least once per week. Engineers for the Infrastructure Manager are also required to inspect the track several times each year using a dedicated Inspection Car. The rails themselves are ultrasonically tested at least every 2 years, with the vast majority tested annually. A broken rail is defined by IÉ-IM as "any rail which is separated in two or more pieces, or any rail from which a piece of metal becomes detached, causing a gap of more than 50 mm in length and more than 10 mm in depth on the running surface". In 2023, there were 5 broken rails reported which is an almost 20-year high, a concerning development considering there were no broken rails reported in 2022. Two of the broken rails were attributed to faults in rail welding processes and separate investigations were undertaken by the RAIU into both. Both investigations were concluded in early 2024 with 8 recommendations made (note these recommendations will be outlined in the subsequent safety performance report for 2024).

Figure 16
Broken rails by year




A fishplate is a special bolted connection that joins two rails together. For a fishplate to be considered broken, IÉ-IM defines "any fishplate which is separated in two or more pieces, or any fishplate in which a piece of metal becomes detached, causing a gap of more than 50 mm length and more than 10 mm in depth on the running surface". Should one break then the rail is not continuous and could, in certain circumstances, lead to a derailment. The trend for broken fishplates has remained at a historically low level and only a single instance was recorded in 2023 which is the best performance since records began (Figure 17). This KPI is being consistently improved in line with network upgrades and is expected to remain at a low level. For context, 20 years ago there were 254 broken fishplates reported in a single year in 2004.

Figure 17
Broken fishplates on the IÉ network, by year



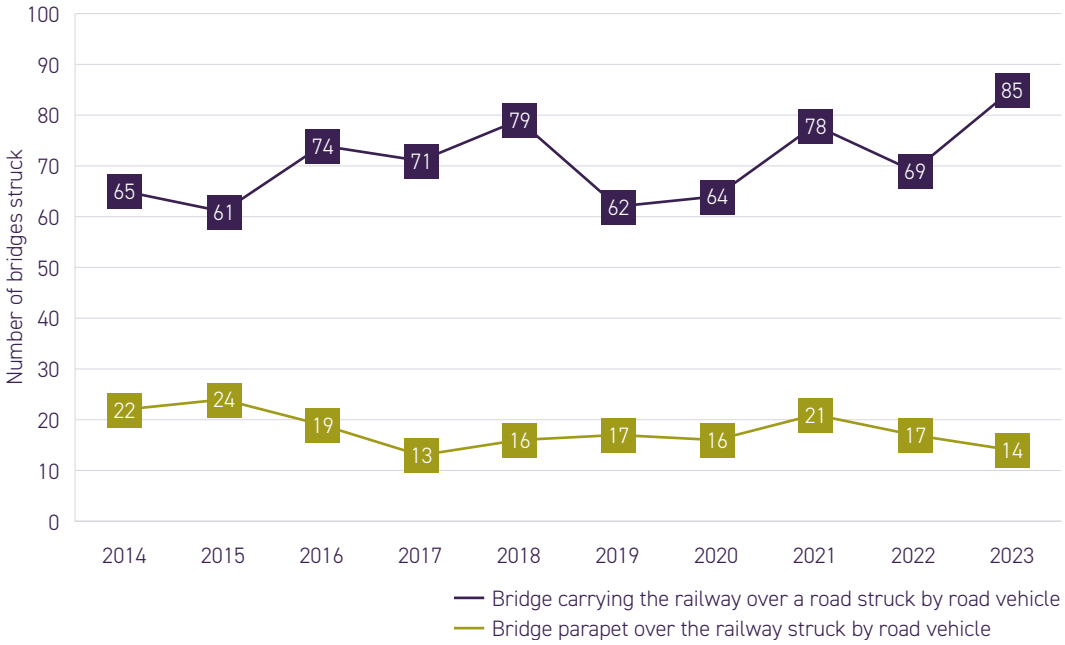

### 2.2.5.2 Bridge strikes

There are more than 4,400 bridges of varying structure types on the IÉ railway network. All must be inspected and maintained by IÉ-IM at various periodicities depending on numerous factors such as their age, type, location, and risk profile.

In terms of simple categorisation there are two categories of railway bridge to be inspected. The first is where a road is over the railway (over bridge) and the second is where the railway is over a road (under bridge). A bridge strike is where a road vehicle strikes the parapet or roadside containment of an over bridge or where a road vehicle strikes the underside of a railway bridge over a road (under bridge).

Both types of occurrences can, in certain circumstances, result in very severe consequences such as causing a track misalignment or structural weakness or failure either of which could result in a train derailment.

Figure 18
Railway bridges struck by road vehicles




The number of bridge strikes increased in 2023, from 86 to 99 in total. The trend overall has been flat over 10 years but over more recent years it has been creeping upwards. As has been previously reported some bridges are more susceptible to strikes than others and these are well known to IÉ, although the risk control measures can be reasonably complex to implement, involving planning and coordination with local authorities.

The system that had been commissioned for IÉ in 2020 which assists in diverting over-height vehicles away from Amiens Street Bridge, a particularly vulnerable bridge in Dublin City Centre, has proven successful in protecting susceptible bridges from strikes and IÉ have implemented an over height detection system at UBC145 on the 26th of June 2024. An overheight detection system was also commissioned at UBC146 on the 23rd of August 2024, both of these bridges are within the vicinity of Portlaoise. IÉ-IM are in the process of evaluating other areas where this system may be rolled out.

### 2.2.5.3 Third party contractors

IÉ-IM engage numerous contractors, for both labour and plant, to assist in delivering the necessary track and structures maintenance needed to keep the Irish railway network safe and operational. A significant growth area in recent years has been in mechanised track and lineside maintenance using special machines (Road Rail Vehicles, RRVs). Their use does, however, introduce risk given operatives are typically not from a railway background and they are using machines that have been adapted to work in a very different environment to mainstream construction settings.

Over the past number of years, there has been several incidents involving RRVs. These have included, RRV derailments, RRVs damaging track infrastructure, RRVs injuring track workers and even a small number of incidents in which an RRV has over-turned. In 2023, there were 12 incidents reported to the CRR involving RRVs. These included 4 derailments, 1 collision, 4 points run-through, 1 incident of misuse by an operator and 2 irregular/unauthorised movements.

This area was a particular focus for the CRR. The Infrastructure Manager has committed resources towards improving contractor safety.

## 2.3 Rhomberg Sersa Ireland

IÉ-IM have, since 2014, contracted external railway organisations to operate and maintain their fleet of On-Track Machines (OTMs). RSIE is currently contracted to provide this service. RSIE have been issued a safety certificate by the CRR to operate on the Irish railway network.

In 2023, RSIE reported that they had 65 staff employed. RSIE does not operate any passenger services and completes most of its operational activity at night, outside of peak and daytime periods. RSIE state that their fleet operated 96,635 train kilometres for the OTM fleet in 2023, up 5,000 km from 2022.

Table 3 shows the reported occurrences for RSIE in 2023. No Derailments or Collisions were reported. Three SPAD were reported by RSIE, all three were due to a combination of human error and process failures and the ensuing investigations recommended actions to be taken to address these failings, some of which have already been implemented. The amount of Railway Infrastructure Incidents increased to 12.

The Rail Infrastructure Damage Incidents were primarily related to operator error, such as grazing sleepers and striking marked and unmarked cables. Other causes included cosmetic parts of OTM's fouling infrastructure clearances.

Table 3
OTM occurrences

| Occurrence | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|
| SPAD | 1 | 0 | 1 | 3 |
| Derailments | 2 | 0 | 0 | 0 |
| Collisions | 0 | 0 | 0 | 0 |
| Minor occupational injuries | 3 | 4 | 5 | 2 |
| Rail infrastructure damage incidents | 8 | 6 | 10 | 12 |

## 2.4 Northern Ireland Railways

NIR have, since 2020, been in receipt of a full Part A Certificate for operations on the Irish railway network.

NIR's operations on the Irish railway network are the cross-border Enterprise service which is operated in conjunction with IÉ-RU and the operation of class 3000 specials.

Table 4 shows the reported occurrences for NIR in 2023. No Derailments were reported. No SPAD on the Irish railway network involved NIR services. There were two collisions involving an NIR operated service, both incidents were categorised as fatalities where trespass or suspicious death was indicated.

Table 4
NIR occurrences on Irish railway network

| Occurrence | 2023 |
|---|---|
| SPAD | 0 |
| Derailments | 0 |
| Collisions | 2 |

## 2.5 Transdev (Luas) statistics

The Dublin Light Railway System, or Luas, is owned by TII. This includes all trams and tramway infrastructure. TDLR has been operating the Dublin light railway system, within different corporate structures since it commenced operation in June 2004. In late 2019, TDLR were contracted to continue operation of the Luas service as well as to undertake infrastructure and rolling stock maintenance.

The Luas comprises of two lines, the Red Line which is 20 km in length and has 32 Stops and the Green Line which is 24.5 km in length and has 35 Stops. The passenger journeys in 2023 were a record number for the Luas, surpassing 48 million. Tram kilometres also increased to a record 4.31 million vs 4.13 million in 2023 (Figure 19).

Figure 19
Luas passenger journeys and tram-km travelled


### 2.5.1 Road vehicle collisions

A significant proportion of Luas tracks co-exist with road traffic and pedestrian movements, most notably in Dublin city centre. The Luas operates primarily by 'line of sight' which is a common operational approach in light railway systems and tramways around the world. This contrasts with heavy rail, whereby the stopping distances are regularly greater than the limit of the driver's vision. Given that the Luas shares sections of the carriageway with road vehicles and other road users, there is a risk that collisions will occur.

The number of road vehicle collisions remained at a significantly lower level in comparison to pre-pandemic figures.

The majority of incidents involved conflicting movements between vehicles and trams at junctions or vehicles breaching red lights. With the exception of one collision, all occurred on the Red Line.

Four years of consistently lower than average road traffic collisions per million kilometre is indicating a sustained improvement in safety performance by TDLR.

Figure 20
Number of road vehicle collisions involving a tram

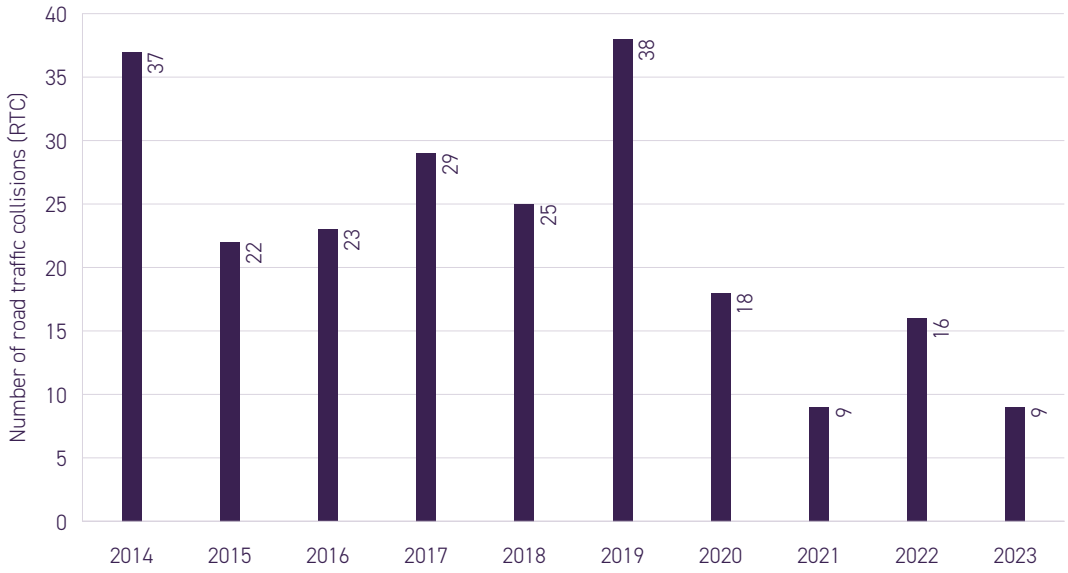
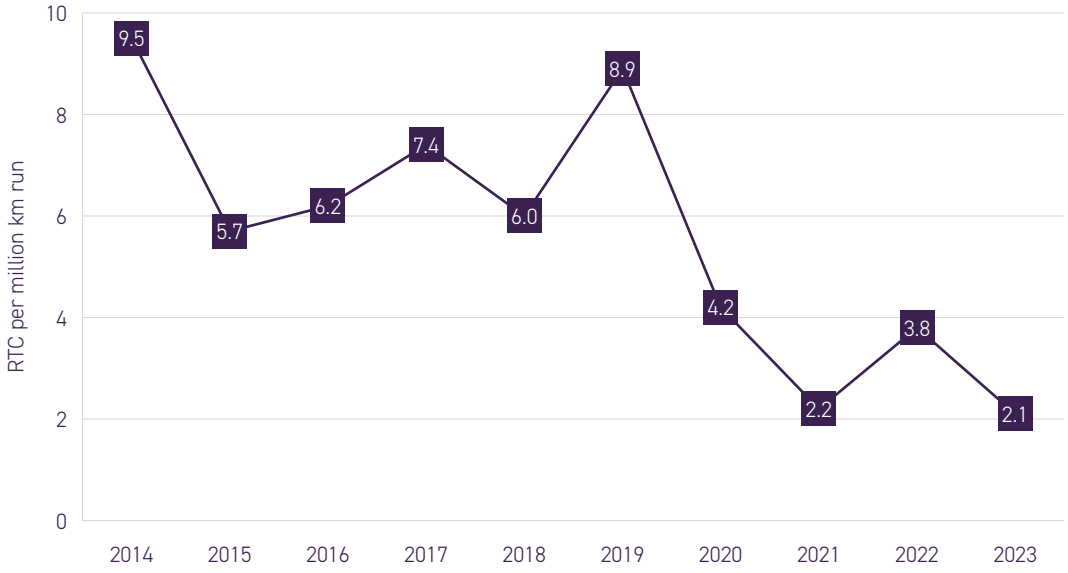



Figure 21
Road vehicle collisions per million km run

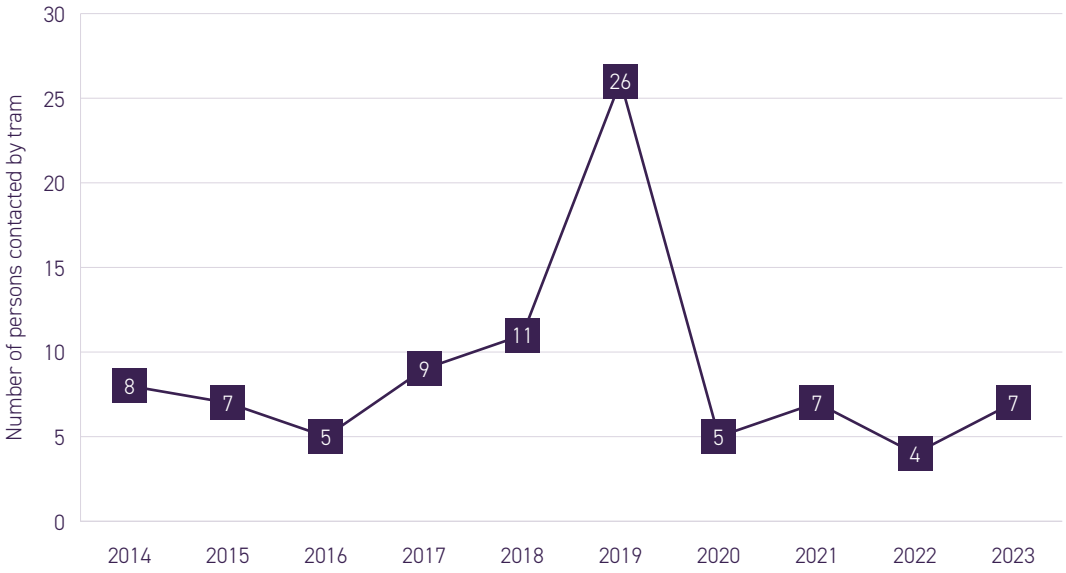


### 2.5.2 Tram contacts with people and cyclists

Tram contact with a pedestrian/cyclist has increased to 7 from a historically low number (4) in 2022. Three of the seven incidents involved the contacted person/cyclist leaving the scene, three required medical assistance and one case was an apparent act of self-harm.

Two incidents involved cyclists, and the remaining were pedestrians. One incident involved a pedestrian following a desire line (an unplanned trail which has formed over time because of human traffic. Usually due to pedestrians taking shortcuts).

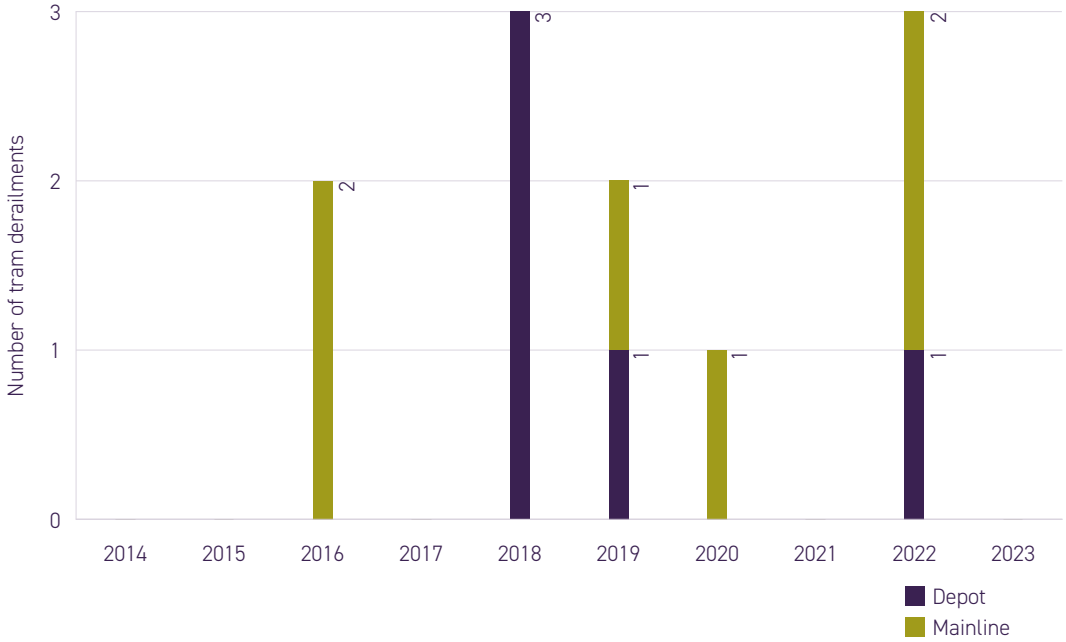
Figure 22
Persons coming into contact with tram




### 2.5.3 Tram derailments

There were no derailments on the mainline in 2022. Derailments are a strong accident precursor and a full year of operations without a derailment is a welcome result.

Figure 23
Tram derailments



### 2.5.4 Signals Passed at Stop (SPAS)

SPAS on the LUAS network is where a tram has passed a stop signal without authority. SPAS are a particular precursor event that the CRR monitors regularly during its supervisory meetings with TDLR. 2023 was a bad year for SPAS on the LUAS network with the number increasing on both lines to the highest level since CRR reporting began (Figure 24).

The level of risk associated with any given SPAS is not assessed by TDLR and therefore the picture regarding the level of risk associated with the incidents is not entirely clear. In October 2022, the RAIU published their trend investigation into SPAS on the LUAS network. One recommendation following from the investigation is that TDLR introduce a risk scoring process for SPAS on the network and this recommendation remains open. The RAIU trend investigation resulted in a total of fifteen recommendations for TDLR or TII to address, the CRR are responsible for ensuring that RAIU recommendations are addressed, and it can escalate the closure of these recommendations if required with railway organisations. From the relevant recommendations on this topic, it is anticipated that there will be better data quality available for TDLR and TII in order to undertake more detailed SPAS internal investigations, trending and subsequent analysis.

Once an RAIU recommendation is closed via the CRR, there can often be a duration of time before a marked improvement in a KPI metric is evident. This transition period is in many cases due to the integration of the additional risk mitigations which in turn will generally lead to a marked improvement in the KPI metric.

The SPAS reported are also mostly (17 of 31) those which have been detected at Line Signalling System locations, which is only located in a small part of the network. For the majority of the network there is no system in place to detect SPAS incidents and TDLR are reliant on drivers being aware of their SPAS to self-report them.

Figure 24
Red and Green line tram SPAS

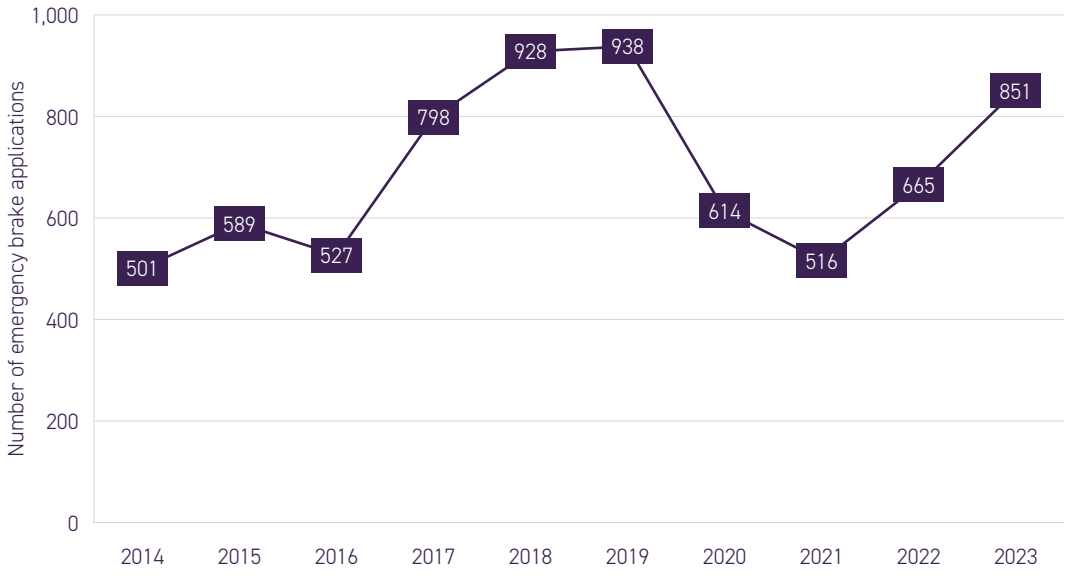
### 2.5.5 Tram emergency brake applications

An emergency brake application is where a driver commands the tram via the interface in the cab to apply friction, electrodynamic and adhesion-independent electromagnetic braking simultaneously. This provides the maximum level of braking available to prevent a harmful incident. The number of Emergency Brake (EB) applications made by tram drivers can be a useful leading safety indicator as it can show there was potential for an unsafe condition to manifest.

In 2023, there was a total of 851 EB applications, which continues the increase towards pre-pandemic levels. TDLR figures note that 241 of these are due to technical/other issues with the tram or its operation and the remaining are attributable to cyclists/pedestrians/vehicles. A notable increase was observed in EBs applied due to pedestrians which increased from 150 in 2022 to 255 in 2023.

Whilst the Technical/Other applications has increased around 10%, the number due to other road users has increased approximately 40% on the previous year (down from a 60% year-on-year increase in 2022). The rolling 12-month rate of EB application per million tram kilometres has been steadily increasing since early 2022 (the end of COVID-19 related restrictions) and as of December 2023 it is 7% below pre-pandemic levels. This trend remains somewhat concerning as there has been no indications thus far that the rate of increase is slowing. The CRR CS&E department continue to review the trend with TDLR senior management as part of its SPRM's. Real time performance at the end of each period is reviewed with TDLR and a number of additional measures are being considered and reviewed by TDLR at present from CRR reviews. Potential embedding of additional human factors related training elements for drivers is currently being considered by TDLR. Further measures to monitor driver performance are also an additional area being developed by TDLR following on from SPRM reviews. Embedding these measures into driver training and in turn driver support plans where required are being reviewed by TDLR at present. It should be noted that EB application levels are still at levels below those pre pandemic.

Figure 25
Tram emergency brake applications



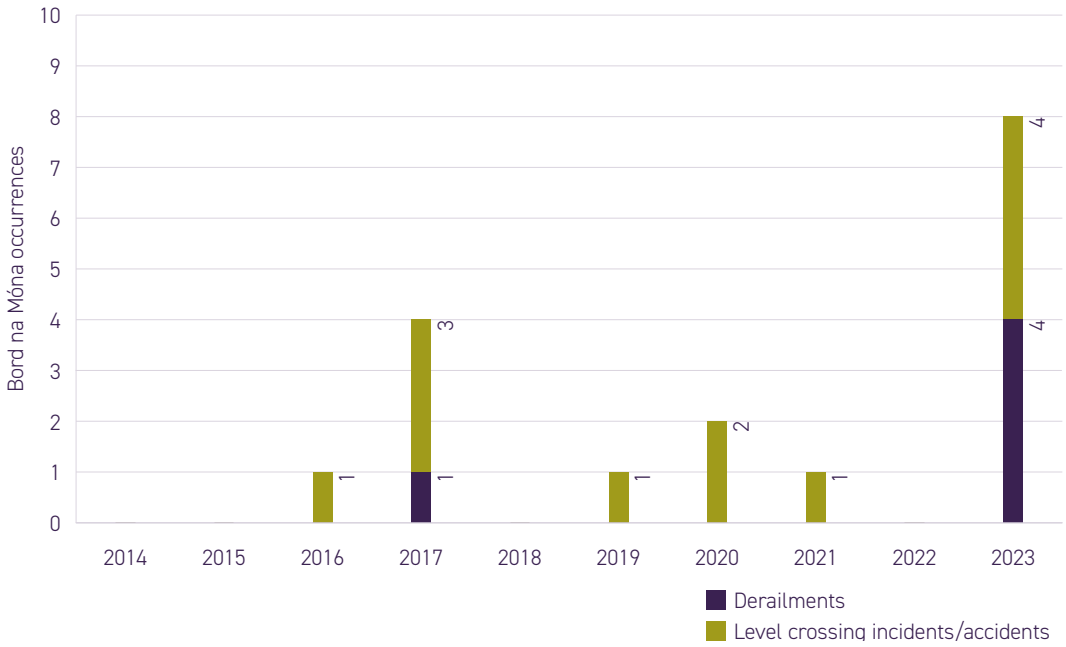
## 2.6 Bord Na Móna industrial railway statistics

The CRR's remit in terms of its oversight of BNM industrial railway is limited to where it interfaces with public roads. While it has 518 km of permanent track, it is only at its interfaces, i.e., level crossings and where there are road bridges over the industrial railway that the CRR is involved. In terms of key infrastructure statistics there are 97 level crossings, of which 28 are operational, and 52 underbridges, of which 17 are operational.

The operational figures have been steadily reducing as BNM transitions away from solid fuel production. Operational level crossings have reduced from 54 to 28 and operational bridges have decreased from 27 to 17. It is expected over the coming years that the operational level crossings and track kilometres will reduce significantly after peat movements by rail cease in 2023.

Bord Na Móna reported 8 incidents in 2023, a considerably high number. With crossings becoming irregular in pattern some of these incidents were related to third-party misuse, whereby road users were closing gates after a train had passed, unaware that the gates were linked to derailers which subsequently derailed the read end of the trains. Actions to address the issue subsequently led to some incidents involving misuse of level crossings by road users who were not yet familiar with BNM's new procedure for crossing. It is anticipated that BNM will cease using level crossings entirely in 2024.

Figure 26
Bord na Móna derailments and level crossing incidents/accidents



## 2.7 Heritage railways

A heritage railway is defined in Irish Legislation as "a person who only operates train services or railway infrastructure of historical or touristic interest". The CRR monitor the operations of heritage railways. They are:

- Difflin Lake Railway, Oakfield Park, Raphoe
- Fintown & Glenties Railway
- Irish Steam Preservation Society Stradbally
- Listowel Lartigue Monorail
- Waterford & Suir Valley Railway (W&SVR)
- Cavan and Leitrim Railway.
- Midlands Great Western Railway – Maam Cross Connemara.

Several heritage railways operated in 2023 and were subject to CRR supervision. Listowel Lartigue Monorail reported one derailment at a turning switch. The incident was low speed and was due to operative error (forgetting to return the switch to the correct position) and a mechanical failure of a safety control (a warning system failed to alert due to a failed electrical contact), there were no injuries reported for this incident.

### 2.7.1 Railway Preservation Society of Ireland (RPSI)

The RPSI are not a self-contained heritage railway and operate steam and diesel hauled heritage trains on the IÉ rail network and therefore hold a Safety Certificate allowing them to operate as a Railway Undertaking (RU). As an RU under the European Railway Safety Directive, they are subject to a risk-based supervision regime that is commensurate with the risks they manage and import onto the IÉ network. As an RU the RPSI has received safety certification based on the acceptability of its Safety Management System, compliance with which is also supervised by the CRR.

The RPSI completed a full year of mainline operations in 2023 and ran approximately 3,883 miles (6,249 km) carrying 13,369 passengers.

The RPSI reported a single passenger injury which involved a sliding door closing on a passenger's finger and one workplace accident which involved a volunteer falling from a height requiring hospitalisation.

A near miss was also reported which involved a train departing from a platform while watering was taking place. There was delayed reporting of this near miss with the CRR being advised in 2024 of the occurrence. The CS&E department of the CRR review occurrences such as these for the purposes of determining the compliance of railway organisations with their safety management system.

# 3. PUBLIC REPRESENTATIONS

## 3.1 Introduction

The CRR uses many inputs to undertake risk-based supervision activity. One source of information are representations received from the public, be they passengers or otherwise. Representations can be made to the CRR, with details on how to make a representation being available on our website (www.crr.ie). The contribution from the various stakeholders, including railway workers, passengers, and the general public is a valuable source of information, and all contact is screened and responded. Where issues that relate primarily to occupational health and safety arise, the CRR liaises with colleagues in the Health & Safety Authority (HSA) with whom there is a memorandum of understanding. Should issues be raised related to passenger services, rather than safety, the CRR directs the representation to the appropriate railway organisation or regulator (typically the National Transport Authority). If after the screening process the issues raised involves railway safety, the CRR endeavours, wherever possible, to deal with the matter directly. If necessary, the CRR will undertake inspections and/or seek information from the appropriate railway organisation(s) for further clarification, seeking resolution before responding back to the person who made the representation.

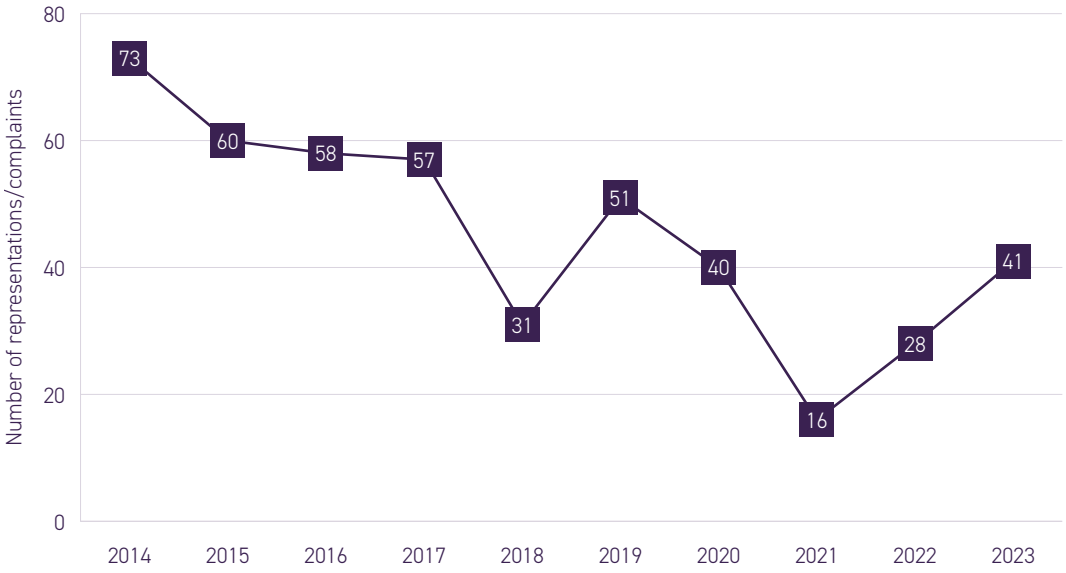
## 3.2 2023 data and commentary

In 2023, the CRR received 41 representations relating to a range of safety issues, from heavy to light rail, infrastructure to rolling stock and heritage railway safety matters (figure 27). The figure remains down on pre-2021 due to a change in data reporting, which is excluding representations that are non-safety related (Requests for Information – see Figure 28 for a detailed breakdown of representation details).

The number of safety related representations has increased significantly since the change to data reporting in 2021 although many representations in 2023 are related to the similar concerns/observations/incidents multiple times which makes the real increase appear slightly more significant.

Of the 41 representations received in 2023, 16 related to IÉ-IM or IÉ-RU and 10 related to the LUAS system. The CRR gives a high degree of attention to any representation concerning railway safety made by either railway staff, railway passengers, members of the public, or others.

Figure 27
Public representations to the CRR by year




Representations from 2023 are broken down into the following categories:

- Safety at stations: queries relating to incidents or concerns at stations
- Safety of infrastructure: queries relating to Railway Infrastructure such as bridges, track, level crossings or fencing
- Safety of rolling stock: queries relating to Vehicles such as train noise, carriage alignment or door operation
- Safety of train operation: queries relating to operations such as train loading, excess train speed or shared running of trams
- Safety of railway working: queries relating to operational activities on the railway such as network regulation or management control
- Request for Information: a request to the CRR for information not specifically related to railway safety (note these are distinct from formal Freedom of Information requests and do not count towards the overall numbers in Figure 27).

The numbers of representations/complaints by category are shown in Figure 28. The primary focus of the CRR is with the 28 safety related representations. These representations varied from concerns regarding the ride height of carriages to concerns regarding the integrity of safety controls.

Figure 28
CRR public representation by category


Note that Request for Information's are not counted towards the overall figure.

# 4. RAILWAY SAFETY TRENDS IN EUROPE

## 4.1 Introduction

European Union legislation defines the CRR as the National Safety Authority (NSA) for the railway network in Ireland. Each European member state has an NSA which, in accordance with the Railway Safety Directive (EU) 2016/798, have a legal obligation to report to ERA a set of defined information that can be used to assess the development of railway safety in the EU. Notably, the NSAs gather common safety indicators (CSIs), defined in legislation, from the railway undertakings (RUs) and infrastructure managers (IMs), which show safety levels in Member States and the EU.

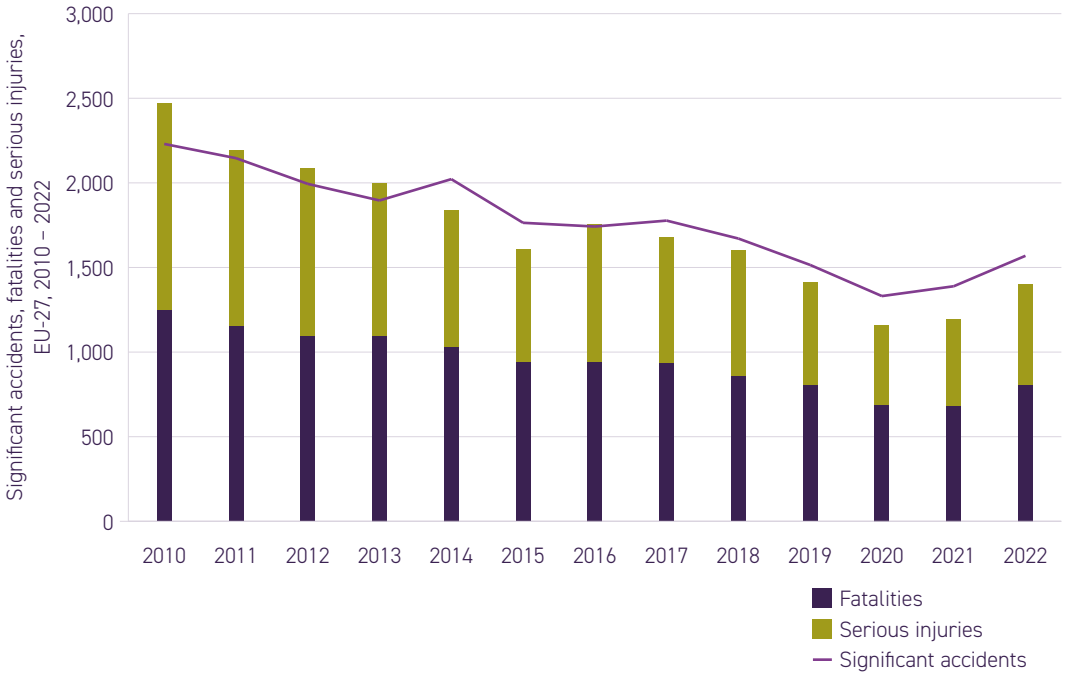
Some noteworthy statistics are presented from recent reports based on data up to the 2022 reporting period and, where available, up to 2023. Definitions for data categories used, where not stated, can be found in the document 'Implementation Guidance for CSIs,' which is available at https://www.era.europa.eu/.

The results of the assessment of CSI's carried out by ERA have identified several areas where safety has been stagnating in recent years. The headline figures such as accidents and serious accidents have also continued to increase in recent years, although remain down when considered over a ten-year reporting period. ERA have reported that, unlike the European aviation and maritime industries, railways have not yet implemented a systematic and comprehensive EU-wide safety occurrence reporting system which would allow learning across member states from not just accidents but also incidents. ERA have received a mandate to draft common safety methods for assessing the safety levels and the safety performance of railway operators (Common Safety Methods on Assessment of Safety Level and Safety Performance (CSM ASLP)) which will include, among other objectives, an obligation for RUs and IMs to report on occurrences which should provide additional methods for assessing the levels of safety performance.

### 4.1.1 Significant accidents and their outcomes

The railway safety directive (Directive (EU) 2016/708) defines a significant accident as "any accident involving at least one rail vehicle in motion, resulting in at least one killed or seriously injured person, or in significant damage to stock, track, other installations or environment, or extensive disruptions to traffic, excluding accidents in workshops, warehouses and depots". In 2022 (the most recently available dataset), there were 1,569 significant accidents resulting in 805 fatalities and 594 serious injuries within the European Union (Figure 29). The annual number of significant accidents, despite increasing in 2021 and 2022 remains on a downward trend when considered over the 10 years leading to 2022, although the reduction rate has stagnated in recent years.

Figure 29
Significant accidents, fatalities, and serious injuries of EU 27, 2010 – 2022



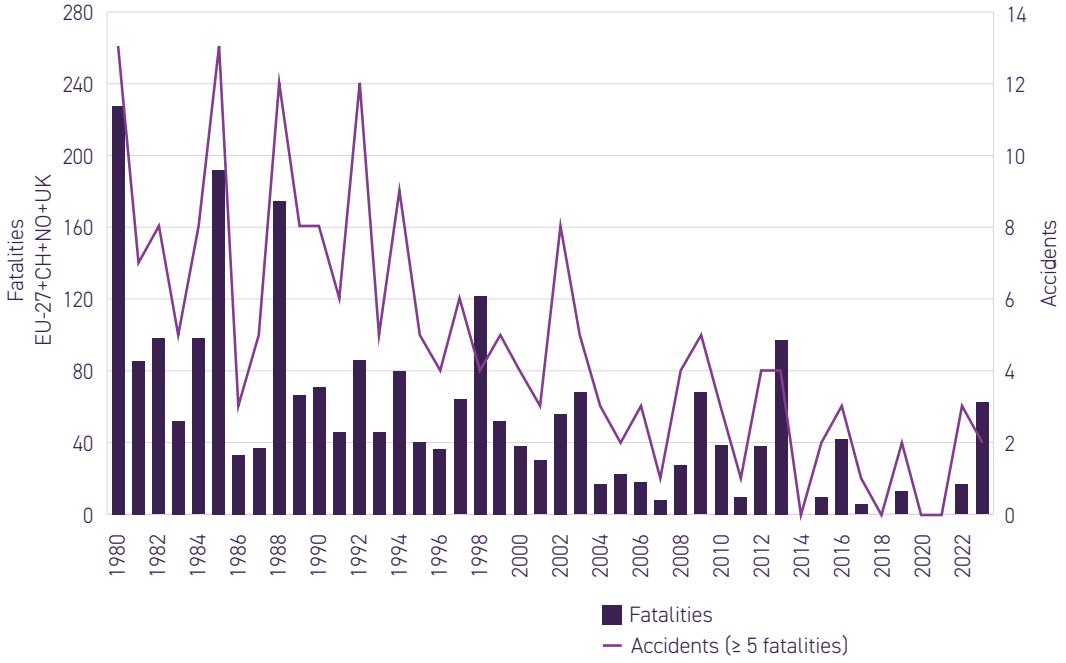

Source: ERA – Report on Railway Safety and Interoperability in the EU 2024.

### 4.1.2 Irish railway safety in an EU context

A major accident refers to accidents resulting in five or more fatalities in order to facilitate long term monitoring of railway safety (ERA – Report on Railway Safety and Interoperability in the EU 2024). A significant accident is defined within the Railway Safety Directive as "any accident involving at least one rail vehicle in motion, resulting in at last on killed or seriously injured person, or in significant damage to stock, track, other installations or environment, or extensive disruptions to traffic. Significant damage is damage that is equivalent to 150,000 euros or more."

The latest CSI data for the EU suggests Ireland has a good safety performance, however, the relatively small network (1,680 route km) leaves a potential for a single major accident with multiple fatalities to alter Ireland's leading position to one that would trail most other Member States. The trendline for major accidents across Europe as a whole has been positive since 1990 with an evident reduction in major accidents across Europe. For the most recent five years of major accident data, however, it is evident that the trendline reduction in major accidents has plateaued/has a minor increase albeit with two years (2020 and 2021) where no major accidents were recorded.

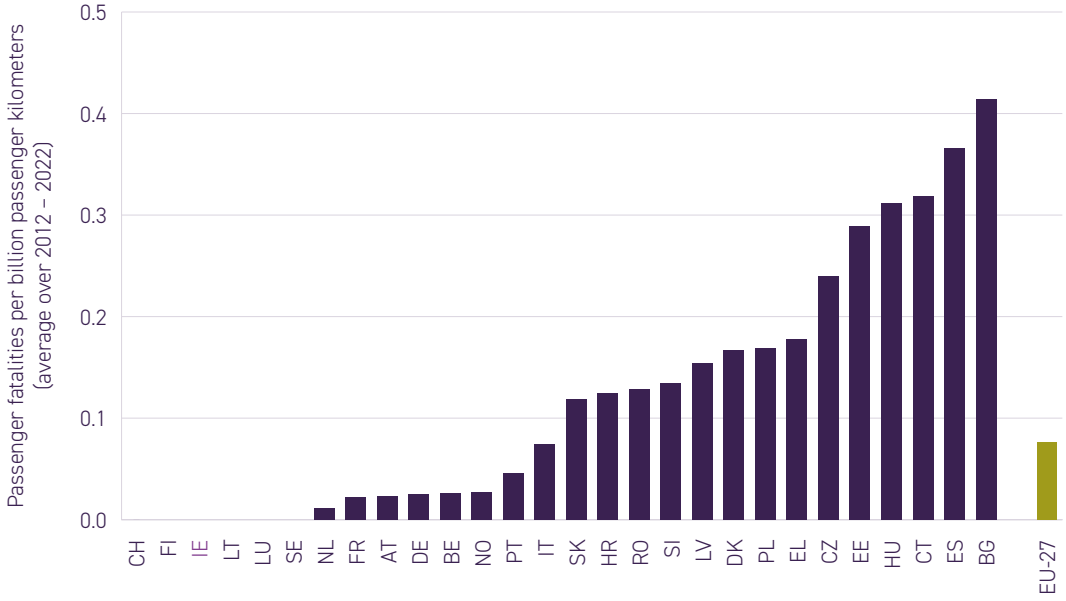
Figure 30
Major accidents in Europe
EU-27 + CH + NO + UK
1980 – 2023




Source: ERA – Report on Railway Safety and Interoperability in the EU 2024.

Ireland's performance within Europe also remains positive in comparison to other Member States, with performance consistently well ahead of the EU level. Data for railway passenger fatality rates show that when passenger fatalities are normalised using train kilometres travelled, Ireland is a leading country in terms of performance over the last decade.

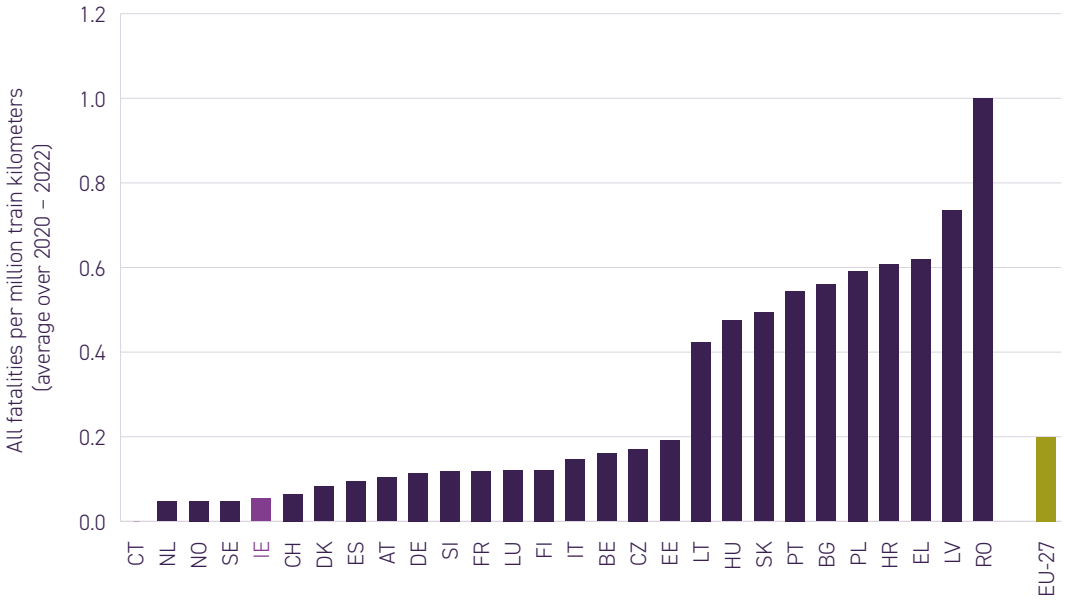
Figure 31
Passenger fatalities rate, 2012 – 2022




Source: ERA – Report on Railway Safety and Interoperability in the EU 2024.

Over a three-year period (2020 – 2022), Ireland is also ranked highly within the EU27 and has a normalised fatality rate (all fatalities, not just passenger) that is considerably below the EU average. However, it is noted that there is considerable disparity between low and high fatality rate countries, resulting in a somewhat binary categorisation of countries either considerably above or below the average.

Figure 32
Fatalities per million train kilometres (average 2020 – 2022)




Source: ERA – Report on Railway Safety and Interoperability in the EU 2024.

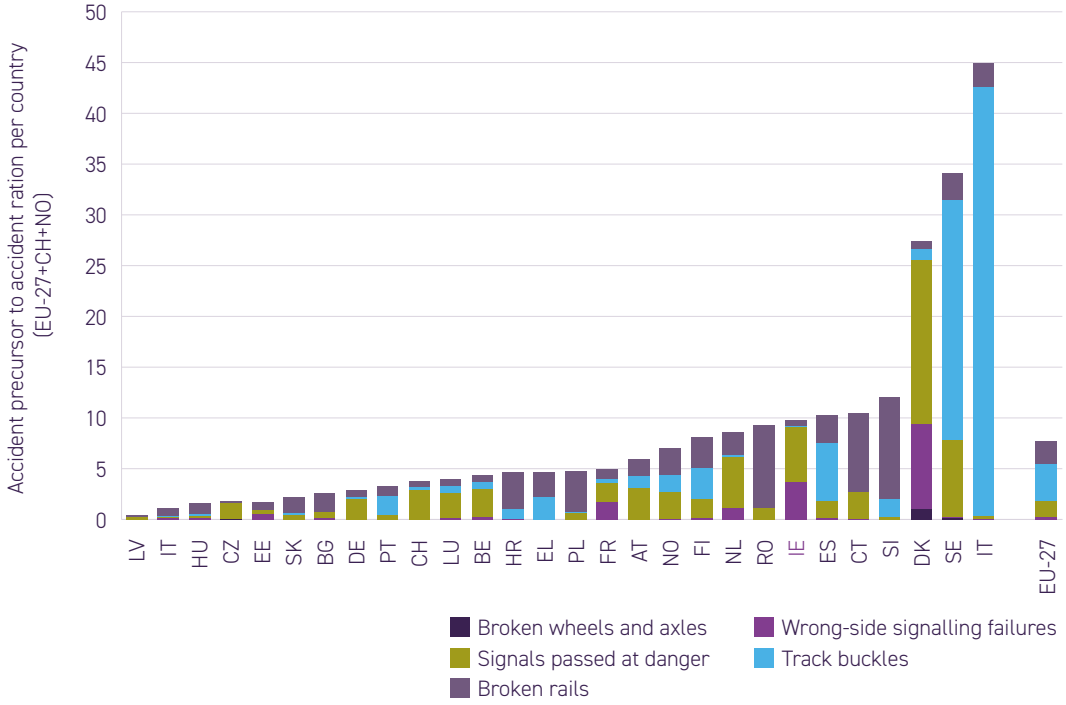
### 4.1.3 Precursor to accidents

Accident precursors are events which occur as part of an accident in a given scenario. These are events whereby the overall safety of the railway system has been compromised to a point whereby an accident is more probable but may not ultimately manifest itself. Due to the causal relationship of precursors to accidents, railway organisations and safety authorities monitor events (precursors) that have no harmful consequences but under slightly different circumstances, could have led to an accident. The following precursors are those reported to the ERA:

- Broken wheels and axles (on trains or wagons)
- Wrong-side signalling failures
- Signal passed at Danger (SPAD)
- Track buckles (track is out of alignment)
- Broken rails.

As seen in Figure 33, Ireland is seventh highest of the EU-27 plus Switzerland and Norway, in terms of the ratio of accident precursors to accidents. It is the case that, as this metric measures the ratio of accident precursors to accidents, Ireland shares the high end of the scale with other low accident rate countries. Performance could be further contrasted by reviewing the relative safety performance of similar member states that have low accident rates but rank higher in terms of precursors. Further analysis could also be undertaken by identifying areas of relative weakness in terms of performance linked to accident precursors when contrasted to other member states with a similar safety record/similar networks. Concerns regarding the quality of reporting of precursor events continues to be expressed by ERA in their most recent reports. Therefore, any comparison between Member States in terms of precursor events should be interpreted with the caveat that precursor event reporting is of varying quality from country to country.

Figure 33
Total precursor events by country, 2018 – 2022




Source: ERA – Report on Railway Safety and Interoperability in the EU 2024.

## 4.2 Major accidents worldwide

The past two years have been particularly solemn for the EU with several major accidents occurring in 2022 and 2023 after two years without a single major accident. One particularly tragic incident occurred in Greece on 28th February 2023, resulting in 57 fatalities which underscores the necessity to continue improving safety performance and the significant tragedy that can unfold should even a single accident occur. The CRR is an active participant in a small number of fora with other National Safety Authorities in Europe and similar agencies worldwide regarding such incidents and endeavour to share learning points derived from investigations. What follows is a brief overview of recent accidents in other jurisdictions which the CRR considered noteworthy for the Irish railway sector.

### Tempi, Greece

Around 23:21 (local time) on 28th February 2023, an intercity passenger train collided head-on with a freight train on the Athens-Thessaloniki mainline between Tempi and Evangelismos. The collision caused catastrophic damage to both trains and resulted in 57 fatalities with 160 injured. It was the deadliest rail disaster in Greek history. Multiple investigations remain ongoing into the incident, but local media have reported that the passenger train was permitted by a human to pass signals at danger (red) onto the same section of track occupied by the freight train. Whilst judicial investigations may identify guilty parties and legal responsibility, the independent Greek National Investigation Body – Greek Air and Rail Accident Investigation Authority (EODASAAM) will investigate to identify systemic safety problems that led to the accident in order to make the necessary safety recommendations to improve the level of railway safety and prevent future accidents.[3]

### Odisha, India

On 2nd June, 2023, at around 19:00 (local time), a passenger train was directed into a siding and collided with a stationary freight train on the Howrah-Chennai main line at high speed. The force of the impact was such that the passenger train fouled the adjacent main line and subsequently derailed another passenger train, the SMVT Bengaluru-Howrah SF Express. The casualties were significant; 296 passengers died and over 1,200 were injured. The Commission for Railway Safety (CRS) in India determined that a faulty connection was made by local railway personnel when they attempted to repair a barrier. As a result of this faulty connection the passenger train was erroneously rerouted into the path of the stationary freight train. The CRS identified deficiencies at several levels in the signalling and telecoms department (the Indian Railways department which carried out the work) and found that Standard Operating Procedures (SOP's) were not followed during the repairs. Unsafe signalling work or repairs has been a cause of several high-profile railway accidents for decades and this tragic accident emphasises the safety critical nature of the work that is undertaken when signalling systems are installed, altered or removed.

3. https://www.era.europa.eu/system/files/2024-02/EL-10464%20INTERIM%20STATEMNT%20IN%20ENGLISH.docx

## Ohio, United States of America

On 3rd February, 2023, at 18:54 (local time), 51 freight wagons derailed in East Palestine, Ohio, of which several contained flammable and combustible materials. The explosion and resulting fire burned some 380,000 litres of hazardous materials and continued over the course of several days. The accident caused a significant environmental disaster requiring mass evacuations and a large clean-up operation. In the course of the investigation, it was discovered that there had been a fire present under one wagon in the lead up to the derailment. The National Transportation Safety Board (NTSB) investigators found that the cause of the fire was likely an overheated bearing which caught fire some 20 miles before the derailment. Trackside hot axle detectors were also found to have failed to detect the overheated bearing with the NTSB reporting: "A hot bearing detector traversed by train 32N detected an elevated temperature on the overheating bearing, but the low priority alert it transmitted to railroad personnel did not reflect the true condition of the failing bearing. Because of design constraints, hot bearing detectors are likely to indicate misleadingly low bearing temperatures. This limit on detector performance, combined with NS's standard operating procedures and the spacing between detectors, meant that the train's crew did not have adequate warning to stop the train before the derailment". The NTSB went on further to explain that further research into this technology is necessary.

Hot axle box detectors (HABDs) and acoustic monitoring are systems used on the Irish heavy rail network to detect overheating axle bearings. These systems can often be of critical importance in preventing major incidents. The utilisation of acoustic signatures via monitoring can potentially detect the early stage of failures as heat generation (picked up by HABD's) can often be at a much later stage of the life cycle.

## Beijing, China

On December 14th, 2023, at around 19:00 (local time) two China Railway Rolling Stock Corporation Qingdao Sifang SFM13's collided during an orange weather alert (for snow) on the Changping line in Beijing. The collision resulted in 102 injuries of "broken bones" and over 500 hospitalisations. The collision occurred between a leading and following train where the leading train had unexpectedly stopped and the following train was unable to brake in time due to low rail adhesion and a slope on the line. Whilst the trains on the line are capable of automated operation, during the snowstorm the railway operator reverted to manual control at lower speed on sections of the line where it was at-grade or an elevated grade (i.e., exposed to the elements). This metro line is also equipped with Communication Based Train Control (CBTC) which allows each train to broadcast its position relative to one another, however, due to the extreme conditions the system reverted to a manual operation and as a result the leading train had to hold position at a signal unexpectedly which in turn led to an unexpected braking application for the following train.
Whilst Ireland's heavy rail network is currently undergoing transformation to include some degree of automation with the introduction of the European Train Control System (ETCS), there is also the Metrolink project which may utilise technology such as Automatic Train Operation (ATO) and CBTC. The introduction of such technologies will require careful consideration of how it interfaces with the Irish climate during extreme weather events.

# 5. ACCIDENT INVESTIGATIONS

## 5.1 Introduction

The RAIU is the National Investigation Body for railway accidents and incidents in Ireland. The RAIU investigate all serious accidents in addition to accidents and incidents which could have, under slightly different circumstances, resulted in a serious accident. A 'serious accident' is, in accordance with the European Railway Safety Directive (EC) 2016/798 and the Railway Safety Act 2005, "any train collision or derailment of a train, resulting in the death of at least one person or serious injuries to 5 or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other accident with the same consequences, which has an obvious impact on railway safety regulation or the management of safety".

The purpose of an investigation by the RAIU is to identify improvements in railway safety by establishing, in so far as possible, the cause or causes of an accident or incident with a view to making recommendations for the avoidance of similar accidents in the future, or otherwise for the improvement of railway safety. An investigation by the RAIU does not attribute blame or liability. The RAIU's investigations are carried out in accordance with the European Railway Safety Directive (EC) 2016/798 and the Railway Safety Act 2005 as amended by S.I. No.258 of 2014 and S.I. No. 430/2020.[4]

All RAIU investigation reports are made publicly available at www.raiu.ie and, due to the nature of their investigations, may contain highly technical terminology and acronyms. When reading this section, one should consult the relevant RAIU report for a full understanding of the Safety Recommendations made.

## 5.2 RAIU active investigations

The RAIU conducted 61 Preliminary Examination Reports (PER) and initiated three full investigations into railway accidents and incidents in 2023 (Table 5).

Table 5
RAIU investigations initiated in 2023

| Date of incident | Details | Duty holder |
|---|---|---|
| 22nd February 2023 | Broken Rail near Emly, County Tipperary | IÉ |
| 23rd February 2023 | Broken Rail, Newbridge, County Kildare | IÉ |
| 9th September 2023 | IÉ collision between a car and a train at Level Crossing XM190, near Claremorris | IÉ |

4. Railway Safety Directive and the Railway Safety Act are supplemented by S.I. No. 430/2020 – European Union (Railway Safety) (Reporting and Investigation of Serious Accidents, Accidents and Incidents) Regulations 2020.

## 5.3 RAIU investigation reports 2023

In accordance with the Railway Safety Act 2005, the RAIU endeavours to publish an investigation report not later than 12 months after the date of the incident. In 2023, the RAIU published five investigation reports which are listed in 6. As a result of their investigations the RAIU made a total of 47 safety recommendations which are discussed in section 5.4.

Table 6
RAIU investigation reports published in 2023

| Date report published | Date of incident | Title of report | No. of safety recommendations made | Railway organisation |
|---|---|---|---|---|
| 16/02/2023 | 07/12/2021 | Dangerous occurrence involving a Double SPAD at Clontarf Road Station | 12 | IÉ-RU & IÉ-IM |
| 23/02/2023 | 27/08/2021 | Collision with track equipment between Newbridge and Kildare | 7 | IÉ-IM |
| 07/06/2023 | 06/07/2022 | Collision of an RRV Dumper with a member of Iarnród Éireann infrastructure maintenance staff | 3 | IÉ-IM |
| 13/10/2023 | 25/10/2022 | Failure of a Current Return Cable on a Luas Tram | 5 | TDLR |
| 22/12/2023 | 24/07/2022 | Self-detrainment of passengers between Shankill and Bray | 20 | IÉ-RU & IÉ-IM |

## 5.4 RAIU safety recommendations 2023

The RAIU, through their accident investigations, identify whenever possible the immediate cause, contributory factors, and any underlying factors. Having established these, the RAIU may make safety recommendations and as previously stated, 47 were made in 2023. In accordance with the Railway Safety Directive the RAIU address recommendations to the national safety authority (the CRR) and where needed by reason of the character of the recommendation, to other bodies or authorities in the Member State or to other Member States. Member States and their safety authorities take the necessary measures to ensure that the safety recommendations issued by the investigating bodies are duly taken into consideration, and where appropriate acted upon.

The CRR categorise the status of recommendations as being either 'Open,' 'Submitted,' 'FER' or 'Closed.' These are defined as follows:

| | |
|---|---|
| Open | Feedback (Evidence) from Railway Organisation (or another party) is awaited or actions have not yet been completed. |
| Submitted | A Railway Organisation (or other party) has made a submission to the CRR, advising that it has taken measures to affect the recommendation and the CRR is considering whether to close the recommendation. |
| FER | Further Evidence Required. The CRR has reviewed a submission (or further submission) but considers that further evidence is necessary to close the safety recommendation. |
| Closed | The CRR has reviewed a submission (or further submission) and is satisfied that the safety recommendation has been addressed. |

A summary is presented below of the actions taken (at the time of writing) in relation to the five RAIU Investigation Reports published in 2023 where safety recommendations were made, and the status of each recommendation.

It should be noted that just because a safety recommendation is identified as being 'open' does not mean that no action has been taken, rather the railway organisation responsible has not yet reported that they have concluded all actions they proposed to take to address the specific safety recommendation.

## 2023-R001
## Dangerous occurrence involving a Double SPAD at Clontarf Road Station (Report published 16th February 2023)

| | |
|---|---|
| Summary | At approximately 15:59 hrs on 7th December 2021 the 15:31 hrs Iarnród Éireann (IÉ) DART passenger service from Malahide to Bray (Train E120) was stopped at Clontarf Road Station Up Platform. The signal to the rear, Signal DN295 was displaying a Red Aspect to protect Train E120.<br>Around the same time, the 15:40 hrs DART passenger service from Howth to Bray (Train E240) was approaching Signal DN287 at Clontarf Road Station.<br>The train's speedometer and On Train Data Recorder (OTDR) showed the train was travelling at 79 kilometres per hour (km/h); the permitted line speed for the section is 75 km/h and reduces to 30 km/h on approach to Clontarf Road Up Platform. The OTDR shows the train braking system initiated an Automatic Train Protection (ATP) penalty brake as the train was travelling at a speed (79 k/h) greater than the target speed (30 km/h). The ATP brake application, in trying to reduce the train speed, resulted in the train's Wheel Slip Protection (WSP) system activating to prevent the wheels from locking up and sliding on the degraded railhead caused by Storm Barra.<br>At 16:01 hrs, Train E120 departed Clontarf Road Station with a planned stop at the Crew Ramp at Fairview Depot for a change of driver (the driver of E120 who brought the train to the Crew Ramp will be known as Driver E120a for the remainder of this report and the replacement driver will be known as Driver E120b). When Train E120 departed Clontarf Road Station the aspect of Signal DN295 situated at the south end of Clontarf Road Station Up Platform changed from green to red to protect Train E120 as it stopped at the Crew Ramp, Fairview.<br>At 16:03 hrs, Train E240 passed Signal DN287 situated at the north end of Clontarf Road Station at danger without authority (known as a Signal Passed at Danger (SPAD)) and continue travelling through Clontarf Road Station.<br>The driver of Train E240, who will be referred to as Driver E240 for remainder of report, could see Train E120 ahead and phoned the Central Signalman at Centralised Traffic Control (CTC) to advise that he felt the train was sliding and was going to run into Train E120.<br>The Central Signalman contacted Driver E120b to enquire if the train was moving and on receipt of conformation requested Driver E120b to continue moving; had Train E120 not commenced moving, Train E240 would likely have collided with the rear of Train E120.<br>Train E240 passed Signal DN295 at danger without authority and came to a stop before the Crew Ramp at Fairview. Driver E240 contacted the Central Signalman to advise that his train had come to a stop. |
| Number of recommendations made | 12 |

| | |
|---|---|
| Recommendation 1 (2023001-01) | The Head of Health & Safety IÉ-RU should arrange for the development and issue of a guidance document for drivers outlining the understanding of the ATP equipment and the driving technique required. New training, monitoring and assessment material should be developed from this guidance. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

| | |
|---|---|
| Recommendation 2 (2023001-02) | The Head of Health & Safety IÉ-RU should arrange for the development of a briefing for DTEs on analysis of driving trends by use of the OTDR. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R001
## Dangerous occurrence involving a Double SPAD at Clontarf Road Station
## (Report published 16th February 2023)

| | |
|---|---|
| **Recommendation 3 (2023001-03)** | IÉ-RU CME should upgrade the OTDRs on the 8500 EMU fleet to the most up-to-date version, to ensure that digital signals are recorded for ATP penalty brake applications. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

| | |
|---|---|
| **Recommendation 4 (2023001-04)** | IÉ-RU CME should consider retrofitting all EMU fleets with a Remote Diagnostic System, whereby a rule can be introduced so that DTEs are immediately notified of ATP penalty brake applications. |
| Action/s taken/ in progress | December 2023 – Evidence of RO actioning Recommendation submitted to CRR. |
| Status | Submitted |

| | |
|---|---|
| **Recommendation 5 (2023001-05)** | IÉ-IM CCE should consider, based on a risk-based approach, the introduction of TGAs at more locations. |
| Action/s taken/ in progress | May 2023 – Closed by CRR. |
| Status | Closed |

| | |
|---|---|
| **Recommendation 6 (2023001-06)** | IÉ-IM SET should undertake a review of I-SIG-2145, Calculation of Signal Spacing Distance, to consider if the risk approaches identified in the standard are effective in relation to the calculation of the spacing of signal distances, in particular, in relation to sharp speed decreases on the approach to signals and consideration should be given to incorrect driving techniques (i.e., driving into the bonds). A review of the use of derogations should also be undertaken. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

| | |
|---|---|
| **Recommendation 7 (2023001-07)** | IÉ-IM SET should put systems in place to ensure that the train simulator staff are provided with updated signal layout schematics as and when required, e.g., altered signal positions. |
| Action/s taken/ in progress | April 2023 – Further evidence requested by CRR. |
| Status | Further Evidence Requested |

| | |
|---|---|
| **Recommendation 8 (2023001-08)** | IÉ-RU CME should update its commissioning documents, to ensure that maintenance tasks commence after installation. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

2023-R001
Dangerous occurrence involving a Double SPAD at Clontarf Road Station
(Report published 16th February 2023)

| | |
|---|---|
| Recommendation 9 (2023001-09) | IÉ-RU CME should review the 8500 EMU sanding improvement plan (2016) against current standards with a view to updating and implementing the sanding improvements to current standards. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

| | |
|---|---|
| Recommendation 10 (2023001-10) | IÉ-RU Ops should update the OTDR Download Assessment Form for DART drivers with only tasks pertinent to DART drivers; allowing DTEs to carry out comprehensive assessments of the DART drivers' driving techniques. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

| | |
|---|---|
| Recommendation 11 (2023001-11) | IÉ-RU Ops should update its competency assessment processes to ensure that the assessments carried out, are the most beneficial, in terms of identifying driver discrepancies. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

| | |
|---|---|
| Recommendation 12 (2023001-12) | IÉ-RU Ops should brief all drivers on the importance of making an open call in an emergency situation rather that calling the Signalmen direct. |
| Action/s taken/ in progress | August 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R002 Collision with track equipment between Newbridge and Kildare (Report published 23rd February 2023)

| | |
|---|---|
| Summary | At 23:00 hours (hrs) on the 26th August 2021, a work detail incorporating: three Iarnród Éireann Infrastructure Manager (IÉ-IM) Chief Civil Engineer's Department (CCE) staff (Engineering Supervisor (ES), Person in Charge (PIC) and General Operative (GO)) and eight contracted staff, met for a safety briefing at a works compound adjacent to the old Curragh Station, County Kildare.<br>The work scheduled by the CCE Infrastructure Department was to replace a defective nine metre (m) section of rail. The work crew were briefed by the ES on their duties for the night and given site safety information including that the work would be under an Absolute Possession (T3 Possession). After the briefing, the ES and GO, followed by the contractors, drove to the access point close to the intended work site. They waited a few minutes until the ES confirmed the last timetabled train passed the worksite (although there was an unscheduled train to pass which was unknown to the ES), and then the ES stated that they were 'good-to-go'. The T3 Possession had not been prepared or granted at this stage, i.e., the line should not have been accessed and no work should have commenced. When the work detail arrived at the site of the defective rail, the GO started to loosen the bolts which fix the rail to the concrete sleeper, while one of the contracted welders started digging the ballast out from around where the clamp was to be placed (the clamp is part of holding gear equipment that is clamped to the rail during rail replacement works). The two other contracted welders started to attach the clamp to the Down Leg of the Up Line. The contractor that was digging the ballast, turned to put down his shovel, when he saw the lights of an approaching train and shouted "train on" and all staff quickly moved to a position of safety.<br>The train (Train J283), an unscheduled empty train, was travelling from Limerick Junction to Heuston Station, approached the worksite and struck the clamp which was clamped onto the rail. The driver of Train J283, Driver J283, brought the train to a stop and contacted the Mainline Signalman to report the collision and near-miss with staff. |
| Number of recommendations made | 7 |

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| Recommendation 1 (2023002-01) | IÉ-IM should consider developing a system, whereby Signalmen must provide a Unique Possession Authority Number, or similar, when authorising T3 Possessions to the PICOP; this number or safeguard should be provided to all staff prior to entering a T3 Possession. |
| Action/s taken/ in progress | April 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R002 Collision with track equipment between Newbridge and Kildare (Report published 23rd February 2023)

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| **Recommendation 2 (2023002-02)** | IÉ-IM should review the current system of supervising and monitoring T3 Possessions, in terms of possession arrangements (e.g., Authority Number) and safety documentation (e.g., method statements); this review should identify improvements in terms of managing T3 Possessions. At a minimum, IÉ-IM should:<br>— Expedite an increase in the supervision and monitoring of T3 Possessions by Engineering Department staff through updating CCE-SMS-001, specifically increasing monitoring prior to possessions being granted (while the IÉ-IM review and updating of supervision and monitoring of T3 Possessions is being undertaken);<br>— Revise the current process of monitoring possessions through Safety Tours, CCE-SMS-008, to ensure the requirements of all guidelines are recorded in the Safety Tour Form;<br>— Once the Safety Tours, CCE-SMS-008, documentation has been reviewed and updated, verify that the Safety Tours are being carried out correctly, and in full accordance with the guidelines, through an auditing process. |
| Action/s taken/ in progress | April 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 3 (2023002-03)** | IÉ-IM should promote a positive culture between staff, at different grades, to ensure ground level staff (including contractors) feel confident to challenge more senior staff in terms of safety. This can be achieved through staff briefing days, safety campaigns and development of a means for staff to provide feedback on supervision activities. |
| Action/s taken/ in progress | April 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 4 (2023002-04)** | IÉ-IM should introduce processes to ensure that information submitted to the RAIU is correct and submitted within the requested timeframes. |
| Action/s taken/ in progress | April 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 5 (2023002-05)** | The IÉ CCE Department (Engineering Department Division 3) should ensure the requirements of CCE-TMS-422 (2022) are met in full. |
| Action/s taken/ in progress | February 2024 – Evidence submitted to CRR. |
| Status | Submitted |

## 2023-R002 Collision with track equipment between Newbridge and Kildare (Report published 23rd February 2023)

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| **Recommendation 6 (2023002-06)** | IÉ-IM should conduct a full review on the reporting of accidents by IÉ-IM staff and contractors, consideration should be given to:<br>— Reviewing CCE-SMS-007 and CCE-SMS-005 to identify any areas where improvements can be made related to the reporting of safety related occurrences; where areas of concern are identified these should be addressed;<br>— Enhance and promote its confidential reporting system to ensure all staff (with a particular emphasis on contracted staff) can report issues related to safety and welfare;<br>— Promote a positive culture, associated with the reporting of occurrences, in an effort to eliminate on-site authority gradients whereby staff cannot challenge supervisors (Safety Recommendation 2023002-03). |
| Action/s taken/ in progress | April 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 7 (2023002-07)** | The CCE Department review and update CCE-SMS-001 and CCE-SMS-008 with a view to addressing the monitoring and supervision of works, in terms of quality of works that affects track safety, which are carried out under internal method statements (and contractor) method statements. |
| Action/s taken/ in progress | April 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R003 Collision of an RRV Dumper with a member of Iarnród Éireann infrastructure maintenance staff (Report published 7th June 2023)

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| Summary | On the 6th July 2020, there were four separate worksites within a T3 Possession in which engineering works on the Cork-Cobh-Midleton lines was being undertaken. The work being carried out in worksite one entailed track panel relaying and steel bridge repairs between Woodhill and Tivoli.<br>There were thirteen items of hired plant and machinery in the worksite, including six Road Rail Vehicle (RRV) Dumpers, which were used for drawing stone from a lineside stockpile at Tivoli access point on the Cobh side of the Up Line. On completion of the loading movement, the RRV Operators (RRVOs) awaited directions from the Person In Charge (PIC)-RRV to tip the stone over the course of the track relaying works.<br>During the works, two RRV Dumpers, located on the Up Line, were laden with stone ballast with the buckets facing Cobh. The RRVOs configured the driving positions of the RRV Dumpers for the reversing movement. The directional lights were configured to white lights on the Cobh end (direction of travel) and red lights at the Cork end.<br>Engineer 1, who was on site supervising the works, was coming to the end of his shift and was giving an update briefing to Engineer 2 who had arrived on site for the late shift. After discussing an unforeseen issue in relation to soft ground conditions, Engineer 1 agreed to remain on site in order to discuss the matter further with their Regional Manager, who had arranged to visit the site.<br>Engineer 1 decided to make a number of work-related phone calls on his company issued mobile phone and moved to a position of safety, walking from the Down Side to the Up Side cess, close to the leading RRV Dumper.<br>While on the Down Side, Engineer 2 requested the PIC-RRV to move the two stone laden RRV Dumpers a short distance along the Up Line towards Cobh to allow the placement of track panels on the Down Line. The PIC-RRV walked towards the leading RRV Dumper observing that the line ahead was clear before shouting and indicating by hand due to the noisy environment to the leading RRVO to move in the direction of Cobh.<br>The RRVO checked his reversing camera monitor located at 90° to his driving position on his right-hand side before looking through the rear windscreen over the RRV Dumper bucket laden with stone, before slowly moving forward.<br>Collision of an RRV Dumper with a member of IÉ infrastructure maintenance staff, Cork, 06/07/22 Railway Accident Investigation Unit 2<br>At approximately the same time, Engineer 1 (located on the Up Side cess) decided to return to Engineer 2 (located on the Down Side). Engineer 1 walked a few metres in the cess, before the terrain got difficult, and crossed into the five foot a few metres ahead of the leading RRV Dumper.<br>Engineer 1 continued to walk for a few metres in the five foot, in the direction of Cobh on the Up Line, before feeling something striking his back. Engineer 1 turned around and realised it was the RRV Dumper and instinctively decide to "go to ground" and lay as flat as possible in the five foot, knowing the RRV Dumper was going to travel over him. The RRV Dumper had travelled approximately twelve metres from its stationary position at this time.<br>The RRV Dumper slowly travelled over Engineer 1, with Engineer 1 sustaining a cut to his nose and minor abrasions to his arm.<br>The RRVO was unaware that he had struck and travelled over Engineer 1 until he was alerted by another member of staff. The RRVO then brought the RRV Dumper to a stop, clear of Engineer 1.<br>All work on site was stopped and medical attention was given by staff on site before an ambulance crew attended the scene and advised Engineer 1 that he did not have to attend the hospital. |
| Number of recommendations made | 3 |

## 2023-R003 Collision of an RRV Dumper with a member of Iarnród Éireann infrastructure maintenance staff (Report published 7th June 2023)

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| **Recommendation 1 (2023003-01)** | IÉ-IM PTS Certification training should include training on the head lights and tail lights for trains ('white lights' are coming towards you, or 'red lights' are travelling away from you); and, specifically, for RRV Dumper, explain the configurable directional lights and the requirement to have red lights displayed at both ends when stationary. |
| Action/s taken/ in progress | July 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 2 (2023003-02)** | IÉ-IM CCE should re-examine the risk assessment related to RRV movements, where previous control measures cannot be implemented (i.e., RRV engines cannot be switched off), alternatives should be considered. |
| Action/s taken/ in progress | July 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 3 (2023003-03)** | IÉ-IM should produce and circulate a policy document for the use of phones and all handheld electronic devices for the acceptable, safe and secure use and management of these devices when working on the railway. |
| Action/s taken/ in progress | July 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R004 Failure of a Current Return Cable on a Luas Tram (Report published 13th October 2023)

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| Summary | At approximately 08:08 hours (hrs) on 25th October 2022 Tram 3012 was departing Connolly Stop, when the driver of Tram 4012 (Driver 4012), approaching Connolly Stop in the opposite direction, saw what they thought was a hose protruding from the underframe of Tram 3012.<br>Driver Tram 4012 contacted the Traffic Supervisor responsible for the Red Line in the Luas Network Management Centre (LNMC) who in turn contacted the driver of Tram 3012. The Traffic Supervisor advised the driver of Tram 3012 (Driver 3012) to continue in passenger service to the Red Cow where the service would terminate and transfer into the Red Cow Maintenance Depot.<br>Tram 3012 served all stops as required to the Red Cow without incident where it was taken from service and transferred to the Red Cow depot for investigation. On investigation it was found that what was initially reported as a hose was in fact Side 1 (S1) Current Return Cable of Motor (M)1 Bogie 176DU, which had severed. In addition, Side 3 (S3) Earth Shunt Cable also on M1 Bogie 176DU had also severed and the S3 Axle End Assembly was showing signs of extreme overheating. Side 1 and Side 3 are on adjacent wheelsets diagonally opposite on Motor Bogie 176DU of Tram 3012.<br>The last maintenance intervention which involved contact with S1 Current Return and S3 Earth Shunt Cables took place twenty days before the incident, as part of the wheel turning preparation; where both cables were detached to facilitate the wheel turning. The work must be carried out in accordance to Work Instruction, TDLR-LUAS-WI-00814 (WI-00814), Preparation before and after wheel turning (2019), the ends of the Current Return and Earth Shunt Cables need to be checked for corrosion; and if corrosion is present, this must be reported to the team leader. Also, as part of WI-00814, the contact surfaces of the Current Return and Earth Shunt Cables must be coated with a small amount of contactal paste before being re-attached.<br>The post-incident inspection identified soiling and oxidation on the Lugs of S1 Current Return and S3 Earth Shunt Cables; and the absence of contactal paste. It is probable that some corrosion on surface of the Lugs was present during the wheel turning process twenty days previous as it is unlikely that the extent of corrosion on the Lugs post-incident had accumulated in that time period (in addition, the absence of contactal paste made the Lugs more susceptible to soiling and oxidation). Railway Accident Investigation Unit 6 Analysis of the failed components found that soiling and oxidation on the Lugs resulted in the overheating of the Lugs which, in turn, conducted into S1 Current Return and S3 Earth Shunt Cables.<br>This returned in elevated temperature creep strain accumulating in both the S1 Current Return and S3 End Shunt Cables, over a significant period of service (again indicating that it was probable there was oxidation and corrosion of the Lugs twenty days previous). In both cables, successive failures of individual strands caused the electrical and mechanical loading on the remaining strands to be increased. Eventually, a point was reached when the cumulative failures of individual strands caused the S1 Current Return Cable to separate completely. Separation of the S1 Current Return Cable caused the electrical load on the S3 Earth Shunt Cable to instantaneously increase significantly as the return circuit found the only alternative path through S3 Earth Shunt Cable causing it to fail immediately. |
| Number of recommendations made | 5 |

## 2023-R004 Failure of a Current Return Cable on a Luas Tram (Report published 13th October 2023)

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| **Recommendation 1 (2023004-01)** | TDLR should develop supporting guidance documentation to WI-00814, Preparation before and after wheel turning, to include information on possible defects, e.g., photographs of unacceptable levels of corrosion on the Current Return and Earth Shunt cable Lugs. |
| Action/s taken/ in progress | December 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 2 (2023004-02)** | TDLR should consider updating LNMC Manual Document (TDLR-OP-M-0001) to include guidance for Traffic Supervisors in relation to actions to be taken in the case of failed cables and hoses. |
| Action/s taken/ in progress | December 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 3 (2023004-03)** | TDLR should consider updating WI-00814, Preparation before and after wheel turning to include the recording of the testing and serial number of the torque wrench into TDLR-FRM-ENG-023 Citadis 401 Wheel Turning Certificate Issue A November 2020. |
| Action/s taken/ in progress | December 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 4 (2023004-04)** | TDLR should consider updating the Wheel Turning Certificate to provide a space for the torque wrench registration number conformation of test and torque value achieved when reattaching the Current return and Earth Shunt cables with a space for sign off. |
| Action/s taken/ in progress | December 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 5 (2023004-05)** | For instances where rolling stock is withdrawal from service as a result of damage; TDLR should develop notification procedures to identify where immediate notification to the RAIU is required (excepting certain condition, such as damage as a result of road traffic collisions where a road vehicle has breached the traffic lights). |
| Action/s taken/ in progress | December 2023 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R005 Self-detrainment of passengers between Shankill and Bray (Report published 22nd December 2023)

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| Summary | On Sunday 24th July, 2022, the Bray Air Display and the 2022 All-Ireland Senior Football Championship Final in Croke Park took place with both events drawing thousands of people. The Iarnród Éireann (IÉ) DART network was operating at capacity with all available DART trains in service, with the exception of one on standby. A door fault on a DART train during the morning resulted in delays to services and increased dwell times. This resulted in large numbers of passengers accumulating on the station platforms.<br>When boarding, passengers were reluctant to move down into the carriages, away from the entrance doors, due to the heat onboard the trains. IÉ staff and crowd control plans were in place at major stations on the DART line, including Bray. However, passengers accumulating at unmanned stations were left frustrated due to a lack of information at stations; and the fact that trains arriving at stations were already close to capacity.<br>With no station staff present, and given that DART trains are driver only operated, IÉ had no way of implementing processes and procedures to manage the overcrowding on these trains. With services getting busier, the standby DART train was brought into service. All trains were arriving at Bray Station were stopping on Platform 2. It was taking approximately eight minutes for passengers to disembark and clear the train from Platform 2 to allow the next train to stop on Platform 2. The next train scheduled to stop on Platform 2 was Train E268. At 14:49:37 hrs, as Train E268 approached Bray Station, Signal BR28 (located approximately 548 metres (m) from Bray Station) was red as Train E206 was still stopped at Platform 2. The air conditioning was off on Train E268 (unbeknown to the driver (Driver E268)), and as the windows were sealed (by design) there was no forced or passive ventilation on the train, leading to increasingly uncomfortable conditions for passengers, with reports of some passengers suffering from symptoms of heat exhaustion.<br>After being stopped for five minutes and thirty-two seconds, one of the passengers (Pax 1) who was travelling with young children and an older person, opened a passenger door by means of the emergency opening device, and passengers began self-detraining. Within a minute of the door being opened, Driver E268 saw passengers on the line and made an emergency call to the Controlling Signalman. At this stage, the 14:43 hrs Bray to Malahide (Train E804) had departed Bray Station and the Controlling Signalman instructed the driver of Train E804 (Driver E804) to stop as a result of passengers on the railway line and placed the relevant signals at danger (as a result, passengers who self-detrained were not at risk of being struck by a train). As Train E268 was stopped, this resulted in Trains E103 and E208 also being stopped at Signals BR26 and BR26 (between Shankill and Bray), respectively.<br>These trains did not have air conditioning but had openable windows. As these trains were stationary there was no forced ventilation and insufficient passive ventilation through the opened windows due to crowding, resulting in increasingly uncomfortable conditions for the passengers on these trains. Passengers on delayed Trains E103 and E208 became aware that passengers had begun self-detraining from Train E268 through messaging, calls and social media (including IÉ's Twitter account). It is estimated that up to 2,000 passengers self-detrained onto the railway line. |
| Number of recommendations made | 20 |

## 2023-R005 Self-detrainment of passengers between Shankill and Bray (Report published 22nd December 2023)

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| **Recommendation 1 (2023005-01)** | IÉ-RU Head of Health & Safety, in conjunction with the Chief Mechanical Engineer's Department (CME), should develop Traction Manual for the entire 8500 Class DART fleet; this should include guidance on the air conditioning. Once complete, this should be briefed to drivers to ensure drivers fully understand how the air conditioning operates. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 2 (2023005-02)** | IÉ-RU Head of Health & Safety should include a check that the heating, ventilation and air conditioning systems are operational in the train preparation instructions. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 3 (2023005-03)** | IÉ-RU should update its Passenger Comfort Risk Register to adequately address the issues related to crowding on trains (with special consideration given to crowding during adverse weather conditions). Based on this, IÉ-RU should develop an operational SMS document for the management of crowding on trains. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 4 (2023005-04)** | IÉ-RU should conduct a full review of how crowding at outlying stations is managed during major events, including reviews to local crowd control plans, PTI and train dispatch documentation; to ensure that the relevant stations are staffed appropriately to adequately manage the passenger flows. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |
| **Recommendation 5 (2023005-05)** | IÉ-RU should review its planning and management processes for large events; considerations should be given to:<br>— How and what information is provided to passengers prior to the event (such as information in relation to predicted scale of passengers using the trains and likely conditions for their journey in order to manage passengers' expectations).<br>— How passengers' expectations are managed for the duration of the event (such as using real time information and making this freely available through passenger announcements at stations and on the IÉ App and social media accounts). |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R005 Self-detrainment of passengers between Shankill and Bray (Report published 22nd December 2023)

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| **Recommendation 6 (2023005-06)** | IÉ-RU should review its Ontrain Customer Communications Booklet and Professional Driving Handbook, and provide drivers with additional training, to enhance driver communications with passengers. The documentation and training should consider best practice and, at a minimum, the following requirements:<br>— An initial announcement to be made within a specified short period of time, even if the reason for the delay is not known at that point;<br>— A further announcement to be made as soon as further information is available about the cause and likely consequences of the delay;<br>— Further announcements, at specified intervals, should be made whenever new facts suitable for informing and/or reassuring passengers become available;<br>— In critical conditions, announcements should be made to dissuade passengers from detraining, these should include making announcements highlighting the risks involved with detraining and their safest option is to remain on the train. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 7 (2023005-07)** | IÉ-IM should carry out a review to determine the suitability of direct messaging (visually and/or verbally) from CTC directly onto trains, consideration should be given as to whether it would improve onboard passenger communications. |
| Action/s taken/ in progress | 16/08/2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 8 (2023005-08)** | IÉ-RU should consider developing processes, in the case of emergency situations, to provide information through social media channels; these communications must be customer-friendly in order to encourage passengers to follow any directions given. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 9 (2023005-09)** | IÉ-IM should develop suitable instructions and guidance for operational staff at CTC to help them determine when a train should be considered as stranded (consideration should be given to the proximity of the stranded train to a station); the timeframe within which this needs to be declared and the actions that then need to be taken must be set out. Where appropriate, these instructions and guidance should be included in the IÉ Rule Book and relevant associated documentation. |
| Action/s taken/ in progress | 11/08/2024 – Action Plan submitted to the CRR. |
| Status | Open/In progress |

## 2023-R005 Self-detrainment of passengers between Shankill and Bray (Report published 22nd December 2023)

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| **Recommendation 10 (2023005-10)** | IÉ-RU should review their suite of documents which reference major customer disruptions and emergencies (in particular, in terms of stranded trains) and address the management of passengers on these trains. Considerations should be given to, but not limited to, the effective development of the following:<br>— A common understanding and shared awareness of the circumstances in order to recognise when minor operational occurrences have the potential to develop into major incidents unless decisions are taken in a timely and decisive manner;<br>— Effective communication and information sharing arrangements between the controlling signalman/traffic regulators to the driver/s;<br>— Assist driver/s in managing, informing and reassuring passengers in order to encourage passengers to stay onboard the train/s;<br>— Anticipate and understand the needs of passengers in a train stranding situation (information, air conditioning, etc.) and to focus action plans accordingly;<br>— Anticipate the need to provide on-site support to drivers of such trains in managing passengers' needs. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 11 (2023005-11)** | IÉ-IM, and IÉ-RU, should review and formalise its processes for the attendance and allocation of staff requirements at CTC for major events, to determine what members of staff need to be present. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 12 (2023005-12)** | IÉ-RU and IÉ-IM should carry out an incident simulation in terms of a scenario involving an incident with the potential for self-detrainment. As part of this simulation, the relevant stakeholders (An Garda Síochána, Dublin Fire Brigade, etc.) should be invited to participate. Any lessons learnt such be adopted into the relevant guidance documents. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 13 (2023005-13)** | IÉ-RU should review its high level emergency preparedness, crowd control plans, risk assessments, train evacuation briefing notes and all other relevant document to include guidance on self-detrainments. Once complete, they should be circulated to the relevant departments and stations, for briefing. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 14 (2023005-14)** | IÉ-RU CME should carry out an assessment on the quality of the public address systems on EMUs against good practice standards and address any deficits. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 2023-R005 Self-detrainment of passengers between Shankill and Bray (Report published 22nd December 2023)

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| **Recommendation 15 (2023005-15)** | IÉ-RU Health & Safety should ensure that train preparation instructions should include a check that public address systems are working prior to trains entering service. |
| Action/s taken/ in progress | March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 16 (2023005-16)** | IÉ-IM & IÉ-RU should review the suite of documents in relation to the planning of large events to ensure that all key personnel are involved in the planning of events. |
| Action/s taken/ in progress | 30/06/2025 –<br>IÉ-RU – March 2024 – Action Plan submitted to the CRR. |
| Status | Open/In progress |

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| **Recommendation 17 (2023005-17)** | IÉ-IM should update the IÉ Rule Book to include instructions for drivers in the event of self-detrainment and/or stranded trains; these requirements should then be incorporated into the relevant associated documents. |
| Action/s taken/ in progress | 31/12/2024 – Action Plan submitted to the CRR. |
| Status | Open/In progress |

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| **Recommendation 18 (2023005-18)** | IÉ-IM should develop procedures for the evacuation of passengers over trespass guards; these should then be included in the Train Evacuation Briefing Notes and other relevant documents which reference evacuations. |
| Action/s taken/ in progress | 31/08/2024 – Action Plan submitted to the CRR. |
| Status | Open/In progress |

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| **Recommendation 19 (2023005-19)** | IÉ should engage with the relevant parties of An Garda Síochána to ensure that there is a shared understanding at CTC of when and how instructions from An Garda Síochána should be complied with. This can be practiced through IÉ-RU incident simulations where An Garda Síochána are in attendance. |
| Action/s taken/ in progress | IÉ-RU – March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

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| **Recommendation 20 (2023005-20)** | IÉ-IM and IÉ-RU should develop a system whereby internal recommendations as a result of safety related incidents are logged with an allocated timeframe, and the actions taken verified, and the status recorded. |
| Action/s taken/ in progress | IÉ-RU – March 2024 – Action Plan submitted to CRR. |
| Status | Open/In progress |

## 5.5 RAIU recommendations summary

For further details on the status of RAIU Safety Recommendations please consult the CRR's Annual Report to the Minister for Transport, which is available on our website, www.crr.ie.

It should be noted that many safety recommendations made by the RAIU may require strategic planning, engineering design, public consultation, planning permission and/or government funding, all of which may result in it taking several years to fully 'close' a safety recommendation.

# 6. REFERENCES

## 6.1 Documents Used


— CRR (2024) Annual Report 2023. Dublin: CRR

— ERA (2024), Report on Railway Safety and Interoperability in the EU 2023

— ERA (2023), Report on Railway Safety and Interoperability in the EU 2022

— ERA (2023), INTERIM STATEMENT ON TEMPE ACCIDENT (28.2.2023)

— IÉ-IM (2024), IÉ-IM Annual Safety Report-2023

— IÉ-RU (2024), IÉ-RU Annual Safety Report-2023

— Railway Preservation Society of Ireland (2024), RPSI Annual Safety Report-2023

— Translink (2024), Events on Irish Rail Network 2023

— National Transportation Safety Board (2024), Board Meeting Summary Norfolk Southern Railway Derailment and Hazardous Materials Release East Palestine, Ohio.

# 7. GLOSSARY

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|---|---|
| BNM | Bórd na Mona |
| CRR | Commission for Railway Regulation |
| CSI | Common Safety Indicators |
| CWR | Continuous Welded Rail |
| DMU | Diesel Multiple Unit |
| DSS | Decision Support System |
| EB | Emergency Brake |
| ECM | Entity in Charge of Maintenance |
| ERA | European Union Railway Agency |
| IÉ IM | Iarnród Éireann Infrastructure Manager |
| IÉ RU | Iarnród Éireann Railway Undertaking |
| NIR | Northern Irish Rail |
| NSA | National Safety Authority |
| OTM | On Track Machine |
| RAIU | Railway Accident Investigation Unit |
| RPSI | Railway Preservation Society of Ireland |
| RRV | Rail Road Vehicle |
| RSIE | Rhomberg Sersa Ireland |
| RTC | Road Traffic Collision |
| SPAD | Signal Passed at Danger |
| SPAS | Signal Passed at Stop |
| TDLR | Transdev Dublin Light Rail |
| TII | Transport Infrastructure Ireland |

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