

# RSC Annual Report 2012

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# Railway Safety Commission

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Annual Report 2012

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# Foreword



**In accordance with Section 28(3) of the Railway Safety Act 2005, the Railway Safety Commission (RSC) is required to present an annual report to the Minister for Transport, Tourism & Sport. This is the annual report for the year 2012 and, in addition to providing information on the activities, administration and governance of the RSC, it presents statistical data on the safety performance of the various participants in the railway sector in Ireland during the year under review.**

The RSC continues to participate with the National Safety Authorities of the other Member States of the European Union in the on-going development and implementation of the European railway safety regulatory framework. This results in a considerable workload for the RSC in relation to the harmonisation of national legislation and implementation of EU common safety methods.

EU Regulations mandate the manner in which railway Infrastructure Managers and Railway Undertakings are to be supervised to ensure that they implement and adhere to their respective approved Safety Management System (SMS). The RSC audit and inspection regime ensures that duty holders' compliance with their respective SMS is supervised in accordance with the common safety method specified in Commission Regulation (EU) No.1077/2012. This regime was extended during 2012 to cover the activities of the Railway Preservation Society of Ireland (RPSI) on the IÉ network.

Under the current embargo on public sector recruitment it has not been possible to engage the requisite number of technical specialists on a permanent basis. As this presented a significant risk to the RSC's ability in delivering on its regulatory duty to supervise railway safety in Ireland, consultant specialists have been engaged to cover the shortfall, which for the RSC stood at 50% at the beginning of the year and 60% at the end of the year. However the cost of this approach is unsustainable.

In an effort to overcome this deficiency, and to provide for the longer-term resolution of this critical issue, RSC entered into an agreement with Engineers Ireland in September 2011 whereby two recently graduated engineers were placed with the RSC on a four-year training programme aimed at developing them to Chartered Engineer status and equipping them with the level of competence required to be railway safety Inspectors. In a further effort to overcome the skills deficiency and lessen the dependency on external consultants, two graduate engineers, who had some previous railway experience, were placed with the RSC on a two-year conversion programme from June 2012.

In March 2013 the current derogation for Ireland on separation of railway infrastructure and train operating activities expires. Consequently, IÉ has worked throughout 2012 to develop Infrastructure Manager and Railway Undertaking business units that conform to the EU requirements. This is a significant organisational change that has been subject to independent safety validation. It will also lead to the introduction of an individual SMS for each business unit. Conformity assessment of the two new SMSs by the RSC is an important part of the successful delivery of this project as safety authorisation of the Infrastructure Manager and safety certification of the Railway Undertaking will be required before the businesses can operate as separate enterprises.

In terms of those areas that were outlined in the 2011 Annual Report as the focus for particular attention during 2012, the RSC has delivered on its responsibilities as follows:

- Comprehensive review of railway safety legislation with objective of developing recommendations to achieve complete conformity with EU Directives – **Report delivered to DTTAS in March 2012**
- Guidance to Iarnród Éireann on its internal restructuring for compliance with EU requirement for the separation of Infrastructure Manager (IM) and Railway Undertaking (RU) activities with particular emphasis on assessment of safety validation of organisational change – **On-going; to complete Q1, 2013**

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- Conformity assessment of separate Iarnród Éireann safety management systems (SMS) for IM and RU and subsequent safety authorisation of IM and safety certification of RU – **On-going; to complete Q1, 2013**
- Conformity assessment of the Northern Ireland Railways (NIR) application for Part ‘B’ safety certification to ensure that their SMS adequately addresses cross-border train operations and does not introduce any additional risk on the IÉ network – **Part ‘B’ Safety Certificate issued April 2012**
- Extension of the new audit and inspection regime to supervise compliance by the Railway Preservation Society of Ireland (RPSI) with their SMS in accordance with EU common safety methods – **Audit of RPSI whole business conducted June 2012 and report issued in September 2012**
- Strengthening arrangements to avert any shortfall in specialist technical human resources that might impair the RSC in delivering on its obligations under EU and national legislation – **Two graduate engineers seconded to RSC by Engineers Ireland June 2012**
- Completion of the approval process to permit Iarnród Éireann to place in service a further series (17 x three-car sets) of Inter City Railcars (ICRs) – **Service authorisation granted November/December 2012**
- Technical study on the suitability of user-worked level crossings on public roads – **Report issued in May 2012**
- Comprehensive audit of safety on the self-contained heritage railways with a view to improving the application of safety management in that area – **Audit conducted during June/August and report issued in November 2012**
- Development of processes and procedures in conformity with ISO 17020 requirements to enable RSC achieve accreditation – **ERA cross audit conducted during the year and report issued in December 2012; work on-going in process development**

In regard to safety of Iarnród Éireann train operations, there was a slight increase in signals passed at danger (SPADs), but the improved record attributable to systems of non-judgemental proactive monitoring, mentoring and corrective coaching of train drivers has been maintained during 2012. However, it must be recognised that, apart from the DART system, automatic train protection is not available on the remainder of the Iarnród Éireann network. The safe working of trains remains in the hands of the train drivers and their obedience to railway signals. As reported last year, it is now necessary to consider how systems of automatic train protection might be rolled out across the Iarnród Éireann network and the implications that this might have for safety investment in the railways in the current economic circumstances.

The RSC continues to focus on its mission “To advance the safety of railways in Ireland through diligent supervision and enforcement” and, in conclusion, it is appropriate to thank the RSC team for their commitment and support in delivering on our statutory duties during 2012.

**Gerald Beesley**  
Commissioner for Railway Safety

# 1. The Railway Safety Commission



## 1.1 Origin and Role of the Railway Safety Commission

The Railway Safety Commission was formally established on 1st January 2006 in accordance with the requirements of the Railway Safety Act (RSA) 2005. In the context of the Railway Safety Directive (European Directive 2004/49/EC) the RSC is the National Safety Authority for the railway sector in the Republic of Ireland.

As the independent regulatory agency charged with oversight of the safety of all railway activities in the State, the RSC is required to ensure that each railway organisation operating in the State understands and effectively manages the risk to safety associated with its activities. This is achieved in three ways, viz.:

**Conformity Assessment** - Assessing Safety Management Systems (SMS) to ensure that they conform to all requirements prior to awarding safety authorisation or safety certificates, and assessment of new railway infrastructure and rolling stock to ensure safety compliance prior to placing in service;

**Compliance Supervision & Enforcement** – Auditing compliance with the procedures and standards prescribed in each approved SMS, and inspection of railway assets to assess compliance with fitness for purpose criteria. Compliance with safety recommendations is assured through the monitoring of implementation plans and by taking enforcement proceedings where necessary; and

**European & Legislative Harmonisation** – Supporting the harmonisation of legislation with European Directives and Regulations, and ensuring that the consequent implementation of related technical and procedural measures conforms to mandatory European requirements.

## 1.2 Structure and Organisation

The RSC is a small, specialist technical organisation staffed with professional engineers supported by a two-person administrative team. A flat reporting structure promotes and facilitates the free-flow of information and ideas, encouraging consultation and creative thinking. Not only does this enable the RSC to meet the requirements of the work programme mandated by European and national legislation, but it also provides the flexibility needed to respond effectively to immediate and unforeseen work demands.

It is essential that an adequate corporate capability for both regulation of railway safety by the RSC and investigation of railway accidents by the RAIU is established and maintained. In order to guarantee that such capability is available in the respective organisations a cadre of professional staff, with railway-specific technical knowledge and experience, is required in order to perform the mandatory functions.

### 1.2.1 Skills Shortfall

In a paper presented to the Department of Transport in November 2010 the RSC identified the organisational structure and staff level required in order to perform its mandatory functions under European and national legislation. These requirements were confirmed in the Workforce Planning Strategy 2012-14, which was submitted in July 2012.

Under the current Employment Control Framework (ECF) the approved level of staffing (13) provides for only seven technical posts in the RSC once the RAIU (4) and administrative (2) requirements are deducted; the Commissioner plus six Inspectors – a shortfall of three

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Inspectors. Furthermore, under the current embargo on public sector recruitment it has not been possible to fill vacancies for two Inspectors (which arose due to resignations in October 2010 and January 2011) so as to bring the number of specialist technical experts back to the approved staffing level under the ECF. Consequently, the shortfall in technical resources in the RSC at the beginning of 2012 stood at 50% of the requirement.

Despite the imposition of the ECF and the embargo on recruitment, the staffing level of the RAIU has been preserved so as to ensure that there is no impairment to its accident investigation capability, as this work is random by nature and must be responded to when triggered by unforeseen events. One RAIU staff member resigned in September 2012 and in order to compensate for this loss and to provide for a considerable increase in the technical capability of the RAIU, two Chartered Engineers (one RSC staff member and one on contract from Engineers Ireland) have been seconded from the RSC to the RAIU. As a result the permanent technical staff available for RSC activities stood at 40% of the technical resource requirement at the end of 2012.

The shortfall in technical resources presents a very significant risk to the RSC's ability to carry out its mandatory functions and deliver on its regulatory duty to supervise railway safety in accordance with Directive 2004/49/EC, and in compliance with Commission Regulation 1077/2012. In order to mitigate this very real risk, the RSC resorted to the engagement of consultant specialists in 2011 and into 2012 to execute routine audits of Iarnród Éireann compliance with its SMS. Services were contracted-in under framework arrangements on an audit-by-audit basis as a short-term, but immediate remedial measure.

Consultant technical specialists are also contracted-in under framework arrangements to support both the SMS conformity assessment and the approval for placing in service functions mandated by Commission Regulations (EU) No.1158/2010 and (EU) No.1169/2010, and Directive 2008/57/EC. Such contract arrangements are far from

satisfactory in that they are of high cost, their administration demands a disproportionate level of RSC management resource, and they do not satisfy the fundamental need to develop and retain specialist railway industry knowledge within the RSC.



## 1.2.2 Risk Mitigation Measures

In late 2010 it was concluded that a graduate training & development programme, under a partnership agreement with Engineers Ireland, was the preferred short-term option as it would: (i) facilitate the development of bespoke skills for regulation of safety in the Irish railway sector; (ii) provide a positive contribution to graduate employment; (iii) permit an on-going reduction in the quantum of costly external support; and (iv) buy time - at least until mid-2014 - before the employment of staff would have to take place.

Having concluded that this was most appropriate course of action, the RSC entered into an agreement with Engineers Ireland in September 2011 whereby two recently graduated

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engineers were placed with the RSC on a four-year training programme aimed at developing them to Chartered Engineer status and equipping them with the level of competence required to be railway safety Inspectors. In collaboration with Engineers Ireland a bespoke graduate development programme has been designed as a key component of the RSC workforce planning strategy.

In a further effort to overcome the skills deficiency, and to provide for the longer-term resolution of this critical issue, the RSC entered into a second agreement with Engineers Ireland in June 2012. In this case two graduate engineers with 3-4 years' railway experience have been placed with the RSC on a two-year conversion programme. In addition to bringing them up to Chartered Engineer status, the aim of this programme is also to develop these engineers to the level of competence required for the role of Inspector with the RSC.

The objective is to ensure that adequate railway-specific technical knowledge and skills are available within the RSC by the end of 2014 so as to deliver on legally-bound duties with the minimum recourse to external consultants. As these graduates in training have grown in knowledge and experience, the dependence on external consultants has been declining. However, they are not yet fully up to speed, and the RSC has no option other than the continued engagement of some external expertise for support in specific areas such as rolling-stock and signalling. The day rates for consultant technical specialists are approximately three times that of direct employment, which is unsustainable.

### 1.3 Railway Accident Investigation Unit

The Railway Safety Act provides for the establishment of a Railway Accident Investigation Unit (RAIU) to meet the requirements of Article 18 of the Railway Safety Directive. Although currently within the corporate structure of the RSC, and sharing administrative resources, it has functional independence for the investigation of railway accidents and

serious incidents. While enabling legislation has yet to be passed, it is planned that the RAIU will be separated from the RSC as soon as possible in order to fully comply with EU requirements.

Investigation by the RAIU is strictly 'for cause', that is to say it seeks to identify the full facts of an incident and why it occurred with a view to preventing recurrence. The Railway Safety Directive specifies, in loss and injury terms, a minimum threshold above which investigation is mandatory. Investigation of incidents of lesser impact is discretionary.

In 2012 the RAIU initiated two formal investigations into accidents and incidents on the railway:

#### Iarnród Éireann:

- Tractor and train collision at Cratloe Level Crossing (XE020), County Limerick, on the 20th June 2012
- Detonation of fog signals in driving cab on DART at Bray Station on the 6th March 2012

In addition, the RAIU initiated a trend investigation into possession irregularities on Iarnród Éireann

In 2012 the RAIU published three reports into accidents and incidents that were formally investigated:

#### Iarnród Éireann:

- Car Strike at Morrough Level Crossing, XG173, County Galway, 14th February 2011 - published 8th February 2012
- Runaway locomotive at Portlaoise Loop on the 29th September 2011 - published 19th September 2012
- Bearing failure on locomotive 233, Connolly Station, 18th October 2011 - published 26th September 2012



## 2. Functional Performance

This section of the annual report deals with the performance of the RSC in its three key work areas: Conformity Assessment and Authorisation to Place in Service; Compliance Supervision and Enforcement; and European and Legislative harmonisation

### 2.1 Conformity Assessment and Authorisation to Place in Service

Activities under this heading comprise two principal strands, assessment of Safety Management Systems (SMS) and Authorisation to Place in Service (APS) new or significantly modified railway infrastructure and rolling stock.

#### 2.1.1 Safety Management Systems

On 2nd April 2012 Northern Ireland Railways Co Ltd were issued with a Part B Safety Certificate for its Railway Undertaking activities within the State on the Dublin-Belfast route.

During 2012 Iarnród Éireann commenced the pre-application phase for renewal of its Safety Certification as a Railway Undertaking and renewal of its Safety Authorisation as Infrastructure Manager. It is anticipated that Certification and Authorisation will be granted towards the end of the first quarter of 2013.

#### 2.1.2 Authorisation to Place in Service

Infrastructure authorisations on the Iarnród Éireann Network during 2012 included two new bridges, a major upgrade to the railway overbridge at Oola (on the Limerick Junction - Waterford line), and parapet upgrades to three bridges. A new station at Oranmore was authorised for detailed design, and the Dublin City Centre Re-Signalling project Phase 1, Stage 1 (Howth Branch), was commissioned for interim service.

The upgrade of two bridges on the self-contained heritage Waterford & Suir Valley Railway was authorised.

For Iarnród Éireann the rolling stock assessment process was completed to permit operation of a further series of Inter-City Railcars (ICR). Service authorisation was granted on 30th

November 2012 for an additional 51 vehicles (17 x 3-car sets), and on 19th December service authorisation was granted for 6 vehicles (2 x 3-car sets) from the original order that had been the subject of re-work by the manufacturers. Service authorisation was also granted to the Infrastructure Division for a Ballast Cleaner and a Multi-Purpose Vehicle.

Four Mk3 Electric Generator Vans, introduced to service by Iarnród Éireann in 1984, have been retained and modified to render them compatible to work with the DeDietrich coaches on the 145 km/hr Enterprise service between Dublin and Belfast. Limited authorisation has been granted for their use in service pending further assessment of particular aspects of the modifications to these vehicles.

A number of tram wrap designs for the LUAS Vehicles were also authorised.



## 2. Functional Performance



Further details on the status of approvals are contained in Appendix 4.

Following the transposition of the Interoperability Directive 2008/57/EC, the RSC Guidelines relating to Authorisation to Place in Service (APS) were updated to cater for the implementation of associated additional requirements. The updated documents are:

RSC-G-009-E - Guideline for the Process of Authorisation for Placing in Service Railway Sub-Systems.

RSC-G-020-B - Guideline for the Safety Assessment of New Infrastructure Signalling Works.

RSC-G-024-B - Guideline providing List of Parameters and Requirements for APS of Heavy Rail INF & related OPE/MAI Parameters.

RSC-G-026-A - Guideline providing List of Parameters and Requirements for APS of Railway Sub-System ENE & related OPE/MAI Parameters.

### 2.1.3 Train Driver Certification

The RSC guideline on the application of the Train Driver Certification Directive, 2007/59/EC, RSC-G-025-A, was published in May 2012. This guideline is relevant for training centres, examination centres, trainers, examiners, railway undertakings, infrastructure managers train drivers and candidate drivers. Iarnród Éireann submitted applications to be recognised as Training Centre and Examination Centre in November 2012. Driving Licences will be issued by the RSC and a register will be held by the RSC to the requirements contained in Commission Regulation (EU) No 36 of 2010 and Commission Decision 2010/17/EC.

## 2.2 Compliance, Supervision and Enforcement

RSC's supervision activities are derived from the need to ensure that Infrastructure Managers and Railway Undertakings are implementing their approved safety management system (SMS).

It is further informed by:

1. Industry safety concerns, typically arising from accidents and incidents;
2. Complaints and representations by, or on behalf of, passengers or affected parties; and
3. Reactive monitoring, including post-incident compliance inspection.

The RSCs supervision activity employs a number of techniques that include:

1. Audits of duty holders compliance with SMS;
2. Sample inspections of assets and operations; and
3. High level supervision meetings with Executive Officers and Safety Managers.

### 2.2.1 Compliance Auditing (Pro-active Supervision)

The RSC undertook five SMS compliance audits in 2012, as follows:

- The internal auditing function of Iarnród Éireann – Audit conducted March 2012
- A special Topic audit of Iarnród Éireann's management of risk – Audit conducted March 2012
- The Operations department of IÉ (Train Control function) – Audit conducted May 2012
- Signalling Electrical & Telecommunications (SET) department as a whole – Audit conducted July 2012
- The New Works department key function areas – Audit conducted November 2012

Additionally, three process audits of IÉ's Safety Management System were undertaken by the RSC. These focused on:

- The Management of Wheelset Maintenance & Overhaul – Audit conducted February 2012
- The Management of Third Party Interfaces on the IÉ Network – Audit conducted June 2012
- The Management of OTM Maintenance – Audit conducted November 2012

## 2. Functional Performance



All audits resulted in recommendations being made and the table below presents a summary of these, in terms of audit outcomes as a result of findings.

Audit Title	Major Non-Compliance	Minor Non-Compliance	Action Required
The internal auditing function of Iarnród Éireann	0	5	10
A special Topic audit of Iarnród Éireann's management of risk	0	0	7
The Operations department of IÉ (Train Control function)	0	2	5
Signalling Electrical & Telecommunications (SET) department as a whole	0	8	8
The New Works department key function areas	0	2	6
The Management of Wheelset Maintenance & Overhaul	0	1	9
The Management of Third Party Interfaces on the IÉ Network	0	1	7
The Management of OTM Maintenance	0	3	6

In accordance with Section 76 of the Railway Safety Act IÉ have submitted Implementation Plans in respect of these, which have been accepted by the RSC. IÉ have already implemented or are in the process of implementing corrective actions, which are being monitored by the RSC.

The RSC audited Veolia, the LUAS Operator, conducting one compliance audit of their safety management arrangements (Safety Case). This focused on:

- The Management of Structures on the LUAS Network – Audit conducted May 2012

The RSC identified 3 areas where action was required. These covered such issues as ensuring third party structures on which the LUAS travels have been subject to structural inspection, clarifying safety responsibilities for key staff and improving the internal flow of safety information.

Veolia, in conjunction with Alstom (the infrastructure maintainer) and the Railway Procurement Agency (RPA) are addressing these issues, and the RSC is monitoring progress.

The RSC also audited the Railway Preservation Society of Ireland (RPSI), undertaking two compliance audits of their SMS. These focused on:

- A whole business audit of the RPSI operation – Audit conducted November 2012 ; and
- The event planning activity – Audit conducted December 2012

In relation to the whole business audit three minor non-compliances were identified. These related to non-compliances with keeping records on the maintenance history for vehicles and wheel-sets, complexity of the SMS, and the management of change.

Additionally, the RSC identified six areas where action is required to prevent an unacceptable occurrence. These covered such issues as risk assessments, competence management, and internal auditing.

In accordance with section 76 of the Railway Safety Act the RPSI submitted an improvement plan which the RSC has accepted and is monitoring its implementation.

## 2. Functional Performance



### 2.2.2 Post Incident Inspections (Reactive Supervision)

The RSC operate an on-call roster whereby an RSC Inspector is always available 24 hours a day, 364 days a year to respond to an accident or incident notification. In 2012 the RSC received 44 calls and mobilised to 13 incidents. Other than those incidents where deliberate self-harm was indicated, all incidents were investigated further and in 2012 the RSC commenced, and completed, three formal Post Incident Inspections (PII). These inspections involve more thorough site investigation, interviews with numerous duty holder staff and review of applicable standards and rules in order to determine if there are any areas of non-compliance with the relevant SMS. PII reports were issued to the relevant duty holder and are also posted on the RSC's website.

The first of these PIIs followed the failure of an axle bearing on IE locomotive No.233. This inspection was concluded in March 2012 and one minor non-compliance was identified. This related to failure to implement approved training and competency standards for rolling stock maintenance personnel. A further six areas were identified as requiring action and these were in relation to written instructions, communications and driver training.

The second PII followed a number of incidents over a two-night period at a level crossing involving an On-Track-Machine. This inspection was concluded in August 2012 and five minor non-compliances were identified. These related to non-compliances with Iarnród Éireann's (IE's) own rules for train movements during engineering works.

In addition, the RSC identified a further eight (8) areas where

action is required. These covered such issues as possession management, safety critical communications, and internal information provision.

The final PII took place following a derailment of an empty passenger train in the depot sidings at Drogheda. This inspection was concluded in November 2012 and three minor non-compliances were identified. These related to non-compliances with IE's own rules for working on or near the line, and control of train movements in a siding. Additionally, the RSC identified four areas where action is required to prevent an unacceptable occurrence. These covered such issues as working in sidings, setting up a safe system of work, and reviewing a particular model of hand operated points for setting routes in depots and sidings.

In accordance with Section 76 of the Railway Safety Act the RSC requested an 'Improvement Plan' from IE. These were duly submitted and found to be acceptable. The RSC have been closely monitoring IE's plans and are satisfied that the non-compliances, and the areas where action was identified as being required, have been or are being addressed.

### 2.2.3 Inspections

RSC Inspectors undertook a number of inspections of IE and Veolia in 2012, focusing on:

- Infrastructure assets including bridges and level crossings;
- Stations;
- Train maintenance depots;
- Tramway infrastructure, and bridges.

## 2. Functional Performance

In addition, where the occasion permitted, inspectors took the opportunity to travel in locomotive cabs to assess operations and the condition of the permanent way. In regard to the self-contained heritage railways the RSC undertook a high level review of all the individual operators focusing on operational and asset management and compliance with their approved safety cases. Additionally, in-service inspections were also conducted on a number of heritage railways that are currently operating. It is planned that in early 2013 the RSC will hold a workshop for all the heritage railways to foster and encourage railway safety improvements.

### 2.2.4 Supervision Meetings

In 2012, as part of the RSC's Supervision Programme, a number of high level supervision meetings were held with the relevant duty holders, namely, Iarnród Éireann (IÉ) Infrastructure Manager, IÉ Railway Undertaking, Veolia and Bord Na Móna, where safety performance was discussed. The RSC also monitored the implementation of Railway Accident Investigation Unit (RAIU) recommendations made following their independent 'for cause' investigations.

### 2.2.5 Serious Incidents

There were no fatal accidents on the IÉ network in 2012



(excluding cases of trespass or where self-harm is suspected). However, there were a small number of incidents that under slightly different circumstances could have resulted in more serious consequences. The first involved a road vehicle and train collision at a level crossing and the second involved a tractor colliding with a train. The RSC made its own inquiries following both occurrences with the latter also being subject to an independent investigation by the Railway Accident Investigation Unit (RAIU). The RSC will consider any safety recommendations that might be forthcoming as a result of this investigation.

On the 28th June 2012, the LUAS suffered its third fatality since operations commenced in 2005. The accident occurred at Blackhorse Stop (near the junction of Tyrconnell road and the Naas road) on the Red Line. A female tried to cross the tram line but did so directly into the path of an approaching city bound tram. The RSC undertook an on-site inspection shortly after the incident and reviewed all available CCTV footage. The RSC concluded that the accident occurred due to the pedestrian seemingly being unaware of the inbound tram and suddenly crossing at speed in front of it, possibly in an effort to catch an approaching outbound tram.

### 2.2.6 Industry Concerns

The RSC maintains formal and informal contact with its peer regulatory and investigatory bodies in Europe. All accident reports and safety advisory notices by these peer organisations that were deemed relevant to duty holders here were circulated by the RSC.

In May 2012 the RSC met with the executive management team of Iarnród Éireann to discuss emerging safety concerns. As part of the RSC's on-going supervision activity certain recurring themes had been identified during audits. These included the need for a greater depth of railway knowledge to underpin competent safety critical decision making, and ensuring adherence to standards including identification and management of corrective steps whenever non-compliance is identified.

The management of historic safety recommendations was

## 2. Functional Performance



also high-lighted as a cause for concern, as with increased supervision by the RSC there is a risk of a growing backlog in this area unless such recommendations are given prompt and effective attention.

### 2.2.7 Public representations

The RSC always gives the highest attention to representations concerning railway safety made by the public, passengers or others. The RSC endeavours wherever possible, to deal with the matters directly, however, when necessary the RSC seek additional information from the duty holder(s) in order to provide a full and comprehensive response.

In 2012, we received 35 direct or indirect representations relating to a range of heavy and light rail infrastructural and operational matters, a significant decrease on the number received in 2011 (55). Of these, 30 representations related to Iarnród Éireann operations or infrastructure with the remaining 5 pertaining to the LUAS (Dublin light rail) system, and some heritage railways. A small number of these did give cause for concern and the RSC acted immediately to ensure that corrective action was taken by the relevant Duty Holder.

The remainder gave no immediate or specific cause for safety concern, but all representations were investigated and responses issued. The RSC continues to track representation topics on an ongoing basis to identify any recurrence or trends that might indicate a need for further attention.

Representations in 2012 were varied in nature, ranging from footbridge condition to tram signalling. There were no obvious trends in terms of the content of the representations received by the RSC. However, in all cases where further investigation was required the RSC did so and provided a response to the complainant.

### 2.2.8 Enforcement activity

Section 7 of the RSA 2005 provides for a number of enforcement measures, ranging from requesting an Improvement Plan to a serving a Prohibition Notice. During 2012 the following enforcement measures were instigated:

Section 76 of the RSA 2005 - Improvement Plan requested following:

- the RSC's audit into IÉ's management of wheelsets;
- the RSC's audit into IÉ's management On track Machine (OTM) Maintenance;
- a number of dangerous occurrences involving road rail vehicles on the IÉ network
- the RSC's Post incident inspection following incidents at a level crossing involving an OTM;
- the RSC's Post incident inspection following a derailment in a train depot;
- the RSC's SMS audits of IÉ's SET, New Works and Operations (IM Function) departments;
- the RSC's SMS audit of the RPSI's operations;

Section 77 of the RSA 2005 - Improvement Notice served relating to:

- Iarnród Éireann's possession management arrangements; the direction under this notice required that the Duty Holder undertake a 'Root and Branch' Review of possession management activities'
- Iarnród Éireann's validation of safety critical components, the direction under this notice required that the Duty Holder carry out a Safety validation exercise of specific elements that it uses in operating full barrier level crossings.

Section 78 of the RSA 2005 - Prohibition Notice served relating to:

- the use of a particular locomotive by the Waterford & Suir Valley railway, i.e., only RSC approved rolling stock be used during passenger train operation.

## 2. Functional Performance

### 2.3 European and Legislative Harmonisation

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In 2011, the European Commission expressed its concern regarding anomalies between the Railway Safety Act 2005 and the Railway Safety Directive which had not been adequately addressed by transposition. These included significant variances in terms and definitions used in the Act. In response to its duty under section 72 of the Act, the RSC has provided ongoing and comprehensive technical support to the Department to address this issue.

The RSC continued to positively contribute to the regulatory development of European railways. It attended three meetings of the Committee on the Interoperability and Safety of the European Rail System on behalf of the DTTAS. It is represented on the Board of the European Railway Agency and contributes to a number of ERA working groups. It attended four plenary meetings of ERA with the National Safety Authorities and two meetings of the International Liaison Group of Governmental Railway Inspectors. The ILGGRI meeting in November 2012 was hosted by the RSC in Dublin. In addition to delegates from Member State National Safety Authorities, it was attended by delegates from Norway and Switzerland.

The Railway Accident Investigation Unit attended one plenary meeting of ERA with the National Investigating Bodies.

### 2.3 Road Rail interfaces

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The RSC chairs the Road Rail Safety Working Group (RRSWG) which offers opportunity to maintain disquiet on this issue through its members – railway undertakings, road authorities, DTTAS, road hauliers and the Gardaí. There were three meetings of this group during 2012.

User-worked public road level crossings present a high-risk interface between members of the public and the railway, as responsibility for safe use of the level crossing rests with the road user. In May 2012, the RSC issued a report on its study into the suitability of this type of level crossing, of which 48 existed on the Iarnród Éireann network in 2010. It addressed recommendations to the Government Departments, railway infrastructure manager, and road authorities concerned. The risks associated with user-worked level crossings on public roads makes them an obvious target for ongoing and systematic risk mitigation and further safety investment.

# 3. Assessment of Duty Holder Safety Performance



## 3.1 Introduction

The safety performance of the duty holders in the Republic of Ireland is considered for the four principal railway sectors that the RSC regulates, namely heavy rail, light rail, industrial systems and the heritage railways. Each railway operator and infrastructure manager is obliged to notify railway incidents and accidents to the RSC. This data is used for assessing duty holder safety performance among other things.

## 3.2 Iarnród Éireann Network

At year end, the IÉ network in service was 1683 route-kilometres, the same as in 2011. There were no significant changes to the network or to the operation of trains. The number of registered level crossings increased due to the separate classification of pedestrian-only crossing points at certain manned level crossings and the regularisation of a small number of unofficial crossing points on well established rights of way.



Accident statistics are presented in detail in Appendix 2. Five deaths to trespassers involving railway vehicles in motion were reported.

One derailment and no collisions of service trains were reported. Nevertheless, five derailments occurred in sidings. There was one divide of a train in running. There was a slight increase in signals passed at danger, maintaining an improved record attributable to systems of non-judgemental proactive monitoring, mentoring and corrective coaching of train drivers by the District Traction Executives.

There were two collisions of a train with a motor vehicle at a user-worked road level crossing, both resulting in minor injury. There were no collisions of trains with the gates of an attended level crossing.

A reduced rate of road vehicle strikes to bridges over and under the railway has been sustained since 2008. Four landslips affecting the railway line were reported for 2012.

Reports of fire and smoke incidents on trains declined. Four incidents were reported, none of which resulted in injury to any passengers.

The number of reported train collisions with large animals on the line declined. Of these incidents, the majority tend to involve deer.

There was one broken rail on a passenger line and one on a freight line for the year 2012, reflecting a continuing low incidence rate. However, the number of fractured rail-joint fishplates and track misalignments and buckles increased in 2012 against a generally declining trend.



# 3. Assessment of Duty Holder Safety Performance

## 3.3 LUAS

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The LUAS urban light railway system consists of two separate double-tracked lines. The Green line is 16.5 km long and runs from St. Stephen's Green to Bride's Glen: 95% on dedicated right-of-way with 14 signalled and 2 un-signalled road level crossings. The Red line is 19.7 km long, running from Saggart to The Point (Dublin docklands): 60% on dedicated right-of-way with 41 signalled road level crossings.

The total kilometres run for 2012 is 3.99 million km compared to the figure for 2011 of 3.86 million km, a slight increase.

29.4 million passenger journeys were completed in 2012 compared to 29.1 million passenger journeys completed in 2011, a slight increase

The following events were recorded in passenger service during the year 2012:

- 21 minor and 1 serious road traffic accidents
- 2 contacts with work vehicles
- 1 major contact with a member of the public (a pedestrian fatality)
- 7 minor contacts with a member of the public
- 1 attempt to set trams on fire
- 1 road vehicle contact with overhead electrical line
- 30 occasions where a tram driver passed a stop signal without authority

The number of road traffic accidents (RTA) declined. The great majority of RTAs tend to occur on the Red Line. The number of contact incidents with a person dropped from 13 to 7. Although a number of injuries were reported, none were classed as serious. However, a fatality occurred where a pedestrian ran off the pavement into the path of a tram while attempting to catch another tram coming in the opposite direction.

There were 414 emergency brake applications, which is about average for the past five years. Abuse of the emergency handle remained high. The total number of public disorder and vandalism incidents increased significantly from 1,935 in year 2011 to 3,047 in year 2012, due to an upsurge in tampering with ticket vending machines.

## 3.4 Industrial Railways

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No incidents were reported for the year 2012.

## 3.5 Heritage Railways

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One incident was reported by a heritage railway in 2012. This involved a derailment on the Waterford and Suir Valley Railway. There were no injuries.

Whilst the safety performance of the sector was generally satisfactory, the RSC is working with a number of heritage railway operations to improve their safety standards.

# 4. Corporate Governance and Administration



## 4.1 Introduction

Corporate governance comprises the systems and procedures by which enterprises are directed and controlled. In this regard, the RSC has adopted and is compliant with the Code of Practice for the Governance of State bodies, as published by the Department of Finance.

## 4.2 Finance

### 4.2.1 Funding

Funding for the RSC is provided in part by the Department of Transport Tourism & Sport by a Grant-in-Aid and in part by a safety levy on the railway undertakings. In 2012 the Grant-in-Aid funding amounted to €0.89m. In 2008 the RSC invoked the provision of section 26(1) of the Railway Safety Act 2005 and made regulations to impose a safety levy on each of the Railway Undertakings. These regulations are made annually, and the regulations for 2012 are contained in Statutory Instrument No. 172 of 2012. The application of funds in the past three years is illustrated below:

	2010 (€ million)	2011 (€ million)	2012 (€ million)
Budget			
RSC	2.13	2.11	2.26
RAIU	0.72	0.68	0.57
<b>Total</b>	<b>2.85</b>	<b>2.79</b>	<b>2.83</b>
Grant-in-Aid RSC + RAIU	1.00	0.99	0.89
Levy Requirement RSC	1.85	1.80	1.94
Levy Refund b/f	-0.33	-0.51	-0.76
Levy Order amount	<b>1.51</b>	<b>1.29</b>	<b>1.18</b>
Operating costs			
RSC	1.55m	1.57m	1.72m
RAIU	0.37m	0.46m	0.43m
<b>Total</b>	<b>1.92m</b>	<b>2.03m</b>	<b>2.15m</b>
GiA application			
RSC	0.63m	0.53m	0.46m
RAIU	0.37m	0.46m	0.43m
Levy application			
RSC	0.92m	1.04m	1.18m
Levy Refund c/f	0.51m	0.76m	0

In order to comply with C&AG requirements in respect of retained working capital, accumulated reserves from previous years in the amount of €0.39m were offset against the levy obligation for 2012 prior to the end of the year, resulting in a reduced levy requirement. As a result, the practice of carrying forward an amount from one year to the next as an offset in the levy obligations will cease.

RSC accounts for 2011 were subject to audit by the Comptroller and Auditor General and were approved by them in December 2012.

### 4.2.2 Statement on Internal Financial Control

The RSC acknowledges responsibility for ensuring that an effective system of internal financial control is maintained and operated. The system can provide only reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded, and that material errors or irregularities are either prevented or would be detected in a timely manner. Maintaining the system of internal financial controls is a continuous process and the system and its effectiveness are kept under ongoing review.

### 4.2.3 Financial Control Environment

2012 is the seventh year of the RSC's existence. Processes and procedures to ensure a strong internal control environment are continually under review and development. A number of measures have been identified to assist in creating this environment and steps have been taken to embed them in the RSC:

- Clear definition of management responsibilities;
- Establishment of formal procedures for monitoring the activities and safeguard the assets of the organisation;
- Adoption of the principles of corporate governance contained in the Code of Practice for Governance of State Bodies;
- Compliance with Internal Audit requirements to advise the RSC on discharge of its responsibilities for the internal financial control system.

# 4. Corporate Governance and Administration

The RSC confirms that all appropriate procedures for financial reporting, internal audit, procurement and asset disposal are being carried out.

## 4.2.4 Tax Compliance

The RSC is compliant with regard to its tax obligations.

## 4.2.5 Travel and expenses

The RSC is compliant with all relevant Department of Finance circulars on travel, subsistence and associated expenses.

## 4.3 Irish Language commitment

The RSC is committed to implementing the relevant parts of the Official Languages Act 2003. RSC signage and stationery are currently in both Irish and English.

## 4.4 Freedom of Information

The former Railway Inspectorate division, forerunner of the RSC under the aegis of the Department of Transport, was subject to the Freedom of Information Act. It is expected that the RSC will be included among the organisations governed by this Act by 2012. In the meantime, the RSC is committed to conforming to the principles of this Act.

## 4.5 Customer charter

The Customer Service charter was updated in 2011 and is available on the RSC website. This charter describes the level of service a customer can expect from the RSC. No customer service complaints were received in 2012.

## 4.6 Risk Management

The RSC has a risk management system in place to review key risks to its business.

## 4.7 Code of Ethics and Business Conduct.

A Code of Ethics and Business Conduct is in place for the Commissioner and all staff and it is being adhered to.

## 4.8 Statement of Strategy 2012-2014

In 2012 the RSC produced their third Statement of Strategy. This document is the triennial Statement of Strategy of the Railway Safety Commission (RSC) for the years 2012 to 2014. Its purpose is to present management, staff, stakeholders, and the public with a clear understanding of the strategic direction that the RSC is adopting to meet its statutory duties and achieve its business objectives. The activities of the Railway Accident Investigation Unit (RAIU) are not covered by this document, as it is planned that the RAIU will be legally separated from the RSC as soon as possible in order to comply with EU requirements.

## 4.9 Website

The RSC maintains an active website at [www.rsc.ie](http://www.rsc.ie)  
The RAIU maintains an active website at [www.raiu.ie](http://www.raiu.ie)

# 5. Looking Forward

**The RSC will continue to deliver on its responsibilities under European and National legislation during 2013, and the areas that will be the focus of particular attention are as follows:**

- On-going technical support to the DTTAS in the amendment of railway safety legislation to ensure compliance with EU Directives;
- Continuing professional development of graduate engineers so as to avert any shortfall in specialist technical human resources that might impair the RSC in delivering on its obligations under EU and national legislation;
- Completion of the conformity assessment of separate Iarnród Éireann safety management systems (SMS) for IM and RU, and subsequent safety authorisation of IM and safety certification of RU business units;
- Engagement with the RPA in the assessment of the new works for the LUAS Cross-City extension
- Extension of the SMS principles to the self-contained heritage railways with a view to improving supervision of safety for those railways;
- Continued work on railway safety and interoperability legislation and technical rules with the objective of achieving complete conformity with EU Directives.
- Legal separation of the RAIU from the RSC so as to fully comply with EU requirements
- On-going development of processes and procedures in conformity with ISO 17020 requirements to enable RSC achieve accreditation.

During 2013 the RSC will continue to focus on its mission “To advance the safety of railways in Ireland through diligent supervision and enforcement.”

# Appendix 1

## Appendix 1: Iarnród Éireann Operating and Infrastructure Statistics 2003-2012

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Staff	5,833	5,590	5,462	5,114	4,933	4,845	4,499	4,254	4,125	4,063
Train-km passenger	12,245,000	11,777,000	13,034,000	14,505,000	16,060,000	18,044,657	16,190,950	16,582,606	17,008,042	17,339,870
Train-km freight	2,705,000	3,350,000	4,953,000	3,737,000	772,000	1,034,173	946,374	341,954	360,299	355,311
Train-km total	14,950,000	15,217,000	17,987,000	18,242,000	16,832,000	19,918,501	18,182,358	17,691,837	18,066,007	18,392,846
Total passenger journeys	35,558,000	34,550,000	37,653,000	43,350,000	45,513,000	44,646,000	38,800,000	38,225,000	37,375,000	36,919,000
Million Passenger -km total	1,601	1,582	1,781	1,872	2,007	1,976	1,681	1,678	1,639	1,583
Route Km				1657	1657	1657	1665	1683	1683	1683
Track km				2110	2110	2110	2141	2165	2165	2165
Level crossings				1171	1126	1095	1069	1050	1018	1040

# Appendix 2

## Appendix 2: Iarnród Éireann Rail incidents and injuries 2003-2012

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Railway operations: passenger fatal injuries</b>										
Fatal injury to passenger due to a train accident, not at level crossing	-	-	-	-	-	-	-	-	-	-
Fatal injury to passenger due to a train accident at level crossing	-	-	-	-	-	-	-	-	-	-
Fatal injury to passenger travelling on a train, other than in train accident	-	-	-	-	-	-	-	-	-	-
Fatal injury to passenger attempting to board or alight from train	-	-	-	-	-	-	-	-	-	-
<b>Railway infrastructure: third party fatal injuries</b>										
Fatal injury to third party at a level crossing involving a train	-	1	-	-	1	1	-	2	-	-
Fatal injury to third party at a level crossing not involving a train	-	-	-	-	-	-	-	-	-	-
<b>Railway operations: employee fatal injuries</b>										
Fatal injury to employee at a level crossing due to train in motion	-	-	-	-	-	-	-	-	-	-
Fatal injury to employee due to train in motion (other than at a level crossing)	-	-	-	-	-	-	-	-	-	-
Fatal injury to employee not due to train in motion	-	-	-	-	-	-	-	-	-	-
<b>Railway infrastructure: employee fatal injuries</b>										
Fatal injury to employee at a level crossing due to train in motion	-	-	-	-	-	-	-	-	-	-
Fatal injury to employee due to train in motion (other than at a level crossing)	-	-	-	-	-	-	-	-	-	-
Fatal injury to employee not due to train in motion	-	-	-	-	-	-	-	-	-	-
<b>Railway operations: fatal injuries to other persons</b>										
Fatal injury due to train in motion not at level crossing	-	-	-	-	1	-	-	-	-	-
Fatal injury to customer or visitor, no train involved	-	-	-	-	1	-	-	-	-	-
Fatal injury involving train in motion on railway or level crossing where trespass or suspicious death was indicated	10	11	8	7	5	8	3	8	7	5
<b>Railway operations: non-fatal injuries to passengers</b>										
Injury to passenger travelling on train due to a railway accident not at level crossing	-	-	12	-	-	-	2	-	-	-
Injury to passenger travelling on train due to railway accident at level crossing	-	1	-	-	-	-	-	-	-	-
Injury to passenger attempting to board or alight from train	69	65	48	55	50	43	17	64	46	41
Injury to passenger travelling on train, other than due to a railway accident	66	70	73	41	35	22	40	28	10	27
<b>Railway infrastructure: third party non-fatal injuries</b>										
Third party at level crossing injury involving a train	-	-	-	-	1	-	-	-	1	2
Level crossing user injury not involving a train	-	3	4	-	1	1	1	-	2	5
<b>Railway infrastructure: non-fatal injuries to other persons</b>										
Injury to customer or visitor to premises	84	71	74	72	70	54	56	85	113	116
Injuries to other persons including unauthorised persons	2	1	1	-	1	-	-	-	-	5
<b>Railway operations: non-fatal employee injuries</b>										
Employee lost time injury involving train movement or train accident	12	7	4	15	7	8	13	11	7	13
Employee lost time injury while working on railway not due to train in motion	54	70	62	38	36	37	31	27	22	32
<b>Railway infrastructure: non-fatal employee injuries</b>										
Employee lost time injury involving train movement or train accident	-	1	-	-	1	1	-	1	2	1
Employee lost time injury while working on railway not due to train in motion	55	48	38	31	42	42	34	30	23	32
Employee lost time injury while working at level crossing not due to train in motion	2	-	1	2	4	-	-	-	-	1
<b>Entity in charge of maintenance and maintenance workshops: non-fatal employee injuries</b>										
Employee lost time injury involving train movement or train accident	-	1	1	-	-	-	1	-	-	-
Employee lost time injury while working on railway not due to train in motion	48	43	38	30	36	27	21	10	18	10

## Appendix 2 cont.

Railway operations: train incidents										
Derailment of train on or fouling running line	12	5	5	9	7	3	3	1	-	1
Derailment in possession on running line (including possessions)	4	1	2	4	1	2	1	1	-	-
Derailment in IÉ siding	58	46	19	16	8	12	4	14	4	4
Derailment in private siding	6	4	4	3	4	-	4	2	2	1
Train collision with passenger or goods train on running line	-	-	-	1	-	-	-	-	-	-
Train/railway vehicle collision in station or possession movement	2	-	1	1	-	1	1	-	-	1
Train collision with a motor vehicle at a level crossing	1	2	2	1	4	4	-	2	1	2
Train collision with pedestrian at a level crossing	-	-	-	-	1	-	-	1	-	-
Train collision with attended gates at a level crossing	2	4	2	2	2	1	-	1	-	-
Train collision with road vehicle obstructing the line (not at a level crossing)	2	-	-	-	-	-	-	-	-	1
Train collision with large animal(s) on the line	43	40	42	43	42	33	20	24	35	26
Train collision with other obstacle on the line	4	10	8	5	9	17	10	1	7	6
Main signal passed at danger where warning was given in time	32	29	36	25	22	12	18	14	4	7
Other signal passed at danger where warning was given in time	19	12	9	9	10	10	5	8	2	1
Railway operations: rolling stock incidents										
Fire or smoke on locomotive or other rolling stock	9	11	8	13	27	13	6	9	8	4
Train dividing in running	1	-	3	-	1	1	1	-	-	1
Rolling stock door incident	3	-	-	1	11	4	1	1	2	1
Failure of rolling stock axle or axle-bearing	-	-	-	-	-	1	-	-	2	-
Infrastructure incidents										
Broken Rail on passenger running line	3	1	6	4	1	2	2	4	2	1
Broken Rail on freight only line or siding	4	1	-	1	-	1	2	-	-	1
Broken or cracked fishplate	511	254	380	332	358	187	160	109	42	88
Track misalignment or buckle	6	-	1	5	1	-	3	1	-	4
Class 1 ultrasonic defect	81	35	31	29	21	27	47	41	2	5
Bridge under the railway struck by road vehicle	137	123	203	194	140	86	98	92	90*	61
Bridge parapet over the railway struck by road vehicle	6	13	12	23	40	26	16	14	15*	11
Landslip or structural failure affecting operations	2	-	4	10	4	-	11	3	-	4
Gate or barrier at level crossing hit by road vehicle	12	35	18	21	37	24	23	31	17	15
Road vehicle hit by barrier at level crossing	12	20	12	8	6	4	5	7	4	4
Total building fire	2	-	-	-	9	3	5	2	2	1

# Appendix 3

## Appendix 3: LUAS Statistics Dublin Light Rail Operating and Accident Statistics 2005–2012

Year	2005	2006	2007	2008	2009	2010	2011	2012
Tram Km (000)s	2,500	2,661	2,751	2,744	2,695	3,082	3860	3990
Road Traffic Accidents (RTA)	36	24	28	32	23	30	30	24
Contact of person with tram	8	21	18	20	18	22	13	7
Collision tram/tram	1	-	-	-	-	-	-	-
Derailment in depot	4	-	3	1	-	-	-	-
Derailment on mainline	1	1	-	-	1	2	-	-
Other injury event						1	-	-
- First Aid	5	1	3	1	5	2	1	-
- Medical Attention	10	9	11	4	20	15	9	7
- Hospital care	2	2	2	1	4	3	1	-
- Fatality	-	-	-	1	-	-	1	1
Total Injuries	17	12	16	7	29	20	12	8
Emergency Handle	14	20	22	43	108	41	103	95
Emergency Brake	946	747	540	435	350	374	478	414

(- denotes Zero)

Note: The first complete year of LUAS operation was 2005



# Appendix 4

## Appendix 4: Approvals granted by RSC in 2012

Infrastructure Projects	Project Phase			
		Preliminary Design	Detailed Design	Operation Commission
Bridge Parapet Upgrades – Sligo Line & Waterford Rosslare Line			√	
Dublin City Centre Re-Signalling – Phase 1 Stage 1 - Howth Branch			√	√
Longford By-Pass – New Bridge – Sligo Line			√	
Oola – Bridge Upgrade – Limerick Waterford Line			√	√
Oranmore – New Station – Limerick Galway Line			√	
Waterford and Suir Valley Heritage Railway – upgrades to two underbridges.				√
Thurles Link Road: Bridge				√

Rolling Stock Projects	Project Phase				
	Concept	Prelim Design	Detailed Design	Test & Commission	Service
Ballast Cleaner					√
Intercity Railcars					√
LUAS Vehicles – Tram Wraps	√	√	√	√	√
Mk III Generator Van					√
Multi-Purpose-Vehicle					√

# Appendix 5

## Appendix 5 - Overview of Energy Usage in 2012

In 2012, the Railway Safety Commission consumed 137,416 Kwh of the energy in our building, Trident House, consisting of:

- 43,255 Kwh of electricity;
- 94160 Kwh gas.

### **Actions Undertaken in 2012**

In 2012 the RSC undertook a number of initiatives to improve our energy performance, including:

- Introducing individual heat control panels and timers in various areas in the office so these areas need only be heated as required.
- Ensuring all equipment is turned off at the end of the day
- Encouraging all staff members to reduce their energy consumption

### **Actions Planned for 2013**

In 2013 the RSC intends to further improve our energy performance by undertaking the following initiatives:

- Increase staff awareness of energy consumption and the methods of reduction.
- Continuing to monitor energy consumption and look for new ways to reduce our consumption