Rail Delivery Group

National Rail

RDG Guidance Note:
Rail Emergency Management – Effective Learning and Development

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About this Document

Explanatory Note

The Rail Delivery Group is not a regulatory body and compliance with Guidance Notes or Approved Codes of Practice is not mandatory; they reflect good practice and are advisory only. Users are recommended to evaluate the guidance against their own arrangements in a structured and systematic way, noting that parts of the guidance may not be appropriate to their operations. It is recommended that this process of evaluation and any subsequent decision to adopt (or not adopt) elements of the guidance should be documented. Compliance with any or all the contents herein, is entirely at an organisation's own discretion.

Other Guidance Notes or Approved Codes of Practice are available on the Rail Delivery Group (RDG) website.

Purpose

The UK railway faces a range of threats, hazards and operational challenges that have the potential to jeopardise its ability to run services safely, and securely and to uphold customer confidence. Increased, 'integrated emergency management' (hereafter IEM) capability has never been more critical. In the past few years, Transport organisations have had to show unprecedented levels of resilience. This guidance note has been developed to support recommendations arising from the industry Rail Resilience Project (RRP) Emergency Management Review (completed June 2021) in that it describes the competencies and training requirement together with the associated self-assessment tools for those engaged in Rail emergency Management.

Executive summary

A new and integrated approach to Learning and Development is needed to advance resilience in critical infrastructure because of the increasing volatility, uncertainty, complexity and ambiguity of the world we now live in. Existing approaches to training for Integrated Emergency Management (IEM) are unstructured, with no clear progression pathway or professionalisation for IEM professionals. Expert knowledge alone is no longer sufficient because knowledge alone does not lead to behaviour change. Learning and development programmes need to be grounded in context, aligning individual's values with business values, developing the learning habits and systems thinking skills (meta skills) that enable people to apply what they know in practice and thus be better prepared to take initiative and lead others in emergencies. These values, learning habits and thinking skills enable individuals to utilise and apply the knowledge and know how they need in context and thus be better prepared for major incidents as well as contributing to the overall resilience of the organisation and society. This document explains and expands upon the Competency Framework and the Self-Assessment Tool and should be read alongside them.

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Written by / Prepared by:

PA Consulting Ltd.

RDG Delivery Team Contact:
John Melville

Authorised by:

Rail Resilience Steering Group (RRSG)

Steve Enright, Independent Chair Rail Resilience Steering Group (RRSG)

The RRPWG and RRSG have representatives from the following Stakeholder groups:

- Train Operators
- Infrastructure Manager (Network Rail)
- TfL, TfW, Transport Scotland
- BTP
- DfT
- ORR
- GBRTT

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1 Purpose, Scope and Structure

1.1 Introduction

Increasing volatility, uncertainty, and complexity of the world we now live in mean that a new and integrated approach to Learning and Development is needed to advance resilience in critical infrastructure.
Existing approaches to training for Integrated Emergency Management (IEM) are unstructured, with no clear progression pathway or professionalisation for IEM professionals. Expert knowledge alone is no longer sufficient because knowledge alone does not lead to behaviour change.

Learning and development programmes need to:

- Be grounded in context.
- Align individual values with business values.
- Develop the learning habits and systems thinking skills (meta skills) that enable people to apply what they know in practice.
- Allow staff to be better prepared to take initiative and lead others in emergencies.

These values, learning habits and thinking skills enable individuals to utilise and apply the knowledge and know-how in context. Thus, they will be better prepared for major incidents as well as contributing to the overall resilience of the organisation and society.

This document explains and expands upon the Competency Framework and the Self-Assessment Tool and should be read alongside them.

1.2 Who should read this guidance?

Rail Entities:

- Benchmarking themselves using the Maturity Model (MM).
- Developing their IEM Learning and Development (L&D) policy.
- Looking to integrate provisions with L&D in other resilience functional areas and the overall Learning and Development strategy of their organisation.

This will enable a joined-up approach and a balanced emphasis on the development of IEM capabilities. It will also clarify the additional contribution it makes to the culture of learning and resilience in the organisation to partners and employees.

Learning and Development Providers:

- Enables a flexible approach to procuring learning and training development, whether in-house or via external providers.
- Facilitates role holders to access external learning and development initiatives offered in the wider resilience sector (e.g. by Category 1 providers or Local Resilience Forums) in any combination.

This guidance illustrates both the need to, and how to integrate quality Learning and Development provisions with business strategy. It enables consistency and transferability by using a common competence framework, assessment methodologies and training specifications.

Rail Emergency Management Role holders:

- To understand the approach and rationale for the learning and development being provided in the sector and why they are required to engage in learning on knowledge and skill areas.

1.3 Purpose

This document provides guidance for rail entities on how to understand, define and embed Learning and Development for IEM capability within their business, and how to procure, design, develop and review learning and development programmes in IEM which align with the newly developed IEM Competency Framework and SAT.

As described in the findings of the RRP Emergency Management Review: Findings and Recommendations Report, Integrated Emergency Management (IEM) activities are currently being delivered in an ad hoc and piecemeal fashion rather than being treated as component parts of an integrated system with a clear line of sight through each organisation's management systems and into industry governance. Additionally, IEM activity is too often considered and undertaken as a compliance burden as opposed to a core activity that

provides a valuable contribution through supporting professional learning which achieves both customer and organisational outcomes.

These training guidelines aim to resolve this through addressing *Recommendation 2 – The industry must develop a suitable body of knowledge and standards for Emergency Management*, and *Recommendation 5 – The industry must be able to assess Emergency Management.*

1.4 Document Structure

This document is structured as follows:

1. Overview and Approach: Offers a general overview and approach to the development of capability in IEM, identifying learning design principles, the rationale for and components of the Competency Framework and how this applies to best practice in approaches to adult learning.
2. Specific Guidance: Provides specific guidance for rail entities in designing, procuring and developing a Learning and Development Programme for IEM, which follows the organisational process mapped out in the image below.
3. Summary and Conclusions: A last section summarises and makes recommendations for next steps.
4. A glossary defines key terms used in the document.

1.5 Scope

This GN is applicable to all members of the Rail Delivery Group (RDG) that manage infrastructure or operate services over the mainland mainline GB rail network including infrastructure managers, train operating companies and freight operators.

Where a future infrastructure manager or train/freight operator is developing their business, they should consider adopting, or planning to adopt, the IEM CoP in Rail as part of their process to achieve their safety licence.

2 Overview and Approach

This section provides an overview of the approach that a Learning and Development Provider for IEM Capabilities should take when designing and creating programmes for rail entities. It starts with general learning design principles, then offers the rationale for the components of the Competency Framework and finally shows how these maps on to best practice in adult learning and behaviour change.

2.1 General learning design principles

Below, the learning design principles that should be considered by providers when developing the IEM training are outlined:

End-to-end Approach:
Together with the Competency Framework and the Self-Assessment Tool, learning and development programmes should facilitate an end-to-end self-directed inquiry approach that allows staff to navigate their own way through the framework, encouraging them to explore their own values and principles aligned to those of the rail network they work for, to use their learning power and thinking skills (meta skills) to access and apply the knowledge and know how they need on the job, when they need it, and thus to take responsibility for demonstrating their overall capability through a Portfolio of Evidence. In the process they will become familiar with the framework as part of 'the way we do things here'.

Cultural Alignment:
It is crucial that any learning and development programme is integrated with business culture, strategy and performance management. The behaviours, meta skills and knowledge and know-how required cannot be fully developed by sending people on a 'training course'. Rather, the course content needs to be applied in practice and therefore must be developed 'on the job'. The learning, leadership and performance culture of the organisation is as much part of the strategy as the Competency Framework that focuses on individuals and teams.

Self-directed learning:
Self-directed learning focuses on 'agency' and the decisions a person makes in the course of their job, with the ensuing behaviours that arise from those decisions, and which demonstrate their IEM capabilities. The purpose of the Self-Assessment Tool is formative - that is for the individual to identify the ways in which they can improve themselves and develop their values, meta skills, knowledge and know-how in the context of the job they do.

Holistic Model:
The aim of all IEM learning and development programmes must be to develop people's IEM capability by establishing a holistic model of the person as a complex change agent, responsible for their own professional identity and performance and empowered to make the changes that are needed to improve themselves and their practice in line with business resilience strategy. It focuses on aligning personal motivation and professional purpose with resilience and business strategy through self-leadership, learning relationships, and the learning habits and thinking skills needed for complex problem solving in IEM.

Blended Learning:
Digital learning infrastructures, including AI, represent significant opportunities for improving the scale, scope and visibility of work integrated learning to support the industry in developing IEM capability. Many aspects of the values, meta skills, foundational and domain specific knowledge defined in the Competency Framework can be digitised as 'bite sized' online learning modules. Online content will not be sufficient on its own to ensure behaviour change, but digitising content in a learner centred manner will offer increased opportunities for 'flipped' learning. That is, by working through online modules asynchronously, time for face-to-face interactions (online or in person) is freed up to focus on coaching, collaboration, facilitating values, learning dispositions and thinking skills and supporting self-directed learning. The provision of common core foundation online content will also aid consistency and, ultimately, interoperability between rail entities. Rail entities then individually or collectively develop or commission bespoke content to suit their organisational and operational context.

2.2 Rationale and Components of the Competency Framework

This Competency Framework comprises the core values and principles, meta skills, foundational knowledge

and domain specific knowledge that are necessary for people who work in Emergency Management within the rail industry. They are consistent with best practice and research evidence.

The Competency Framework is divided into four sequential categories of human learning processes, which attend to differing aspects of professional self-leadership, each of which can be assessed and measured and contribute to a Portfolio of Evidence. These are values, meta skills, foundational knowledge and domain specific knowledge.

Figure 1 illustrates these four human learning processes that contribute to sustainable behaviour change which can be facilitated by addressing all aspects of an individual's personal and professional performance, in the context of the organisation.

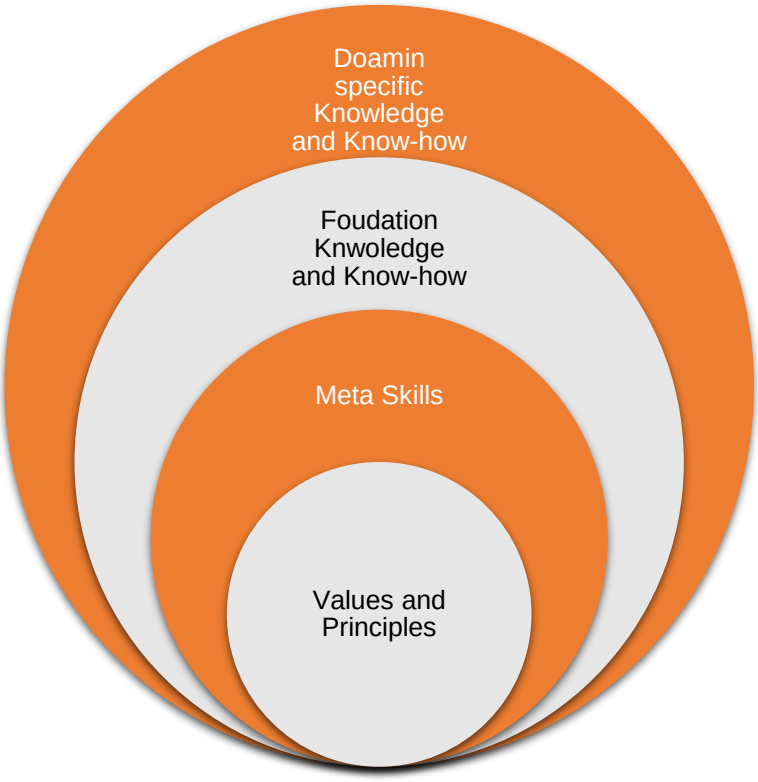

Figure 1 - Visualisation of the IEM Competency Framework Sections

It addresses the question: *What does it mean to become an effective Integrated Emergency Management professional?*

The Competency Framework has been designed to:

- provide a map of the field of human development requirements in the domain of Emergency Management in the rail industry.
- indicate an approach which is 'user friendly' and provides multiple 'entry points' for individuals at distinct levels and with different experiences and job roles.
- emphasise the importance of professional agency and self-leadership through values and meta-skills as tools for sense-making and decision making.
- provide a scaffold for forms of 'portfolio assessment' through self and peer evaluation as well as to contribute to performance management.
- provide an evidence base for organisational IEM capability evaluation, review and improvement.

Values and Principles:

The principles which are considered by the Rail Industry to be important for guiding the behaviours and relationships that underpin a healthy, system-wide knowledge and prevention of risks, preparedness for, response to and recovery from emergencies and adaptation to long-term stressors. These values and principles can be described and articulated but will only be effective for the whole business if they are modelled and enacted, starting particularly with leaders and supported by business processes and structures, but also by IEM Professionals who have a more in-depth understanding of IEM. Each rail entity may develop a distinct brand and language for a set of values that reflect their culture.

Seeing the Bigger Picture

Leading Courageously

Changing, Adapting and Improving

Including Diverse Viewpoints

Inspiring a Resilient Service

Making Effective Decisions at Pace

Developing Self and Others

Figure 2 - Values and Principles in the IEM Competency Framework

Meta Skills[1]:
The high level, transferable learning habits and thinking skills for complex problem solving which enable a person to apply their values and knowledge in practice. They provide the 'how' to effectively go about achieving measurable resilience as an outcome in a particular place or context and how to respond in an emergency. These meta skills can only be learned and honed through application and practice on the job. They help a person or team to operationalise systems thinking, to analyse situations, to rapidly adapt and learn and to work effectively with others. They are key to purposeful decision making in response to risk, uncertainty and complexity.

Figure 3 - Meta Skills in the IEM Competency Framework

Foundational Knowledge and Know How:
The common principles, concepts, models and fundamental processes that all stakeholders need to know about resilience and emergencies and how it fits into and benefits the organisation and society. There is knowledge about and know-how relevant to, learning with self and others, and organisational and environmental resilience that will enhance and deepen the application of the Meta-Skills in practice.

Domain Specific Knowledge and Know How:
Detailed knowledge a working practitioner or expert needs to know to undertake functional tasks and activities in IEM in the specific domain of the Rail Industry.

In this Competency Framework domain specific knowledge and know how is identified sequentially in terms of its relevance to the Emergency Planning Cycle:

- Risk Anticipation and Assessment
- Risk Mitigation
- Preparedness
- Readiness
- Response
- Recovery

Knowledge refers to conceptual understanding and articulation, whereas 'know-how' refers to functional skills - the ability to do something and demonstrate competence in practice. Together these constitute what a person needs to understand and be able to do in the business context to develop their overall capability in IEM.

2.3 How the Competency Framework enhances adult and organisational learning

The meta skills of self-leadership, learning relationships and thinking skills for complex problem solving are core adult learning processes that integrate across each of these elements of the Competency Framework and contribute to sustainable behaviour change. They include learning habits and thinking skills that enable a person to reflect on themselves and their 'inner processes' as well as to engage in knowledge building in context on the job.

IEM Capability is developed iteratively, maturing over time as a person builds their experience on the job - connecting the knowledge they need with the purpose they have set. A Portfolio approach enables the individual to record and evidence their own progress over time in a way that can be integrated with business development and career progression. Table x below explains how the adult learning cycle maps onto the various sections of the Competency Framework.

[1] the Meta Skills framework used in this model has been developed by WILD Learning Sciences Community Interest Company and is made available here through Creative Commons Licence under CC BY-NC-ND 4.0

Values and Principles	Meta Skills	Foundational Knowledge & Know-how	Domain Specific Knowledge & Know-how
Mastery, autonomy and purpose are core drivers of adult learning. Focusing on the alignment of personal, professional and organisational purpose and values in IEM supports intrinsic motivation, self-leadership and professional identity formation. This is enhanced by coaching and modelling as well as self-reflection. It is a foundation for effective behaviour change, business leadership and innovation at all levels.	Provide people with the capacity for using meta-cognitive reflection, self-awareness and reflection and learning relationships to make decisions about how to solve the complex challenges they face on the job. By honing these meta skills in practice in 'peace time' they will be better equipped to respond in a major incident. They provide scaffolding or guidance for 'next best question' or 'next best action' in real contexts on the job and are relevant beyond IEM. They are best developed through expert facilitation, modelling and peer coaching.	This constitutes the best of what 'we know' about a holistic approach to resilience. Accessing and understanding this knowledge and know-how (online or via explicit teaching) provides me with the intellectual rigour and skills to contribute to my decision making in practice. This knowledge needs to be applied, practised and improved on the job through testing, self-evaluation, peer coaching and expert facilitation. It should be a baseline entitlement for all.	This is the specific technical knowledge about what I need to know and apply at distinct stages of the Integrated Emergency Planning Cycle. Accessing and understanding this knowledge and know-how (online or via explicit teaching) provides a person with the intellectual rigour and skills to contribute to their decision making in practice. This knowledge needs to be practised and improved in authentic contexts, scenarios or exercises, through self-evaluation, peer coaching and expert facilitation.

Table 1 - Adult Learning Cycle mapped to the IEM Competency Framework

3 Specific Guidance for designing, procuring and delivering an L&D programme.

This section presents specific guidance for Rail Entities who wish to design a Learning and Development Programme into their core business processes, to support the development of a mature IEM capability. Written from the viewpoint of the Rail Entity's process it follows the headings outlined in *Figure 4* .

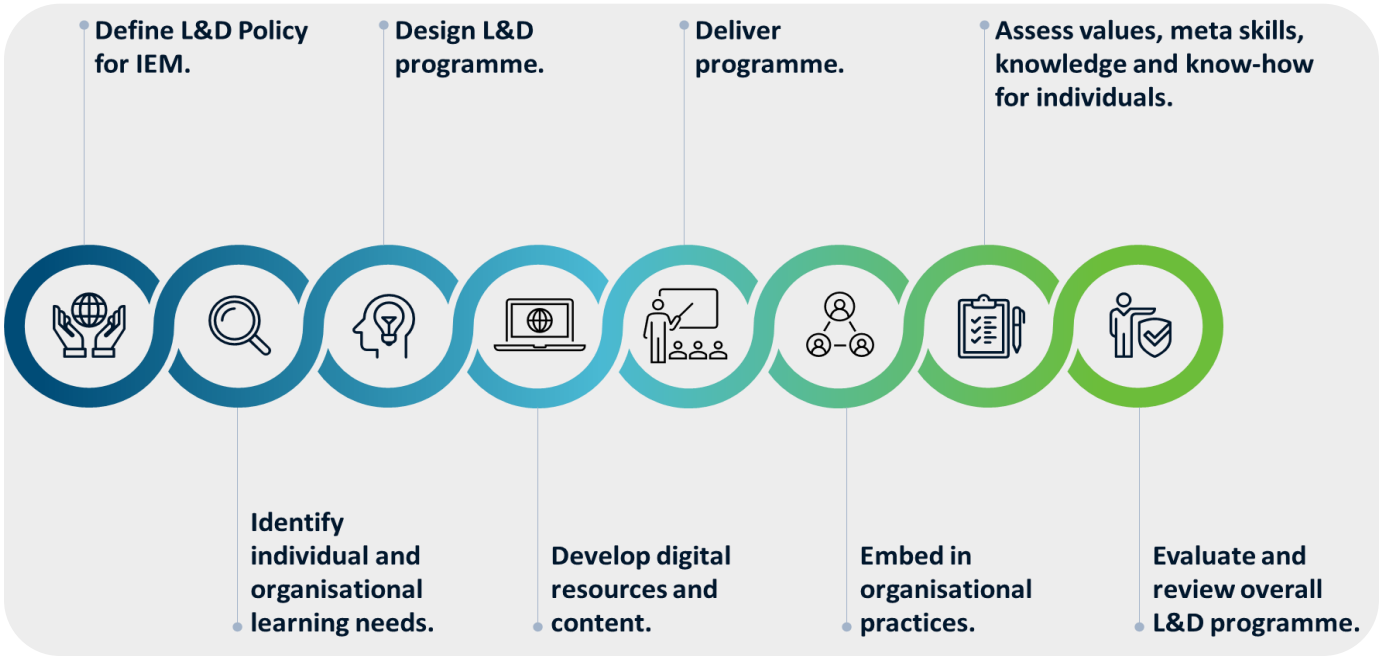

Figure 4 - Process for Rail Entities to design, develop and implement an IEM L&D Programme

3.1 Define IEM L&D policy.

The overarching goal of a Learning and Development Programme for IEM training is to equip all IEM rail staff with the values, meta skills, foundational and domain specific knowledge and know-how to demonstrate that they have reached the required capability levels to carry out their jobs reliably, securely and with minimal risk. It also provides the organisation with confidence that they are equipped to respond to emergencies and crises. This goal needs to be integrated with the overall business strategy, supported by business processes and by the culture of the organisation.

The Competency Framework, together with the SATS and these guidelines will have 'touch points' with many aspects of the business, including reward mechanisms, performance management, digital infrastructure, data management, career progression, leadership, risk appetite, innovation culture, employee engagement, customer relationship management and more. The success of any programme will depend on the capacity of the leadership to understand the recursive and dynamic relationships in the organisation as a complex system.

The rail entity should tailor its approach to its bench-marked maturity on the Rail Maturity Model in Emergency Planning and identify the best business entry points for its Learning and Development programme. The programme should be tested and refined, and attention should be paid to the internal capability building to make it sustainable in such areas as peer coaching-for-learning, approach to 'lessons learned' after projects and incidents, communities-of-practice, talent acquisition, apprenticeships and leadership development.

3.2 Identifying needs

An organisation should design Learning and Development Programmes which focus on the actual needs of the individuals and teams in particular contexts together with the strategic change needs of the business. Learning outcomes should be aligned with business strategy. There is no 'one size fits all' and there is no 'silver bullet'. Therefore, the navigation by the individual through the Competency Framework should be based on evidence about where they are and what they need as a team and as individuals, as agreed with their

colleagues in their current context.

A Learning Needs Assessments should review four forms of baseline data about the individual and two forms of baseline data about the organisation:

Individual

What is measured	How it can be measured
Individual behaviours	Self or peer assessed against organisational values
Individual meta skills: learning dispositions and thinking skills	Self and or peer assessed against scientifically valid measures or frameworks
Foundational knowledge about what it means to be a resilience professional	Measured by tests of knowledge, self-report, progress through online content, peer review.
Domain specific knowledge	Measured by tests of knowledge, self-report, progress through online content, peer review of specific competences.

These individual learning needs assessments should be viewed and analysed alongside organisational level learning needs and data which provides evidence about how the business strategy, structures and processes contribute to the complete range of the resilience cycle.

Organisational

What is measured	How it can be measured
An organisation's cultural readiness for change	Survey sample, focus groups.
An organisation's preparedness and adaptive capacity in response to crisis	Survey, focus groups, self-evaluation
An organisation's maturity in IEM best practices	Organisational IEM Maturity Assessment

Learning needs assessment data can take multiple forms which should be curated, collated and integrated, so that business leaders can make informed decisions about where, when and how to make changes through Learning and Development.

Self-Assessment Tool

The Self-Assessment Tool (SAT) were developed alongside this Competency Framework and can primarily be used by individual rail staff to identify where their capability gaps lie compared to their required capabilities as identified in their job level in the Competency Framework.

Appropriate anonymisation and aggregation of data from the SATs will ensure valid organisational level data - without such assurance of anonymity, the self-assessment data is inevitably distorted and compromised.

3.3 Learning Design

The knowledge content of the 'curriculum pathway' for IEM Professionals has been developed with reference to best practice, regulatory frameworks and research evidence and identifies subject matter content (knowledge and know how) that is mapped onto the journey of the IEM cycle. This extensive outline of content may be knowledge 'about' or knowledge of 'how to' with the latter being particularly necessary for application in practice. There is also 'content' (knowledge about and know-how) related to organisational values and to the three meta skills.

This content can be 'taught' via traditional methods by experts and digitised and curated online for asynchronous access and self-paced learning, augmented by AI. However, content modules relating to values and meta skills are tuned to practice and application and should be used to supplement face-to-face peer and expert interactions, with evidence of success demonstrated through narrative and qualitative descriptions of their application to 'on the job' challenges.

Digitising these sections of the Competency Framework as online modules and making them available for individual and team learning journeys across the industry supports the principle of self-leadership and behaviour change at scale. The IEM Competency Framework should be used as a baseline for developing the relevant training content online.

Learning Designers will need to be clear about what materials can be accessed online and how their programmes will facilitate people through interaction in developing the values and meta skills that will enable them to make better decisions which impact on practice.

If content digitisation is pursued in an 'open source,' accreditable pathway (regulated by Ofsted, for example), it would implement the recommendations of the *RRP Emergency Management Review: Findings and Recommendations Report* by creating training focused on one shared Competency Framework for the IEM industry.

3.4 Specifications: Differentiation by Role

Split into the core sections of principles and values, meta skills, foundational knowledge and domain specific knowledge and know-how, the mapping of the three training levels should be straightforward. Curriculum outlines for each training level are provided below.

Level 1: Awareness - Intro to Emergency Management and Resilience in the Rail Industry

- This course should be delivered remotely and completed by all rail staff. The approach should be supplemented by
    - an integrated approach to performance management and
    - opportunities for short, online, facilitated learning events that focus on the meta skills and values aspect of the framework and extend the capacity for peer learning relationships.
- Required competencies can be found in the Competency Framework column “Rail Industry Staff” and online learning content should reflect the required competency levels.
- Indicative content:
    - IEM principles and values
    - meta skills: self-leadership, learning relationships, and complex problem solving.
    - foundational knowledge of organisational resilience, IEM and governance
    - foundational knowledge of working with self and others
    - foundational knowledge of developing self and others
    - foundational concepts of the IEM cycle: *definition of incident*, RAA, Mitigation, preparedness, readiness, response initiation, response strategy, response planning and response delivery, and recovery
    - include statement that asks everyone to confirm that they understand that any activities must be in adherence to the Network Rail Safety Standards
    - use of emergency planning/response exercises to develop and test IEM knowledge and know-how.

Level 2: Integrated Emergency Management Professionals

- The learning journey for IEM professionals should be more ‘in depth’ and rigorous and progress through an annual sequence for which the EM Professional is accountable. A blended learning approach should enable them to put much of their learning into practice via simulations, case studies, VR experiences, mock-examples and application to the ‘day job’ for some aspects of the IEM Cycle. Learning should be regularly demonstrated through the assessment approaches described below.
- The required competency levels for IEM professionals can be found in the Planning and Response columns of the Competency Framework and will be determined by their role and seniority. Domain Specific Knowledge from the Competency Framework should be used as the basis for training content.
- Suggested delivery method:
    - Self-guided online learning for awareness levels, supplemented by short learning events as above. In depth extended modules mapped onto the IEM cycle.
    - Role-specific in-person 1 or 2-day facilitated programmes which provide the opportunity for development of all aspects of the Competency Framework and deepen the capacity for peer coaching and review:
        - In-person simulations and case studies to target the development of values and meta skills and put knowledge and know how into practice.
        - Action learning sets after each training experience to meet in small groups or peer triads, to self- and peer-assess, peer-coach and set targets for change. Repeated after each training event to evaluate personal and team change through review of pre- and post-data based on the SAT and based on the performance on the simulation.
        - Diagnostics for future learning needs and events.

        - Opportunities to develop facilitated, self-directed innovation projects which contribute to the organisations IEM preparedness whilst demonstrating increasing capability against the framework.
- Indicative content:
    - Awareness level online learning (see above).
    - In addition to the foundational concepts of the IEM cycle, more in-depth modules on each part of the IEM cycle should be developed for EM professionals to access and internalise via self-guided online learning.
    - Practice scenarios and simulations developed for each EM profession which are consistent with and operationalise all aspects of the online content.
    - Use of emergency planning/response exercises to develop and test IEM knowledge and know-how.

Level 3: Senior Management and Leadership

- Senior Management and Leadership should be required to have completed the same online awareness level course as everyone else upon newly joining a rail company.
- Required competency levels can be found in the Senior Leadership (Director Level) columns of the IEM Competency Framework.
- A more concise and targeted learning approach is proposed for this group, in the form of a 1 day in-person course to ensure that all senior leaders can accrue experience, even if simulated, on handling high-pressure, high-stakes emergency situations.
- Pre-course assessments: before any short course the individual would be required to complete the values and meta skills self-assessments to inform their reflection and dialogue on the programme, through peer coaching triads. An outcome from the triad would be a personal learning goal which the individual would pursue after the event and report back on progress, with evidence, after three months.
- Indicative content for the 1-day course:
    - Part 1: Recap of IEM fundamentals, Civil Contingencies Act, and rail command structures.
    - Part 2: Decision Making in Incidents.
    - Part 3: Using key professional support, i.e., HR, Finance and Communications
    - Part 4: Scenario-based exercises to put senior Emergency Management into practice. And requirements for ongoing participation in emergency management exercises to maintain currency of knowledge and know-how.
- Business Resilience Leadership Challenge: 3-month work integrated learning projects aligned to the overall Competency Framework.
    - Senior Leaders and Managers should be able to identify, diagnose and find solutions to vulnerabilities in their organisation's practices in relation to any or all aspects of the IEM cycle, including preparedness. It is recommended that the Rail Industry offers senior leaders the opportunity to engage in a blended and facilitated Resilient Leadership programme, designed to facilitate them in developing their overall IEM capabilities integrated with their job. They would be required to identify a specific challenge within their area of responsibility, aligned to business strategy, understand and analyse the challenge, identify and implement solutions and report on their personal development, their learning dispositions and thinking skills and recommend a solution to the business that addresses the challenge. The programme would be guided primarily via a coaching approach.
- Additionally, there is an expectation that senior leaders should be trained specifically on business leadership and management and develop effective and tailored leadership styles to enable their teams to deliver high-quality work while maintaining wellbeing and balance. However, as this is not specific to IEM, the specification of this type of training is out of scope in the present document.

3.5 Development of Resources

The development of resources for a Learning and Development programme for IEM should take advantage of technology, learning analytics and artificial intelligence. Where expert content can be digitised, rather than taught face to face, time on the programme will be freed up for face to face facilitated learning programmes which support 'on the job' learning experiences.

In so far as possible, the industry should identify a common core set of learning resources.
Online resources should be learner centred and engaging, with opportunities for self-assessment, collaboration and discussion and application built in. They should supplement, but not replace, human learning relationships.

Digital learning infrastructures should be built around a ‘single view of the learner’ rather than the curriculum framework, so that an individual can manage their own progress over time and extract engagement, progression and achievement evidence to present in their Portfolio.
When designing and developing resources for a blended learning approach, facilitators should consider the following:

- Balance Modalities: Integrate e-learning, classroom facilitation, on-the-job application, and simulations to create a cohesive learning programme.
- Engage Learners: Develop interactive content and activities to maintain engagement across different formats.
- Leverage Technology: Use online platforms and tools to enhance learning and ensure accessibility.
- Adapt and Evolve: Adjust and differentiate learning resources based on participant feedback and learning progress.
- Evaluate and Improve: Implement methods to assess understanding and gather feedback to refine the training programme.

An example of a module that provides content about ‘systems and critical thinking skills’ (meta skill of thinking skills for complex problem solving) can be seen in *Figure 5*, showing how the meta skill of thinking skills for complex problem solving is applied in different domains:

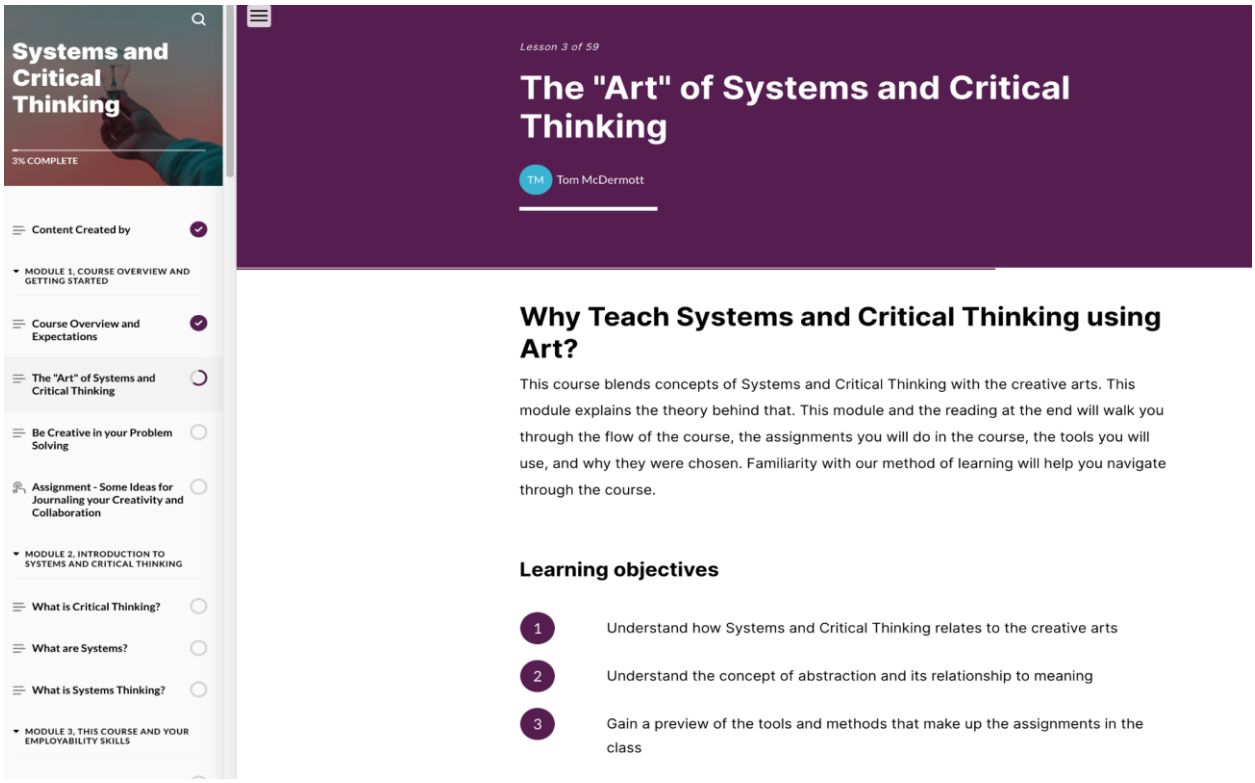

Figure 5: Example Module on the art of Systems and Critical Thinking

3.6 Training Delivery

Capabilities are best developed and perfected on the job. Whenever possible, a significant part of learning should be integrated into regular performance management. Skills like response and recovery can be developed through exercises, case study reflections, and engaging with communities of practice for shared learning opportunities.

Engaging participants in learning is crucial. Social or peer learning is a resilient behaviour, and the delivery approach should focus on maximising opportunities to develop shared mental models of effective practice and co-create new knowledge. This is what sets resilience and IEM learning apart from good training. It should allow content to be customised and relevant through discussions, tailored to learner needs, and enhanced by activities and formative feedback from peers and tutors. When learners are actively involved, they are more likely to apply what they have learned, leading to better performance and outcomes.

The 70:20:10 model[2] visualises this (see *Figure 6*) which details different learning methodologies Learning and Development facilitators should use are outlined, and the rationale.

Common engagement methods are outlined below, and it would be expected that all of these are included in the IEM learning journey at some point:

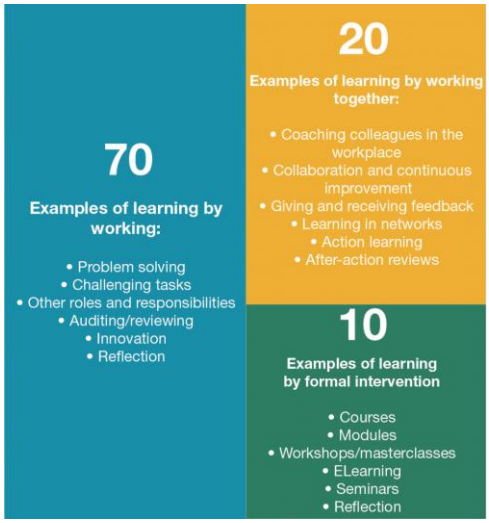

Figure 6: 70:20:10 Model

- Active learning techniques: Instructional methods that engage learners in the process beyond passive listening, such as discussions, problem-solving activities, and hands-on tasks.
- Peer coaching-for-learning and mentoring: A process where colleagues support each other through feedback, sharing experiences, and providing guidance, fostering a supportive learning environment.
- Case studies, scenarios, and real-world examples: Detailed analyses of specific situations used to illustrate concepts and apply theoretical knowledge to practical situations. Here, AI personas could be leveraged to create simulations of staff one would have to interact with in an emergency and practise unexpected responses in high-stake situations (e.g., signallers, electrical control room operators, mobile operations managers).
- Group activities and collaboration: Learning experiences where participants work together on tasks, promoting teamwork, communication, and problem-solving skills.
- Feedback and reflection: Providing information on performance to help learners improve and encouraging them to think critically about their experiences and learning processes.
- Continuous professional development (CPD) opportunities: Ongoing learning activities that help professionals develop and enhance their skills and knowledge, ensuring they remain competent in their roles.
- Performance management processes: Systematic approaches to improving employee performance through setting goals, providing feedback, and evaluating outcomes.

Together, these methods prepare learners for real-world challenges by making learning more relevant and meaningful. It is therefore important to implement blended learning approaches where possible and link any online and classroom-based learning to the realities of an employee's every-day working lives, holding employees to account for what they've learned, how they've learned it and how it adds value to business strategy.

This creates the rationale for the training approaches outlined for the three different training levels as detailed.

The Delivery Environment

Creating an effective training environment involves ensuring that both physical and virtual spaces are conducive to learning. The physical environment should be comfortable, well-lit, and accessible, with ergonomic seating and necessary welfare accommodations for all participants. Reliable technology and equipment, such as projectors and internet access, are essential.

In the virtual environment, user-friendly e-learning platforms that support multimedia content and interactive activities are crucial. Providing technical support helps participants navigate any issues. Comprehensive training materials, including manuals and multimedia resources, should be readily available to support learning during and after sessions.

When designing a blended learning approach, it's important to integrate e-learning, classroom training, and simulations seamlessly. Content should be consistent across all modalities to keep coherence. Engaging and interactive content, such as videos and hands-on activities, keeps learners motivated. Encouraging active participation through group discussions and collaborative projects enhances the learning experience.
Piloting the roll out of new delivery, gathering feedback and revising before delivery to cohorts is critical to assure learning experience and quality.

[2] https://702010institute.com/702010-model/

The Role of Facilitation & Trainer/Facilitator Qualifications

Facilitators are essential in delivering learning programmes, as they manage group dynamics, help discussions, and adapt to learners' unique needs. They are also a key part in evaluating training effectiveness against the learning design principles. While expert knowledge is important, the Competency Framework also needs self-leadership, learning relationships, and thinking skills for complex problem-solving, which are developed through relationships and contextual learning on the job. The most effective learning relationship for a competency all facilitators should have.

In face-to-face sessions two facilitators should be present:

- A learning facilitator, with minimum of a level 3 training qualification and preferably 'coaching-for-learning,' and assessment qualifications.
- An IEM Specialist, with a relevant IEM qualification at RQF level 5 or above or equivalent evidencable good practice experience against the competencies.

Facilitating the learning process means assessing, guiding, and supporting learners as they engage with the material. This encourages them to make informed decisions and take actions, rather than just receiving information. The focus is on developing creative and critical thinking for complex problem-solving and applying knowledge practically.

A learner-centred approach promotes active participation, collaboration, and personal responsibility. Facilitators act as coaches and mentors, providing guidance and continuous feedback to help learners track their progress and set improvement goals. This method fosters critical and creative thinking, systems thinking, and self-leadership, encouraging learners to set their own goals and seek resources independently. Developing learning relationships is crucial for positively affecting business culture. Flexibility and adaptability are key, with facilitators using diverse methods and responsive teaching to meet learners' needs and enable effective competency development.

Training learning professionals to ease progress through the IEM Competency Framework requires them to understand and model the values and meta skills it describes. Domain-specific knowledge is important but not enough. Facilitators should be trained to use various methods and tools to cater to different individuals and teams, remaining adaptable and responsive to participants' needs. This includes honing skills such as active listening, effective communication, managing group dynamics online and offline, and fostering continuous improvement and self-reflection.

3.7 Embedding training and support into the organisational process

A learning and development programme cannot be successful if it operates in a silo away from core business processes. It is important that providers identify those aspects of business as usual that will support the individuals concerned as they navigate their way through the programme over their career.

The following points identify some touch points for consideration and review:

- The rail entity needs to provide opportunities for individuals to apply their learning on the job.
- There is a need to build internal capacity for coaching and mentoring within the business.
- The digital and business processes that support a portfolio approach and the time and effort needed to develop it.
- How IEM capability development can be incorporated into any annual review process (contribution/reflection from peers, LM and self) together with annual self-reassessment to show progress.
- How the core aspects of the capability framework - particularly values, meta skills and foundational knowledge - are relevant across the business and how they might contribute to the business in general as employability skills, leadership development, apprenticeships, talent acquisition etc.
- How apprenticeships and professional learning can align with regulated credits to contribute to recognised qualifications frameworks.
- How the organisation can harness the collective intelligence of the programme for wider dissemination and reward, for example, through events, communities of practice, 'badges' etc.

3.8 Assessment of People

Continuous assessment and clear feedback mechanisms are vital for monitoring progress and helping learners understand their strengths and areas for improvement. By focusing on these aspects, a supportive training

environment can be created that effectively combines various learning methods to achieve the best outcomes.

Assessment and evaluation (see glossary) both involve the collection of data as evidence to analyse progress towards a desired outcome. There are at least three interrelated forms of data literacy that IEM professionals need to be familiar with as they engage with human, social and technical systems:

- Narrative: the stories people, teams and organisations talk about themselves and their business.
- Qualitative: evidence about how humans interact, respond and behave that can be observed or construed and can be reported on thematically or numerically. Can be curated and collated into numerical data sets for statistical analysis.
- Quantitative: numerical evidence that has been empirically observed and quantified and can be curated and collated into data sets for statistical analysis.

IEM professionals need to be familiar with balancing the weight of evidence from data of diverse types and the contribution of each to a valid judgement in authentic contexts.

Data from all sources should be suitable for its specific purpose. It can be used formatively to help an individual, team, or organisation improve towards a goal, or as a summative judge of performance. Summative assessments should be used carefully, as too much focus on them can hinder learning and adaptation.

Each of the four levels of the Competency Framework uses diverse types of data, so end-of-program assessments should reflect this. Values, learning, leadership, and personal change are best shown through narrative data. Meta skills development is best shown through qualitative data, which can be aggregated and anonymised into quantitative data. Project outcomes are often shown through a mix of quantitative and qualitative data, and sometimes narrative.

A final assessment of a person's progress through the Competency Framework should review evidence of personal change, the appropriate use of meta skills to solve complex problems, and specific project outcomes, like 'how I handled xxx situation.' These should be shown through all three types of data and combined into an overall judgment of IEM competency:

- Me: a narrative account of personal/professional change and how it has informed the project (below)
- My Skills: evidence of how particular meta skills (dispositions and systems thinking skills) have been applied on the project (below)
- My Project Outcomes and the value to the business (a presentation with evidence)

Given that the framework focuses on self-leadership and decision making, it is important that individuals are held accountable for the changes they choose to make, either through peer assessment or presentations through which they demonstrate their capabilities.

3.9 Evaluation and review of programme

The overall evaluation of training based on the Competency Framework is the extent to which the organisation concerned is better prepared to deal with long term stressors, has greater adaptive capacity and can deal with emergencies, shocks and disasters.

Training which develops in a business which does not attend to its culture, business practices and structures, will be less effective over the long term than one that does.

Training events and programmes should be evaluated over time against the progress towards the realisation of the four elements of the Competency Framework in practice - for individuals, teams, departments and the organisation. Each training event should be evaluated by a common evaluation framework, with data from the events being collated over time.

The Kirkpatrick Model3 should be leveraged to support the evaluation of IEM training programmes. It provides a comprehensive evaluation by assessing multiple dimensions, from immediate reactions to long-term results, while offering insights for improvement by identifying strengths and weaknesses at each level. This allows organisations to make informed decisions on enhancing future training iterations and new programmes. Additionally, using the model correctly helps assure that training programmes are aligned with organisational

[3] https://www.kirkpatrickpartners.com/the-kirkpatrick-model/

objectives and contribute to overall business success. The model also offers a structured approach to gather evidence on the effectiveness of training, which can be used to justify training investments.

The Kirkpatrick Model consists of four levels:

- The first level, Reaction, measures participants' immediate reactions to the training. This can be gauged through surveys or feedback forms, often referred to as "smile sheets," to assess participants' satisfaction, engagement, and perceived relevance of the training.
- The second level, Learning, assesses the increase in knowledge or skills because of the training. This can be measured by conducting pre- and post-training assessments, quizzes, or tests to evaluate the knowledge gained, as well as practical demonstrations or simulations.
- The third level, Behaviour, evaluates the extent to which participants apply what they learned when they return to their jobs. This can be measured through observations, interviews, or surveys to gather feedback from participants and their supervisors about changes in behaviour and the application of new skills on the job.
- The fourth level, Results, measures the final outcomes of the training, such as improved performance, increased productivity, or fewer breaches of conduct. This can be determined by analysing key performance indicators (KPIs), business metrics, or financial data to assess the impact of the training on organisational goals.

By systematically evaluating each level, one can gain a comprehensive understanding of the effectiveness of IEM training programmes and make data-driven decisions to enhance their training initiatives.

Review Periods

The Competency Framework should be integrated with Business as Usual and form part of performance management, then an annual review with a line manager or 'capable other' would be optimum. Emergency Management should be everyone's responsibility, whilst the values and meta skills are crucial for the Future of Work and should thus form part of business language and culture, appropriately differentiated.
Any formal event, programme, scenario or exercise should be preceded and followed by assessments and accountability by the individual to stakeholders. Self-diagnosis, change targets and self-leadership in learning need to become the 'norm'.

This programme should be mapped to a formal accreditation framework and carry globally transferable credits at all levels: forming a strategy for this is highly recommended.

The Competency Framework should always provide the foundation for a 'lessons learned' review of any incidents or significant projects, followed by personal, team and business level improvement targets.

Wherever possible data should be collated and used diagnostically, pre- and post-interventions or on an annual basis, to measure progress for the individual and the organisation.

Accreditation Opportunities

This IEM competency Framework builds on research and best practice for developing a whole of society approach to resilience within a critical national infrastructure sector and focused on the domain of Integrated Emergency Management. The values and principles, meta skills and foundational knowledge are generic across domains, but traditionally their acquisition has been 'ad hoc', often learned through experience and disappearing once an individual retires or moves on. The domain of Emergency Management is relatively new as an applied domain, drawing on several more traditional disciplines.

Consolidating these developments into a regulated accreditation framework would be a significant advance in the field because it would allow for intellectual and professional rigour as well as 'status'. Society measures what matters. There are opportunities to work with accrediting bodies to enable individuals to be awarded globally transferable credits for learning outcomes achieved within this framework. It could then be included in apprenticeships and all levels of work integrated learning.

The RDG should consider pursuing this agenda with appropriate bodies, for example the new Skills England body, Skills Development Scotland, The New UK Resilience Academy, The London Interdisciplinary School, The Princes Trust and ASDAN, among others.

It is recommended that this framework is aligned to relevant National Occupational Standards as they come out and are reviewed.

4 Conclusion and Summary

4.1 Conclusion

The guidance in this document highlights the need for a structured and integrated approach to Learning and Development (L&D) for IEM within rail entities. By aligning L&D programs with business strategy, conducting thorough needs assessments, and using a blended learning approach, rail entities can build strong IEM capabilities. Continuous assessment, feedback, and evaluation are crucial for ensuring these programmes are effective and for fostering a culture of resilience and preparedness. Successfully implementing these guidelines will improve rail entities' ability to respond to emergencies and crises, protecting both their operations and the wider community.

4.2 Summary

This document outlined the recommended approach to develop a substantive IEM training programme. It includes guidance on the IEM Competency Framework, the Self-Assessment Tool and how they should be used to realise crucial recommendations of the RRP Emergency Management Review: Findings and Recommendations Report.

Based on the Competency Framework, the suggested approach of developing blended IEM learning programmes for all rail entities was then outlined. The key areas of the approach are summarised below and are visualised in *Figure 7* below.

Figure 7 - Summarised Process for Rail Entities to develop an L&D Programme for IEM

- Defining IEM L&D Policy: Establishing a policy that aligns with the overall business strategy and integrates IEM training into core business processes. The policy should focus on equipping staff with the necessary skills and knowledge to handle emergencies effectively.
- Identifying Needs: Conducting thorough Learning Needs Assessments to determine the specific requirements of individuals and teams. This involves evaluating individual behaviours, meta skills, foundational knowledge, and domain-specific knowledge, as well as assessing the organisation's cultural readiness and adaptive capacity.
- Learning Design: Developing a curriculum pathway for IEM professionals that includes both traditional and digital learning methods. The curriculum should cover principles and values, meta skills,

foundational knowledge, and domain-specific knowledge, tailored to separate roles within the organisation and aligned to the IEM Competency Framework.

- Development of Resources: Utilising various engagement methods such as active learning techniques, peer coaching, case studies, and simulations to enable effective learning. Emphasis is placed on integrating learning into everyday business practices.
- Delivery of Training: Creating conducive physical and virtual learning environments, leveraging technology, and employing skilled facilitators to deliver training. A blended learning approach is recommended to combine e-learning, classroom training, and on-the-job application.
- Embedding Training and Support: Ensuring ongoing support for role holders through coaching, mentoring, and performance management processes. Embedding training into organisational processes is crucial for sustained capability development.
- Assessment of People: Implementing continuous assessment and feedback mechanisms to monitor progress and identify areas for improvement. Various forms of data (narrative, qualitative, and quantitative) are used to evaluate individual and organisational performance.
- Evaluation and Review of Programme: Using the Kirkpatrick Model to evaluate the effectiveness of training programmes at multiple levels, from immediate reactions to long-term results. Regular reviews and updates are necessary to assure alignment with organisational objectives and continuous improvement.

5 Glossary of Terms

Term	Definition
Assessment:	identifying and collecting data which enables a judgement to be made about performance on the process or outcomes of learning.
Capability	Refers to the ability of a person, team or organisation to achieve specific outcomes. It incorporates the capacity to adapt and respond to challenges in new and evolving situations.
Competences	A competence is the ability to effectively apply values, meta skills, knowledge and functional skills to perform a specific task or role to a defined standard.
Core values and principles	important principles that should guide people's behaviour and decision making. Can be evidenced through narrative accounts in specific contexts.
Domain	A specific area or field or category of knowledge, expertise or human activity. In this case the domain is Emergency Management in the Rail Industry.
Evaluation	The use of data to improve practice at individual, team, organisational or industry levels.
Formative Assessment	Data as above which is used explicitly to enable the 'tutor' or the 'learner' to understand what to do next to achieve the purpose of the learning journey.
Foundational knowledge	This is cross-cutting knowledge (as above) which is foundational for understanding a particular domain.
Functional Skills	These are core practical skills which are essential for everyday tasks and workplace activities. They enable the effective operation of real-world activities and the application of knowledge in authentic contexts.
Knowledge	The facts, information, data and skills that can be accumulated by a person to develop theoretical and practical understanding of domains. It can be explicit or implicit. Can be evidenced through recall, questioning, traditional testing, MCQs and Vivas.
Meta Skills	Overarching, high level thinking skills which enable a person to learn, adapt and apply more specific knowledge and functional skills in specific contexts to respond to, and find solutions for, complex challenges. Can be evidenced through 'meta-cognitive' accounts of how a solution was arrived at.
Portfolio Assessment	A body of materials constituting evidence of progress in capability development, which is collated and curated by an individual to demonstrate how they are achieving the goals and expectations of the organisation. Can be used for training and development as well as performance management and should be aligned with the 'job to be done' by the individual.
Summative Assessment:	Data as above which is used explicitly to enable the 'tutor' to make a judgement about performance against a predetermined learning outcome.

Rail Delivery Group

National Rail

Rail Delivery Group Limited Registered Office, 2nd Floor, 200 Aldersgate Street, London EC1A 4HD
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