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Good practice note

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Managing Road Safety in Emerging Markets

Supported by

Strategic Analytics Team

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Methodology

This good practice note is based mostly on secondary information gathered from the public domain. Primary data was also gathered through independent research by Strategic Analytics Team Ltd. and included an empirical survey and qualitative interviews with individuals from portfolio companies and the wider public on road safety practices.

Disclaimer

Contents

Introduction

Context

The private sector and investors are increasingly seeing a need to enforce stronger practices around road safety planning, monitoring and reporting in organisations in emerging markets. Establishing a strong road safety culture and reinforcing this by senior management is a key foundation for good road safety management systems.

CDC, PIDG, SIFEM, FMO and Proparco recognised the need for a good practice note focusing on practical solutions and good practices to improving road safety in their individual portfolios and beyond to all organisations operating in emerging markets, with useful tools, good practice recommendations and case studies from their portfolio.

Objectives and scope

This good practice note aims to support organisations in emerging markets to improve their road safety processes by providing practical advice on planning, implementing, monitoring and reporting on road safety management systems. The objective of this note is not to provide new standards, but to provide practical tools, case studies, good practices and access to external resources to support investors and companies to strengthen or develop road safety management systems.

Audience

The main audiences of this good practice note are:

- *organisations where road-related travel is an integral activity in their supply chain or main operations*. This note provides guidance for senior management in these organisations as well as for the health and safety/journey management/road safety teams on managing drivers as well as contractors;
- *organisations where road-related travel is an indirect operation (that is, employees travelling to work by road)*, this note provides guidance on good practices towards ensuring employee safety during road travel; and
- *investors who want to improve road safety performance in investees in emerging markets*. Within this group, the guidance is mainly relevant for environment, health and safety (EHS) specialists, investment staff or compliance professionals.

How to use

This good practice note serves as a comprehensive resource for investors and companies. For ease of use, readers should refer to the table of contents or the navigation table on the next page to identify sections that are most relevant. Many sections are relevant to both investors and companies, though some focus on one or the other and this is indicated in the navigation table.

Information is supported by good practice examples as well as practical tools and checklists which are included at the end of the document, including questionnaires and guidance on road safety planning. Each section also includes further guidance and resources to support the reader:

Additional resources	Additional links to resources which cover certain topics in greater detail
Toolkit	Reference to tools and templates in the annexes
Suggestions	Aspects for readers to consider to further enhance or strengthen their practices
Good practice	Recommendations in line with good international practices or standards
CDC Group insight	Analysis from the fatal incidents reports[1] published annually by CDC Group
Case study	Examples of good practices around road safety management implementation at select investee companies

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 Investors

 EHS managers / journey management team

 Senior management

 Drivers and contractors

Acronyms

CDC	CDC Group Plc
EHS	Environmental, health and safety
FMO	Financierings-Maatschappij voor Ontwikkelingslanden
GSM	Global System for Mobile Communications
ISO	International Organization for Standardization
KPI	Key performance indicator
PIDG	Private Infrastructure Development Group
SIFEM	Swiss Investment Fund for Emerging Markets
UN	United Nations
WHO	World Health Organization

Glossary

Accident	An unexpected event that has happened in the workplace which has caused personal injury, death or ill health of an employee or member of the public, or damage to property.
Competent drivers	A driver who has a combination of training, skills, experience and knowledge to drive a vehicle safely.
Incident	An event in the workplace that has not caused personal harm and may or may not have caused damage, but that warrants reporting.
Journey management	The control of the movement of people, goods and vehicles during any journey to ensure their safe arrival.
Non-routine journey	A journey that is not considered a routine journey and includes unexpected or increased risks from re-routing an ongoing journey or a journey that requires additional attention or resources.
Organisational culture	Shared organisational beliefs and values established by leaders and communicated and reinforced through various methods, ultimately shaping employee perceptions, behaviours and understanding.
Pedestrian	Any person who is travelling by walking for at least part of their journey. In addition to walking, a pedestrian may use various modifications and aids to walk such as wheelchairs, motorised scooters, walkers, canes, skateboards and roller blades. A person is also considered a pedestrian when running, jogging, hiking or when sitting or lying down in the roadway.[2]
Performance management	The process of ensuring that a set of activities and outputs meets an organisation's goals in an effective and efficient manner.
Performance metrics	A quantifiable measurement of behaviour, activities and/or overall *performance* of an organisation or an individual.
Road risk level	A scoring system that measures all the factors affecting road use.
Road safety	The systematic application of a series of control measures to minimise the risk of harm to road users.
Road safety programme	An effective tool for the development of system-based road safety policies and procedures.
Routine journey	A journey that is regularly undertaken by a driver as part of a scheduled or regular route where the risks have been assessed as reasonable, hazards are understood and there is no expected deviation from the planned route.
Safe vehicle	Vehicles that are manufactured to meet all major international standards, maintained correctly and legal to operate.
Third party	Any individual who does not have a direct connection with an organisation or individuals but who might be affected by its activities.
Work related	An event or exposure in the work environment that either causes or contributes to a resulting condition or significantly aggravates a pre-existing injury or illness.[3]

Executive summary

In February 2020, following the UN's Decade of Action for Road Safety, the World Health Organization set an ambitious goal of reducing road traffic deaths by 50 per cent by 2030.[4] This has set a need for governments, technical experts, the private sector and financial institutions to work towards safer roads and a strong road safety commitment in their operations. Private sector organisations are morally, legally, financially and socially responsible for the road safety performance of their activities. This coupled with an increasing interest from potential investors and lenders to work towards international standards has resulted in more forward-looking organisations taking the initiative to go beyond local legal requirements by implementing recognised international standards.

This good practice note aims to support this commitment to road safety and to provide practical recommendations and good practices for organisations in emerging markets across various aspects of road safety management. These include establishing a strong corporate road safety culture, understanding risk assessments, implementing procedures around vehicle and driver selection and monitoring/reporting on incidents. It provides tools and guidance, along with case study examples, to address the risk of road safety in an organisation's operations and provides good practice recommendations to minimise and manage these risks. It is intended for health, safety and environment, procurement, logistics and contract management professionals operating in those emerging markets with the highest rates of road transport-related incidents and fatalities.

The document has been developed to provide good practice recommendations for organisations across all sectors including those where road transport is an indirect function. Hence, there is a need to prioritise the recommendations based on the nature of operations, scale of the business and organisation's priorities.

It is divided into seven chapters that outline the main aspects of a corporate road safety management plan and support an organisation in planning, developing and implementing their road safety system. The following are key components of a strong road safety management system:

Corporate culture and responsibilities	The first step to improving road safety in an organisation is to establish road safety as a corporate agenda, through governance structures and regular reporting that ensure a strong corporate road safety culture. This is key for ensuring participation and commitment from employees, contractors and sub-contractors – alongside involving senior management and establishing formalised management systems that focus on aspects such as governance, road safety policy, risk assessment, management procedures and training.
Driver selection and management	Drivers (direct and contractors) represent the organisation in public and hence recruiting and training competent drivers will play a key role in reducing road safety incidents and improving approaches to safety in an organisation.
Vehicle selection and management	Vehicle safety requirements, inspections and regular maintenance help to ensure protection of drivers and other road users.
Road safety technology	Technology can play a key role in monitoring and improving road safety operations and supports an organisation in achieving other goals such as driver safety, risk assessment and reduction in emissions.
Journey management	Establishing a robust procedure to undertake route risk assessment, providing training for drivers/contractors and monitoring journeys are key to identifying road safety risks and opportunities.
Accident incident investigation and management	Investigating an accident/incident allows an organisation to identify what went wrong and implement preventative measures to improve road safety. Unbiased, honest, transparent and collaborative investigation procedures allow for detailed analysis of root causes and recommendation of corrective actions, which all improve overall road safety.
Vulnerable and other road users	Training and awareness to all employees, contractors and sub-contractors on vulnerable road users further strengthens an organisation's commitment to road safety.
Annexes	Further detailed information and practical tools to support and help organisations plan and implement road safety objectives is included in the annexes. Organisations unsure of how they can plan and execute an effective road safety policy and associated procedures should seek the advice of a specialist road safety consultant.

01

Corporate culture and responsibilities

Objective

Develop and implement a robust management system with clear responsibilities outlined for all stakeholders to ensure a strong foundation for improving road safety performance in an organisation.

Good practice recommendations

- Implement a strong road safety culture led by senior management, and embed this within the corporate agenda, as the foundation for good road safety management.
- Create a structured road safety management system with policies and procedures around responsibilities, risk assessment, investigation procedures and performance management monitoring. This is essential for an organisation to continuously improve road safety performance.

The foundation of good road safety management is a strong, positive, organisation-wide road safety culture, led by senior management and reinstated regularly as a corporate priority across operations. This chapter explains how to enable a positive internal environment to support reducing the human cost of an organisation's road transport activities.

1.1 Road safety culture

A road safety culture is the collective behaviours and beliefs of an organisation's stakeholders with respect to their perception, tolerance and appetite for road safety risks. A positive road safety culture is the primary factor for the long-term success of any road safety initiative, as it relies on the action of its employees/stakeholders. 'Internal environment' refers to the processes, management styles, incentives, ethical and responsible business behaviour, open and transparent reporting, and clear accountabilities of an organisation.

A positive organisational culture requires senior management to lead by example, demonstrate their belief in road safety initiatives, and inspire employees and contracted personnel through their personal commitment. Such leadership can take many forms, including setting good examples in day-to-day tasks such as using seat belts, leading toolbox talks with drivers and conducting management inspections and walkabouts. Establishing a governance structure or mechanism to review progress against an organisation's road safety agenda and safety statistics, respond to accidents/incidents and provide approval for necessary budgets is also key to a collaborative and proactive road safety culture.

Senior management should also set a visible example by attending trainings, participating in award and recognition programmes and publishing videos on the importance of road safety. They should aim to enable improvement by engaging with middle management, challenging the organisation's road safety performance and allocating adequate budgetary resources.

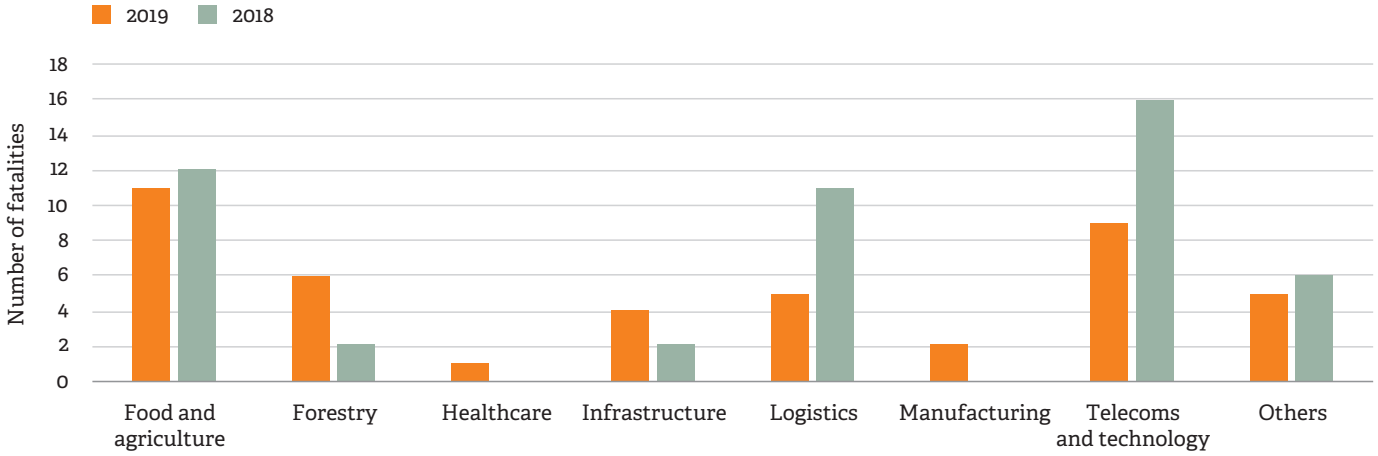
1.2 Components of a road safety management system

Developing and implementing a road safety management system will help ensure that road safety culture is sustainable over the long term. The complexity of the system will depend on each organisation's exposure to road safety risks, including their fleet size, road risk exposure, operating area, environmental and social conditions.

CDC Group insight

On review of the fatalities reported to CDC Group Plc from portfolio companies (direct and intermediary investments) from 2018 and 2019, logistics, food and agriculture and technology sectors showed a high number of road-related fatalities involving direct workers, contract workers and third parties.

Figure 1 Road-related fatalities reported to CDC Group by sector



These sectors are known to have inherent risks associated with driver fatigue, late night driving, poor compliance with safe vehicles and poor training or implementation across their operations. Also, most journeys will require travel in areas where roads are poorly maintained, and this leads to further road-related incidents if the drivers are unaware of these conditions or are not trained on techniques such as defensive driving. Hence, in this situation, a strong road safety culture along with good procedures to train drivers, manage vehicles and plan journeys will be key role to reducing loss of life in the company and also reputational risks associated with the same.

The road safety management system should be regularly reviewed and updated to align with corporate goals and objectives. The necessary components of a road safety management system, good practice recommendations and minimum requirements are outlined on the next page.

Additional resources

The Road Risk Toolkit[5] by the Global Road Safety Facility in partnership with the European Bank for Reconstruction and Development provides road safety procedural templates and resources to support in the development of a road safety management system.

Toolkit

An example of a road safety policy statement is included in **Annex 1: Example road safety policy statement**.

Road safety management system components	Good practice	Minimum requirements
Planning	Benchmark the organisation's performance against recognisable standard or historical road safety data or publicly available road safety data for a comparable industry/geography. Terminology to be used should be in line with good industry standards such as ISO 31001:2018, ISO 39001:2012, ISO 45001:2018 or ISO Guide 73:2009. Guidance from a recognised road safety specialist is recommended.	
Goals and objectives	Establish a long-term achievable goal, based on a benchmarking exercise for, for example, zero fatalities by 2050 or zero tolerance to unsafe behaviour. Agree on specific, measurable, achievable, relevant and time-bound (SMART) objectives to achieve the goal. The objectives and goal should be signed off and reviewed regularly by senior management.	A commitment to ensuring the safety of all stakeholders during operations is included in an integrated or standalone policy signed off by senior management. All workers (including contractors) should be made aware of the same. Management should regularly review road safety incident/accidents and use learnings to inform policy and improve the organisation's approach to road safety. Regular reporting to Board members on road safety statistics including road-related fatalities (direct and third party).
Policy	A policy (standalone or integrated with other relevant policies such as environment, health and safety (EHS)) outlining commitment to road safety goals, objectives and key performance indicators (KPIs) that is displayed across all areas in an organisation and included in contractor agreements as well as a one-page policy statement outlining key objectives to enhance communication with all stakeholders developed and included in regular trainings.	
Dedicated team/resource (depending on company size)	The decision to establish an integrated or dedicated road safety team will be determined by the size of the road safety operation, with larger operations more likely to justify dedicated resources. The selected personnel should ideally have experience in the sector and understanding of road safety management practices and will be responsible for developing the road safety framework, specifying road safety monitoring technology and implementing journey management procedures.	Organisations can consider training the existing EHS team to ensure road safety capabilities or hire external specialists to support in developing and training on road safety procedures.
Risk assessment	The purpose of any road safety risk assessment should be to identify the risks related to road safety, the likelihood of these occurring, factors affecting driver behaviour (eg: driving period and compensation structures) and the impact on achieving an organisation's road safety objectives. The assessment should also recommend controls/initiatives to be implemented to reduce the likelihood of occurrence. It should be carried out by a competent trained person and reviewed by a journey management team.	As a minimum, the organisation should have in place a procedure to identify and mitigate road safety risks and procedures implemented for monitoring the same as part of the risk assessment framework. This should also address road safety risks during temporary or seasonal activities (such as during construction or harvesting) where road safety risks may be high.
Procedures	Management procedures should be established outlining criteria for driver recruitment, vehicle selection, risk management, journey planning, performance management, training and accident/incident investigation.	
Training and performance management	Regular communication on road safety policy (such as display of visual communication material, regular toolbox talks, peer-to-peer mentoring sessions), acknowledging and responding to incidents, and channels to record and monitor complaints, that consider local languages and literacy levels, should be set up for key stakeholders to input into the road safety framework. Action-based incentive schemes, performance management systems and community engagement initiatives further strengthen the driver/contractor's resolve to comply with the road safety standards.	Induction and refresher trainings to be provided to all drivers. Regular feedback and a procedure to report and track grievances must be established as well.

1.3 Stakeholder responsibilities

To ensure a strong corporate road safety culture, participation and engagement at all levels of the organisation is crucial. While day-to-day activities and responsibility for implementing the road safety management system will lie with the on-ground teams, senior management need to participate to spread further awareness across the organisation and highlight company objectives. Broad roles and responsibilities for implementing road safety in an organisation are outlined in the table below.

Function	Responsibilities	Good practice recommendations
Investors and Board of Directors	Ensure road safety is included as a corporate agenda. Review and approve the organisation's vision and goal to achieve certain objectives. Approve required budget and resources for implementing the road safety management system.	Reinforce the organisation's road safety approach during Board meetings and discussions. Review performance reports and challenge the organisation's road safety performance. Participate in sub-Board committees or management committees related to health and safety to ensure road safety plan is on track. Consider incentives linked to road safety performance of the organisation. **Annex 2** provides examples of potential metrics/ KPIs.
Health, Safety and/or Environment committee/audit committee or similar	Ensure representation from senior management and teams responsible for managing road safety within the operations. Provide a governance structure for reporting on, improving and strengthening the road safety programme. Report on progress against initiatives, road safety data and any critical actions to be refined. Appoint suitable technical consultants or advisers to support in improving road safety performance.	Circulate minutes from the meeting to the Board. In the absence of a relevant Board committee on road safety or health and safety, discuss these points at Board meetings.
Management	Demonstrate visible leadership and commitment on road safety and lead implementation of the road safety plan. Identify suitably qualified personnel to implement the road safety framework. Ensure adequate resourcing of road safety.	Share road safety communication videos, posters and events with both internal and external stakeholders. Provide regular updates, reports and information to the Board on the road safety plan and process.
Team or resource/s responsible for EHS, HSE, road safety or driver safety	Develop, implement and monitor the road safety management system. Submit detailed reports to senior management on serious accidents/incidents, recommendations, capacity building needs and other such requirements. Provide technical road safety support including training and awareness activities.	Provide senior management with detailed requests for resources and outline the need, advantages and timeline for the same. Continuously identify opportunities to further enhance and improve the road safety management system.
Drivers	Understand and comply with the organisation's road safety management systems.	Chapter 2 provides detailed recommendations on driver selection and training.
Contract drivers and fleet managers	Organisations should consider the following measures to integrate contractors into their road safety culture: – Follow due diligence procedures when sourcing and selecting contractors; review their road safety management plan, training programmes and track record to deliver on road safety before commissioning. – Include legal clauses in the agreement tied to road safety KPIs and performance-based payment milestones. – Strengthen onboarding/training for contractors. – Proactively engage with contractors and maintain regular, transparent communication on their performance and recommendations. – Consider working with a smaller number of trusted contractors, that have undergone a robust due diligence process, and understand the organisation's culture and requirements.	

1.4 Corporate governance

A strong road safety management system and culture should be rooted in a corporate governance approach, to ensure Board, senior management and main decision-makers include road safety in the corporate agenda. Investors can establish sub-committees of the Board or management committees to get regular reports and updates on road safety and any additional initiatives/trainings provided by the company. When establishing a committee to manage road safety:

- make sure senior management are represented;
- include suitably qualified and experienced external members, as relevant;
- pre-determine the frequency for meetings (quarterly, semi-annually or annually);
- agree on a meeting format and agenda before the meetings;
- identify and agree on KPIs to monitor the organisation's road safety performance;
- agree on a benchmark to use and monitor road safety performance;
- ensure open and collaborative discussion during committee meetings; and
- circulate minutes of the committee meeting to the Board, highlighting any key progress updates, achievement or road-related serious incidents.

Organisations can also consider including road safety as a standing agenda item for Board meetings and require reports or updates on road safety statistics, progress against the road safety action plan (if any developed) and any additional initiatives or road safety training programmes being organised to be included in the committee pack/material and circulated to all members.

Toolkit

Examples of reporting metrics and key performance indicators are listed in **Annex 2: Road safety reporting metrics/ key performance indicators**.

1.5 Road safety monitoring and improvement

By establishing and tracking specific performance indicators/metrics, an organisation can monitor progress against its objectives and identify areas for improvement. A good road safety monitoring system should include both leading and lagging indicators and be aligned with the overall road safety goal and specific objectives.

Leading indicators

- Define the actions necessary to achieve the road safety objectives with measurable outcomes and do this by providing benchmarks that, if met, will be indicative of meeting the overall road safety goal.
- These are often described as inputs that are typically dynamic but difficult to measure.
- Include, for example, number of trainings undertaken or inspections conducted.

Lagging indicators

- Are easy to measure but hard to change as they only reflect actual historical events. They are sometimes described as an output metrics.
- Include, for example, road safety incidents/million kilometres driven or number of road traffic violations.

The responsible teams, along with senior management, should demonstrate commitment to the process by regularly analysing performance and basing decisions on objective performance data. The results of such performance should then be used as the basis for future road safety budgeting decisions, communication activities and training plans. Once the method of data collection has been identified, specific performance metrics should be defined, with specific definitions to ensure consistency. Interested parties such as employees or their representatives should also be consulted with during this process. The results should be shared at Board meetings to ensure awareness of any road safety issues or trends and to support informed decision-making at a senior level. Senior management can use performance data to shape corporate goals and objectives and to approve budget for road safety initiatives and training.

Good practice

When developing an approach to road safety monitoring, the responsible personnel/teams should consider the following:

- Any local regulatory or insurance requirements must be complied with.
- Adequate resources and staff training will be needed, ahead of time.
- Consistent and comparable performance indicators will need to be established to identify trends over time. For example, an absolute number of road traffic accidents/incidents for an organisation with four vehicles should not be compared with an organisation that operates 7,000 vehicles.
- Regular reporting on performance is critical for continual improvement, identifying trends and for ensuring appropriate budget is made available for further improvements.

Toolkit

Examples of reporting metrics and key performance indicators are listed in **Annex 2: Road safety reporting metrics/ key performance indicators**.

1.6 Performance management programmes

Organisations should have procedures to continuously improve road safety performance via an appropriate and proportionate safety management system, incentivise drivers and contractors to comply with the system, and manage road safety violations and unsafe behaviour.

Assurance and continuous improvement	– Activities to drive continuous improvement should be multifaceted and reflect performance monitoring and reporting priorities. Examples include driver/operator vehicle checks or visual inspections, regular management visits, reviews of journey management data or in-vehicle monitoring, periodic reviews of management system, feedback collection and lessons learned sessions. – Records should be maintained on driver attendance, performance, trainings and any accidents/ incidents reported, and activities periodically reinforced through internal or external audits. – Further resources can be found in the Health and Safety Executive's guide to measuring health and safety performance.[6]
Incentive and reward programmes	– Reward programmes should be based on leading and lagging indicators. Examples include employee safety suggestions, participation on safety committee, evidence of good driving behaviour from in-vehicle monitoring and longest safety record. – Organisations can consider providing non-financial incentives such as public recognition by managers in toolbox talks or annual driver appreciation events. – Small rewards should be given frequently, rather than large rewards infrequently, to maintain motivation among the entire team, rather than just a small group with the most points. – For further information on incentive and reward programmes see guidance from the UK HSE.[7]
Awareness raising	– Coaching sessions with the drivers or techniques to improve culture towards identifying and reporting near-miss, unsafe acts and other interventions to improve road safety should be discussed and encouraged. – Situations should be handled with progressive response depending on the nature and severity of the violation. Often companies issue initial warnings to first-time offences before initiating full disciplinary procedures. Such proportionate approaches can work towards to maintaining discipline and respect for the road safety programme, without resulting in the loss of otherwise valuable personnel.

Good practice

Reward and coaching programmes should be developed in line with overall EHS goals and linked to findings from a detailed incident investigation process. The procedures should not be solely the responsibility of the road safety team and should be interlinked to the governance of an organisation. Companies must also consider additional trust-building procedures to establish strong communication between drivers and management teams on road safety.

02

Driver selection and management

Objective

Develop and implement a robust framework for driver recruitment, performance management and capacity building to enhance the selection and training of 'competent drivers' in an organisation.

Good practice recommendations

- Develop criteria for driver and contractor recruitment including driving experience, professional recommendations, violation history, documentation and fit-to-work tests.
- Establish professional development programmes to increase drivers' capacity and training.
- Make sure fatigue is managed appropriately to ensure driver performance and safety.

Organisations should aim to recruit and train competent drivers. A competent driver has a combination of training, skills, experience and knowledge that allows them to drive a vehicle safely. Factors such as attitude and physical ability can also affect a driver's competency.

Often working alone, competent drivers are critical for the success of a road safety programme and the safe deployment of vehicles on transport operations. Competent drivers can:

- enhance the reputation of an organisation and reduce the organisation's road risk level;
- reduce the likelihood of involvement in accidents or incidents that result in harm to the driver, other road users and communities. Fewer accidents can improve the organisation's reputation and avoid additional operational costs associated with resulting delays to shipments, damaged goods and vehicle repairs; and
- ensure that vehicles are properly maintained and driven in a manner that reduces wear and tear and improves fuel performance. Well-maintained and operated vehicles can reduce operating costs, improve road safety and improve profits.

The three types of drivers in an organisation are defined as:

Professional drivers

- Employed directly to drive for the organisation in line with driver recruitment requirements
- Normally drive for more than 75 per cent of their duties
- Key stakeholder in developing and implementing the road safety management programme
- **Good practice:** Drivers should undergo regular fitness tests and training on vehicle maintenance, journey management, accident/ incident reporting and feedback sessions

Non-professional drivers

- Employed by the organisation but not for professional driving. For example, employees who drive their personal vehicle to work
- Require organisation-led training; in some countries this may be a legal requirement and organisations should check
- **Good practice:** All employees should be aware of the organisation's road safety objectives and systems

Third-party drivers

- Workers that drive for the organisation indirectly, including professional and non-profressional drivers
- Should be aware of contractor clauses and comply with organisation's road safety requirements
- **Good practice:** Ensure that all drivers undertake training as part of contractor clauses

A strong driver management framework will also consider third party or contract drivers. Instead of owning, operating and maintaining their own fleet, companies may opt to subcontract driving responsibilities to other organisations. This can offer multiple advantages by reducing the cost and responsibilities of training and managing drivers and maintaining vehicles and equipment. However, companies also then have less oversight and control over who is driving on their behalf and their skillset, experience and training. It is therefore important to partner with a contractor who has strong values with respect to road safety and to clearly communicate expectations and ensure these are reflected in the contractual agreement.

CDC Group insight

Examples of reporting metrics and key performance indicators are listed in **Annex 2: Road safety reporting metrics/ key performance indicators**.

This good practice note mainly focuses on professional and third-party drivers, but some recommendations can also be extended to non-professional drivers to enhance an organisation's commitment to improving road safety. These could include issuing recommendations on safe driving practices, requiring use of seat belts and helmets in personal vehicles and providing company-organised transit to/from communities in the early morning or late at night.

2.1 Competent driver management framework

Driver competency is best assured when organisations follow a driver management framework that supports the recruitment and development of all employees in the organisation.

A driver management framework should include procedures for:

1. **Driver selection:** including recruitment criteria, fit-to-work assessments and records to be submitted.
2. **Driver training:** the process to identify capacity needs, training for professional development through accredited and recognised providers.
3. **Driver management:** mainly performance management.

Driver selection	
Experience and technical capabilities	– Practical assessment of safe driving techniques – Review of experience and recommendations from previous employers – Review of violation history – Assessment of non-driving skills: reading, writing and communication
Records – review	– Driver details and history – Copy of driver's license and other related permits in line with local legislation – Based on type of vehicle being driven, appropriate permits and licenses to be maintained – Compliant with local legislative requirements
Fit-to-work assessment	– Visual and hearing tests – Medical assessment carried out by a qualified medical professional. The purpose is to identify any cognitive, physical, motor or sensory impairments, sudden incapacitation disorders, substance-use disorders, psychiatric illnesses or other medical conditions which may affect a person's ability to drive. These examinations should be carried out fairly and confidentially and accompanied by education, prevention and treatment programmes. Medical results should be implemented and stored in line with data privacy and non-discrimination policies – Robust policies and awareness raising on drug and alcohol use is required as well
Third-party driver selection and management	– Contractors should be made aware of the company's corporate culture and requirements around road safety, driver training and vehicle maintenance – Company can consider undertaking a due diligence procedure including review of contractor road safety management plan, training programmes and track record to deliver on road safety before commissioning – Legal clauses should be included in the agreement and tied to road safety KPIs and performance-based payment milestones – Companies should consider working with a smaller number of trusted contractors, that have undergone robust due diligence processes, and understand the organisation's culture and requirements

Driver training and development	
Direct employees/ drivers	– **Mentoring and coaching** programmes help drivers improve their performance – **Regular training** reinforces road safety messaging and good practice – **Specialised training**, such as defensive driving, can be provided in-house or through accredited providers to advance drivers' knowledge and skills – Drivers transporting **dangerous goods** or **hazardous materials** should undertake specialised training on how to handle these loads safely and what to do in an emergency
Third-party/ contact drivers	– Contract or third-party drivers should also be included in the regular and specialised training programmes – Regular and transparent communication with third-party drivers on performance, training targets and goals is essential

CDC Group insight

More than 35 per cent of the road-related fatalities reported by portfolio companies to CDC Group in 2019 were caused by non-compliance to company procedures. This was mainly around lack of helmets, driving beyond the speed limit, driving late at night, exceeding the maximum safe number of passengers per vehicle or performing poor or insufficient pre-journey safety checks. Hence, it is vital for organisations to have in place an engaging and regular training programme to ensure driver participation in the overarching road safety agenda.

Additional resources

- The Road Risk Toolkit[8] by the European Bank for Reconstruction and Development and Global Road Safety Facility offers free training for light vehicle, motorcycle and heavy vehicle drivers and fleet managers.
- Use of mobile phones while driving is a leading cause for road safety accidents and incidents in many countries globally. The World Health Organization (WHO)'s guidance on the use of mobile phones[9] provides useful interventions that organisations can consider if they face similar concerns.

Driver management	
Performance management	– Provide regular training to drivers on organisation's policies and procedures, especially for third-party drivers – Facilitate regular feedback sessions (excluding daily check-ins) to encourage employees to raise issues, ask questions and share knowledge – Establish a grievance recourse mechanism to receive, manage and address complaints – Establish recognition and reward programmes
Record keeping	– Maintain records of driver details, licences and permits, in line with data privacy policies – Maintain training records on courses completed and certificates obtained
Health assessment	– Run annual health check-ups and assessments by qualified medical professionals to ensure drivers remain fit to work – Undertake regular eye tests – Sensitise drivers/contractors on alcohol and drug use policies
Fatigue management	– Assess if existing work schedules or compensation methods contradicts fatigue management targets for drivers. – Establish policies and procedures to manage fatigue, including on shift patterns, frequency of breaks, late night driving and leave policies – Train drivers and fleet managers to recognise early signs of fatigue (such as yawning, difficulty keeping eyes open, loss of concentration) and put in place contingency plans should a driver be unable to operate a vehicle safely – Undertake audits on professional driver working hours and break frequency to ensure implementation of policies – Encourage reporting of excessive working hours through the grievance recourse mechanism or other communication channels – Consider providing facilities, such as beds and showers, where drivers can rest between shifts

Case study: *Investee company in Colombia*

Challenge:

A public sector organisation in Colombia operating a fleet of mixed buses sought to improve road safety practices following a series of accidents involving pedestrians and motorcyclists. The organisation used the following approach to reduce the number of accidents their vehicles were involved in.

Action:

– The organisation developed a 12-point continual improvement programme for drivers. This consisted of daily briefings (toolbox talks), recognition and reward schemes and implementing a robust driving policy for drivers.

– The organisation undertook an in-depth analysis of the accidents it was involved in. It executed this by analysing available data and conducting a risk analysis of the routes, road structures, driver behaviour and weather conditions. The organisation identified key indicators and created a standard severity rating that can be applied to all accidents.

– The organisation applied the same rules to its primary fleet and its contractors' fleets. It openly shared information and results of accident investigations with all drivers and through safety committees provided clear communication on the new driver policy, so that all parties understood the organisation's new road safety objectives.

Result:

Introducing these actions led to a 10.7 per cent reduction in road-related fatalities in the first half of the year.

Additional resources

The International Labour Organization (ILO) recommends that drivers should not be allowed to drive for more than four consecutive hours without a break and maximum total driving time, including overtime, should not exceed nine hours per day or 48 hours per week. More information can be found under the ILO's Hours of Work and Rest Periods (Road Transport) Convention (No 153[10]) and Recommendation (No 161).[11]

2.2 Driver retention

Attrition of drivers and fleet operators has a major impact on managing an effective road safety system and training programme. Organisations usually budget for the capital expenditure needed to onboard new drivers and enrol them onto capacity building, training or certification programmes to improve their commitment to road safety. To manage retention of drivers in an organisation, consider the following interventions:

- establish forums/channels to collect feedback, grievances or suggestions from drivers and contractors on a regular basis. These can be in the form of anonymous emails, one-to-one feedback discussions, group workshops or a suggestion box. Organisation should make sure that the process is run in a transparent and unbiased way to ensure drivers and contractors are comfortable to participate and provide useful feedback;
- reiterate the important role drivers and contractors have in implementing the corporate road safety agenda and encourage them to participate in the above-mentioned feedback sessions and workshops; and
- review information provided by HR from driver exit interviews to identify areas for improvement and drivers' main concerns to pre-empt attrition.

Suggestion

Organisations can offer their drivers and contractors support by providing good working conditions, monitoring working hours and overtime, providing access to tools to identify and manage fatigue, and maintaining a collaborative corporate culture.

03

Vehicle selection and management

Objective

Develop and implement a framework for vehicle selection, maintenance, servicing and disposal.

Good practice recommendations

- Develop a framework for vehicle selection including vehicle type, safety record of vehicle brand/make and maintenance requirements.
- Incorporate considerations for safe vehicles based on vehicle type.

A safe vehicle can be defined as one that protects drivers, passengers and other road users from avoidable danger or harm. Vehicles should be bought for purpose based on their expected use with all standard safety features such as seat belts and roll bars and should not be retrofitted to service another requirement (such as goods vehicle without any safety features used to transport workers).

CDC Group insight

12.7 per cent of fatalities in CDC's portfolio reported in 2019 were due to workers being transported in a goods vehicle instead of a passenger vehicle.

This chapter discusses how vehicles should be managed in support of organisational road safety. As vehicle-related accidents/incidents are the leading cause of serious injuries and fatalities during road transport-related operations, safe vehicles will always be a key component of any successful road safety initiative.

To facilitate a systematic and efficient approach to managing vehicle safety, organisations should adopt a vehicle management framework that supports a structured approach to managing each stage of a vehicle's life cycle, including its disposal when retired by the organisation. The following graphic shows the minimum guidelines such a framework should include.

Selection and procurement

- Good all-round visibility for drivers
- Fitted warning systems, safe and comfortable seat belts/restraints, roll protection or operator restraints
- Safeguarding from dangers such as power take offs, chain drives, exposed hot exhaust pipes
- Protection from bad weather, extreme temperature, dirt, dust or fumes
- Sufficient lights provided and brightness of the vehicle

Visual inspection

- Regular visual inspections should be carried out to identify defects that can affect the safety of the vehicle, passengers or other road users.
- Drivers, contractors and subcontractors should undertake regular inspections before driving and records should be maintained and monitored by supervisors.
- Any defects identified should be reported to supervisor and repaired.

Maintenance and servicing

- Vehicles should be maintained in line with vehicle manufacture guidelines. Replacement parts should meet international manufacturing standards and be sourced from reputable manufacturers.
- Special attention should be given to warning devices, specific safety systems such as control interlocks, warning devices, brakes, tyres, steering and any fittings that allow drivers to see clearly.
- Accurate records should be maintained for any repair or replacement work.
- **Good practice:** Tyres should not be used if they are over ten years old and should be replaced.

Disposal

- As a minimum organisations should have a policy around reason for disposal (maximum permitted age), recovery of value, third-party disposal and compliance with local legislation.

Toolkit

Further information and guidance can be found in **Annex 4: Safe vehicle criteria** and **Annex 5: Vehicle inspection checklist** for organisations to use and adapt for their own purposes.

3.1 Vehicle types

Organisations should consider having in place minimum safety requirements for the vehicles used, in line with national legislation (such as the Indian Automotive Industry Standards,[12] global Technical Regulations[13] or ISO standards for road vehicles[14]). Organisations should consider the following when transporting passengers or goods:

Goods vehicles	– Goods vehicles are designed to carry goods and materials and not people. Organisations should ensure that vehicles are used for their intended purposes and not for uses they are not designed for. For example, transporting passengers in the back of goods vehicle can lead to serious harm or death to the passengers if the vehicle is involved in an accident. – Drivers of goods vehicles should undertake appropriate specialised training for the type and size of goods vehicle they will be operating, especially if hazardous materials are being transported, so that they know what to do in an emergency.	
	Suggestion	The carrying capacity of a vehicle must never be exceeded, as it can result in mechanical failure of the vehicle or any trailer it is towing. In addition to a long-term increase in operational costs through additional wear and tear, this can destabilise the vehicle, resulting in a potentially fatal rollover.
	Good practice	Organisations that transport hazardous or dangerous goods are encouraged to take advice from a specialist dangerous goods safety advisor. Recommendations by the UN on the Transport of Dangerous Goods[15] can be used to develop stronger practices.
Passenger vehicles	Passenger vehicles are those that are designed to carry people. In some cases, there may be a space for goods to be carried, but such loads should be placed in the cargo space, secured correctly and not let loose among passengers, who could be injured in the event of a sudden stop or rollover situation.	
	Suggestion	The organisation should consider how to transport people during public health epidemics. This may mean reducing passenger numbers, creating additional space between passengers and asking passengers to always wear masks when in the vehicle, or other measures that ensure safe operations
	Good practice	Make sure that all passengers wear seat belts while in the vehicle, and that three-point seat belts are used wherever possible. Drivers should receive training in how to manage passengers as well as how to operate the vehicle.
Farm machinery and passengers	Organisations operating in sectors such as forestry, agri-businesses and manufacturing may use trailers towed behind tractors or in the cargo area of trucks to transport workers. While it is not good practice, it is recognised that some organisations will use this as a method of transporting workers around a site. In these cases, organisations should take all reasonable and practical steps to mitigate and reduce the associated risks to workers. These include: – Drivers should be trained and experienced, adhere to the speed limit and be warned of the dangers of transporting passengers in goods vehicles. – The tractor must be equipped with mirrors that give a clear view behind the trailer and of the passengers on the trailer. – Determine maximum number of people allowed and monitoring mechanisms to ensure there is no overloading. – The tractor-trailer combination should, as a minimum, have an anti-lock braking system that allows simultaneous braking across the whole tractor-trailer combination and the trailer, where possible, should be suitable adapted so that passengers can be carried safely, including with the use of seat belts. – Finally, the tractor-trailer should be connected properly with all securing pins in place before the trailer is moved. The Health and Safety Executive gives further advice on carrying passengers on farm trailers.[16]	
Two and three-wheel vehicles	– Two and three-wheel vehicles are higher risk road users. WHO estimates this category represents 28 per cent of all global road traffic fatalities. Examples include motorcycles, bicycles, scooters, tuk-tuks and rickshaws. – When two and three-wheel vehicles are used to transport goods, an additional risk assessment to determine loading amount and technique is necessary.	
	Good practice	Organisations should adopt a framework to reduce road safety risks. This should as a minimum include: – driver training from a recognised and certified body, repeated every two years; – mandatory use of helmets for the riders and passengers (see WHO Guidance on Helmets[17]); – use of seat belts for passenger vehicles (see WHO guidance on seat-belts[18]); – high-visibility clothing for the rider; – use of daytime lights; and – a coaching programme to address rider non-compliance.
Plant machinery and all-terrain vehicles	Organisations should also incorporate powered machinery used in sectors such as construction, warehousing, forestry and agriculture in their road safety management system. Examples of powered machinery include mobile cranes, road roller, dump trucks, road graders, forklifts and all-terrain vehicles. These are often used in high-risk environments where there are many blind spots, pedestrians and a changing landscape that pose risks to the driver and others in the immediate vicinity. Organisations should carefully consider how they can ensure equipment is operated safely to minimise risk.	

Case study: *Investee company in South Africa*

Challenge:

A transportation company in South Africa was servicing a project whereby stone was transferred 1,500 kilometres from the quarry to a port where it was then shipped overseas. The company was experiencing a high number of breakdowns and equipment failures, sometimes resulting in major accidents that caused serious injuries to other road users.

The company, under threat of action from local communities, conducted a third-party investigation to look at their logistics operations.

Action:

The consultant identified that the company's lack of any formal fleet management process and a failure to keep records was routinely leading to procurement, maintenance and servicing issues. This in turn was resulting in very high service, maintenance and repair costs as well as community tensions and significant compensation payments to the families of people injured in accidents.

- To address this, the company started by changing its procurement process to ensure that the vehicles it purchased were suitable for their intended purpose.
- It also contracted a competent local company to oversee and manage all of its maintenance requirements and introduced daily driver safety checks to identify and report vehicle defects.
- These measures were then formalised in a fleet management policy to ensure the changes were sustainable over the long term.

Result:

These combined measures reduced the number of incidents and breakdowns by over 80 per cent, increased vehicle use by 23 per cent and reduced operating costs by 15 per cent.

3.2 Alternative fuel vehicles

Design of vehicles and engines is rapidly changing. Vehicle manufacturers are moving towards the use of alternative fuel vehicles, including biofuels and electric vehicles, powered through battery or hydrogen technology. Transitioning to these forms of vehicles will have a positive environmental impact in terms of reduced emissions, however the following should be considered when looking at transitioning to alternative fuel vehicles:

- Consider using a phased approach based on the availability of alternative fuel vehicle providers in the country. Refer to national legislation or policy, as this may influence the selection of vehicle type and roll-out timeline.
- Provide training to drivers on operating and maintaining electric vehicles to reduce fires and other safety incidents.
- Ensure vehicles are regularly maintained to minimise emissions.
- Manage and dispose of waste, such as batteries, in line with local regulations.
- Locate distribution sites appropriately to minimise impacts.

Case study: *Investee company in India*

Challenge:

A company located in India, managing a fleet of 4,300 vehicles, provides first-mile, mid-mile and last-mile solutions for delivering groceries to end customers. Last-mile delivery vehicles (mainly large commercial vehicles as well as a fleet of two and three-wheel vehicles), provided the link between the store and the customer and averaged five trips per day.

The company was keen to transition to electric vehicles to reduce its overall impact on the environment and offer its drivers ownership models to directly own the electric vehicles. A techno-economic feasibility study was done to identify electric vehicles that could be used for last-mile deliveries and a practical timeframe prepared for transitioning the fleet to this new vehicle type.

Action:

The company faced many challenges during the transition mainly due to lack of charging infrastructure, the limited number of established electric vehicle manufacturers in the market and driver perceptions towards electric vehicles.

- It piloted various electric vehicle models, which included checking performance on daily distance travelled, load carried and condition of roads travelled.
- Based on the pilots, the company selected the most feasible option to support its operations and developed a transition plan.
- To overcome the lack of infrastructure, the company began piloting options to swap batteries and facilitate shorter charging period between trips.
- It held training programmes and feedback sessions with its drivers to improve their perception towards electric vehicle safety and driving.

Result:

After implementing these measures, the company was successful in introducing over 500 two and three-wheel electric vehicles into its vehicle fleet in June 2020 and continues to look at opportunities to increase this number. It has also provided charging points in the hubs to further incentivise drivers to own/operation electric vehicles and to reduce range anxiety (that is, concern over having enough charge for a journey).

04

Road safety technology

Objective

Integrate use of technology in planning, monitoring and training to improve road safety performance.

Good practice recommendations

- Use technology options to improve driver competency and ensure operational efficiency and safe planning.
- Select technology options that align with corporate objectives and the road safety business case and are straightforward to use and integrate into existing systems.

The use of technology to support of road transport operations is growing. In some countries, its adoption is advanced and in others its uptake is slow, typically driven by the contractual demands of large multinational corporations. The benefits of technology include improvements in driver competency, greater operational efficiency and a reduction in organisations' overall road safety risks. Organisations should carefully consider their technology needs before purchasing new vehicles.

4.1 Technology options

Many organisations have not taken advantage of the improvements in technology and rely heavily on manual process. In the long term, this is less efficient, open to unauthorised changes and fails to provide organisations with the information and data that can improve overall business performance, reduce costs and increase safety.

There are many types of in-vehicle monitoring and reporting technologies available on the market. Examples include:

- **Camera systems:** Cameras can be used to record and monitor vehicle surroundings, driver behaviour, facial recognition and movement sensors. They can also be used as security against unauthorised personnel, transport and theft.
- **Tracking systems:** Basic or advanced tracking systems can be used to provide remote monitoring support and data on vehicle and driver performance.
- **Telematics systems:** These provide a variety of reporting functionalities including details of both driver and vehicle compliance.
- **Communication systems:** Cell phones, radio systems, portable devices and pads can be used to communicate with the driver. However, companies should carefully consider how to avoid communication systems becoming a distraction while driving.
- **Driver assist systems:** These are mechanical or electronic systems that assist drivers.
- Safety and security systems: These include rollover protection systems and speed control.

Toolkit

Further information on different technologies and their benefits can be found in **Annex 7: Road safety technologies**.

Suggestion

Technology is developing at a rapid pace and organisations are advised to take independent advice before procuring any technology to ensure it is fit for purpose, will meet operational and reporting requirements and is to some extent future proofed.

4.2 Technology selection and guidance

When implementing any technology, it is important that organisations are clear in the areas they want to monitor, objectives for the business and its impact on employees. Many employees become concerned about new technologies and the impact these will have on working conditions and data privacy. Once a preferred technology is selected, organisations should make sure they engage regularly with their drivers and impacted stakeholders, to ensure their input and feedback is considered while developing and implementing the technology. This allows drivers to be part of the technology updating process and reinforces the organisation's commitment towards employee safety and engagement. When selecting technology, organisations can use this checklist:

Technology selection guidance		Yes	No
Hardware	Is there access to reliable providers?		
	Is the hardware robust enough for the environment it will be operated in?		
	Is it simply installed?		
	Is additional technical expertise required for the hardware?		
	Is additional infrastructure needed such as faster internet speed, additional monitors?		
Software	Is the software easily installed, does it need lots of technical support, is it easily operated and what level of training is required for it?		
	Will the software integrate with the existing systems?		
	Is there a need for strong data/internet connection and sufficient GPS coverage?		
Communication	Is it easy to use for the drivers and/or journey managers?		
	Is additional infrastructure needed for it to communicate with existing monitoring systems?		
	Can this be translated to the local language, as needed?		
	Are reporting needs understood clearly?		
Data	Is there clarity on what data can be stored, where and who is responsible for it along with its security and retrieval?		
Scalability	Is the system chosen scalable to meet the needs of the organisation going forward?		
Training	Is there access to sufficiently qualified trainers/training material to induct the drivers/journey managers onto these systems?		

All data stored from in-vehicle road safety technology devices must be in line with international good practices on data privacy and security.

Road safety technologies can be used to monitor and track multiple indicators such as driver behaviour, route risk, delivery updates and reduction in emissions and they can also have a commercial benefit to organisations.

Case study: *Investee Company in Zambia*

Challenge:

A vertically integrated food retailing brand based in Zambia is involved in cold chain food production, cropping, stock feed production and retail and distribution activities. The company manages a large vehicle fleet and employs direct and contract drivers to transport its goods between farms, retailing hubs and stores. The company had recorded multiple incidents of excessive fuel being used or stolen and hence relooked at their procedures to ensure sustainability and efficiency in their operations

Action:

The company introduced a vehicle monitoring system to control fuel consumption, which had previously been calculated manually based on distance covered. This monitoring system was piloted at one of its locations where the vehicle fleet is relatively large. To reduce the loses, measures such as charging drivers for recording shortages of above 10 litres per refuelling were introduced along with a bonus incentive for drivers recording minimal shortages. The monitoring software was then updated to include automatic fuel consumption calculations for each route covered.

Result:

The company recorded a 46 per cent improvement in diesel savings from the previous year after implementing the system (using the same vehicle fleet and similar distance covered). Consumption patterns also showed that some trucks showed a 58 per cent improvement in distance covered with the same quantity of fuel. All drivers who meet saving targets received bonuses as an incentive as well.

4.3 Vehicle selection considerations

When purchasing a new or used vehicle from a reputable supplier, organisations should consider equipping vehicles with the following key safety features:

- three-point seat belts for all occupants, with pre-tension systems;
- active head restraints for all occupants;
- air bags fitted;
- anti-lock braking systems; and
- side impact protection systems.

Organisations should also consider including the following additional safety systems, or suitable alternatives as available in the market:

- electronic stability control;
- traction control;
- autonomous emergency breaking collision avoidance through electronic braking systems;
- lane control technology;
- speed limiters (note these can be retrofitted depending on the manufacturer and vehicle model);
- adaptive cruise control;
- parking assistance;
- proximity warning indicators; and
- active headlights.

Suggestion

Organisations should undertake some assurance that new technology can be integrated into their existing systems. For example, if a fleet of new vehicles comes with advanced telecommunication features, it is important to ensure these will be compatible with the organisation's current telematics system. Otherwise the new features will either not be used, or the organisation may be unintentionally forced to upgrade its entire system.

05

Journey management

Objective

Develop and implement a journey management process for route planning, risk assessment, monitoring and training to improve road safety during operations.

Good practice recommendations

- Implement a technology/software-based approach to journey management to increase efficiency and reduce potential for human error.
- Develop procedures for planning journeys, assessing route risks, monitoring and reporting and provide training to drivers and contractors.

Journey management is a process to enable organisations to move people or goods between the points of dispatch and arrival, ensuring the safety of the vehicle, driver, passengers and goods, other road users and the communities through which they travel. This is done by establishing a documented plan with measures to address risks around compliance of drivers and vehicles, safety and security of personnel and goods, weather and route hazards and to consider vulnerable road users. Organisations that implement journey management systems tend to benefit from improved road safety performance, lower maintenance and fuel costs, fewer accidents and incidents, and an improved reputation in the community.

5.1 Route planning

Route planning can either be done through specific software/technologies or a robust auditable documentation process. It is essential that supervisors are well trained on the optimal means of identifying routes and the software being used.

Good practice

A software-based journey management system can significantly strengthen road safety practices by introducing real time journey monitoring, maintaining a database of drivers, vehicles and safe routes and supporting automatic workflows. They also tend to be more effective than manual paper-based systems and reduce the potential for human error. If a software-based system cannot be used, organisations will need to rely on a manual paper-based journey management system.

Optimal route selection involves, as minimum, assessing the following risks:

The final journey management plan should contain details of the driver, vehicle, journey manager, journey route details, frequency and method of communication while on the road, and estimated journey duration. Journeys should be planned and approved by a trained supervisor, not managed by the drivers themselves. Once the plan is complete, it should be communicated and reviewed with the driver. The journey manager should ensure that the driver understands the plan. All journey management plans should be finalised and agreed on before the journey starts.

Journey management software can be linked to various in-vehicle monitoring technology to further increase the efficiency of the system and support real-time data sharing and monitoring. See chapter 4 on road safety technology for further information.

Good practice

Organisations wishing to do more complex route planning assessments may want to seek advice from a road safety consultant.

5.2 Risk assessment

Organisations should undertake route risk assessments to identify the hazards and threats that are involved in the operations they undertake and ensure that adequate measures are put in place to mitigate the hazards and reduce the consequences. Such assessments identify and assess potential road safety risks, analyse their causes and evaluate their likely consequences. This supports the prioritisation of risks so that finite organisational resources can be deployed to reduce road safety threats. In general, the risk assessment process should aim to identify hazards, prioritise these based on their likelihood of occurrence and severity and recommend controls to reduce the overall impact.

There are many ways to perform a risk assessment; this good practice note recommends the use of qualitative approaches and risk assessment matrices such as the one below. Such an approach is typically quick and requires minimal training to perform the assessment.

A generic road safety risk assessment should be performed for any routine journey, as defined by the journey management team. Specific risk assessments should also be performed before starting any non-routine journey or if there are significant changes to the route, environment or other aspect of a routine journey plan.

Severity	Consequences				Increasing likelihood				
	People	Assets	Environment	Reputation	A	B	C	D	E
					Never heard of before in the industry	Heard of in the industry	Has happened in the company or more than once per year in the company	Has happened at the location or more than once per year in the company	Has happened more than once per year at the location
0	No injury or health effect	No damage	No effect	No impact					
1	Slight injury or health effect	Slight damage	Slight effect	Slight impact					
2	Minor injury or health effect	Minor damage	Minor effect	Minor impact					
3	Major injury or health impact	Moderate damage	Moderate effect	Moderate impact					
4	PTD or up to 3 fatalities	Major damage	Major effect	Major impact					
5	More than 3 fatalities	Massive damage	Massive effect	Massive impact					

Risk assessments should be based on experience and guidance from recognised sources such as project-specific environmental, social and health impact assessments, local and national legislation, governmental bodies, health and safety publications and relevant industry associations. See **Annex 13: Hazard identification: driving, journeys and vehicles** for a list of common road safety hazards for use during road safety risk assessments.

Suggestion

Risk assessments should be revised on a regular basis, considering learning from accident/incident investigation data and any changes to regular operations.

Road safety risk assessments should be done by a qualified professional with good working knowledge of the sector, geography and vehicles involved. This may include the personnel performing road transport activity, for example, drivers, journey managers and operational supervisors, road safety specialists, members of the senior management team and possibly local community representatives.

5.3 Implementation of the journey management tool

Journey management should be managed, whenever possible, by a dedicated team whose sole role is to plan, execute and complete journeys. In the absence of a journey management team, organisations should consider training the teams responsible for health and safety or driver management on journey management planning, implementation and monitoring. If an online or digital journey management software is being used, the responsible team/s should be well versed in using the same. They should:

- challenge the need for every journey made;
- combine journeys with others travelling on the same route to minimise kilometres travelled and reduce exposure to road safety risks;
- provide active monitoring of journeys in progress to ensure the safe completion of each journey and enable effective assistance in the case of accidents/incidents or overdue vehicles;
- use scheduled transport services wherever possible; and
- use a hierarchy of controls to reduce risks to as low as reasonably practical (ALARP).

Additional resources

These offer additional information on risk assessments:

- An Introduction to Managing Occupational Road Risk[19]
- ALARP at a glance[20]

Case study: *Company in Qatar*

Challenge:

A transport company in Qatar was facing several transport challenges due to traffic congestion and exposure to high road risks. These were leading to significant delays and high operational costs.

Action:

To address this, the company launched a journey management project focused on how it could reduce the risks involved in its road transport operation and reduce costs. It implemented a comprehensive journey management system combined with its existing telematics system. This allowed the company to achieve greater driver and vehicle visibility and more robust data collection and reporting.

Result:

The use of advanced analytics allowed the company to significantly reduce its road risk exposure by re-routing vehicles at certain times of the day to avoid high-risk areas, such as school zones and high congestion junctions. The was reinforced through a hands-on journey management system. Within a year, the system, when linked to the company's telematics system, was able to achieve:

- a 15 per cent reduction in the number of kilometres driven by the fleet;
- significant reductions in fuel consumption and carbon footprint;
- increased driver and vehicle use;
- reductions in the size of its vehicle fleet size; and
- lower driver training costs by focusing on higher-risk drivers.

5.4 Manual paper-based journey management plan example

Some organisations may opt to implement a manual procedure for journey management due to factors such as restricted access to the journey management plan technology, lack of funds, access to training. While it is recommended that organisations strive to use a software-based system for journey management, in situations where this is not feasible, the following elements should be incorporated into a manual approach:

- journey management plans;
- maps;
- phones;
- journey manager or relevant resource (in the absence of a dedicated team) at each location;
- expected breaks and locations of the same; and
- clear instructions for each dispatch and receiving location.

The journey manager or journey management team should be responsible for completing journey management plans, briefing drivers on their designated route and identifying any hazards on the route and authorised rest stops where drivers should take a break.

When travelling between sites, the journey manager at the starting location should notify the journey manager at the destination that the vehicle is leaving and give the following information:

- driver's name and Global System for Mobile Communications (GSM) number;
- vehicle make, model and registration number;
- details of any passengers;
- details of the load;
- details of the route;
- expected arrival time; and
- a copy of the written journey management plan.

The journey manager at the receiving location should document the information and written journey plan. It is recommended that journey managers use a whiteboard or similar tool as a reference point while journeys are underway. When journeys are finished, the journey manager should record this on the journey management plan and note any hazards, compliance infringements or comments from the driver so they can be reviewed and if needed, briefed to other drivers. The details of the completed journey should only be removed from the board once the driver has arrived and reported to the journey manager and the journey has been signed off.

Annex 10: Basic journey management template gives an example template that organisations can use.

Toolkit

- Annex 8: Journey management implementation
- Annex 9: Journey management software systems
- Annex 10: Basic journey management template
- Annex 11: High-risk journey considerations
- Annex 13: Hazard identification: driving, journeys and vehicles

06

Accident/incident investigation and management

Objective

Establish a formal procedure for investigating, reporting and learning from road safety accidents/incidents to minimise or eliminate the likelihood of a reoccurrence.

Good practice recommendations

- Establish a dedicated team to be responsible for ensuring a proactive, unbiased and detailed approach is taken to investigating accidents/incidents.
- Establish a process to identify trends in recurring accidents/incidents and incorporate learnings into a proactive approach to road safety.
- Provide training to all drivers and contractors to ensure they are aware of the accident/incident investigation procedure.
- Identify areas of improvement on near miss and accident/incident reporting including incentive schemes

Investigating an accident/incident allows an organisation to identify what went wrong and implement preventative measures to improve road safety. Accident investigation and management procedures should be supported by formal training for investigators and the provision of necessary resources, such as transportation and equipment (excluding cameras and voice recorders) for collecting evidence. As well as providing training on accident/incident investigation procedures, organisations should also train drivers and contractors on basic first aid and what to do in the event of an accident.

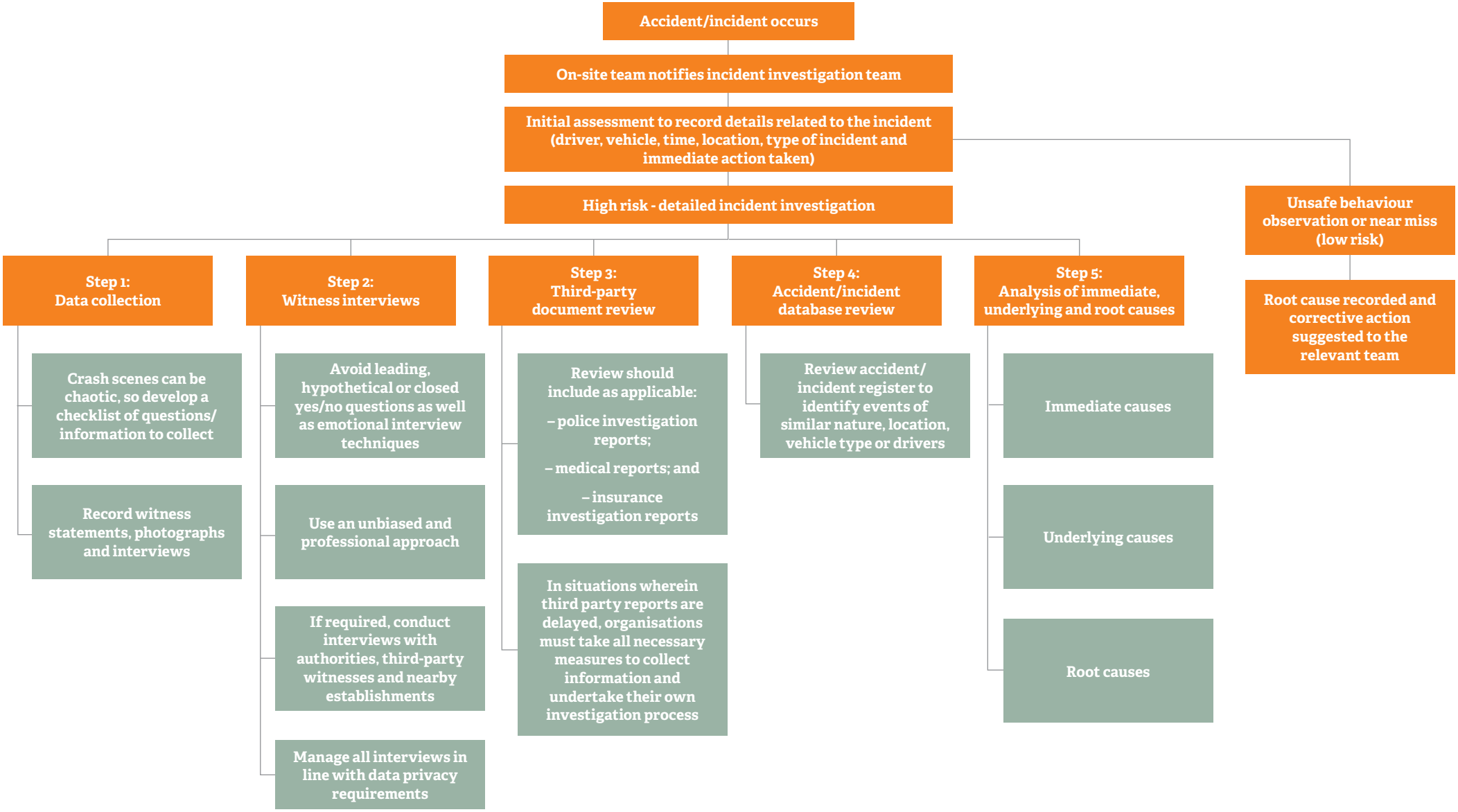
6.1 Investigation team

To ensure proactive accident/incident investigation and reporting, organisations that manage a large vehicle fleet or are involved in operations that pose a high road safety risk should establish a dedicated investigation team with at least one person trained in investigation skills. In the absence of a dedicated team, personnel should be trained in investigation skills in addition to their other responsibilities. The size of the investigation team will depend on the organisation's needs, operations and vehicle fleet size.

This team will be responsible for undertaking a detailed investigation that includes gathering evidence, reading witness statements, analysing relevant pictures, identifying causes and coordinating with other stakeholders such as local law enforcement and insurance agencies that may be involved in the investigation process. For serious road traffic accident/incidents, organisations may wish to use specialist incident investigators.

6.2 Investigating accidents and incidents

The investigation team should be notified as soon as the organisation becomes aware that an accident/incident has happened. Incident investigations must be undertaken for all incidents reported, however the depth of investigation will be based on the severity of incidents to individuals and likelihood of risk to the organisation, its employees and/or third parties, irrespective of whether the potential harm caused by the accident/incident was fully realised. When investigating a road safety accident/incident, it is recommended that the following steps are taken:



6.2.1 Cause analysis

As part of an accident/incident investigation, a detailed cause analysis should be undertaken to identify the root cause of the event.

Cause	Definition	Examples
Immediate cause	Immediate causes of an incident are the most obvious unsafe acts or conditions that resulted, or could have resulted, in an incident.	Drinking alcohol before driving (an unsafe act), failure to obey the speed limit (unsafe act) and inadequate load restraint (an unsafe condition).
Underlying cause	Underlying causes are less obvious systemic or organisational reasons for an incident.	Failing to complete routine maintenance on a vehicle or lack of route planning.
Root cause	Root causes are the core issues that result in an incident or accident occurring in the first place. They are beyond technical failures and could be linked to behavioural or organisational controls and procedures. It is important to look beyond the immediate and underlying cause to understand why it occurred.	Lack of adequate training leading to a load falling off a moving vehicle. Driver fatigue caused by busy working schedules Overloading of vehicles

Suggestion

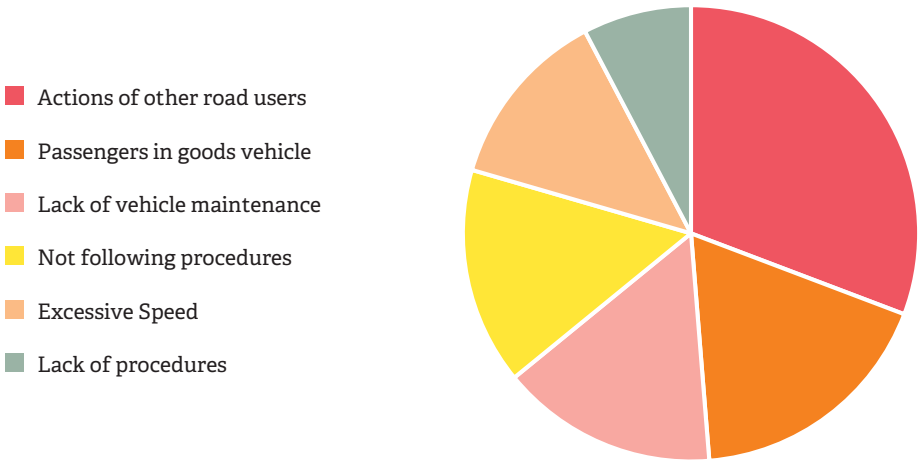
Using the **'Five whys' approach** can help to identify the root causes of good or bad health and safety practice, and therefore help bring about behavioural change. For any incident of good or bad practice, description from the individual or team involved should be recorded to not only help better understand the issue but also helps in terms of teamwork. Then ask why this situation happened and write that answer down too. Discuss with them whether this answer describes the root cause of the problem. If it doesn't, then ask 'Why?' again up to five times or more. By asking 'Why?' up to five times, one can:

- investigate the causes of an accident or incident;
- identify solutions to prevent an incident happening again;
- make links between the root causes of good or bad practice; and
- learn good practice lessons to improve health and safety in your business.

CDC Group insight

Of the fatalities reported to CDC Group in 2019, the main root causes were identified to be actions of other road users, passengers transported in good vehicles, lack of vehicle maintenance and non-compliance with procedures.

Figure 2 Main root causes of fatalities in CDC's portfolio in 2019

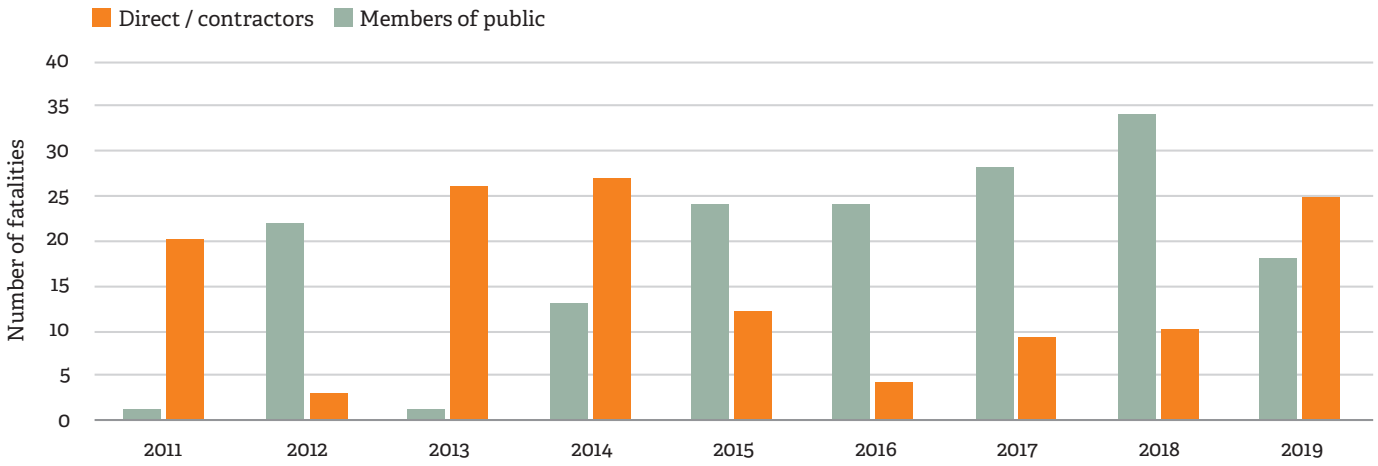


6.2.2 Third-party fatalities

CDC Group insight

Based on a review of CDC Group's publicly available fatality reports from 2011 to 2019, the total number of pedestrian fatalities was 17 per cent higher than the total number of worker fatalities (direct and contract workers) due to road-related incidents. Most of these pedestrian fatalities were reported in the forestry, telecom and infrastructure sectors which generally involve a significant amount of road operations, and more off-road driving.

Figure 3 Road-related fatalities reported between 2011–2019 from CDC's portfolio



Depending on the sector which the company operates in, there could be interaction with local communities, pedestrians and other road users. Drivers (contract and direct) should be provided with training around vulnerable road users, pedestrian safety and other good practices to reduce potential impact on third parties. Should the driver be involved in a road safety-related accident/incident involving a pedestrian, actions should be taken to ensure the safety of both driver and pedestrian. Should the accident/incident result in the death of the pedestrian, the company should consider options to provide support to their family. Organisations should also consider impacts to the person's livelihood in situations where the accident/incidents lead to disabilities. Some organisations have explored support such as covering the funeral fees, providing the family with compensation, providing other family members with employment/training opportunities. Organisations should also have in place procedures to ensure the protection of the driver or impacted person after the accident, in situations where there may be adverse reactions from the community to accident/incidents involving pedestrians. Good practice recommendations around minimising impact on vulnerable and other road users is given in Section 7.

6.2.3 Recommendations

Based on an analysis of information and identification of the causes of an accident/incident, a set of recommendations should be developed to avoid the same accident/incident reoccurring in the future. This should consist of a list of actions that resolve the immediate and underlying causes of the incident/accident, such as replacing or repairing equipment, and address the root causes. When developing recommendations, hierarchy of controls should be considered whereby the organizations initially aim to eliminate or substitute the hazard, followed by engineering or administrative controls i.e. (change of vehicles or better training procedures). Under this hierarchy based on the effectiveness of different types of control, personal protective equipment should be considered as an additional safety measure rather than an effective hazard elimination mechanism where possible

Recommendations can differ based on the person involved in the incidents and corrective action plans need to be tailored to the situation. For example, direct drivers and workers can be provided with more training and sensitisation, while for contract drivers, an indirect approach to training, reporting and incident monitoring may be required. Other recommendations could involve improvement of maintenance practices, assessment of working schedule, evaluation of vehicle types or repair/replacement of certain vehicle parts.

CDC Group insight

On review of CDC Group's fatality data in 2019 it was found that the root cause of 21.8 per cent of accidents was unsafe driving techniques by other road users. Though these fatalities were not directly linked to driver behaviour, this showed a need to increase defensive driver training within the companies and an ongoing review of the same.

Recommendations should be developed as SMART actions and seek to resolve the causes identified in the analysis. SMART actions have the following characteristics:

- specific (simple, sensible, significant);
- measurable (meaningful, motivating);
- achievable (agreed, attainable);
- relevant (reasonable, realistic and resourced, results-based); and
- time-bound (time-sensitive, time/cost limited).

The list of recommendations should be included in the investigation report and presented to senior management for approval to implement the recommended follow-up actions.

Compensation provided to drivers should be in line with national legislation concerning employment injury benefits for drivers and also aligned with international labour standards, including Convention No. 121, the Employment Injury Benefits Convention, 1964 [Schedule I amended in 1980] (No. 121)[21] and the Employment Injury Benefits Recommendation, 1964 (No. 121).[22]

Additional resources

See ILO's guidelines on the promotion of decent work and road safety in the transport sector[23] for more guidance on compensation benefits for drivers.

6.2.4 Closing the investigation

The investigation should be officially closed with all relevant documentation and evidence carefully archived once all information has been gathered, root causes identified, recover measures, mitigations and corrective actions agreed, lessons learned, and final report approved by senior management. Often an investigation by the authorities or emergency services will continue beyond the company investigation. This delay should not limit an organisation from undertaking and closing its own investigation using available resources and information. Compensation for the impacted person or their next of kin should be provided in line with local regulatory requirements or the company's corporate policy on the same.

Additional resources

For more information on responding to serious accidents and incidents see the Institute of Safety and Health's resource Learning the lessons[24] and see the Road Risk Toolkit[25] for additional resources on post-accident/incident review and data collection methods.

Toolkit

See **Annex 13** for guidance on identifying hazards related to driving, journeys and vehicles.

6.3 Accident/incident investigation reporting and communication

Accident/incident investigation reports are an important tool for documenting and communicating the findings of an investigation, as well as learning and reporting. As a minimum, a report should include the details of the accident/incident, immediate actions taken, causes leading to it and corrective actions. Maps or pictures (even if hand drawn) can be helpful in describing the accident/incident and can be included in the report.

The investigation team or similar appointed personnel are responsible for undertaking a detailed investigation process and for developing a corrective action plan with recommendations to reduce the risk of similar accidents/incidents occurring in the future. The corrective actions and recommendations should also include tentative timelines and personnel responsible for implementation to allow for effective monitoring and closure of the action. The final detailed investigation report should be submitted to senior management for approval and implementation. Based on the nature of the recommendations in the report, senior management may need to approve the use of additional resources or budget.

Any actions agreed on should be tracked with their cost and performance effectiveness as risk controls assessed over time. Follow-up actions can be tracked using simple tools such as Microsoft Excel spreadsheets or action-tracking software; however, it is critical that these are searchable and easily used by authorised personnel. When the analysis identifies a pattern of accidents/incidents originating from similar causes, for example tyre failure, the road safety team should consider conducting follow-up investigations.

As the number of accidents/incidents being reported increases through the use a structured procedure, the database can be used to map common causes or trends across operations. This exercise could potentially reduce future fatalities and improve monitoring and tracking of accidents/incidents

Regular reports on serious accidents/incidents along with implementation status of the recommendations should be presented at meetings of the Board or its sub-committees to ensure safety remains a corporate objective for the organisation and senior management are aware of the actions being taken. Depending on the operations and sector, organisations can either submit annual or quarterly serious accident/incident reports to the Board to review and discuss. Organisations may also need to submit similar reports to some investors, insurance companies and for other legal purposes.

Suggestion

Organisations should provide drivers with relevant training on reporting accidents/incidents as per the procedure, as well as basic first aid training.

Toolkit

- Annex 13: Hazard identification: driving, journeys and vehicles
- Annex 15: Accident/incident investigation report template

07

Vulnerable and other road users

Objective

Establish practices and procedures to reduce road-related incidents or fatalities of third-party road users including vulnerable users, pedestrians and other two-wheel and three-wheel vehicle drivers.

Good practice recommendations

- Provide training to drivers and contractors on vulnerable road users and precautions to be followed.
- Carefully consider areas where there is a high proportion of vulnerable road users when planning journeys.
- Critically, develop an effective and proactive community engagement plan for projects that have a direct impact on road safety of the neighbouring community.

7.1 Vulnerable and other road users

While planning journeys, organisations should aim to avoid areas where there is a high proportion of older people, hospitals, care facilities, schools or colleges (vulnerable road users). Organisations can consider implementing the following to further reduce pedestrian-related incidents:

- Have policies in place that determine when and where vehicles may be parked so they do not obstruct pavements, junctions or pedestrian crossing points.
- Impose and monitor vehicle speed, through a telematics system, near high-risk facilities such as schools and hospitals.
- Focus driver training on recognised vehicle blind spots.

With people increasingly riding bicycles and walking, alongside evidence of the insufficiency of shared cycle/motor vehicle road spaces, drivers should be frequently reminded to be aware of cyclists and other two-wheel vehicle road users, obey road safety rules and not to take any unwarranted risks.

Suggestion

The above recommendations and trainings can be provided to all employees in an organisation and not just restricted to drivers and contractors, to increase awareness of road safety and conduct.

7.2 Community engagement and participation

For organisations involved in projects that impact the safety of the neighbouring community due to a significant increase in traffic associated with traffic or movement of machinery, it is key to develop and implement an effective and proactive community engagement procedure at an early stage. In such cases, appointing an appropriately trained and experienced spokesperson to manage community engagement and grievances will also ensure a strong relationship between the company and local communities and reduce the risk of any community-related issues and protests.

Early and regular engagement with the local community and stakeholders in the surrounding areas on road safety is important for several reasons:

- Local communities may not be aware of general road and pedestrian safety rules if the area is rural and away from any major highways and busy roads. This coupled with an increase in congestion and traffic in the area due to the company operations could lead to an increase in road-related accidents and fatalities among the community. Furthermore, this could also lead to a gradual increase in air pollution in the area, causing further health complications to people in nearby communities.
- Organisations often depend deeply on local communities. For example, failing to account for local community needs tells potential employees they will not be cared for if they join the organisation. This reduces the desirability of the organisation as an employer.

Community road safety education programmes can raise awareness on road use rules and enhance the organisation's reputation in local communities. Examples of initiatives that organisations can consider for improving community road safety awareness include:

- regular community training programmes on road safety signs, rules and other considerations;
- appointing 'road safety champions' in communities to spread awareness on road safety;
- regular interaction with the community to share information on road safety and highlight any reductions in incidents; regular feedback sessions with the community;
- including road safety awareness in the education programme for local schools; and
- organising student empowerment initiatives or competitions around increasing road safety awareness.

Good practice

Organisations should develop an external grievance mechanism to allow communities to log any complaints or grievances they may have. The grievance mechanism should be developed considering local context and access. For example, an online grievance portal may be less effective in areas where there is limited access to the internet.

7.2.1 Construction phase impact

Construction activities often generate significantly higher risks to communities in a certain time period. Generally, multiple contractors/sub-contractors are involved in this phase and hence project sponsors/investees should impose hard controls and requirements on third parties to minimise risk to communities. The following considerations should be implemented at construction sites and project facilities to ensure the protection of employees, contractors and sub-contractors:

- **Keep pedestrians and vehicles apart**: Establish clear walkways for construction staff to move around safely and for pedestrians and cyclists to pass without entering the construction site or being in the same road area as general traffic.
- **Minimise vehicle movements:** Ensure that adequate traffic controls are in place, working with local enforcement agencies if needed to ensure compliance from other road users.
- **Control site visitors:** Ensure all workers wear high-visibility clothing and that at night suitable and adequate lighting is available and operational.
- **Clearly identifying the workplace for other road users:** Use physical barriers to keep general traffic out of the construction zone.
- **Clearly indicate entry and exit gates and provide enough parking space** for personal vehicles, visitors and construction machinery.
- **Establish clear storage areas** to keep the worksite free from hazards.
- **Engage with local authorities** to report damaged road infrastructure or poor road conditions.
- Organisations involved in construction activities also have **plant machinery operating**. Adequate controls should be put in place to avoid the significant risk this machinery poses to operators, other construction workers and the general public.

A good example (and pictorial guide) of a safe road working plan for construction site/project facility can be found at besmart.ie.[26]

While most organisations are not directly involved with the road design planning and construction, for those that have an influence or are involved, good practices to be considered are outlined in **Annex 16: Road design considerations**.

Case study: *Investee company in India*

Challenge:

With an aim to reduce road-related fatalities and improve safety measures being implemented across its road assets, a leading global infrastructure fund based in India launched a road safety programme with a focus on four E's - Engineering, Education, Emergency care and Enforcement

Action:

The following initiatives across under the four E's have been initiated:

- **Engineering:** Use of additional traffic signage, speed calming devices and rumble strips with thermo plastic paint. Implementing Vehicle/ Public under pass (VUP/PUP), improved highway lighting (including LED lights), Black spot identification, road safety audits, analysing root causes for crashes, app-based road asset management system.
- **Education:** Members of the association have partnered with local NGOs to establish a community engagement programme that focuses on youth in rural areas that are vulnerable to road safety risks; Educate/ train users (drivers, pedestrians, local residents) to follow traffic rules and safely navigate the road.
- **Emergency care:** strengthened emergency response services with use of good quality ambulances, tie up with hospitals, improved reaction time to reach crash site and transport to the hospital within the golden hour.
- **Enforcement:** Working with local authorities to improve adoption of traffic rules by drivers and where possible enforce penalties.

In addition, the infrastructure fund played a catalytic role in the setup of an association of infrastructure investors and their respective asset management companies to exchange and work together and where possible partner on road safety.

Result:

On monitoring the road safety performance of the assets, a significant reduction in average number of road crashes per kilometre, average number of deaths per kilometre and post-crash severity on their road assets after they have acquired the asset vis-a-vis pre-acquisition data. The community engagement programme also led to increased awareness around user/ pedestrian behaviour and emphasised the message of road safety across the community. Emergency response led to saving of lives vis-à-vis other concessionaires in the country. There is progress on Enforcement but it is still a work in process.

08

Annexes

The following annexes provide further tools (checklists, forms and examples) and guidance on implementing certain aspects of the road safety management system. These may be used as they are or adapted to a particular context when implementing improvements to road safety arrangements.

Annex 1: Example road safety policy statement

An example one-page road safety policy statement is shown below. Organisations can use this to train drivers on the key goals/objectives and performance indicators.

RELEASE DATE DOCUMENT NUMBER COMPANY LOGO

Company Road Safety Policy

Goal: To suffer zero fatalities on company-related journeys and celebrate our world-class road safety performance.

Our company is committed to the following principles:

- Select and develop the best drivers.
- Only use safe vehicles that are fit for purpose.
- Respect the environment and the communities we operate in.
- Reduce the risk of all journeys to a level that is as low as reasonably practicable.
- Learn from incidents and near misses.
- Promote a culture of accountability and commitment among all our employees.

Our road safety objectives are:

- All vehicles will be verified as safe to use through daily driver pre-use checks and monthly inspections by a qualified mechanic.
- All vehicles will be maintained according to the manufacturer's instructions.
- All drivers will be certified as fit to work, and competent to drive, through an annual medical assessment and defensive driver training, renewable every three years.
- Each company driver will be monitored and coached monthly by company journey managers using telematics technology.
- All journeys using company-owned vehicles will be monitored using telematics technology.
- Every journey will be risk assessed and managed according to the results of the assessment.
- All road safety incidents will be reported to the Board of Directors within 24 hours of being identified.
- All road safety-related incidents and near misses will be investigated within two weeks of being reported. Each investigation will be led by a senior manager.
- The company's road safety performance will be monitored, analysed and reported to the Board of Directors monthly.
- Senior management will review the company's road safety performance annually and conduct an audit every three years.

Key performance metrics

- Percentage of vehicles failing monthly safety inspections
- Average driver risk rating, as determined through analysis of telematics data
- Number of driver road traffic violations on company business
- Number of road safety incidents per million kilometres driven

DATE: _____ SIGNATURE OF SENIOR COMPANY REPRESENTATIVE: _____

Annex 2: Road safety reporting metrics/key performance indicators

Objective	Priority	KPI	Measure	Suggested frequency
Board meeting, HSE committee or similar discussions	High	Accident/incidents reported (major versus minor incidents)	Lost-time injury or fatality numbers	Quarterly or as discussed
		Severity rate	Number of accidents/injuries per XX kilometres travelled	Quarterly or as discussed
		Organisational road safety survey	Results	As and when surveys are undertaken but no less than annually
		Benchmarking against sector/ competitor	Not applicable	Not applicable
	Medium	Driver population	Absolute number	Per organisation
		Vehicles and types	Absolute number	Per organisation
		Kilometres driven	Per vehicle	Per month/year
		Number of journeys	Per fleet	Per month/year
	Low	Fuel used by the organisation	Number of litres	Per month/year
		Fuel used by individual vehicles	Number of litres	Per month/year
Driver safety or performance management	High	Serious incidents or defaults (such as speeding, harsh breaking, seat belt violation, late night driving)	Absolute number	Per 100,000 km driven
		Driver risk rating	Average	Per organisation
		Driving licences checked	Percentage	Of driver population
	Medium	Driver trainings (including first aid)	Absolute number	Per month/year
		Driver safety checks	Absolute number	Per month
		Medical certifications	Percentage	Of driver population
Contractor drivers	High	Past performance review	Absolute number of non-compliances or road fatalities	Per 100,000 km driven
		Driver training	Absolute number	Per month
		Driver safety checks	Absolute number	Per month
		Reports as per contract requirements	Absolute number	Annual
	Medium	Performance feedback	Qualitative review	Annual
Vehicle safety	High	Vehicle incidents	Absolute number	Per 100,000 km driven
		Vehicle inspections and safety checks	Absolute number	Per month
		Vehicle type and age	Absolute number	Per month
	Medium	Scheduled fleet maintenance	Absolute number	Per month
		Non-scheduled fleet maintenance	Absolute number	Per 100,000 km driven
Journey management	High	Route violations	Absolute number	Per 100,000 km driven
		Average journey length	Absolute number	Per month
		Unauthorised stops	Number	Per 100,000 km driven
		Delays	Number	Per 100,000 km driven
Sustainability	High	Fuel used by individual vehicles	Litres	Per 100,000 km driven
		Fuel used by the organisation	Litres	Per 100,000 km driven
		Emissions outputs	Kgs	Per month
		Engine idle time	Hours	Per month
		Vehicle daytime use	Hours	Per month
		Vehicle night-time use	Hours	Per month

Annex 3: Driver fit-to-work assessment

Recruiting managers and supervisors should use this guidance to help determine if a driver is fit to work as part of the recruitment process.

Factor	Ability	Guideline
Lower body strength	Show a range of motion, mobility and coordination sufficient to be able to use foot-operated vehicle controls	Subject can walk to the assessment unaided physically by another person or significant support device (that is, walker, wheelchair, breathing apparatus or artificial limb). There is no loss (full or partial) of a leg or foot. No excessive shaking, tremor, weakness, rigidity or paralysis.
Upper body strength	Show a range of motion, mobility and coordination sufficient to use hand-operated vehicle controls and to turn the head and body to the left, right and rear to look for other traffic and pedestrians	Subject can turn their head and upper body to the left and right and has full use of the arms and hands. There is no loss (full or partial) of an arm. There is no loss of a hand or finger, which interferes with proper grasping. No excessive shaking, tremor, weakness, rigidity or paralysis.
Hearing	To hear other traffic and vehicle-warning devices (horn or emergency siren)	Subject can hear the normal spoken voice during the licensing process, with or without a hearing aid.
Sight	To see other traffic, road conditions, pedestrians, traffic signs and signals	Subject can meet applicable vision requirements by passing a standard vision screening or presenting evidence of similar testing by a vision specialist.
Cognitive skills	To think, understand, perceive and remember	Subject exhibits cognitive skills and responds to questions and instructions (can complete an application, knowledge test or vision screening). No obvious disorientation.
Control	To maintain normal consciousness and bodily control (the ability to respond to stimuli)	Subject exhibits normal consciousness and bodily control (no self-disclosed or obvious incident or segment of time involving altered consciousness). No loss of body control involving involuntary movements of the body (characterised by muscle spasms or muscle rigidity, or loss of muscle tone or muscle movement). No obvious disorientation (responds to questions and instructions; can complete an application, knowledge test or vision screening).
State of mind	To maintain a normal social, mental or emotional state of mind	Subject does not exhibit extremely hostile and/or disruptive, aggressive behaviour, or being out of control. No obvious disorientation.

Annex 4: Safe vehicle criteria

This table outlines criteria for the specification of safe vehicles.

Vehicle type	Mandatory	Additional consideration
All vehicles This equipment should be installed on all vehicles, where appropriate and available	Fully functioning lights (back and front including reversing light and high-visibility tail/fog light) Tyres to match manufacturer loads and speed ratings. Consider their operating environment(s) and likely road surfaces Seat belts for all seating positions Laminate safety glass windows and windshield Driver and passenger-side mirrors	Head rests (all seats) Air bags (all possible, but at least for driver and front passenger seats) Anti-lock brakes High-mount brake light Electronic stability control Side impact protection In-vehicle monitoring system Climate control: heater and/or air conditioner as appropriate for ambient climatic conditions Heated outside mirrors for cold weather climates
Heavy vehicles This equipment should be considered on heavy (heavy-duty) vehicles	Spray-suppression flaps ('mud flaps') Wheel-nut position indicators (that identify when wheel nuts have loosened) Reversing alarm system – this should also be implemented for including other vehicles with limited rear visibility and/or when operating in areas of high congestion/activity) Wheel chocks (on passenger-side rear) Heavy-duty wide-angled fully adjustable rear vision mirrors on both driver and passenger sides of the vehicle Conspicuous rear and side markings, including the use of high-visibility tail and brake lights	Convex mirrors fitted appropriately to ensure adequate vision of blind spots, including passenger side and in front of cab-over vehicles Electronic trailer stability control Under-run protection – both side and rear Endurance braking system (engine retarder or equivalent) for regions with steep terrains
Buses and coaches Consider this equipment for buses and coaches	The passenger access door should be kerb side of the bus. Emergency exit side windows should be installed. Hammers for smashing windows in case of an emergency should be fitted at or near the windows. Each designated emergency exit door should have a clearly visible sign.	The body strength should conform to US Department of Transport Federal Motor Vehicle Safety Standards, European Commission Regulation 66 and/or Australian Design Rules 59/00, at a minimum, to ensure sufficient survival space for passengers in case of a rollover. Adequate segregated luggage space should be available for the maximum number of occupants. High-mounted pulse/strobe beacon of neutral colour (clear), where allowed by local regulation High-mounted brake and turn signal lights in conditions of restricted visibility, such as dust, blowing snow and fog
Off-road and emergency response vehicles	Flashing beacon lights, of appropriate colour Two-way radios	High-mounted brake and turn signal lights Vehicle recovery extraction connection point(s) Automatic or remote tyre air pressure management system (sand) Rollover protection – depending on use and risk
Auxiliary safety equipment that should be considered	Fire extinguisher, of appropriate type and capacity First aid kit, of appropriate type and capacity Suitable spare wheel and tyre, with appropriate vehicle jack and wrench(es) Enough water for the journey	In-vehicle cargo restraint Vehicle recovery tools (such as slings) Extreme weather kit (heat or cold) Disabled vehicle markers (such as warning triangles)

Annex 5: Vehicle inspection checklist

Daily checklist				
	Item	**Pass**	**Fail**	**Comment**
1	Fuel level			
2	Windscreen wipers and blades			
3	Washer jets			
4	Washer fluid level			
5	Headlights (main and dip)			
6	Side lights			
7	Rear lights			
8	Indicators			
9	Brake lights			
10	Reversing lights (and tone, if fitted)			
11	Hazard lights			
12	Mirrors (rear view and wing)			
13	Horn			
14	Seat belts			
15	General bodywork (condition/damage)			
16	Safety equipment (such as first aid kit, fire extinguisher)			
Weekly checklist				
1	Tyre pressure (including spare)			
2	Tyre tread/side wall condition (including spare)			
3	Wheel nuts			
4	Battery (condition)			
5	Coolant level			
6	Oil level			
7	Brake fluid level			
8	Hand brake			

Annex 6: Safety equipment

Organisations should equip each vehicle with the following safety equipment. Drivers should receive training on how to use the equipment in case of an emergency.

Safety equipment	Purpose
First aid kit and spade tow rope	To provide immediate support to anyone injured in an accident, including the driver of the vehicle
Fire extinguisher	To tackle any fire and enable the driver and passengers to escape from the vehicle Vehicles should carry fire extinguishers that meet the safety requirements of any goods carried
Red warning triangles or flags	To be set in front of and to the rear of any vehicle that is broken down or is causing an obstruction
High-visibility jackets	For use by the driver. Consider also supplying high-visibility vests for each passenger that may be carried
Water and food	In remote operating environments, vehicles should carry enough food and water for each person to survive for a minimum of 24 hours
Torch and spare batteries	To provide light at night and alert those who may be searching for any lost vehicle and passengers
Warm blankets	When operating in cold environments, ensure that there are sufficient warm blankets for each person who will be in the vehicle in case of breakdown

Annex 7: Road safety technologies

Where organisations are buying or upgrading technology for use with new or existing vehicles, they should consider the following:

Type of technology	Specific technology	Benefits to organisations	Additional guidance
Driver assist systems These are mechanical or electronic systems that take over some driver activities.	Parking sensors	Potential to reduce low speed impacts with static objects and alert the driver to pedestrians at the rear of the vehicle.	Can be retrofitted to vehicles.
	Park assist	Takes over from the driver to park a vehicle.	This system cannot be retrofitted to a vehicle and is only available from some manufacturers at this time.
	Satellite navigation systems	Assists the driver to navigate to multiple destinations. Can be linked to an organisation's route planning software or a standalone product. Potential to significantly reduce the number of kilometres driven and subsequent road risk by ensuring the best route is selected for the type of vehicle. These systems can be retrofitted to vehicles or purchased from most manufacturers at the time of ordering a new vehicle.	These systems come with different software for different types of vehicles – systems designed for cars should not be used for buses or heavy trucks as they will not account for the mass and size of the vehicle.
Camera systems The use of cameras in vehicles is growing and provides many benefits for organisations and drivers. The technology in cameras is also improving rapidly, hence fitting a camera system should be considered.	Simple and complex systems	Simple camera systems can be used to record and monitor the front of the vehicle, which can be useful when a vehicle is involved in an incident, helping to resolve disputes as to which party may be at fault and aid in investigations. In more complex systems, several cameras can be attached to a vehicle, monitoring its surroundings, and linked to a multi-screen in the vehicle to give the driver a complete picture. When linked to movement sensors, such systems can actively alert the driver when a person, such as a cyclist or pedestrian, or an object comes within a set distance of the vehicle. The images can then be recorded onto a hard drive or uploaded via a mobile data connection back to the operations centre. Camera systems also offer security against the transport of non-authorised persons and allows both operations supervisors and drivers to review the actions of the driver and any passengers in the vehicle. Camera systems can be fitted to any type of vehicle. Some new vehicles now have them as an additional option.	**Suggestion:** *Constant upload of data can be expensive, but if an organisation carries high value goods that may be under threat of theft, it may want this as a security option.* All camera systems require the storage and/or transmission of data. Organisations should ensure that they manage this in accordance with any national legal requirements. Organisations may need to consider how they introduce camera systems to their workforce and should have in place a clear programme that includes educating staff and drivers on the benefits of having camera systems. Organisations should check the system requirements and the need to have a monitor fitted in the cab for the driver to be able to view the live image. Monitors can be helpful but should not be switched on constantly; they should only be used where there is an activation requirement, for example using reverse gear. Camera systems can be retrofitted onto vehicles by trained competent engineers. **Suggestion:** *If an organisation is considering using a complex camera system, it should seek independent advice from a specialist before purchasing a system.*
	Forward facing	These provide direct recording of a driver's behaviour which can be checked against the telematics data. It will show if the driver commonly drives too close to other vehicles. They can have the automatic ability to store data before an incident takes place as well as for a set time afterwards. This is of particular use for malicious/false insurance claims against organisations.	
	Rear facing	These can be linked to an internal monitor that activates when the driver selects reverse gear. They give the driver a clear 180 degree view behind the vehicle and can help reduce low speed reversing incidents and damages as well as provide the driver with a clear view behind the vehicle.	
	Side cameras	As with rear facing cameras, these can be fitted to provide a view along the side of the vehicle for a driver. The monitor can be set to activate when an object or person moves within a set distance of the side of the vehicle. They can reduce incidents involving riders of two/three-wheeled vehicles and pedestrians who walk near to a vehicle while it is manoeuvring.	

Type of technology	Specific technology	Benefits to organisations	Additional guidance
Camera systems (*cont.*) The use of cameras in vehicles is growing and provides many benefits for organisations and drivers. The technology in cameras is also improving rapidly, hence fitting a camera system should be considered.	In cab	Internal cameras provide organisations with several opportunities. They can be used to: – monitor driver fatigue. Where live feeds are used journey managers should randomly select drivers and check on fatigue levels by observing their behaviour; – review the driver's behaviour in the event of an incident, before during and after the event; and – ensure that no unauthorised passengers are onboard the vehicle and monitor passenger behaviour towards drivers; this is useful in passenger transport-dedicated vehicles.	Drivers may raise objections about having a camera in the vehicle monitoring their behaviour. Organisations need to consider how they introduce this technology and educate drivers on the advantages and benefits of them.
	In trailer	Designed to allow the driver or supervisors to monitor the safety and security of the load. Provides additional security where theft, hijack or unauthorised persons are a threat to the organisation.	Organisations need to consider if this a reasonable option against the actual (not perceived) security challenges.
	Facial recognition	Organisations may wish to consider these and link them to the telematics system to ensure that only the authorised driver is driving and that only authorised passengers are being carried. These may be linked to compliance systems and to the ignition system of the vehicle.	May be cost prohibitive to an organisation depending on its specific requirements. **Suggestion:** *If an organisation is considering using this type of equipment, it should seek independent advice from a specialist.*
Tracking systems Basic tracking systems are simple low-cost solutions that allow an organisation to monitor the location of its assets.	Basic training	Provides up-to-date information on the location of assets or packages the device is attached to. Provides additional security to organisations. These can be attached to plant machinery or high value goods to enable them to be tracked and if stolen, recovered. Most systems are accurate to within five metres globally. Used for plant machinery, including generators, to remotely monitor the number of run hours, the fuel usage and maintenance schedules. Provides additional security to asset equipment as an anti-theft deterrent Remotely monitor the heat, light, temperature, humidity and location of high value goods or containers as well as log significant vibrations and shocks (important for fragile goods)	Not designed to provide telematics data, only the geolocation. While they can be used to monitor the location of a vehicle, they do not provide the rich reporting for an organisation to manage its KPIs or drivers that a telematics system does.
Advanced tracking systems Useful where security of personnel and assets is a significant issue and additional measures need to be implemented to reduce the threat.	Bio metrics	This may include retinal scan, face recognition and fingerprint equipment being fitted to vehicles and linked to additional systems.	Organisations considering additional security measures are strongly advised to seek independent expert advice. These are the next generation systems that will take over from traditional telematics systems in the next 10–15 years. They may be too expensive for some organisations at this time.

Type of technology	Specific technology	Benefits to organisations	Additional guidance
Advanced tracking systems (*cont.*) Useful where security of personnel and assets is a significant issue and additional measures need to be implemented to reduce the threat.	Radio frequency identification	Fitting radio frequency identification readers into vehicles allows organisations to add an additional layer of security and compliance by ensuring that only those drivers and passengers authorised to use that vehicle are travelling in it.	The systems can be linked to some telematics systems and ignition systems, which can then be set not to start if 100 per cent compliance is not met. Radio frequency identification readers may not be robust enough to manage hot, cold, dusty, dry and wet environments and fail, leaving the vehicle and passengers unable to continue their journey if they are linked to ignition systems. **Suggestion:** *If an organisation is considering using this type of equipment, it should seek independent advice from a specialist.*
	Automatic number plate recognition	Automatic number plate recognition provides organisations with an access control measure at operations centres. Assists in ensuring that only authorised and complaint vehicles and drivers can enter or leave a location without the need for additional intervention. Can be linked to other access control systems as well as telematics and compliance systems.	These are useful where there is a high volume of known traffic in a safe location. They should not be used in high-risk environments where higher levels of security are required. Accurate database management is essential to their safe operating, ensuring that the make, model and colour of a vehicle match the registration number provided. **Suggestion:** *If an organisation is considering using this type of equipment, it should seek independent advice from a specialist.*
Telematics systems Useful where security of personnel and assets is a significant issue and additional measures need to be implemented to reduce the threat.	Basic telematics systems	Provide details of location and direction of travel and information on how the vehicle is being driven.	How and why an organisation uses telematics should be dependent upon what reporting is required and how integrated this will be to operational performance costs as well as road safety. In its simplest form, telematics will be a tracking device that will tell an organisation where its vehicles are, direction of travel and speed. More complex systems will provide a range of reporting that can include some a range of in-depth KPI data, analysis, and performance management reporting.
	Advanced telematics systems	Provide management information to help an organisation control and manage its operation, including vehicle and driver use and the quantification of environmental impact. They can also be directly linked to onboard camera systems to provide even more comprehensive road safety functionality as well as additional systems such as automatic number plate recognition, radio frequency identification and bio metrics systems.	
		Organisations should benefit from being able to store and monitor data on: – driver details; – driver performance; – driver risk rating; – vehicle location; – vehicle performance; – vehicle maintenance requirements; – fuel usage; – kilometres driven; – incident monitoring; – route guidance and route monitoring; – speed; – weight; – temperature; and – seat belt usage.	**Suggestion:** *If an organisation is considering using this type of equipment, it should seek independent advice from a specialist.*

Type of technology	Specific technology	Benefits to organisations	Additional guidance
Telematics systems (*cont.*) Useful where security of personnel and assets is a significant issue and additional measures need to be implemented to reduce the threat.	Advanced telematics systems (*cont.*)	Used correctly this technology provides key performance data, enabling organisations to: – monitor drivers' behaviours; – implement reward, recognition and coaching policies; – monitor daily vehicle checks; – ensure vehicles use designated routes; – reduce fuel usage and kilometres driven; – verify that vehicles are driven correctly, without excessive acceleration and braking; – forecast vehicle use requirements and demand planning; – reduce underuse; – support vehicle security arrangements; and – reduce the organisation's overall road risk.	
Communication systems		Organisations should recognise and understand that road safety is not just about how drivers drive, it is also about how supervisors and managers communicate with drivers while they are on the road.	Communication should only take place when a vehicle is stopped, and the engine turned off. In some countries this is a legal requirement, while in others the driver could be penalised.
	Cell phones	Cell phones are a common but dangerous method of communicating with drivers while on the road. Answering calls and responding to messages while driving causes drivers to be distracted and increases the likelihood of accidents, which can have deadly consequences. In common usage allowing quick access to drivers, and particularly helpful in the event of incidents.	Telecommunications coverage in some countries is very poor with large geographical areas not covered.
	Radio systems	Can in some countries be more useful than cell phones. More reliable in remote or hostile environments where security is a major concern.	Driver distraction is the same as using a cell phone.
	Handheld portable devices and pads	Can be used to send and receive data, text messages, update routing information and a range of other organisation-specific information or data. They can be programmed to only allow communications to take place when the vehicle is not moving and the engine is switched off, reducing the likelihood of the driver being distracted while driving.	Can be expensive if they are only being used as a basic communication device. If they are linked to other systems, then they become more cost effective. For example, they could be used to collect signatures from consignees/consignors which then triggers automated processes such as invoicing. May not work well in countries where there is poor communications infrastructure unless they are connected to satellite phones, which may be expensive to operate.

Safety and security systems

Depending on the organisation's operational needs, safety and security systems for vehicles should be integrated into the operational and road safety management systems. As such, organisations should consider implementing the following equipment types.

Safety and security systems	Uses	Benefits to organisations	Additional guidance
Rollover protection system	Rollover protection systems should be considered for all light passenger vehicles and minibuses with up to nine passengers where the vehicle is being operated in remote or hostile environments.	Occupants of vehicles without such systems are five times more likely to be seriously injured or die than those fitted with these systems in a rollover incident.	These can be retrofitted to vehicles, but they should conform to international manufacturing standards and be fitted by qualified personnel. Rollover protection systems can be fitted internally or externally to a vehicle.
Speed limiters	Speed limiters can provide either mechanical or electronic assistance to ensure that a driver never breaks the speed limit or warns the driver that they are doing so.	Provides some assurance that vehicles are not being driven at excessive speeds.	More traditional speed limiters are mechanical devices fitted to a vehicle; their disadvantage is they can easily be tampered with. Cannot monitor driver behaviour and will not reduce speeds to meet road or environmental/social conditions.
Tachographs	Tachographs can be both digital and analogue. They record the length of time a driver has been driving or resting along with the speed of the vehicle.	Provide compliance assurance to organisations where cellular infrastructure is not yet at a level to adopt the use of more advanced technologies.	These can be retrofitted to most vehicles by a competent technician. Analogue units are more susceptible to tampering than digital units. Digital tachographs require the additional use of software systems and driver's cards that are unique and specific to a driver. If an organisation is considering this option, it may be more beneficial to consider telematics systems unless there is a legal requirement to fit this equipment.
Alcohol and drug testing kits		Ensures compliance with an organisation's alcohol and drug policy as well as making sure drivers do not drive while unfit through drink or drugs.	In some countries where alcohol is banned this may cause offence on religious grounds. Organisations should introduce these with care and note that even if alcohol and drugs are illegal, they can and will be obtained and used by a small minority of people.
Driver apps	Can be used in a wide variety of ways, from driver daily vehicle checks to providing performance feedback from telematics data and supporting recognition and reward programmes.	Can be used to automate a range of activities performed by drivers, schedulers and managers. These can be off-the-shelf solutions or bespoke to organisations depending on the business requirements.	The type of technology systems operated by an organisation may limit the possible use of app technologies.
Cell phone (GSM) blocking devices	GSM blocking devices are designed to stop drivers from making or receiving calls while the vehicle is in motion by blocking their GSM or mobile internet signal.	Installing such devices will assist organisations in enforcing 'no-telephone-communication-while-driving' policies. They can be programmed to allow emergency calls only.	

Annex 8: Journey management implementation

Stage of the journey	Journey management tool	Responsibilities	
		Journey manager/team	Driver
Before start of journey	**Route planning** – Use the route database to identify high-risk areas along the planned route. – Draw in information from other sources where available, including weather and traffic reports. – If the journey is a non-routine journey, managers should ensure that they do adequate risk mitigation and increase the level of communication with the driver. **Driver and vehicle management** – All required licenses and certificates can be tracked through a journey management IT solution with alerts of expiry dates and non-compliance. – Driver database can be generated so that they include EHS compliance requirements and trainings, including mechanism of non-compliance alerts and notifications, and tracking of personal data (for example, age requirements). – Vehicle database is linked to procurement process and maintenance database can be established to ensure vehicle is in line with country requirements and manufacturer specifications.	– Identify optimal route using journey management plan tools and database and develop route plan. – Ensure driver is fit, healthy and not fatigued.[27] – Ensure vehicle condition is in line with organisation's requirements. – Make sure any defects reported by the driver are repaired before the journey starts. – Check driver and vehicle documentation. – Brief driver on journey details and load being carried and reinforce the lifesaving rules. – If everything is compliant, authorise the journey to start.	– Ensure familiarity with the planned route and journey requirements. – Carry all required documentation, including if there are any specific documents for the goods being carried. – Agree with the journey manager on best methods for communication. Ensure the load is safe and secure.[28] – Check vehicle condition and internal cleanliness is in line with organisation's requirements. – Report any defects to the journey manager so they can be repaired before the journey starts.
Journey monitoring	– In-vehicle technology such as telematics, GSM blocking devices and onboard camera systems can be linked to the tool to monitor driver and vehicle performance (see chapter 4 for in-vehicle technologies). – Any unsafe act/emergency detected by these technologies will trigger an alarm and notify the journey manager. – In organisations where no in-vehicle technology is being used, a paper-based solution should be used.	– Monitor the driver and vehicle progress throughout the journey. – Communicate with the driver as agreed in the plan. – In cases of emergency, provide the driver with alternate routes and other support, as needed. – Record any compliance failures, including speeding, deviation from route plan and failure to take breaks	– Comply with the plan and if they need to deviate, contact the journey manager before deviating. – Check during the journey that the load is secure.[29] – Communicate with the journey manager at the agreed times. – Stop and take regular rest at the agreed locations. – Do not use any mobile communications device while the vehicle is in motion, and only when the engine is switched off. – Always follow lifesaving rules.
End of journey	Based on the technology being used, the journey management system can analyse the data available and provide information on: – driver behaviour; – poor use by load capacity or poor routes; – compliance violations such as speeding; – alternative modes; and – optimum driver performance. The journey management plan provides a standard reporting procedure for an organisation and its contractors, which is customisable to meet the organisation's KPI targets.	– Undertake a debrief with the driver; this should include – fatigue management;[30] – any incidents or near misses that took place, recorded on a central register; and – any policy and journey compliance violations. – Any incidents that are considered dangerous should be reported to a senior manager. – Undertake regular reviews of learnings and feedback. It is recommended that this is done at least once a month. – Apply consequence management where required. – Apply driver reward programmes where required.	– Undertake an inspection of the vehicle to ensure it is left in a safe condition and report any defects to the journey manager. – Complete a journey debrief with the journey manager and identify any hazards, near misses or concerns. – Explain any journey compliance violations.

Annex 9: Journey management software systems

This table shows recommendations that should be considered when selecting a journey management system.

Visibility	Requirement
100 per cent visibility of all vehicle movements (primary and contractor)	Prevents unauthorised use of vehicles or deviations from journey plans
100 per cent visibility of all people movements (where the organisation transports its own people using land transport)	Prevents use of transport services for unauthorised or non-compliant travellers by tracking people in vehicles
Standardisation	
Implementation of a standard journey management process with enough flexibility to accommodate critical local requirements	Gives assurance of the right implementation and application of journey management process to achieve land transport operational efficiency and improve road safety performance
Standard KPIs and sufficient reporting capabilities based on standard data definitions	Provides reporting in line with business requirements
IT and mobile technology solution	
A fit-for-purpose solution that is scalable for an organisation's requirements	Embeds additional apps to allow for growth
Strong integration of systems	Integrates with other systems to provide optimisation for fleets
Optimisation	
Improved vehicle use reducing overall road risks and improving operational costs	Identifies poor use by load capacity or unsuitable routes
Optimises driver use	Controls break times and allows drivers to be allocated to routes that optimise driving time
Reporting	
Reduces journey risk through analysis of data	Allows analysis of driver behaviours, routes, schedules, alternative modes and compliance violations
Provides automated reporting capabilities	Provides standardised reporting for the organisation and its contractors, customisable to meet the organisation's own KPI targets

Annex 10: Basic journey management template

A simple journey management plan template that organisations should consider using as a base and adapting to meet their needs.

Drivers Details	
Name	
GSM Number	
Company ID	
Compliance Checked	

Compliance	Yes	No
Driver Fully Compliant		
Vehicle Fully Compliant		
Drivers Vehicle Check Sheet attached		

Vehicle Details	
Make	
Model	
Registration	

Load Details	Yes	No
Non Hazardous Load		
Hazardous Load		
High Value Load		
Hazardous Load Materials Form Completed		

Journey Details	Depart Time	Arrive Time
Start Location		
Rest/Stop Location		
Rest/Stop Location		
Rest/Stop Location		

Passenger Details	
Name 1	
Name 2	
Name 3	
Name 4	

Emergency Details	
Driver must contact the journey manager if they deviate from route or have an emergency	
Call	
Insert Tel Number	

Driver Brief

Driver Debrief

Journey Manager Name

Journey Manager Signature

Annex 11: High-risk journey considerations

Organisations need to consider when an environment may be high risk and then undertake mitigating actions to reduce the risk to their drivers, assets and the wider community. This table presents some examples of high-risk environments, but organisations should assess their own operations and mitigate appropriately.

High-risk environment	Risk factors	Mitigating action
Remote journey (for example: desert)	– Heat – Driver fatigue[31] – Dust storms – Breakdown – Limited communications	– Robust journey management plan – Driver briefing – Search and rescue plan – Satellite phone
Carrying high value items High value could be determined as a monetary value or because the goods are difficult to obtain, or attractive to theft	– Theft – Damage – Threat to staff through hijack	– Robust journey management plan – Driver briefing – Use of additional security tracking devices – Use of security personnel
Carrying high-risk material/supplies (such as chemicals or fuel that is flammable or has an environmental impact)	– Spill or damage to vehicles – Health and safety risk	– Material safety data sheets and/or hazardous material management procedures must be implemented – Drivers should be trained on handling the hazardous chemicals during transport and loading and unloading activities – Drivers should be made aware of emergency contact numbers and first aid procedures, in case of spill, damage or other concerns
Journeys in conflict zones	– Theft – Hijack – Kidnap – Assault/murder	– Use of B6 armour-plated vehicles to carry passengers – Use of specialised security teams to support the journey – Use of satellite tracking, live camera feeds and panic alarm systems – Use of 24/7 specialised monitoring services that are connected to the local emergency services

Annex 12: Sustainable vehicle design and use

Organisations should consider how they can reduce the impact they have on the environment and make cost savings by modifying vehicles. Some simple changes can easily improve the sustainability of an operation.

	Risk factors	Mitigating action	Impact
Truck			
Roof deflectors	Reduced wind drag	Improves fuel consumption	Between 5 and 9% fuel saving on average
Chassis skirts	Reduced wind drag	Improves fuel consumption	Between 3 and 4% fuel saving
A-pillar deflector	Reduced wind drag	Improves fuel consumption	Between 3 and 4% fuel saving
Trailers			
Side skirts	Improved wind flow	Helps improve fuel consumption	Between 3 and 6% depending on the trailer type
Stabilisers/nose fairings	Improved wind flow at the front of the trailer	Helps improve drag co-efficiency and improve fuel consumption	Between 3 and 6% depending on the trailer type
Tires			
Wide tires (such as 455/55R22.5) in place of two single tires	Reduced rolling resistance	Improves fuel consumption and has less impact onto road surfaces	Fuel savings of up to 10%
Correct tire pressures	Reduced rolling drag	Improves fuel consumption, reduces impact onto road surface	Fuel savings of up to 10%
Engines			
Stop–start technology	Reduced idle engine in congested traffic	Improves overall fuel consumption, reduces carbon emissions	Fuel savings of 4% on average
Euro 6 engines	Reduced CO_2 (by 25%)	Improves fuel consumption	Reduces nitrogen oxide emissions by 55%

Organisations should note that modifications to vehicles and trailers may require retesting and licensing depending on the country that they are operated in and that any modifications should only be carried out by qualified and authorised engineers.

Read more about vehicle technologies for reducing load-specific fuel consumption.[32]

Annex 13: Hazard identification: driving, journeys and vehicles

This list can be used to remind organisations about generic road safety hazards when they perform road risk assessments or carry out incident investigations.

Activity	Hazard and contributing factor
Driving	Aggressive or high-risk driving – failing to give right of way, following too closely, improper passing, ignoring traffic control device, speeding
Driving	Distraction – for example, texting or talking on cell phone, using Global Positioning System (GPS) or two-way radio, grooming, eating, having an involved conversation with passenger
Driving	Does not know correct procedures for using equipment (such as how to apply tire chains)
Driving	Does not properly recognise driving-related hazards and/or does not adjust driving accordingly
Driving	Does not wear seat belt; does not require passenger to wear seat belt
Driving	Driver not familiar with driving responsibilities or route, unprepared
Driving	Driving too fast for road/traffic conditions
Driving	Failure to pay attention to driving responsibilities; complacency
Driving	Fatigue – reduced vigilance, slower reactions, poor decisions
Driving	Impaired by alcohol, medication or prescription or illicit drugs
Driving	Insufficient orientation or training: driver does not have necessary skills or is unfamiliar with procedures to operate vehicle
Driving	Medical condition that could affect driving abilities (such as heart condition, sleep apnoea)
Driving	Poor nutrition and/or hydration – fatigue, attitude
Driving	Poor vision (eye health)
Driving	Slip, trip or fall while entering or exiting vehicle
Driving	Violence from passenger
Journey	Avoidable and unnecessary driving is not avoided
Journey	Backing/reversing
Journey	Collision with farm animals, wildlife
Journey	Collision with oncoming vehicle (their fault)
Journey	Collision with pedestrian or cyclist
Journey	Congested traffic – unexpected delays, frustration, stress
Journey	Extreme temperature conditions – severe heat or cold
Journey	Limited visibility – fog, excessive dust, travelling into sunset or sunrise
Journey	Long duration trips (more than two hours); unpredictable or irregular schedules, shift work, driving between midnight and 6:00 am
Journey	No trip plan, check-in procedure, emergency procedures or communications device
Journey	Poor traction conditions – summer: heavy rain, rain after lengthy hot period, winter: freeze/thaw cycles, shaded corners, temperatures a little above or below freezing
Journey	Poor trip scheduling – unrealistic time allowed, inefficient route selection, avoidable delays not eliminated
Journey	Route includes intersections or roads with known high crash frequency; uncontrolled railway crossings
Vehicle	Car slips off jack during tire change
Vehicle	Cracked/damaged windshield
Vehicle	Electrical energy shock (such as improper battery boost)
Vehicle	Faulty brakes
Vehicle	Faulty head lights, taillights, signals or other such fault
Vehicle	Improper lockout (such as vehicle rolls into another vehicle, person)
Vehicle	Improperly adjusted mirrors – visibility
Vehicle	Improperly adjusted seat and headrest – MSI strain, visibility
Vehicle	Lack of emergency equipment or first aid supplies
Vehicle	Loose items in cab, disorganised driving workspace
Vehicle	Sudden release of air pressure from airline or hydraulic pressure (such as lift truck, onboard hydraulic equipment)
Vehicle	Tires not suited for application (for example, all-season tires rather than winter tires)
Vehicle	Unsecured, overloaded or unbalanced load
Vehicle	Vehicle not maintained according to manufacturer specifications
Vehicle	Vehicle not selected or equipped for use (such as underpowered, wrong axle configuration)
Vehicle	Vehicles not regularly inspected

Annex 14: Questions to ask during an accident/incident investigation

To avoid leading questions, hypothetical questions, emotional interview techniques and closed questions, the following questions can be asked when investigating a serious accident/incident.

Accident/incident details	1) What was the employee doing at the time of the accident/incident? 2) Was the activity new, for example, was new equipment being used? Was it a new route? Had the employee done this work before? 3) Were company procedures being followed? 4) Was the route risk assessment undertaken and followed in line with the recommendations? 5) Was proper supervision being provided, for example, by the journey management team? 6) Were there any witnesses present and if so, what were they doing? 7) Were any third parties affected by the accident/incident, for example pedestrians or other road users? 8) What was the nature of any injuries suffered by any party to the accident/incident? 9) What other damage or disruption did the accident/incident cause, for example, traffic disruption or damage to equipment or property, including that of third parties?
Location details	1) What was the location of the accident/incident? 2) What was the physical condition of the area when the accident/incident occurred, for example, what was the weather like? Was it wet or raining? Was there debris or other vehicles on the road? What was the condition of the road? Was there street lighting? 3) Have any other accidents/incidents been recorded in this location?
Action taken	1) What was the immediate action taken at the time of the accident/incident?
Employee background	1) Was the employee qualified to perform this operation? 2) Had the employee received training on this operation before the accident? 3) Has anyone involved in the accident been subject to any disciplinary action for unsafe acts in the past?
Vehicle condition	1) Was the vehicle, tools or equipment fit for use and had they been inspected before use?
Additional documentation	1) Were any medical reports, police investigation reports or insurance reports being undertaken?
Cause analysis	1) What immediate or temporary action could have prevented the accident/incident or minimised its effect (by addressing the immediate causes)? 2) What long-term or permanent action could have prevented the accident/incident or minimised its effect (by addressing the root causes)? 3) Did any unsafe act contribute to the cause of the accident/incident? If so, is any disciplinary action recommended?

Annex 15: Accident/incident investigation report template

This report template can be used for serious accident/incident investigations. Organisations should not hesitate to customise it, so it aligns with their specific context and requirements.

Sheet A: Reporting division (name):				
Date of report				
Contact person(s)				
Date and time of accident; date of notification				
Type of accident/ incident				
Description of issue	Date and time of incident Type of incident: environmental issue, fatality, alleged fraud or other Name of person(s) involved, injured or deceased, if applicable Narrative and contextual information Whether incident was work or non-work related Causes of incident Status of investigation Listing of parties involved in investigation (witnesses and staff, unions, police, other authorities and other parties) Publicity			
Immediate response				
Third-party involvement (any contractors, sub-contractors, community members or other stakeholders)				
Incident investigation	Immediate cause			
	Root cause			
	Underlying cause			
	Preventive cause			
Corrective action plan recommendations	Recommendation	Timeline	Responsible personnel	Deliverable
Signed off by				

Refer to section 6.2.1 for guidance around undertaking root cause analysis and investigation mechanisms while developing the accident/incident report.

Annex 16: Road design considerations

Road infrastructure plays a significant role in influencing the likelihood or severity of a crash.

The elements that are typically thought to impact on efficiency and safety are intersections, horizontal curves, vertical curves and gradients, cross-section (lane and shoulder width, medians and roadsides) and merge/diverge areas. Design guides should cover these issues in detail. Hence to ensure safe roads, organisations involved in constructing roads and related infrastructure should consider the following in their design criteria:

- **Design speed:** The selected design speed influences the characteristics of various geometric elements on a roadway, such as lane widths, horizontal and vertical curves, and sight distance. The speed selected should reflect the speed drivers expect to travel on a section of roadway, and should consider the neighbouring developments, the roadway function and its physical limitations (due to, for example, terrain, expected traffic volumes).
- **Lanes and shoulders:** Crash risk can be linked to the total seal width (lane and shoulder seals). Crash risk decreases with increasing seal width (that is, wider lanes and larger shoulders), as the sealed area provides a recovery zone for errant vehicles and space for evasive manoeuvres. For two-lane rural roads, shoulder sealing can reduce crash risk by up to 35 per cent.
- **Horizontal alignment:** This involves the design of horizontal curves along a road and is a key consideration in design as crash risk increases with decreasing curve radius (that is, as a turn gets tighter). The risk increases more rapidly for curve radiuses below 400 metres. The crash risk is also higher for isolated curves (or where the driver might not be expecting it), and lower for curves in a sequence of similar standard curves.
- **Vertical alignment:** This involves the road grade (the rate of change of vertical elevation) and vertical curves (that is, crests and sags). Sag curves are not known to have any significant effect on safety. The most crucial effect crests have on safety is through sight distance, which is covered in the next bullet point. There is a small correlation between crash risk and vertical grade – the crash risk also increases more rapidly for grades beyond 6 per cent as vehicle speeds become more difficult to manage.
- **Stopping sight distance:** This is the distance required for a driver to recognise a need to stop and brake to a stop from a particular speed. Horizontal and vertical curves, and particularly crests, limit a driver's sight distance. Road widening (either as wider shoulders or an overtaking lane) over a crest with less-than-adequate sight distance can be an effective countermeasure rather than flattening the crest. Improving limited sight distance at locations where other vehicles may be slowing or stopping (intersection sight distance) can be extremely important for safety.
- **Roadside clearance:** Also known as horizontal clearance or lateral offset, roadside clearance is distance between the edge of the roadway or shoulder to a vertical roadside obstruction, and the type of obstruction a vehicle might hit. Crash risk can potentially be reduced by 35 to 45 per cent when all roadside hazards are removed (such as trees, poles and fences); however, a barrier installation can be an effective countermeasure for reducing run-off-road crashes. It should be noted that a 'clear' roadside should also be flat or mildly sloping (such as 1:4 or flatter), and that roadsides with steeper gradients can have a large impact on vehicle safety.

For more information on safe road infrastructure considerations please refer to the PIARC Road Safety Manual's guidance on infrastructure safety management[33] including recommendations on policies, benchmarking to good performance and standards.

Road design monitoring

iRAP is the umbrella programme for the international road assessment programmes undertaken globally to ensure safe roads. iRAP's main approaches to assessing roads include the following:

- **Star rating:** 1–5-star ratings, based on road inspection data, that provide a simple and objective measure of the level of safety which is 'built-in' to the road for vehicle occupants, motorcyclists, bicyclists and pedestrians.
- **Crash risk mapping:** Provides crash risk maps to capture the combined risks arising from the interaction between road users, vehicles and the road environment.
- **Performance tracking:** Establishes key outcomes and indicators to measure performance over a period, to advice on improvements to safety infrastructure.
- **Investment plans:** Provide practical and affordable road infrastructure options through safer roads investment plans to improve the star rating.

For more information around iRAP intervention and safe road design please refer to iRAP.[34]

Endnotes

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For further information:

CDC Group plc:

123 Victoria Street
London SW1E 6DE
United Kingdom

T: +44 (0)20 7963 4700

E: enquiries@cdcgroup.com

cdcgroup.com

PIDG Ltd:
6 Bevis Marks
London
EC3A 7BA
United Kingdom
Tel: +44 (0) 203 848 6740
E: info@pidg.org
www.pidg.org

SIFEM AG:
c/o Obviam AG
Helvetiastrasse 17
P.O. Box 3000, Bern 6
Switzerland
T: +41 31 310 09 30
E: info@sifem.ch
www.sifem.ch

FMO:
Anna van Saksenlaan 71
2593 HW
The Hague
The Netherlands
T: +31 70 314 96 96
E: info@fmo.nl
www.fmo.nl

Proparco:
151, rue Saint Honoré
75001
Paris
France
T: + 33 1 53 44 31 08
E: proparco@proparco.fr
proparco.fr

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