Research and consultation in preparation for developing the Forestry Log Haulage Registered Code of Practice

Preliminary Report

January 2018
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1. Executive summary

The Australian Forest Products Association (AFPA), with funding and support from industry, is leading the development of an industry specific code of practice for safe log haulage operations. AFPA have endorsed the Australian Forest Contractors Association (AFCA) to manage the project on behalf of industry. The Forestry Log Haulage Registered Code of Practice (FLHRCoP) will be developed in line with the Guidelines for Preparing and Registering Industry Codes of Practice (‘the Guidelines’), prepared by the National Heavy Vehicle Regulator (NHVR). The FLHRCoP will sit under the Master Code of Practice (MCoP), currently being developed, and address risks which are specifically associated with forestry log haulage and not covered in the MCoP. This report details the outputs from the preliminary steps undertaken by AFCA and EY in preparation of the FLHRCoP, specifically the research and consultation undertaken with industry.

1.1 Overview of objectives and approach

The Guidelines outline that as the Developer of the FLHRCoP, AFCA is required to consult comprehensively with the industry sector to demonstrate that regulatory, technical and operational advice and experience is incorporated. Further, as the FLHRCoP is a voluntary standard, AFCA believes that extensive consultation in the development of the code is required to ensure industry participation and implementation.

EY was engaged to assist AFCA in undertaking the preliminary research and consultation in order to:

► Outline the current state of log haulage operations, legislation and standards, including variations across states and regions.
► Identity gaps and inconsistencies in existing frameworks/policies/standards.
► Provide examples of better practice.
► Outline considerations for the development of the FLHRCoP.

In order to do so, EY undertook the following activities:
1.2 Overview of findings

Based on our research and consultation, EY found that:

► There are a number of standards and codes of practice specific to log haulage that have been developed that apply in different jurisdictions.
► There are inconsistencies between guidance documents.
► Some areas of risk have either not been addressed or have not been sufficiently addressed for log haulage.
► Our preliminary findings identified that the key areas for consideration for the FLHRCoP are:

<table>
<thead>
<tr>
<th>Area of consideration</th>
<th>Key issues for consideration</th>
<th>Key risks and contributing factors</th>
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</thead>
<tbody>
<tr>
<td>Equipment Design</td>
<td>Equipment design refers to the specifications of the trucks, including technology and systems that are required for safe operation of log haulage. Log haulage truck equipment varies greatly in design when compared to other heavy vehicle operations, due to the organic nature of the load being transported.</td>
<td>Structural/design deficiency</td>
</tr>
<tr>
<td>Maintenance of Equipment</td>
<td>Maintenance of equipment refers to the maintenance requirements that are specific to the log haulage industry. Log haulage operations put the equipment under a greater amount of strain due to the nature of operations. The driving conditions under which the equipment operates and the road conditions in which they function can lead to equipment failure or impact the life expectancy of the equipment.</td>
<td>Equipment failure</td>
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EY identified the following issues for consideration and key risks and risk factors related specifically to the log haulage industry in each of the key areas.
<table>
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</tr>
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| Driver training, competency and attitudes | Driver competencies, experience and training are key for the safe operation of the log haulage industry. | ▶ Rollover  
▶ Pay structure  
▶ Fatigue  
▶ Mass management |
| Driving environment and conditions | Driving environment and conditions experienced by drivers during log haulage operations are highly variable and have a significant impact on the safety of operations. | ▶ Driving environment  
▶ Third party crash |
| Load restraint systems | Load restraint systems and the types of tensioning (automatic vs manual) are key for the safe operation of the log haulage industry. | ▶ Loss of load  
▶ Shoulder injury |
| Loading awareness | Loading processes, load configuration, construction and the understanding of chain of responsibility are key for the safe operation of the log haulage industry. This will assist with the safety of personnel during the load process for log haulage. | ▶ Traffic management  
▶ Loading environment  
▶ Loading |
| Unloading | Unloading of logs during the log haulage process has a number of nuances that are specific to the industry. These impact on fatigue, safety of personnel, and traffic management. The unloading facilities and, in some cases, practices are currently managed by the processing facility without necessarily considering chain of responsibility and the impact of design. | ▶ Crushing injury  
▶ Delays during unload  
▶ Traffic management |
## Area of Consideration | Key Issues for Consideration | Key Risks and Contributing Factors
--- | --- | ---
Consignment Practice | The contractual and operating conditions and expectations established by the landowner/forest manager/operator/processor/forest contracting business can influence all aspects. | ▶ Pay structure  
▶ Fatigue  
▶ Mass management  
▶ Loading and unloading environment
Community | Forestry operations often occur in and around small regional communities with small and narrow roads. In some instances community expectations require routing log haulage vehicles through back roads or around restricted times of operation (i.e. not during school bus drop-off/pick-up times). There are negative community perceptions of log truck safety given the visibility of incidents and perception of incident rates. Operations also often occur in areas with higher levels of self-drive tourism. | ▶ Third party crashes

EY found the following high-level gaps, deficiencies and variations for the industry from a policy, standards, guidelines and legislative perspective that the FLHRCoP could address:

1. **GAPS**
   - Maintenance practices: Many operators will maintain to manufacturer specifications, which do not take into consideration the extreme operating environment of log haulage.

2. **Mass management**: Log haulage operators are required to meet the NHVR mass management standards. However, there are no specific conditions that apply to the log haulage industry with regards to the impact of additional mass on static rollover threshold (SRT).

3. **Equipment design**: Currently, there is a lack of guidance and variety of truck designs in use across the country with no overarching or national control.

4. **Pay structure**: No industry standard or guidelines for contractor pay structure, with different arrangements incentivising behaviours that impact on safety.

5. **Driver training**: There is minimal guidance which leads to inconsistent and informal approaches to assessing driver competency, with variations across regions, states and companies.

6. **Loading/Unloading**: No national expectation of loading training and competency which has led to voluntary implementation and inconsistency between regions. There is minimal guidance around how unloading should be conducted safely and is currently dependent on the processing facilities.
7. Load restraint systems: There is significant variation in knowledge of requirements, expectations and technology of restraint systems, with different systems used across different regions, states and companies. There is different understandings of how compliance is achieved, with inconsistent approaches to assessing performance standards.

8. Consignment practices: are dependent on the consigner and what practices they wish to implement.
2. Background and objectives

Log haulage is a specialised and high risk heavy vehicle transport industry. Management of risk and safety has been driven at a regional and state level, with limited national documentation and guidelines. The unique nature of the operations mean that standard heavy vehicle guidelines do not sufficiently cover all the associated risks. EY has been engaged by AFCA to support the development of an overarching code of practice specifically for log haulage operations. The aim is to achieve safer outcomes for the industry across Australia.

2.1 NHVL and industry specific guidelines

The Heavy Vehicle National Law (HVNL) was introduced in 2013 for heavy vehicles over 4.5 tonnes GVM. The law aimed to deliver safety benefits, reduce the compliance burden for business, increase Australia's international competitiveness, and make it easier for business to operate across state and territory borders.

The HVNL established the NHVR (the Regulator). The industry is in the process of developing a master code of practice to aid the safe operation of the heavy vehicle industry. This master code will provide generic guidance regarding compliance with the NHVL specifically addressing fatigue, mass dimension and loading, speed and vehicle standards and maintenance. There was recognition that the master code will not address all risks specific to sub-industries. As such, the NHVR established guidance for heavy vehicle operators, such as log haulage, for development of complimentary codes of practice that will address industry specific risks.

The forestry industry currently operates under a varied environment of guidance documents and codes of practice that have been developed haphazardly across the country in response to regional or state based initiatives. EY reviewed log haulage guidance documentation to understand the gaps, inconsistencies and variations that exist.

2.1.1 National

At a national level, heavy vehicle guidance consisted of the National Transport Commission's Load Restraint Guide, 2004, which is currently in the process of being updated. More specific to log haulage, Safe Work Australia developed a 2014 national guide to managing risks of log haulage which includes potential hazards and examples of control mechanisms. In addition, ForestWorks produced a log haulage manual in 2014 which details best industry practice for log haulage operations.

2.1.2 State

Generally states have their own heavy vehicle road safety handbooks, with some having produced specific log haulage guidance documents. These include, but are not limited to:


2.1.3 Regional

Some regions have taken this a step further and developed region specific guidance for log haulage, such as the following:

- Best practice guide, Forestry Corporation, North NSW, undated.
Whilst the intent was to create a safer work environment the guidance documents reviewed are outdated and do not provide a consistent approach to the safe operation of log haulage. The most comprehensive document at present is the log haulage manual developed by ForestWorks with industry.

2.2 Safety and log haulage

The forestry industry has unique safety and risk factors around log haulage in comparison with other heavy vehicle operations, and will benefit from an industry specific code of practice. The log haulage process for the purpose of this engagement includes the loading of logs from the forest operation through to unload and delivery of the logs to the processor. This does not include the felling of the trees or the saw mill process of the logs.

The forestry and logging industry is classified as a high risk industry with a number of high risk events, serious injuries and fatalities having occurred across Australia. The log haulage component of this industry is the highest risk interface between the industry and the general public and is the focus of this code of practice. The risk factors include the challenging road environments and conditions in which log haulage operators must drive to reach the, often times remote, forest coupes, and the organic nature of the load which creates variation in load balance and stability. Key incidents that have occurred include truck roll overs, vehicle accidents, and loss or partial loss of load.

2.3 Objectives of EY engagement

AFPA, with support from AFCA, has commenced the development of an industry specific code of practice, and has completed the notice of intent process with the NHVR. AFCA engaged EY for assistance in predominately undertaking Stage 2 which includes the following steps:

1. Research and consult with industry.
2. Set out the purpose and scope of the industry code of practice.
3. Develop the content using a risk management process.
4. Identify the risk types.
5. Assess the risks.
6. Suggest measures to control risk.

The outputs of this process will directly inform the design of the FLHRCoP to be submitted to the NHVR. Currently the industry is challenged in terms of navigating what is safe and compliant. This code of practice will be developed as a guide for driving nationally consistent better practice of how to comply with the HVNL. The primary objective being to achieve the best result for industry with safer outcomes for everyone involved.
3. Approach

EY has taken a strategic planned approach to develop understanding of the current state and key safety issues of the log haulage industry. The approach of consulting with industry experts, using appropriate language and maximising consultation across the supply chain is necessary to achieve considered, valuable and safer outcomes for the industry.

3.1 Overview of methodology

EY applied a three phased approach. The first phase involved strategic planning and research to identify key stakeholders, develop a consultation plan and review key existing documentation. The second ‘discovery’ phase, involved assimilating information from the desktop research, undertaking stakeholder interviews with key industry members and ‘day in the life of’ site visits. This approach enabled EY to direct each part of the process and categorise key areas for discussion and verification. The third phase consisted of a discovery workshop with stakeholders to validate outcomes of the first two phases. An overview of our approach is detailed below.

3.2 Desktop research

The EY team conducted desktop research that combined a review of key documents provided by AFCA and a research discovery phase to understand elements of better practice. The research discovery phase was targeted to the key themes, documents and questions identified in the initial document review. All the documentation reviewed was summarised for key takeaways and regional applicability.

Documentation reviewed varied across jurisdictions and included Codes of Practice, best practice guidelines, standard operating procedures, industry practice manuals, brochures, handbooks and workshop notes in efforts to identify gaps and deficiencies across Australia. The full list of documentation is detailed in Appendix B.

Key observations that have come out of this review include:

- There are a number of standards and codes of practice specific to log haulage that have been developed that apply in different jurisdictions.
- There are inconsistencies between guidance documents.
- Some areas of risk have either not been addressed or have not been sufficiently addressed for log haulage.
From these key points the concept of a gap, deficiency and variation was developed to feed into four main areas of consideration:

These four main areas were developed through a culmination of stakeholder interviews and site visit observations. For further detail on these areas see Section 4.1.

3.3 Stakeholder interviews

In collaboration with AFCA key industry stakeholders were selected for twelve discovery interviews wherein the objective was to collect a range of perspectives and input into:

► The diversity of codes of practice and operating procedures in place across Australia.
► Key risks, incidents and their causes.
► Examples of better practice.

The stakeholder interviews formed the core basis for shaping the findings outlined in Section 4 of this report, specifically the key issues for consideration (as outlined in Figure 5 on page 21). For a comprehensive list of stakeholders interviewed, see Appendix A.

3.4 Site visits – ‘Day in the life of’

Three ‘Day in the life of’ (DILO) site visits were undertaken in Launceston, Oberon and New Norfolk (Tasmania). EY met with forest industry stakeholders, viewed the log haulage process and joined truck drivers on their journeys. The objectives of the site visits were to build EY’s understanding of the industry, to inform the code of practice with industry terminology and language, and to ensure it is reflective of the wide variety of operating environments and activities.

For a list of personnel interviewed whilst on site, see Appendix A. Images taken during the DILO site visits are shown on the following page.
Figure 1: Load transit and varying road conditions.

Figure 2: Log landings.

Figure 3: Restraining the load.
3.5 Discovery workshop

A discovery workshop was held on 30\textsuperscript{th} October 2017, using telepresence technology that enabled participation from the Perth, Melbourne, Brisbane, Canberra and Sydney EY offices. There were 27 attendees from across the supply chain, including forestry contracting businesses, forest managers/land owners, and processors. For a full list of attendees, see Appendix A.

The workshops presented the preliminary findings from the desktop review, site visits and discovery interviews as a means to:

- Update industry on work completed to date and next steps.
- Validate, challenge and stress test current thinking and offer the opportunity to comment and provide feedback.
- Collect additional information and clarify areas of complexity.
- Provide industry opportunity to participate and feel consulted.

Feedback from the workshop indicated it was well received by the stakeholders with a good level of contribution observed across the jurisdictions. For more detailed discussion of findings see Section 4.
4. Preliminary findings

EY aims to drive the best outcome for the industry with consensus and buy-in. Our approach sought to maximise consultation through listening to the experts and engaging with those that do the job daily. Overall, these preliminary findings include a high level overview of general observations, the issues for consideration for the code of practice, the gaps, deficiencies and variations in existing documentation and examples of better practice.

Our preliminary findings outline the results of EY’s discovery phase. As a result, EY has mapped the current state and highlighted gaps, deficiencies and variations. At a high level, EY made the following general observations during the Discovery phase:

- The current state has high levels of regional variation driven by local collaboration, and the standards are ultimately state based, or have criteria driven by consigners.
- The operating environment is challenging with low levels of influence/control over key risk factors such as road conditions (including off road), remote work, and load characteristics.
- There is a sense that the safety culture could be improved, with performance improvement largely driven by consignment practices rather than haulage operators.
- Relative to the broader heavy vehicle industry, log haulage businesses are generally smaller. The industry is concerned about the cost that could be associated to reach compliance for safe operation.
- Currently, Western Australia does not operate under the NHVL so it is yet to be understood how the FLHRCoP will influence practice.

4.1 Issues for consideration in the FLHRCoP

EY sought to understand the key issues for consideration in the design of the FLHRCoP. In particular, we wanted to understand what the differentiators from other heavy vehicle operations are. We considered issues and risks across the four key areas of log haulage operation - equipment, driving, load restraint and loading/unloading.

Table 1 provides an overview of the key risks and risk factors that need to be considered to understand how they could impact the design of the FLHRCoP.
### Table 1 Issues for consideration for the FLHRCoP

<table>
<thead>
<tr>
<th>Area of log haulage operation</th>
<th>Issues for consideration</th>
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<tbody>
<tr>
<td><strong>Equipment</strong></td>
<td></td>
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#### 4.1.1 Equipment

##### 4.1.1.1 Design

Log haulage truck equipment varies greatly in design when compared to other heavy vehicle operations. Safe operation requires understanding and respecting the constraints of the equipment for safe haulage of logs. Design requirements will also affect trailer configuration and operation, coupling and uncoupling of trailers, operation of scales, maintenance requirements and end of life awareness. Historically, design of trailers has been driven by operational requirements of individual contractors, and therefore there was a high level of variation in specification and design. Further, the environment in which the equipment operates provides additional challenges which need to be taken into consideration.

**Structural/design deficiency**

There are variations in opinions across the industry regarding the best use of design and technology. For example:

- Suspension design can vary from airbags to springs.
- Scale design and operation is inconsistent.
- The use of GPS tracking of vehicles is varied.
- There is varied opinion on the use of forward and rear dash cameras with some operators believing they cause more incidents than they prevent.

**Different loads (log type, size and condition) require different setups and there is no standard. Operators also need flexibility to cater for different load requirements i.e. heights of logs in bays.**

**Equipment ‘fit for purpose’**

- Log haulage is specialised and requires equipment to be made fit for purpose more so than other heavy vehicle operations.
- Loads are organic and inconsistent, requiring flexible design and functionality. Changing log lengths and types requires different types of equipment.
- Retrofitting is challenging and expensive.
- Many trucks and trailers are old.
- Truck cabs are generally not designed for log haulage.
- Adding stanchions to other trucks rather than using purpose built trucks creates risk.
- Trailer manufacturers generally respond to client demand rather than performance requirements, and can be influenced by cost.

**Minimum equipment specifications**

- There are currently no minimum equipment specifications for the log haulage industry.
- The cost of fleet modernisation should be considered. There is a perception that equipment is generally older relative to the rest of the transport industry.
- Certification and assessment requirements should also be considered. Currently, there are inconsistent approaches to...
testing, with some systems being tested based on engineering analysis and other systems being tested by in field trials. In field testing of performance is difficult due to the variations in load.

4.1.1.2 Maintenance

Log haulage operations put the equipment under a greater level of strain compared with general transport due to the nature of operations. The driving conditions under which the equipment operates and the road conditions in which they function can often lead to increased wear and tear and equipment failure or impact the life expectancy of the equipment.

Equipment failure

► Equipment is subject to harsher operating conditions and therefore at greater risk of equipment failure if the right maintenance program is not in place.
► In the event of an incident, there is no requirements for independent assessment and approval for the truck getting back on the road after an accident.
► Most haulage companies follow maintenance as specified by the manufacturer however log haulage runs under conditions beyond normal operations. This means that equipment can be out of specifications or destroyed between service intervals.
► In the event of a breakdown, there is increased risk as vehicle retrieval can be from remote/difficult to access locations.
► Maintenance needs to focus on certain areas of trucks which are more likely to fail. This includes brakes, air bags, air lines, body work, turntables, and kingpins.
► There is currently no consideration of frequent third party inspections to ensure equipment is maintained as required for the log haulage industry.
► The industry predominately conducts self-maintenance over their operational fleet. This is of particular concern post a log haulage truck rollover incident as the onus sits with the owner of the operations to deem the vehicle road safe.

4.1.2 Driving

Driver competencies, experience and training are key for the safe operation of the log haulage industry. Driver attitudes, experience and awareness during log haulage operation have the following risk implications:

4.1.2.1 Driver capabilities and behaviour

Rollover

► High centre of gravity of loads (compared to non-forestry loads).
► Driver inattention due to radio distractions, mobile phones and third party road users.
► Road design/conditions are highly variable in terms of maintenance and quality, particularly on private roads and requires a greater driver skillset and awareness.
Driving environment and conditions

- Human factor to determine how to drive to the road conditions (e.g. how to take a corner).
- Load balance can impact the likelihood of rollover and is a risk that is impacted by loader skill, mass, load types, and communication between loader and driver.
- Scale accuracy impacted by landing conditions. There is the potential for overloading and/or requirement for buffer.

Pay structure
- Pay per load vs pay per hour can impact on the driver’s behaviour.

Fatigue
- Fatigue is a risk and contributing factor but controls and requirements are largely covered by national regulations.
- Waiting times during load and unload can often impact fatigue for log haulage drivers.
- Driver fitness can be a contributing factor to fatigue issues and could be monitored.

4.1.2.2 Driving environment and conditions

The driving environment and types of conditions experienced by drivers during log haulage operations have risk implications in the following areas:

Third party crash
- Slow speed of trucks and lack of awareness by third parties particularly on remote roads and tourist routes.

Driving environment
- Road conditions are often challenging and high risk (narrow, poorly maintained, or off-road conditions).
- Road conditions can change overnight.
- Remote work/working in isolation and ad-hoc/informal management processes. There are many drivers who may be working in isolation in remote areas, without immediate access to any means of communication.
- Community opposition restricts routing.

4.1.2.3 Community

- Forestry operations often occur in and around small regional communities with small/narrow roads.
- In some instances community expectations require routing log haulage vehicles through back roads.
- Operations often occur in areas with higher levels of tourism. Tourists may not be familiar with requirements for sharing the road safely with log trucks.
- There are negative perceptions from community about the log haulage industry, given the visibility of incidents and perceptions of incident frequency.
4.1.3 Load restraint

Load restraint systems and the types of tensioning (automatic vs manual) are key for the safe operation of the log haulage industry.

Material/ equipment types
► Insufficient restraint systems or loading quality can lead to loss of load (e.g. loading tapered logs with butts all to the back).
► There are different restraint setups which have different risk profiles. Industry perceives that different restraint setups are required for different types of log loads. This includes chains, ropes, straps and webbing.
► Log type can influence the effectiveness of restraint systems and needs to be considered including the species, time of year, shape, size and weight (wet vs dry), and age. The organic status can impact the behaviour of the load.
► The appropriate restraint system can also be challenged by landings where multiple grades of log are harvested and require transportation.

Method and meeting requirements
► Improved understanding of load construction vs loading a truck to improve stability, crowning and strap placement.
► OHS implications from manual tensioning and unwinding should be considered including throwing restraint, such as chains, over the load leading to shoulder injuries.
► Setting minimum method requirements to improve load restraint and meet performance standards (i.e. 0.8 force).

4.1.4 Load and unload

There have been a number of fatalities resulting from loading and unloading. Loading and unloading guidance procedures and the understanding of chain of responsibility are key for the safe operation of the log haulage industry. This will assist the safety of personnel during the load and unload process for log haulage.

4.1.4.1 Loading

Traffic management
► There are numerous pieces of equipment and persons on site which creates the risk of traffic management which can be difficult to navigate during the load process.
► Safe driver truck zones vary across the industry (inside vs out of the truck). As a result there is potential for confusion between different parties involved. This leads to a lack of role clarity and understanding of how to manage the risk in these dangerous areas. There should be a consistent approach and induction process applied to ensure driver safety during the load process.

Loading environment
► The loading environment is highly variable, and often placed in remote locations with temporary facilities. Consideration of
safe operation in design is often poor, and the ability to retrospectively address is limited.

► Where there is greater variation and complex environments the driver and loader are exposed to a higher level of risk that needs to be managed.

► When more log grades are harvested there are more stacks necessary on the landing which is challenging in low space or hilly environments and contributes to the risk for personnel on site.

► The loading bays are often narrow and not designed for safe operations. The logs can potentially fall long distances.

► The weather conditions within the operating environment can be varied.

► There are often time pressures placed on the loading of trucks. Often there can be a line-up of trucks waiting to haul logs from one loading environment creating an additional traffic management issue.

► Communication between truck driver and loader is critical.

► Equipment varies across industry.

► There can be challenges with remote reading of scales.

► There is need for specific training of loader operators including how to load/unload safely with a non-uniform product and understanding what constitutes an unsafe load.

Loading
► Can be affected by:
  ► Communication between loader and driver
  ► Loading equipment and coupe/pile management
  ► Skill of operator
  ► Self-loading which comes with its own issues and risks
  ► Load height and mass
  ► Softwood vs hardwood

4.1.4.2 Unloading
Crushing injury
► Unloading setup varies depending on the receiving facility with risk being impacted by:
  ► Specifications of mills
  ► Lengths of logs or mixed lengths of logs
  ► Receiving facility configuration
  ► Heights and widths of bolsters across mills
  ► Load restraint removal process

► There is variation of practice with some processing facilities using automatic unloaders whilst others prefer loader log grab.

► The facilities are currently determined by the processing facility with various levels of maturity regarding understanding of chain of responsibility and consideration of safety in design.

Unload process
► The hours of operations and delivery times are set by the processing facility in some instances which may encourage speeding events.

► The slot delivery windows can encourage speeding, however not including these could lead to delays while drivers wait for equipment which in turn impacts on driver fatigue.
Traffic management
► Numerous pieces of equipment and persons on site that are ultimately managed by the processing facility.

Receiving points
Including domestic processing facilities (sawmills, pulp and paper mills and other conversion facilities) and export facilities (yards or bulk facilities).

► The setup of receiving points is not consistent across the industry and at different types of receiving points. This creates risk in:
► Transporting logs between the aggregation yards and stevedoring area.
► Storage of log stacks up to 10m high.
► Unregistered trucks.
► Private road usage.
► Short turnaround times.

4.1.5 Consignment practices
The contractual and operating conditions and expectations established by the landowner/operator can influence safe practices and management of risk.
4.2 Framework for the development of the FLHRCoP

EY is in the process of developing a framework to inform the development of the FLHRCoP for the safe operation of log haulage. During this process it is important to understand the current policy and regulatory framework. EY undertook a review of the current state of the regulatory framework that the log haulage industry operates under including the legislation, standards, best practice guidance and Codes of Practice. The intent was to learn where the current regulatory framework does not sufficiently address the risk’s specific to log haulage.

To provide a comprehensive analysis of the current legislative framework, EY developed the following definitions to maintain a consistent analytical approach:

- **Gap:** The NHVL or other national standard does not adequately address the risk specific to log haulage as the risk in log haulage is different to normal heavy vehicle operations.
- **Deficiency:** There is a lack of guidance or existing standards for controlling risks specific to the industry.
  - Implementation of controls is largely voluntary and or innovative.
- **Variation:** Regional and/or state variations with regards to safe operating expectations or standards.

4.3 Key gaps, deficiencies, variations identified

EY identified several gaps, deficiencies and variations:

- **Gaps:** Due to insufficient expectations or requirements from regulation or industry guidance for addressing log haulage risks.
  - Maintenance.
  - Mass management.
- **Deficiencies:** Limited information, standards and guidance from industry.
  - Vehicle design and specification.
  - Driver training and competencies.
  - Safe loading and unloading practices.
- **Variations:** Variation in practice across industry.
  - Load restraint systems.

Table 2 expands on the key areas identified through EY’s analysis of the regulatory framework. These six key areas will be pivotal for the framework EY creates to inform the development of the FLHRCoP for the safe operation of log haulage.
4.3.1 Gaps identified

Maintenance
► Manufacturer maintenance specifications do not take into consideration the extreme operating environment of log haulage. Log haulage operators are normally required to apply a higher level of maintenance and inspection, in order to manage the risks associated with maintenance. Current legal specifications do not outline the requirement for a risk based approach to maintenance.
► Nationally, there is no third party assurance required to certify maintenance checks are completed and that the truck is road worthy.

Mass management
► There is no specific restrictions applied to log haulage for mass management of load. As vehicle stability and the centre of gravity is impacted by the load mass, there is a risk that increased weight allowances can increase the risk of rollovers. This is currently not addressed in mass management accreditation.

4.3.2 Deficiencies identified

Vehicle design and specification
► There is a lack of national and state guidance for vehicle design and specification that is suitable for the variety of environments and conditions to mitigate the strain on the equipment.
► There is an extensive variety of truck designs in use across the country.
► There is no overarching framework or national controls in place to guide the log haulage industry.

Driver training and competencies
► There is only minimal guidance in place for pay structure requirements which leads to variations across regions, states and companies.
► Minimal guidance provided to the log haulage industry to navigate the complex driving environment that sees a diverse variety of road conditions. This leads to variations of how the driving environment is managed across regions, states and companies.
► There is no core competency requirements regarding driver training and experience. As a result, there is minimal driver training provided across regions, states and companies.

Safe loading and unloading
► There is only state lead guidance regarding safe loading and unloading procedures therefore leading to voluntary implementation and inconsistency between regions.
► There is minimal guidance around how unloading should be conducted safely and is dependent on mill operators.
4.3.3 Variations identified

Load restraint systems

- There is a range of conflicting guidance regarding load restraint systems. Significant variations exist around expectations and restraint systems used across different regions, states and companies. For example, chains vs straps and automated tightening of straps vs manual tightening.
- There is no guidance or minimum requirements regarding consignment practices and how they should be implemented. Consignment practices are very dependent on the consigner and what practices they wish to implement.

Figure 5 demonstrates the seven key areas that current legislation, policies, standards and guidelines cover and highlights the gaps, deficiencies and variations for the safe operation of log haulage that exist.
4.4 Potential solutions and examples of better practice

EY identified potential solutions and examples of better practice during our Discovery phase. These have been grouped under each of the four key areas.

4.4.1 Equipment

Appropriate equipment design enables the safer operation of the log haulage industry. The industry equipment design and technology requires certain specifications in order to haul logs from the loading platforms through to the processors. Minimum industry equipment specifications could include but may not be limited to the following:

- SRT requirements.
- Bed height requirements.
- Engine specifications for the management of emissions.
- Electronic braking system (EBS) requirements.
- National truck insurance requirements.
- Centre tyre inflation requirements.
- Camera requirements considering forward and rear facing technology.
- Certification following third party inspections.

The following points regarding equipment use which have created safer industry practice for log haulage are considered better practice:

- Trailer mounted headboards to prevent loss of load.
- Flexible stanchions to allow for the variation of log size and configuration depending on hardwood or softwood transportation. The flexible stanchions also enable safer load restraint preventing the logs from shifting during transportation.
- GPS monitoring of trucks to report and manage speed, fatigue and load/unload constraints across fleets. Current operators who utilise this technology have seen a significant reduction in speeding of drivers through increased driver awareness and better management of fatigue issues.
- Lowering the bed of the truck leads to a lower centre of gravity.
- Operators who have specially designed log haulage trucks rather than stanchion retrofitted trucks.
- Implementation of pre-start checks and regular maintenance checks/safety checks which enables better management of fleet, maintains vehicle equipment standards for log haulage and improves driver awareness.
- Communication between drivers around truck condition/behaviour when more than one driver uses the same truck (e.g. double shift trucks).
4.4.2 Driving

Driver awareness, competency and experience is paramount for the safer operation of the log haulage industry. This is impacted by external factors such as wait times and road conditions. EY found that truck drivers are often not sufficiently inducted prior to commencing with log haulage companies, and are subsequently not made aware of the differences between normal heavy vehicle operations, and log haulage. This is viewed as one of the significant causes of incidents in the log haulage industry and as such minimum driver competencies could include:

- Accreditation.
- Experience of drivers.
- Courses/induction on roll over.
- Inductions including route map planning, understanding road conditions, emergency procedures, chain of responsibility and access for plantations.

Waiting times during load and unload can impact fatigue, as such, the following could be considered:

- Log books for drivers.
- Unloader looking at and planning wait times.
- Report the average wait times for benchmarking improvements.

Road conditions are often varied and high risk, potential control measures may include:

- Road gazettals could be implemented enabling the classification to haul b-doubles etc. This would require working with road authorities and councils for safe operations on public roads.
- Implementing geofencing to create a virtual geographic boundary, enabling software to trigger a response when a log haulage truck enters or leaves a particular area.
- Stopping to check the load could be considered including:
  - Mapping route journey's to consider safe areas to stop.
  - Management of driver checks this could be done through tracking of drivers or contractual requirement.
  - Driver awareness when the road changes.

The following are examples of better practice for improving driving awareness, behaviour and competency whilst hauling logs:

- Rollover training and SRT education has been received well and provided valuable education regarding centre of gravity, speed and rollover prevention.
- HVP: 100% drivers received rollover/training.
- Companies encouraging safe driver practices through various systems (e.g. points systems/feedback systems).
- Training drivers in safe driving practices.
- Paying drivers by hour rather than by load.
- Use of radio systems to warn other trucks of where you are along the route and thus pass on safer stretches of road.

4.4.3 Load restraint

Load restraint systems and types are key to the prevention of lost load during transportation of logs. The following are examples of better practice for improving load restraint design to ensure the safe transportation of logs and safety of personnel:

- Trailer head boards.
- Belly chain on longer loads.
- Auto-tensioning winches.
- Using the loader operator to take the chains over the load to prevent shoulder injuries.
- Engaging engineering firms to conduct scientific analysis of load restraint system performance and if they conform with performance standards.
- Using all the available restraint equipment on the vehicle to restrain the load.
4.4.4 Loading and unloading

Loading and unloading practices are important for the economic efficiency and safe operation of the log haulage industry. The following offer better practice for loading and unloading which can prevent delays, improve the safety of personnel and improve loader operator competency:

- Unloading bays to prevent crushing injuries.
- Good use of communication systems prior to moving around the site.
- Training loader operators in how to construct a load in a safer manner.
- Stacking the wood on the log landing in a safe and effective way such that logs don’t easily topple.
- Discussion between loader operator and driver around any considerations in the load prior to driver taking the load.
5. Next steps

Following this preliminary work further investigation will be undertaken to identify and assess risks in consultation with stakeholders.

The next steps will include phase 5 and phase 6 as detailed in Figure 6. Our final report will provide AFCA with guidance to inform the development of the FLHRCoP. The timeline for the completion of the engagement is March 2018. Our team’s experience in facilitation and consultation with industry stakeholders and broad range of experience working with high risks environments means EY is well placed to provide this support.

![Figure 6: Next steps for development of FLHRCoP.](image-url)
Appendix A  Stakeholders engaged

Table 3: Summary of stakeholders interviewed via teleconference

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/10/2017</td>
<td>Barry Fennell</td>
<td>Fennell Forestry</td>
</tr>
<tr>
<td>10/10/2017</td>
<td>Islay Robertson</td>
<td>HQ Plantations Pty Ltd</td>
</tr>
<tr>
<td>11/10/2017</td>
<td>Graeme Elphinstone</td>
<td>Elphinstone Pty Ltd</td>
</tr>
<tr>
<td>11/10/2017</td>
<td>Cory Kennedy</td>
<td>Kennedy Trailers</td>
</tr>
<tr>
<td>11/10/2017</td>
<td>Cameron MacDonald</td>
<td>HVP Plantations</td>
</tr>
<tr>
<td>16/10/2017</td>
<td>Andrew Lyon</td>
<td>Forest Products Commission</td>
</tr>
<tr>
<td>24/10/2017</td>
<td>Islay Robertson</td>
<td>HQ Plantations Pty Ltd</td>
</tr>
<tr>
<td>24/10/2017</td>
<td>Alan Pincott</td>
<td>Australian Trucking Safety Services &amp; Solutions</td>
</tr>
<tr>
<td>25/10/2017</td>
<td>Alwin Goetze</td>
<td>Moreland Holdings Pty Ltd.</td>
</tr>
<tr>
<td>26/10/2017</td>
<td>Andrew Groves</td>
<td>G &amp; J Groves Pty Ltd</td>
</tr>
<tr>
<td>27/10/2017</td>
<td>Islay Robertson</td>
<td>HQ Plantations Pty Ltd</td>
</tr>
<tr>
<td>27/10/2017</td>
<td>Rodney Anderson</td>
<td>Visy Pulp and Paper</td>
</tr>
<tr>
<td>27/10/2017</td>
<td>Gye Gardner</td>
<td>Seymours Transport</td>
</tr>
</tbody>
</table>

Table 4: Stakeholder attendance at discovery workshop hosted on 30th October 2017

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aaron Moeller</td>
<td>NHVR (Regulator)</td>
<td>Brisbane</td>
</tr>
<tr>
<td>Andrew Groves</td>
<td>G &amp; J Groves Pty Ltd</td>
<td>Canberra</td>
</tr>
<tr>
<td>Andrew Plank</td>
<td>Norske Skog Paper Mills (Australia) Ltd</td>
<td>Melbourne</td>
</tr>
<tr>
<td>Belinda Lengenberg</td>
<td>Hyne Timber</td>
<td>Melbourne</td>
</tr>
<tr>
<td>Brodie Frost</td>
<td>Timberlands Pacific</td>
<td>Melbourne</td>
</tr>
<tr>
<td>Charles Stansfield</td>
<td>VicForests</td>
<td>Melbourne</td>
</tr>
<tr>
<td>Chris Jones</td>
<td>Greenfreight Logging NSW</td>
<td>Canberra</td>
</tr>
<tr>
<td>Clint Larkins</td>
<td>Midway</td>
<td>Melbourne</td>
</tr>
<tr>
<td>Cory Kennedy</td>
<td>Kennedy Trailers</td>
<td>Melbourne</td>
</tr>
<tr>
<td>Daniel Hart</td>
<td>Safety and Fleet Manager Sunchip Group Pty. Ltd.</td>
<td>Brisbane</td>
</tr>
<tr>
<td>Daniel Pfrunder</td>
<td>HQ Plantations Pty Ltd</td>
<td>Brisbane</td>
</tr>
<tr>
<td>Darren Herd</td>
<td>Forico</td>
<td>Melbourne</td>
</tr>
<tr>
<td>David Bennett</td>
<td>PF Olsen (Australia)</td>
<td>Melbourne</td>
</tr>
<tr>
<td>David Blackwood</td>
<td>Cartage Contractor</td>
<td>Melbourne</td>
</tr>
<tr>
<td>David Murtagh</td>
<td>Hyne Timber</td>
<td>Brisbane</td>
</tr>
<tr>
<td>James Asher</td>
<td>Asher Enterprises</td>
<td>Brisbane</td>
</tr>
<tr>
<td>Jane Imrie</td>
<td>Forestry Corporation</td>
<td>Sydney</td>
</tr>
<tr>
<td>Louise Bourke</td>
<td>Forestry Corporation of NSW</td>
<td>Canberra</td>
</tr>
<tr>
<td>Marius Heymann</td>
<td>Timber NSW</td>
<td>Sydney</td>
</tr>
<tr>
<td>Mark Hitchens</td>
<td>Forestry Corporation</td>
<td>Sydney</td>
</tr>
<tr>
<td>Melissa Haslam</td>
<td>The Forest Industries Federation WA</td>
<td>Perth</td>
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<tr>
<td>Melissa Hayward</td>
<td>HR Forestry</td>
<td>Canberra</td>
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<tr>
<td>Michael Brady</td>
<td>Cartage Contractor</td>
<td>Melbourne</td>
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<tr>
<td>Tim Beaven</td>
<td>Rosin Developments Logging Pty Ltd</td>
<td>Canberra</td>
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<tr>
<td>Tom Parkinson</td>
<td>The Forest Industries Federation WA</td>
<td>Perth</td>
</tr>
<tr>
<td>Wade Dallos</td>
<td>Forest Products Commission WA</td>
<td>Perth</td>
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</table>
Table 5: ‘Day in the life of’ site visit key personnel spoken with

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>Region</th>
<th>Date</th>
<th>EY personnel</th>
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<tbody>
<tr>
<td>Chris Mangan</td>
<td>Mangan Haulage</td>
<td>Bathurst</td>
<td>12/10/2017</td>
<td>Laura Besley</td>
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<tr>
<td>Steve Bye</td>
<td>Select Logging</td>
<td>Launceston</td>
<td>13/10/2017</td>
<td>Carissa Liddle</td>
</tr>
<tr>
<td>Andrew Clarke</td>
<td>Les Walkden Enterprises</td>
<td>New Norfolk (Tasmania)</td>
<td>13/10/2017</td>
<td>Sophie Pieters-Hawke</td>
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## Appendix B  Documents reviewed

<table>
<thead>
<tr>
<th>Provided by client documentation</th>
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<tbody>
<tr>
<td><strong>AFCA, National Transport Commission Draft Load Restraint Guide 2017 Submission, 4 August 2017</strong></td>
<td></td>
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<tr>
<td><strong>anon, Best practices for restraining logs and timber for Tasmania, undated</strong></td>
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<tr>
<td><strong>Department of Infrastructure, Energy and Resources, Tasmanian Heavy Vehicle Safety Code, November 2008</strong></td>
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<tr>
<td><strong>Forest Industry Council (Southern NSW) Inc., Log Truck Delivery Vehicles Industry Best Practice Guide FIC Load Restraint Calculations, Appendix A, February 2009</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Forestry corporation, Best Practice Guide to Loading, Securing and Unloading Hardwood Logs on the North Coast of NSW, undated</strong></td>
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<tr>
<td><strong>ForestWorks ISC, Log Haulage Manual, Techniques for loading, driving and unloading trucks that carry logs and other forest produce, Version 1, August 2014</strong></td>
<td></td>
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<tr>
<td><strong>NSW Government, Transport for NSW, Safer Technologies for Heavy Vehicles and Combinations, January 2013</strong></td>
<td></td>
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<tr>
<td><strong>Office of Industrial Relations, Workplace Health and Safety Queensland, Forest harvesting, Code of Practice 2007, commences 2012</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Safe work Australia, Forestry: Guide to managing risks of loading, transporting and unloading logs, July 2014</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Safety Standards Committee Tasmanian Forest Industries Training Board Inc., Forest Safety Code (Tasmania), 2007</strong></td>
<td></td>
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<tr>
<td><strong>Stacey, AFCA, Notes from the technical writers workshop 24-25 August 2017, August 2017</strong></td>
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<tr>
<td><strong>Tasmanian Government, Tasmanian heavy vehicle driver's handbook,</strong></td>
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<table>
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<th>Further research documentation</th>
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<tr>
<td><strong>Anon, Victorian Forestry Contractors Information Booklet, undated</strong></td>
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<td><strong>BC Forest Safety, Resource road user safety guide, 2015</strong></td>
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<td><strong>Central Gippsland Harvesting and Haulage Safety Committee, Central Gippsland Harvesting &amp; Haulage OHS Committee Best Practice Guide for the Haulage of Timber in Log Form, Version 003, May 2006</strong></td>
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<td><strong>Competenz, Best practice guidelines for loading, 2005</strong></td>
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<tr>
<td><strong>Competenz, Best practice guidelines for transport, 2005</strong></td>
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<tr>
<td><strong>DEPI VIC, Code of Practice for Timber Production, 2014</strong></td>
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<tr>
<td><strong>FISA forest haulage working group, Forest Haulage Safety Manual, 2016</strong></td>
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<tr>
<td><strong>Forest Industry Transport Group, Round Timber Transport Guidelines for Haulers and Drivers, July 2017</strong></td>
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<tr>
<td><strong>Forestry Industry Transport Group, Managing Timber Transport Good Practice Guide, 2014</strong></td>
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<tr>
<td><strong>Forests NSW, Forest Practices Code – Part 1, Timber harvesting in forests NSW plantations, 2005</strong></td>
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<tr>
<td><strong>Government of South Australia - Primary Industries and Resources SA, Guidelines for plantation forestry in South Australia, 2009</strong></td>
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<tr>
<td><strong>Health and Safety Executive, Stacking round timber, sawn timber and board materials, 2014</strong></td>
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<tr>
<td><strong>HNVR, National Heavy Vehicle Inspection Manual, Version 2.2, 2017</strong></td>
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<tr>
<td>Irish Forest Industry Chain &amp; Forest Industry Transport Group</td>
<td>Road haulage of round timber code of practice, undated</td>
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<tr>
<td>M.J. Connell</td>
<td>Log Presentation: Log damage arising from mechanical harvesting or processing</td>
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<tr>
<td>Ministry of Business, Innovation &amp; employment</td>
<td>Approved Code of Practice for Safety and Health in Forest Operations</td>
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<td>National Heavy Vehicle Regulator</td>
<td>Industry codes of practice - guidelines for preparing and registering industry codes of practice</td>
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<td>National Heavy Vehicle Regulator</td>
<td>Basic Fatigue Management Accreditation Guide</td>
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<td>National Heavy Vehicle Regulator</td>
<td>Frequently Asked Questions: Work &amp; Rest Hours Exemption: Proposed personal use of a fatigue-regulated heavy vehicle</td>
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<td>National Heavy Vehicle Regulator</td>
<td>Maintenance Management Accreditation Guide</td>
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<td>National Heavy Vehicle Regulator</td>
<td>Mass Management Accreditation Guide</td>
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<td>Pont, Baas and Wilshire</td>
<td>Safety gains in log transport in New Zealand</td>
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<td>TERNZ and SCION</td>
<td>Load securing in the log transport industry - Injury risks and interventions</td>
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<td>Victorian Auditor-General</td>
<td>Managing Victoria's Native Forest Timber Resources</td>
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<td>WorkCover NSW</td>
<td>Safety in forest harvesting operations CoP</td>
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Appendix C  Workshop agenda

Table 7: Agenda for discovery workshop

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<thead>
<tr>
<th>Workshop Agenda</th>
<th>Facilitator</th>
<th>Times</th>
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<tr>
<td>Objective</td>
<td>To provide maximum opportunity for industry to contribute and provide input into the preliminary report.</td>
<td></td>
</tr>
<tr>
<td>Purpose</td>
<td>To validate our preliminary findings via a discovery workshop, collect additional information and clarify areas of complexity.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Monday 30th October 2017</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>1-3:30pm</td>
<td></td>
</tr>
<tr>
<td>EY attendees</td>
<td>Christopher Thorn (2:15-close) Sophie Pieters-Hawke Laura Besley Carlissa Liddle Kathryn Smith (Brisbane) Philippa De Fonblanque (Perth) Marilyn Wee (Canberra)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agenda Item</th>
<th>Facilitator</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Welcome, Introductions and Housekeeping</td>
<td>SPH</td>
<td>1:00pm</td>
</tr>
<tr>
<td>2. Icebreaker</td>
<td>SPH\EY Hosts</td>
<td>1:05pm</td>
</tr>
<tr>
<td>3. The Journey to developing the FLHRCoP</td>
<td>SPH</td>
<td>1:10-1:20pm</td>
</tr>
<tr>
<td>4. Our Values Approach</td>
<td>SPH</td>
<td>1:20-1:25pm</td>
</tr>
<tr>
<td>5. Framework for Safe Operation of Log Haulage</td>
<td>SPH/LB</td>
<td>1:30-1:35pm</td>
</tr>
<tr>
<td>6. ACTIVITY ONE: Validating the key issues for consideration</td>
<td>SPH/LB</td>
<td>1:35-2:00pm</td>
</tr>
<tr>
<td>7. ACTIVITY TWO : Understanding risks and the risk factors</td>
<td>SPH/LB</td>
<td>2:05-2:35pm</td>
</tr>
<tr>
<td>8. ACTIVITY THREE : Systems Gaps, Deficiencies and Variations</td>
<td>SPH/LB</td>
<td>2:35-3:05pm</td>
</tr>
<tr>
<td>9. Next steps in the Journey</td>
<td>SPH</td>
<td>3:05-3:10pm</td>
</tr>
<tr>
<td>10. Close of Workshop</td>
<td>SPH</td>
<td>3:15pm</td>
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Appendix D  Workshop outcomes

Summary of work conducted during the discovery phase

EY have conducted the discovery phase to support the development of an overarching code of practice specifically for log haulage operations.

Firstly, EY conducted desktop research that combined a review of key documents provided by AFCA and a research discovery phase to understand elements of better practice. The research discovery phase was targeted to the key themes, documents and questions identified in the initial document review. All the documentation reviewed was summarised for key takeaways and regional applicability.

Secondly, EY undertook extensive stakeholder consultation through twelve discovery interviews and three ‘Day in the life of’ site visits in Tasmania and NSW. This was done in collaboration with AFCA. The objective was to collect a range of perspectives and input from industry stakeholders and to build EY’s understanding of the industry, to inform the code of practice with industry terminology and language, and to ensure it is reflective of the wide variety of operating environments and activities.

On Monday 30th October EY hosted a workshop and presented draft key findings from the discovery phase. Based on research and site visits, EY have grouped findings under four main areas for consideration in the development of the code of practice.

![Diagram](image)

| Equipment | Driving | Load restraint | Load & Unload |

There were 27 attendees at the workshop from across the supply chain, including contractors, land owners, trailer manufacturers, and corporations. The workshop outcomes showed that there was consistency across the industry despite differing operating environments and organic materials hauled. This was a positive outcome as attendees came from different areas within the industry, as well as different locations. EY was able to get more information and detail regarding all risk areas.

The first activity of the workshop aimed to get agreement on what issues the code of practice should be focusing on. The second activity of the workshop was designed to map the risks/ risk factors for each of the four areas. The final activity took the attendees through the factors in EY’s draft framework.

The following table summarises at a very high level the information captured during the workshop activities. This information will be used to inform the development of a framework for the log haulage code of practice. We wish to thank all the participants for taking part in the workshop and valued your engagement, contribution and expertise.

Feedback from the workshop was positive, with participants expressing that they felt that EY had done a good job in capturing all the key issues that are to be considered in the code of practice. A representative from the NHVR was in attendance and was pleased with the level of consultation that AFCA are undertaking.
<table>
<thead>
<tr>
<th>Considerations</th>
<th>Details</th>
<th>Risks/risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equipment</strong></td>
<td><strong>Equipment technology</strong> EBS, BPS, SRT/Cog, Swept path, Scales, Suspension, NTI, cameras fwd/rear Bolster height, bay width, tyre rim size, age, minimum specs? Focus areas, frequency, wear &amp; tear, age, cost factor 'fit for purpose' restraint, trucks, third party</td>
<td>Incorrect use, lack of understanding, lack of certification, wear and tear, roll over, malfunction, lack of maintenance, age of equipment, self-maintenance, fall from height, difficult to standardise as freight varies, rate cutting, operating outside manufacturers’ specifications</td>
</tr>
<tr>
<td><strong>Equipment fit for purpose vs multi-function</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Maintenance</strong></td>
<td></td>
<td></td>
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<td><strong>Certification</strong></td>
<td></td>
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<tr>
<td><strong>Inspections</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Driving</strong></td>
<td><strong>Stopping to check the load</strong> Frequency, driver tracking, contract/legal req., driver awareness</td>
<td>Weight, centre of gravity, load shift, loss of load, loose objects (bark/stones), instability</td>
</tr>
<tr>
<td><strong>Fatigue</strong></td>
<td><strong>Wait time, log books, driver fitness</strong></td>
<td>falling asleep, dodgy log book, &quot;home&quot; classification, waiting times, travel to and from work</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td><strong>Course, induction, blacklists, licencing, minimum competencies</strong></td>
<td>driver capability, heath, experience, behaviour, attitude, speed, drugs/alcohol, distractions, customer demands, over correction, inexperience damaging trailers, poor communication on forest roads</td>
</tr>
<tr>
<td><strong>Road conditions</strong></td>
<td><strong>Public, private, geofencing, speed, gazettes, weather</strong></td>
<td>Road failure, weather, poor roads, community perception, collision, other driver behaviour, roll over, unfamiliar roads, damaging trucks, visibility with narrow and windy roads</td>
</tr>
<tr>
<td><strong>Load Restraint</strong></td>
<td><strong>Equipment</strong> Equipment #, type (strap/chain/webbing), log type, other restraint (headboard/guard), winches</td>
<td>Loss of load, manual handing, meeting standard, maintenance, shape/ evenness/ crowning/ slippery, greater unconsulted regulation, calibration of weights, price, inadequate, wear and tear, lashing tension and contact with logs</td>
</tr>
<tr>
<td><strong>Method</strong></td>
<td><strong>Construct load, crowning, strap placement, log placement, overhang, training how assess if meeting, available equipment, cost, flexibility vs best practice</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Loading/ Unloading</strong></td>
<td><strong>Safety of Personnel</strong> PPE, safe driver zones, communication</td>
<td>logs falling on driver illumination, design, facilities, setup calibration, access to scales, standards decided by mill loader skill/training</td>
</tr>
<tr>
<td></td>
<td><strong>Conditions</strong> Uneven surfaces (weight), setup of unload, site variance</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Equipment</strong> Scales (remote reading?), SRT, industry variations</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Restraint removal</strong> Stations</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Load build</strong> crown, height, mass, training</td>
<td></td>
</tr>
<tr>
<td><strong>Other considerations</strong></td>
<td><strong>Costs</strong> Under-pricing long term contracts, follow through on safety programs for forest companies <strong>Receivers/procurement role</strong> Application to WA? <strong>State border consistency</strong> <strong>Flexibility &amp; clarity of CoP</strong> <strong>Regulation</strong> Need to focus on managing the actual risk on the ground rather than managing adherence to the code. Regulation imposes requirements rather than industry led</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Norske did trial of fatigue under the drivers hours</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Table shows a summary of notes from the discovery workshop, detailing various considerations and their associated risks.*
Outcome from Workshop Two:

FLHRCoP December Update

To support the development of a national code of practice specifically for log haulage EY have completed the risk assessment consultation phase of their project. Three workshops were delivered over late November and early December, with over 70 people attending. There was a healthy representation from forestry contracting businesses, land owners and consigners, and trailer manufacturers. Each workshop was also attended by Aaron Moeller from the NHVR and Peter Elliot from the Australian Logistics Council who spoke about changes to the NHVL and the development of a Master Code of Practice (MCoP).

The objectives of the workshops were to get industry involvement in the identification of critical risks associated with log haulage and collect information and data about controls and better practice. The information and insights collated is to inform EY’s report to AFCA that will then be used to build the Forestry Log Haulage Code of Practice (CoP).

The purpose of the risk assessment is to identify risks specific to log haulage that will require the CoP to provide guidance and specification. Risks not specific to log haulage are to be addressed in the MCoP or other legislation, such as the Workplace Health & Safety Act.

This briefing paper provides a summary of the risks identified throughout the workshops and their categorisation of whether the risk is considered:
- Risk to be included in the CoP (Table 1)
- Risk to be determined for inclusion in CoP (Table 2)
- Risk that will not be included in the CoP (Table 3)

Industry feedback is being sought to:
- Validate the risks to be included in the CoP (Table 1)
- Consideration of whether the undetermined risks should be in or out of CoP (Table 2)
- Validate the risks that should not be included in the CoP (Table 3)

Feedback can be provided via email to stacey@afca.asn.au by no later than 15 January 2018.

Risks to be included in the CoP

The below Table 1 provides a summary of the keys risks identified for log haulage as a result of the consultation and workshops that are proposed to be included in the CoP.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Context &amp; Justification for inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rollover</td>
<td>This risk includes trailer and/or cab rollover. This is specific to log haulage due to the organic nature of the load, road conditions, trailer design requirements, and SRT.</td>
</tr>
<tr>
<td>2. Loss of control of the vehicle</td>
<td>This is specific to log haulage due to the organic nature of the load, road conditions, trailer design requirements, and SRT.</td>
</tr>
<tr>
<td>3. Full loss of load</td>
<td>This risk considers loss of a whole bay, not just whole load. This is included as load restraint requirements are unique due to the organic nature of the load and equipment type/design.</td>
</tr>
<tr>
<td>4. Partial loss of load</td>
<td>This risk is defined as loss of single or multiple logs. While very similar to full loss of load, it is viewed as a different risk profile. This is included as load restraint requirements are unique due to the organic nature of the load and equipment type/design.</td>
</tr>
<tr>
<td>5. Rolling log during loading/unloading</td>
<td>This risk is considered due to the very specific loading and unloading requirements of the load, and the environment/conditions under which the activities are undertaken. While the risks are slightly different, they have been clustered as there is a high level of similarity.</td>
</tr>
<tr>
<td>6. Load shift</td>
<td>This risk considers any shift of the load from under restraint straps during transport. This is included as load restraint requirements are unique due to the organic nature of the load and equipment type/design.</td>
</tr>
<tr>
<td>7. Loss of Debris</td>
<td>This risk considers loss of bark, branches, rocks or other foreign matter during driving.</td>
</tr>
<tr>
<td>8. Manual handling</td>
<td>This risk is specific to load restraint manual handling risks only. Other manual handling risks (such as replacing a tyre) are not specific to log haulage.</td>
</tr>
<tr>
<td>9. MHE crash/ crush</td>
<td>This risk considers crash or crush involving loader/unloader/forklift. While not often identified in the workshop, once raised, there was consensus from industry that it was a risk worth assessing.</td>
</tr>
</tbody>
</table>
Risks to be determined for inclusion in CoP
There were also risks identified in the below Table 2, that are yet to be confirmed as risks to be addressed in the CoP due to the scope and role of an industry specific CoP.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Third party collision</td>
<td>Initially, this risk was identified as significant for the log haulage industry. However, addressing controls specific to this risk are largely out of the control of industry. It may be excluded as it is not unique to log haulage, other than logging often occurs in smaller communities with higher levels of tourism and smaller roads.</td>
</tr>
<tr>
<td>11. Infrastructure failure</td>
<td>This risk included catastrophic infrastructure failure such as bridge collapse or road slide (not wear, tear and poor conditions). The risk is potentially worth assessing due to the frequency of operating in high risk infrastructure yet it may be considered out of scope in terms of the role of an industry specific CoP.</td>
</tr>
<tr>
<td>12. Bogged vehicle retrieval</td>
<td>While there are specific factors relevant to log haulage, this risk could be addressed within an organisation's safe operating procedures.</td>
</tr>
</tbody>
</table>

Risks that will not be included in the CoP
In addition, there were a number of risks identified summarised in Table 3 below that are proposed to be excluded. These have been categorised as follows:

- Not a risk - The issue assessed is considered a contributing factor or consequence (and therefore should be reflected in other risk analysis and considerations).
- Not in scope - It is expected that this risk should already be considered as part of the organisation's risk management process. While this is an important risk for organisations to address, it is too specific to operations. Not specific - This risk occurs in other industries and other types of heavy vehicle operations. Therefore, this risk should be covered by the MCoP or other legislation.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slips/trips</td>
<td>Non-specific - This includes falls whilst getting in and out of cabin.</td>
</tr>
<tr>
<td>Falls from heights</td>
<td>Not in scope - A fall resulting from climbing on a load. This is considered a risk event/operational risk to be covered by an organisation’s safe operating procedures. The CoP may indicate that this activity should also not be undertaken.</td>
</tr>
<tr>
<td>Medical event (e.g. heart attack)</td>
<td>Non-specific - As a top event this is not a specific risk to log haulage, but emergency response procedures may be impacted by remoteness. It could be a contributing factor to an event occurring.</td>
</tr>
<tr>
<td>Overloading</td>
<td>Not a risk - While some participants identified overloading as a risk in itself, it has been assessed as a contributing factor.</td>
</tr>
<tr>
<td>Site conditions</td>
<td>Not a risk - A site contributing factor are not deemed a risk in themselves.</td>
</tr>
<tr>
<td>Loss of social licence to operate</td>
<td>Not within scope - The loss of social licence to operate is a consequence of poor safety management. Risk of occurrence is an organisational/ strategic risk not a safety risk.</td>
</tr>
<tr>
<td>Mechanical failure (inc decoupling)</td>
<td>Not a risk - This is a contributing factor that may trigger an event.</td>
</tr>
<tr>
<td>Struck by foreign body</td>
<td>Not within scope - This is a risk event rather than risk category. It is deemed too specific for the CoP.</td>
</tr>
<tr>
<td>Environmental damage (e.g. fire)</td>
<td>Not specific - This event may occur in multiple industries, and is not specific or significant enough to log haulage. This could be considered a consequence rather than a risk.</td>
</tr>
</tbody>
</table>
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