# Federal Office of Road Safety

## 1993-94 Research Grants

# **Project Title**

# **National Fleet Safety Database**

# 30th June 1995

Grant Recipient: National Safety Council Australia Ltd Chief Investigator: Mr J.F. Whiting, National CEO Project Consultant: Mr M. Casey

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# **Final Report**

## Background

As one of the successful applicants the NSCA Ltd was awarded a grant by the Federal Office of Road Safety (FORS) under the 1993-94 Seeding Research Grants Scheme to establish a system of collecting, analysing and comparing Australian Fleet Safety Statistics.

## **Executive Summary**

Fleet vehicle managers in Australia presently lack a reliable benchmark database on the performance of their fleet drivers, vehicles and their different environments. This lack of reliable information became apparent following requests from fleet managers of the National Safety Council of Australia (NSCA) member organisations and others for access to data on fleet accidents. According to Jim Whiting, National Chief Executive Officer of the NSCA the only information available was American data provided by the National Safety Council (USA) who publish an annual "Fleet Accident Rates". This data is a compilation of accidents for 857 fleets travelling 3.9 billion miles involved in 31,252 accidents.

Occupational fleet safety is of major importance when taking into account the overall road vehicle accident statistics in Australia. It has been estimated that most of the cars on the roads on any given day are driven by occupational drivers either as part of their job or commuting to their workplace Road vehicle accidents are the most common cause of work related deaths, injuries and absence from work in Australia. They are more likely than any other type of work-related injury to result in death or permanent disability.<sup>①</sup> Moreover, the average time cost of a work-related road traffic crash is \$18 500, with the average time lost greater than for any other workplace claims.<sup>②</sup> A major fleet management company has estimated that 20 % of all company vehicles will be involved in an accident some time this year.<sup>③</sup>

In response to this obvious gap in data and information relevant to Australian fleet accident statistics the NSCA in conjunction with the Federal Office of Road Safety has developed a National Fleet Safety Database. This database of fleet vehicle performance as related to accidents and others factors involved in fleet operations will allow the benchmarking, trend analysis and the identification of the causes of accidents and incidents. Data obtained from the database will in turn enable the design, development and implementation of the relevant risk management and preventative strategies for participating fleet operators.

## Introduction

The NSCA Ltd was formed in 1927 and is a not for profit organisation providing services to the industrial and manufacturing sector in occupational health and safety. In line with the general aims of the organisation the "National Fleet Safety Database" was identified by NSCA clients and others as a needed area of investigation.

The expressed needs of NSCA clients and others can be summarised as follows:

- a) Requests from Fleet Managers who have access only to limited overseas statistics such as broad "accidents/millions miles".
- b) Awareness of initiatives in fleet vehicle safety management overseas, notably the USA.

In addition, the commitment by the NSCA to fleet safety and occupational road safety (NSCA Annual Report, 1994) includes not only the "National Fleet Safety Database" but extends to the publication of a "Fleet Safety Manual".

The Fleet Safety Manual aims to provide a resource to promote the adoption of best road safety practice by industry, and particularly the corporate fleet sector. The promotion and marketing of the Manual is another joint project between the NSCA and the FORS.

#### General Objective of the Project:

The primary purpose of the National Fleet Safety Database Project is to provide uniform and comparable fleet vehicle incident statistics.

The project is essentially a research and development project rather than "pure" research. The feasibility of establishing a fleet safety incident database is to be researched and the development will provide a meaningful basis for extended further research. Results which will be reported will include the assessment of the acceptance and usefulness of the proposed database for Fleet Managers' above stated needs

#### Specific Objectives of the Project:

Specifically the National Fleet Safety Database aims to establish:

- A broad comprehensive, continuously active, statistically reliable database of fleet vehicle incidents to allow better understanding of fleet vehicle safety including the ability for individual organisations to benchmark performance;
- b) Develop an Australian standard of classification of fleet vehicle incidents through Standards Australia.

#### Benefits to Road Safety:

Anticipated benefits to the fleet sector:

- a) More informed analysis of causative factors of fleet vehicle accidents/incidents which include human, vehicle engineering/design and road engineering /design factors;
- b) Quantitative basis for better designed fleet safety programmes.

## **Project Stages**

#### Stage 1: Information /Communication Stage

- Expand the network of fleet managers (willing to contribute to a confidential Accident Statistics Database) to approximately 100 distributed across all States.
- Establish the nature and extent of existing incidents statistics databases currently collected and analysed by fleet managers, insurance companies, government agencies, safety organisations.
- Search for, discover and analyse any existing standardised categorisations, coding structures, taxonomies for fleet vehicle accidents national and international.

#### Stage 1 Results

Stage one is complete. An exhaustive search of existing statistics databases of both public (state and federal road research bodies and institutions) and private commercial organisations (see appendix i) has resulted in a comprehensive account of databases and their utility.

Participant response by organisations across Australia to the project is summarised as follows.

- Participating organisations to the National Fleet Safety Database to date are:
  - ⇒ Number of organisations: 43
  - ⇒ Total fleet size of participating organisations: 48,546
- Organisations currently expressing interest in the National Fleet Safety Database of fleet sizes greater than 1,000:

Projected Total=	37,000
Organisation D =	3,500
Organisation C =	9,000
Organisation B =	12,500
Organisation A =	12,000

Grand total of actual projected fleet units to date: 85,515

#### Stage 2: Design Stage

- Compile a standard of classification of fleet vehicle accidents.
- Design and develop coding protocols for the monthly data recording formats (hard copy and electronic) for a pilot network of 100 fleet managers.
- Design and develop database software for collation, analysis and reporting.

#### Stage 2 Results:

Recording Format - The National Fleet Safety Database form is a computer scanned reporting document of 38 discrete items (see appendix ii). The reporting information is categorised into six areas;

- fleet driver details
- driver training
- fleet vehicle details
- details of incident
- injuries
- driver's perception of prevention

A detailed breakdown of these areas specifying individual data items can be found in appendix ii.

Classification of Fleet Vehicle Accidents - After consultation with fleet managers of state and national corporations, insurance industry and road research bodies, both state and federal, a standard of classification of fleet vehicle accidents was identified. The "Model Guideline for Road Accident Data and Accident-types, Version 2.1" was developed by David Andreassen of the Australian Road Research Board(ARRB). The model guideline was produced in the context and knowledge that no uniform national classification of accidents currently exists.

As stated by the ARRB the model guideline (see Appendix iv) is currently produced for two reasons:

- 1. To document the concepts, definitions and procedures to be followed in the determination of accident-types so that results from different agencies can be understood in context.
- 2. To make the Guidelines available to the various agencies dealing with many different types of road accident reports as a step towards data systems with compatible data items.

The Model Guideline Manual defines terms and describes the procedures for deriving accident codes from the sketch and narrative contained in an accident report. In order for reliable classification to occur respondents are asked only to provide the accident description and sketch diagram data and the actual accident classification will be made by trained personnel of the NSCA.

The Model Guideline Manual procedures also capture and classify multiple events when these occur.

The draft of this manual was produced in 1990 and circulated for comment. Version 1.1 was released in July 1991. Version 2.1 with revisions and additions was released in November 1994.

#### Stage 3: Data collection and system design

Provide monthly and six monthly feedback and the redesign of data analysis, collation, reporting, protocol techniques for a pilot group of 100 fleet managers.

#### Stage 3 Results:

With the development of the recording proforma having just being completed it is planned that a mail-out to all participants of the database will commence in July 1995. Collation, data analysis and reporting back to participants to occur in the following three months.

#### Stage 4: Marketing

- Finalise the database system's design.
- Expand the network of participants through open marketing.

#### Stage 4 Results:

Marketing of the National Fleet Safety Database so far has involved:

- Direct mailing; fleet managers to fleet management services, fleet audit consulting services.
- Education / Information Sessions for Industry (six sessions: approx. 500 attendees).
- Newspaper articles; The Australian 6.10.94, The Australian: OHS Feature 3.2.95.
- Magazine Articles, Australian Safety News, August 1994, Business Fleet, August 1994.
- National Concentrated Issues Media Relations Campaign, which involved interviews with the National CEO of the NSCA for radio and print.

- Promotion of the Database Project to NSCA members; there exists approximately 5,000 6,000 national members.
- Incorporation of "Transport Safety" as a Key Element of the NSCA 5-Star Health and Safety Management System Version 2,1995, (452 participant organisations) see appendix v.

Now that the "National Fleet Safety Database Form" has been completed, further marketing of the Database is planned for the latter part of 1995 having established and finalised the recording and reporting procedures.

#### Stage 5: Self-Sustaining Phase

• Establish a self-sustaining service.

#### Stage 5 Results:

To be implemented following Stage 4.

## **Outstanding Issues**

- Finalisation of the report analysis software.
- Following first monthly reports to participants to institute a marketing plan emphasizing national data results.

To further integrate the National Fleet Safety Database with the FORS Fleet Vehicle Safety Manual due for publication and marketing in August / September 1995.

## Discussion

Given that occupation fleet safety is but one aspect of the road vehicle accident picture in Australia, the issue of reliable and meaningful statistics on a national perspective is just as important, if not more so when the entire road vehicle accident picture is taken into account.

As already noted by Andreassen (1981)<sup>®</sup> and demonstrated in the review of the various accident data systems from each State and Territory, meaningful national statistics are inadequate. From a national perspective what does exist are the statistics on the 2500 - 3000 road deaths per year, yet aggregate data from each of the States on road deaths cannot produce any meaningful analyses. The issue of uniform incident/accident data remains a problem when seeking a collective viewpoint on any aspect of national road safety.

Almost two decades ago the Advisory Committee on Road User Performance and Traffic Codes (ACRUPTC) (1978) tendorsed the need for a collection of a common core of data items from all States so that some comparable national figures could be produced. In 1990 David Andreassen presented a paper, "The Quality of Accident Data", at the 15th Australian Road Research Board Conference® which discussed the degree of adoption of the items achieved since 1978. His findings can be best summarised by his concluding remarks "..... we, collectively, have achieved nothing concrete in the full implementation of even those desires (*i.e. a common set of data items*). We have nothing to be proud of when it comes to looking at the situation".

In the development of the data items for the National Fleet Safety Database much deliberation was given to both those items pertinent to the aims of the database and those items current in the development of classifying road accidents on a national basis. Not only is the National Fleet Safety Database an innovation, in the Australian context, in providing a quantitative basis for better designed, more effective fleet safety programmes it also unifies the compatibility of the fleet safety data items with that of other data systems being developed nationally in Australia.

# Appendix i

## Fleet Vehicle Incident Database

Consultation and information on standardised categorisations and coding structures for vehicle incidents has been received from:

- Australian Road Research Board
- Monash University Accident Research Center
- National Injury Surveillance Unit
- Vic Road
- National Road Transport Commission
- · Victoria Police, Accident Investigation Dept.
- Tasmanian Department of Transport and Work
- · Office of Road Safety
- Motor Accidents Authority of NSW
- Insurance Council of Australia Ltd
- National Insurance Brokers Association of Australia.
- Association of Risk Insurance Management
- Local Authority Insurance Brokers
- Jardine Australian Insurance Brokers
- NRMA
- Lumley General Insurance
- Zurich Australian Insurance

#### Fleet Managers: (sample list)

- Shell Australia
- BP Oil
- Kodak
- Pratt Industries
- RACV
- ICI

- Telecom
- Optus
- S.G.I.C
- Qantas
- Toyota
- S.P.C.



# Appendix ii

# NATIONAL FLEET SAFETY **DATABASE FORM**

INSTRUCTIONS: RIGHT	⊂●⊂⊂⊂⊂ WRONG &¢¢¢œø
<ul> <li>Please use only a blue, black biro or 2B pencil.</li> <li>Do NOT use a red pen or felt-tip pen.</li> </ul>	<ul> <li>Completely fill the oval as in the example.</li> <li>Please erase mistakes fully.</li> </ul>
FLEET DI	RIVER'S DETAILS
Employer / Company Code	Period of employment by current employer before incident:
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	<ul> <li>Several days before incident</li> <li>Several weeks before incident</li> <li>Several months before incident</li> <li>Not known</li> <li>Other</li> </ul>
9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	<ul> <li>Licence type:</li> <li>Learner &amp; permit</li> <li>Probationary licence</li> <li>Probationary &amp; conditional licence</li> <li>Standard licence</li> </ul>
<ul> <li>Gender of Driver:</li> <li>Male</li> <li>Female</li> </ul>	Licence category (Select all endorsements): Light truck O Small bus CHeavy truck O Small bus
Age of Driver:           0         17-20         0         36-40         0         51-55           0         21-25         0         41-45         56-60           0         26-30         0         46-50         0         60+	<ul> <li>Light articulated</li> <li>Heavy bus</li> <li>Heavy articulated</li> <li>Articulated bus</li> <li>Road train</li> <li>Licence Issue Date</li> <li>Licence Expiry Date</li> </ul>
<ul> <li>31-35</li> <li>Number of hours normally worked per day:</li> <li>8 hours or less</li> <li>more than 8 hours (excluding overtime).</li> </ul>	Day     Month     Year       Jan     Jan       Feb     Feb       BB     Mar       BB     Mar <tr< th=""></tr<>
<ul> <li>Employment Tenure:</li> <li>Permanent</li> <li>Part-time permanent</li> <li>Casual</li> <li>Other</li> </ul>	Image: Second
DRIVE	ER TRAINING
<ul> <li>Has the driver ever taken driver training?</li> <li>No</li> </ul>	How recent was that training in relation to the incident?
○ Yes	Several days before the incident

- ⊖ Yes
- Defensive (Classroom training only)
- Advanced (Classroom and practical driving)
- Several weeks before the incident
- Several months before the incident
- Several years before the incident

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# FLEET VEHICLE DETAILS

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1 Location of normal predominant use:		Venicle's body type:
	//CBD //Suburban	C Hatchback C Motorcycle C Truck
Co Cou	untry	🗆 Light Commercial Vans/Utes 😽
2 Manufac	cturer and model of vehicle:	MAKE TARE WEIGHT (kg)
FORD	Falcon     Other     Fairmont     Laser	900 901 1501 1301 Over Not and to to to 1500 stated under 1100 1300 1500
HOLDEN	<ul> <li>Calais</li> <li>Other</li> <li>Commodore</li> <li>Nova</li> </ul>	Holden         O
MITSUBISHI	Magna Other     Lancer	○ Vans/Utes
NISSAN	⊖ Pulsar ⊖ Other	AVAKE         IONNE           4         Over         Over         Over         Over         Over         Not           and         4 to         6 to         12         16         20         stated
ΤΟΥΟΤΑ	<ul> <li>○ Camry</li> <li>○ Other</li> <li>○ Corolla</li> </ul>	under         8         12         1016         1020           Daihatsu         C
OTHER MAN		Isuzu         C         O
OTHER MOI	DEL 0	8 Vehicle modification (different to manufacturer's specifications)
3 Year of Manufa	cture 19	<ul> <li>No</li> <li>Yes (give details)</li> </ul>
	CD CD Red CD CD White CD CD Yellow CD CD Black	Does vehicle have ABS braking system?
	ab ab Blue ab ab C Green ab ab C Other	Is the vehicle fitted with communication equipment?
	000 000	<ul> <li>○ CB Radio</li> <li>○ Other</li> <li>○ Mobile Telephone</li> </ul>
5 Fleet us	ie:	11 Was this equipment being used by the driver at the time of the incident?
O Fre O Bo	eight hth	O Yes O No
6 Vehicle	is one of a fleet of:	IZ When was vehicle last serviced before incident?
0 10 0 11	or less  to 100 to 100 congreater than 500 vehicles	<ul> <li>Several days before incident</li> <li>Several weeks before incident</li> <li>Several months before incident</li> <li>Not known</li> </ul>
		10 Other

.

#### DETAILS OF INCIDENT



#### 9 Single vehicle incident ...

- Left road or roll over
   Hit stationary object
- Hit by objectHit animal
- Hit pedestrian

Other

#### Were any vehicles, other than your own, involved in the incident?

- No . Go to "INJURIES" section
- 🗢 Yes 🔹 How many? നമായായായായായ

#### Details of other vehicles involved in incident.

Manufacturer and model of vehicle		Manufacturer and model of vehicle		
Year of manufact	ure:	Year of manufact	ure:	
Colour C Red White Yellow Black Blue Green Other	Owner: Private Other company Same company Not known	Colour Red White Yellow Black Blue Green Other	Owner: Private Other company Same company Not known	

INJURIES

#### Were any people in your fleet vehicle injured?

C No

- 🗢 Yes 🛛 📦
- ✷ Driver employee
- Driver non-employee
- Passenger(s) employee
- Passenger(s) non-employee

#### What was the result of the injuries?

- C Fatality
- Serious (requiring hospitalisation)
- Minor (treated at the scene)

#### DRIVER'S PERCEPTION OF PREVENTION

In your opinion how could a similar incident be prevented in the future?

# Appendix iii

# Core data items of the National Fleet Safety Database form.

### **Fleet Driver Details**

- Employer/Company identification number (anonymous Personal Identification Number P.I.N.).
- Gender of driver.
- Age of driver.
- · Licence type.
- Licence category.
- Licence Issue Date,

#### **Employment Details**

- Number of hours normally worked.
- Employment tenure.
- Period of employment prior to incident.

### **Driver Training**

- · Driver training undertaken.
- Period of training prior to incident.

#### **Fleet Vehicle Details**

- · Location of predominant vehicle use.
- Manufacture and model of vehicle.
- Fleet use.
- Size of Fleet.
- Vehicle's body type.
- Modifications to vehicle.
- ABS braking system fitted to vehicle.
- · Communication equipment fitted.
- Servicing of vehicle.

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## **Details of Incident**

- Time/Day etc of when incident occurred.
- Location of incident.
- Vehicle status at time of incident
- Condition of road surface
- Weather conditions.
- Type of road.
- Incident description.
- Sketch diagram of incident.
- Details of other vehicles involved in incidents.

## Injuries

- Fleet vehicle injuries.
- injury result.

## Driver's perception of prevention

• Driver's opinion of how a similar incident could be prevented.

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# Appendix iv

# Updated guideline for accident data

REPORT SUMMARY

Model guideline for road accident data and accident-types. Version 2.1

by David Andreassen

In 1990, ARRB started a project to determine the cost of various accident types, based on data from a number of States. After examining the recording systems of these States, it became obvious that there was a lack of compatibility in what information was collected, how it was collected and how it was processed. This lack of uniform concepts and definitions means that useful comparisons of accident data between States is impossible.

One of the primary uses of data collected about road accidents is to provide information to decision-makers, who can then decide on realistic treatments or countermeasures for particular accident-types, road user groups, vehicle types or road characteristics. They might also be used by bodies such as insurance companies to determine risk and premium rates. For all these applications, it is essential that accurate and consistently compiled data be available. This requires national definitions and guidelines to be applied to the collection and processing of accident data.

There is also a lot happening with computerised systems of data capture, matching and presentation which will impact markedly on the type and detail of data that can be collected and researched. This brings with it yet another reason to standardise data descriptions throughout Australia.

#### Aims of this technical manual

This Model Guideline is currently produced for two reasons:

- 1. **To document the concepts, definitions and procedures** to be followed in the determination of accident-types so that the results from different agencies can be understood in context.
- 2. To make the Guideline available to the various agencies dealing with many different types of road accident reports as a step towards data systems with compatible data items.

#### Scope of the manual

TRANSPORT

This manual defines terms and describes the procedures for deriving accident codes from the sketch and narrative contained in an accident report. The procedures also capture and classify multiple events when these occur. Examples of how to determine the codes are included.

The draft of this manual was produced in 1990 and circulated for comment. Version 1.1 was released in July 1991. Version 2.1 with revisions and additions was released in November 1994.

Future versions of the Guideline will include examples of questions for accident reports and how they should be answered for a proposed set of data items.

INTO

RESEARCH

15.

PRACTICE

# Appendix v

## 3.05 KEY ELEMENT

## **TRANSPORT SAFETY**

(34)

16.

- 1. Motor Vehicle Fleet Safety. (16)
- 2. Personnel Travel Safety. (10)
- 3. Freight Transport Risk Management. (8)

## **Key Element Description**

Transportation of all kinds is used extensively in all industries and occupations. Whether it be by road, rail, air, or sea, management of risks associated with the transport of personnel and freight is an integral part of an organisation's health and safety management system.

If your organisation is specifically involved in the Transport Industry, many of the sub-elements of Key Element 3.05 will be covered in more detail in the general Key Elements of Categories 1., 2., and 5.

It should be emphasised that transport safety applies to both on and off-site locations as well as to transport contractor services.

Many business activities involve peripatetic employees i.e. employees who do not work at one fixed workplace but, by nature of their work, they travel in and about the community using any or all forms of transport.

As such, even small organisations have fleets of motor vehicles of all sizes.

Whereas Key Element 4.07 Traffic Management is primarily concerned with specific aspects of on-site traffic safety, this Key Element 3.05 covers all general forms of transport safety anywhere the organisation's business activities occur.

Transport of Dangerous Goods is partly covered in Key Element 3.11, Hazardous Substances/Dangerous Goods Management and Emergencies associated with transport are in Key Element 5.04, Hazardous Substances/Dangerous Goods Emergencies.



## **TRANSPORT SAFETY**

(34)

## Guidelines

- 1. The coordinator should establish a method of ensuring that the specific OH&S requirements of transport contracts are documented and transport contractors are formally advised of these requirements. The co-ordinator should ensure that the OH&S practices of potential transport contractors are assessed and taken into account in the awarding of contracts (refer Key Element 2.12, Contractor Occupational Health & Safety Program).
- 2. The organisation should examine the use of modern risk assessment processes to minimise the risk associated with hazardous substances especially those that constitute a significant security threat to the organisation, its employees and any other persons or group who may be effected by a threat situation (refer Key Elements 2.01, 2.04).
- 3. The coordinator needs to conduct a review of substance storage and transport. The review should determine whether in compatible substances are being stored and transported together. Where this is indicated, the coordinator needs to develop procedures to provide for separate storage and transport in accordance with relevant legislation (refer Key Element 3.11, Hazardous Substances/Dangerous Goods Management).
- 4. The potential scale and impact of transport related emergencies should be evaluated on a worst case basis using a modern risk assessment process. Refer Key Elements 5.03 and 5.04.

KEY	ELE	MENT	7 3.05	Possible Score	ACTUAL SCORE	-
3.05	Trar	nsport S	Safety	(34)		
	1.	Motor	Vehicle Fleet Safety.	(16)		
		a)	Does the organisation have a motor vehicle Fleet safety Program?	2		
		b)	Does the program have driver selection policies and procedures?	2		
		C)	Does the program have vehicle selection/purchase policies and procedures?	2		
		d)	Does the program have formal incident investigation procedures?	2		
		e)	Does the program have formal vehicle maintenance policies/procedures?	2		
		f)	Are vehicle drivers given formal defensive driver training?	2		
		g)	Are there formal policies re specific driver eligibility for specific vehicles?	2		
		h)	ls there an individual(s) identified and acting as Fleet Safety Coordinator/Manager?	2		
			TOTAL SUB-ELEMENT 1	16		Contraction of the local division of the loc

KEY	ELE	MEN	T 3.05	POSSIBLE SCORE	ACTUAL
3.05	Trai	nsport	Safety	(34)	
	2.	Pers	onnel Travel Safety.	(10)	
		a)	Are there policies re selection of mode of transport and carrier for employees to use on organisational business requiring inter-capital, non-metropolitan and inter- national travel?	2	
		b)	Are there policies re maximum duration and scheduling of travel periods particularly for motor-vehicle travel?	2	
		c)	Are company fleet motor vehicles fitted with necessary safety features such as freight containment barriers etc?	2	
		d)	Are vehicle hirers/contractors assessed at least annually?	2	
	*	e)	Have there been assessments of health and safety risks such as noise, vibration, air quality associated with drivers and passengers of each vehicle used by the organisation?	2	

## TOTAL SUB-ELEMENT 2

10

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#### **KEY ELEMENT 3.05** POSSIBLE ACTUAL SCORE SCORE 3.05 Transport Safety (34)(8) 3. Freight Transport Risk Management. Does the organisation require its 2 a) transport contractors (including couriers) to provide evidence of their own safety programs before and during the operation of the contract? 2 b) Are freight transport risks specified and documented for all incoming and outgoing freight? 2 C) Is there evidence that the organisation observes minimum legislative requirements for the transport of freight as load securement such and containment? d) Is there a formal incident investigation 2 policy/procedure in response to freight loss/damage incidents? **TOTAL SUB-ELEMENT 3** 8

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