



# In-Vehicle Monitoring Systems – Specification



## Revision History

Version	Date	Amendments
01	1.12.2015	First Issued
02	11.06.2020	Re-formatted (title, disclaimer, foreword, roles and responsibilities). Updated per Transport Certification Australia review.



## Feedback and Enquiries

Safer Together welcomes feedback and enquiries on this Specification:

[Land.transport@safertogether.com.au](mailto:Land.transport@safertogether.com.au)

## Disclaimer

Whilst every effort has been made to ensure the accuracy of the information contained in this publication, neither Safer Together nor any of its Members past present or future warrants its accuracy or will, regardless of its or their negligence, assume liability for any foreseeable or unforeseeable use made thereof, which liability is hereby excluded. Consequently, such use is at the recipient's own risk on the basis that any use by the recipient constitutes agreement to the terms of this disclaimer. The recipient is obliged to inform any subsequent recipient of such terms.

This information is made available for the information purposes and solely for the private use of the user. Safer Together will not directly or indirectly endorse, approve or accredit the content of any course, event or otherwise where this publication will be reproduced.

## Copyright Notice

The contents of these pages are © Queensland Natural Gas Exploration and Production Industry Safety Forum (Safer Together). Permission is given to reproduce this document in whole or in part provided (i) that the copyright of Safer Together and (ii) the sources are acknowledged. All other rights are reserved. Any other use requires the prior written permission of Safer Together.

These terms and conditions shall be governed by and construed in accordance with the laws of Queensland. Disputes arising herefrom shall be subject to the jurisdiction of the courts of Queensland.



## Contents

Foreword .....	4
1 Purpose .....	4
2 Scope .....	5
3 Roles and Responsibilities .....	5
3.1 Safety Leaders Group .....	5
3.2 Land Transport Working Group .....	5
3.3 Companies Adopting this Specification .....	6
4 Requirements .....	6
4.1 IVMS Capabilities .....	6
4.2 Driver and Vehicle Requirements .....	9
4.3 IVMS Settings, Exceptions and Reporting .....	10
5 Definitions.....	12
Appendix A: Template for Monthly Reporting.....	13
Appendix B: IVMS Event Data Table .....	14
Appendix C: Example – Organisational IVMS Exception Report.....	15



## Foreword

This Specification was developed by the Land Transport Working Group of the Queensland Natural Gas Exploration and Production Industry Forum (Safer Together). Following agreement of the relevant sub-team and approval by the Land Transport Working Group, the Safer Together Safety Leaders Group agreed to the publication of this Specification by Safer Together.

Where this Specification is adopted by individual companies (by incorporating the Requirements defined in s4 into their Safety Control Framework and passing them onto their supply chains via contract terms and conditions), it aims to supersede existing company requirements for the purpose of industry-harmonised standardisation.

Companies operating in the Queensland Natural Gas Exploration and Production Industry are obliged to comply with the law and are expected to inform themselves of legal requirements. This Specification does not detail legal requirements. Where this Specification offers a higher standard than that required under the law, it is intended that the higher standard shall apply.

## 1 Purpose

In-Vehicle Monitoring Systems (IVMS) are a requirement for both heavy and light vehicles operating in both rural or remote areas, by Safer Together member companies and their contractors. This document has been developed in order to provide a high-level minimum standard, which Safer Together member companies and IVMS providers may refer to when specifying requirements for IVMS.

This Specification is intended for use by operators and contractor partner companies participating in Safer Together. It applies to both Heavy and Light Vehicles undertaking operations participating in Safer Together.

“Out of Scope”

- Plant and machinery ordinarily restricted to non-road related areas

This specification should be read and applied in conjunction with Transport Certification Australia's (TCA), *'Telematics In-Vehicle Unit (IVU) – Functional and Technical Specification'* (TCA IVU Specification) v3 – issued February 2019, available



at <https://tca.gov.au/component/joomdoc/Specification-TelematicsIVUFTSVersion3.0-External.pdf/download>).

Whilst IVMS providers are encouraged to achieve telematics IVU type-approval through TCA for their device, this document does not mandate this requirement.

Where requirements of this Specification directly align with a stated technical specification stipulated in the TCA IVU Specification, a reference shall be provided to the TCA document.

## 2 Scope

This Specification applies to all participating operators and contractor and subcontractor partner companies in Safer Together who undertake light vehicle operations and heavy vehicle transport operations (including bus and coach Hire).

## 3 Roles and Responsibilities

### 3.1 Safety Leaders Group

The Safer Together Safety Leaders Group (SLG) is responsible for:

- Approving this Specification and any subsequent revisions
- Ensuring that necessary arrangements and resources are in place to:
  - maintain this Specification (including subject matter expertise and legal advice as necessary);
  - communicate its requirements to relevant stakeholders;
  - provide user support for implementation; and,
- Confirming that processes are in place for monitoring the degree of standardisation achieved by implementing this Specification across the Industry, and for evaluating the impact it is having on safety.

### 3.2 Land Transport Working Group

The Safer Together Land Transport Working Group is responsible for:

- Maintaining this Specification by: monitoring feedback from users and other relevant stakeholders; tracking Industry practice and legislation; obtaining input from subject matter experts and legal advice as necessary;
- Providing user support for implementation;
- Communicating Requirements to relevant stakeholders;



- Monitoring the degree of standardisation achieved by implementing this Specification across the Industry and evaluating the impact it is having on safety.
- Ensuring specification meets current and emerging technology

### 3.3 Companies Adopting this Specification

Companies adopting this Specification are responsible for:

- Incorporating its Requirements into their Safety Control Framework, including processes to ensure integrated planning, risk assessment and change management;
- Passing its Requirements onto their supply chains via contract terms and conditions;
- Communicating and implementing its Requirements;
- Approving any exemptions to this Specification in accordance with processes defined in their Safety Control Framework;
- Assuring that its Requirements are met.

## 4 Requirements

The IVMS unit must be securely and permanently fixed into the vehicle.

All IVMS installation, repairs and recovery activities must be performed by an appropriately trained and authorised technician and meet the requirements stipulated in the TCA IVU Specification. Records relating to the installation and certification of the IVMS unit must be maintained by the IVMS provider.

The absence of a permanently fixed and compliant IVMS unit or inability to meet any of the exception or reporting criteria detailed must be treated as a deviation from this specification. This includes the use of portable IVMS units. Any decision to deviate from this specification shall be at the discretion of the relevant Operator and its contractor.

### 4.1 IVMS Capabilities

The In-vehicle Unit (IVU) unit must be able to monitor as a minimum:

Requirement	Tolerance
GPS location data communicated by Next G, WiFi or satellite (where fitted)	Meets or exceeds the TCA IVU Specification
Communicate remotely (ie Next G, WiFi coverage or	Meets or exceeds the



Requirement	Tolerance
satellite	TCA IVU Specification
GPS quality data – Poll every 5 seconds	Meets or exceeds the TCA IVU Specification
Date and time data	Meets or exceeds the TCA IVU Specification
Driver of the vehicle at any given time	Nil tolerance applicable
Vehicle speed data recorded via GPSV	Meets or exceeds the TCA IVU Specification
Vehicle direction of travel data – record GPS point every 20° and 100m	Meets or exceeds the TCA IVU Specification
Vehicle idle time in hh:mm:ss – for a vehicle maintaining a stationary position	Meets or exceeds the TCA IVU Specification
Driver and passenger/s (where fitted) seat belt engaged	Within + / - 2 seconds
Acceleration & Deceleration Events – LIGHT VEHICLES – currently 12km/h/s and 18/km/h/s	Nil tolerance applicable
Acceleration & Deceleration Events – HEAVY VEHICLES – currently 10km/h/s and 13/km/h/s	Nil tolerance applicable
4WD engaged on unsealed roads (where fitted / required)	Nil tolerance applicable
IVMS unit disconnection / tamper (battery, antenna, settings)	Nil tolerance applicable
Rollover detection	Nil tolerance applicable
Identification details (vehicle ID, time, date, longitude, latitude, event type)	Nil tolerance applicable
Provision for satellite communications (ie Iridium)	
Ability to add Duress Button where satellite communications are present	



The In-Vehicle Monitoring System must be capable of either meeting or exceeding:

**REQUIREMENT**

Receiving and applying geofence information. The IVMS must be able to receive regular updates in the form of SQL Database, Excel Worksheets or Shapefile or approved equivalents.

To ensure consistency in reporting, the geofence information must be uploaded in a format that cannot be edited by contractors and non-authorised personnel.

Retaining a minimum of 1 week of data on the IVU – in the event the vehicle remains in a remote area for a prolonged period and cannot transmit the data. 'Data' includes all information to inform on criteria stipulated in *IVMS SETTINGS, EXCEPTIONS AND REPORTING*; and engine diagnostics (where recorded). If the volume of data collected and generated prior to transfer from the IVU exceeds the data storage capacity of the IVU, new data shall overwrite stored data – commencing at the most historic.

Retaining a minimum of one (1) years data from the entire fleet on a server. Data is recoverable and capable of being presented in a suitable format to support reporting and investigation purposes

Transmitting data and events as per the following:

- a. Pre-determined data communication requirements:
  - i. If the IVU has been out of the Telstra Next G range for more than 60 minutes, poll the Satellite (where installed) for the vehicle's longitude, latitude and identification details.
  - ii. All critical events to poll the IVU for the vehicle's longitude, latitude and identification details.
- b. Providing a minimum of 60 seconds of second by second data preceding a vehicle accident or incident, or travel data s otherwise approved by the CSG operator. Travel data includes all information to inform on criteria stipulated in *IVMS SETTINGS, EXCEPTIONS AND REPORTING*; and engine diagnostics (where recorded).
- c. Transmitting data via satellite communications (where installed) on critical events – including rollover, duress and impact events. Data includes the vehicles longitude, latitude and identification details.
- d. Uploading trip data at the end of each trip – whilst in Next G coverage. Trip data includes all information to inform on criteria stipulated in *IVMS SETTINGS, EXCEPTIONS AND REPORTING*; and engine diagnostics (where recorded)

Performing frequent IVMS health checks to identify disconnections and faulty units.

Processing events and exceptions based on geofence settings.





#### REQUIREMENT

Sending alerts by SMS and/or email to agreed recipient/s.

Perform a 'find nearest vehicle' query.

Display historical and active (real time) tracking of a vehicle's trip history.

Ability for use of an Application Programming Interface (API) from the IVMS provider to its client for use of creating integrated solutions within a third party system.

## 4.2 Driver and Vehicle Requirements

The following data relating to the driver and vehicle must be captured in the vehicle and driver profiles at a minimum. The sections highlighted in grey are how the driver and vehicle information is to be displayed in the reports and on screen.

### Minimum Driver Information

Detail	Format	Example
Driver First Name	String	Jane
Driver Last Name	String	Doe
Unique identifying information linked to the driver – this is different to the key ID or driver ID assigned in the system	String	Employee Number / User ID / Email
Company	String	Smythe Electrical
Department / Team if applicable	String	Apprentices
System Display Name – Surname, First Name, (i.e. the name that will display in reports and on screen)	String	Doe, Jane

### Minimum Vehicle Information

Detail	Format	Example
Vehicle Registration	String	XXX123
Vehicle ID (if applicable)	String	QH2345
Make	String	Toyota
Model	String	Landcruiser
Company	String	Smythe Electrical
Department / team if applicable	String	Apprentices



Detail	Format	Example
System Display Name – in any order – vehicle registration and make and model (i.e. the vehicle name that will display in reports and on screen) – LV / HV / OTH (i.e. light vehicle / heavy vehicle / other including plant and machinery)	String	XXX123 Landcruiser - LV

### 4.3 IVMS Settings, Exceptions and Reporting

The Queensland Natural Gas Exploration and Production Industry Safety Forum has endorsed the following speed settings for all CSG industry related vehicles servicing the CSG sector:

- Unsealed Public Roads – maximum 80km/h, unless a lower speed is signposted
- Unsealed Private Roads – as defined by the operator (e.g., land access requirements)
- Sealed Roads (public and private) – as signposted

The IVMS must be capable of monitoring and reporting on the following exception events/rules:

Event Category	Rule Parameter
Exceeding speed limit	<ul style="list-style-type: none"> <li>• <math>\geq 5</math>km/h instantaneously (verified by GPS) (<b>event</b>) or</li> <li>• <math>\geq 5</math>km/h for <math>\geq 5</math> sec (verified by GPS)(<b>reportable event</b>)</li> <li>• (all speed events to return maximum km/h value)</li> </ul>
Drive without seatbelt	<ul style="list-style-type: none"> <li>• Any motion <math>\geq 5</math>km/h for <math>\geq 5</math> sec (<b>Reportable event</b>)</li> </ul>
4WD disengaged on unsealed roads (provision for data capture)	<ul style="list-style-type: none"> <li>• Any motion <math>&gt; 40</math>km/h for 5 mins &amp; 4WD not engaged on an unsealed (public or private) road</li> </ul>
Harsh deceleration/braking	<ul style="list-style-type: none"> <li>• <math>&gt; 12</math>km/h/s (<b>event</b>) – Light vehicle</li> <li>• <math>&gt; 10</math>km/h/s (<b>event</b>) – Heavy vehicle</li> </ul>
Excessive braking	<ul style="list-style-type: none"> <li>• <math>&gt; 18</math>km/h/s (<b>Reportable event</b>) – Light vehicle</li> <li>• <math>&gt; 13</math>km/h/s (<b>Reportable event</b>) – Heavy vehicle</li> </ul>
Harsh acceleration	<ul style="list-style-type: none"> <li>• <math>&gt; 12</math>km/h/s (<b>event</b>) – Light vehicle</li> <li>• <math>&gt; 10</math>km/h/s (<b>event</b>) – Heavy vehicle</li> </ul>
Breaks (Journey)	<ul style="list-style-type: none"> <li>• 1hr 45mins continuous driving (audible alert in</li> </ul>



Event Category	Rule Parameter
Management – Light Vehicles only)	<ul style="list-style-type: none"> <li>vehicle)</li> <li>&gt;2hrs without a 15min (continuous) break by individual (<b>event</b>)</li> <li>&gt;2hrs 15 min of continuous driving by individual (<b>Reportable event</b>)</li> </ul>
Harsh Cornering	<ul style="list-style-type: none"> <li>As recommended by IVMS provider</li> </ul>
Impact Detection/possible accident	<ul style="list-style-type: none"> <li>Recommended Event – not reportable</li> </ul>
Rollover Detection	<ul style="list-style-type: none"> <li>Mandatory as recommended by IVMS provider</li> </ul>

Reference to an 'Event' and 'Reportable Event' requires Safer Together member companies and their contractors to address drivers' behaviours in line with their own performance management processes as a consequence of their triggering an exception.

Reference to 'Reportable Event' further requires Safer Together member companies and their contractors to record and report the exception in line with the IVMS Reporting Template – refer to Appendix A.

Reference to 'Breaks (Journey Management – LV only)' – Safer Together member companies or their contractors operating heavy vehicles are encouraged to adopt the 2-hour maximum driving rule, however may continue to operate in compliance with the Heavy Vehicle National Law (HVNL). Heavy Vehicle operators managing fatigue pursuant to HVNL, may be required to segregate their fleet in IVMS.

A 'continuous break' requires the vehicle remaining stationary for the stated minimum period, but does not require the ignition to be turned off.



## 5 Definitions

GPSV	Global Positioning System Velocity
Harsh Cornering	A lead indicator of risky driving behaviours that may result in a loss of control/rollover of a vehicle
Heavy Vehicle	As defined in the Safer Together Heavy Vehicle Specification – a vehicle with a gross vehicle mass (GVM) of more than 4.5 tonnes and/or a combination that includes a vehicle with a GVM of more than 4.5 tonnes
Light Vehicle	As defined in the Safer Together Light Vehicle Specification – a vehicle with a gross vehicle mass not more than 4500kg, not including motorbikes, quad bikes (other ATV's including Polaris 6 wheelers etc), bicycles and tricycles
Polling	A form of communication between two or more systems or devices, where a specific status is repeatedly checked and verified
Sealed Private Road	As defined by the operator (e.g., land access requirements)
Unsealed Private Road	Everything that falls outside of unsealed public roads including but not limited to: <ul style="list-style-type: none"> <li>• Right of way</li> <li>• Formed tracks</li> <li>• Access tracks</li> </ul>
Unsealed Public Road	State/council gazetted unsealed roads including forestry roads



## Appendix A: Template for Monthly Reporting

Safer Together Member Company's and contractors Monthly Performance Report													
Reporting Period	Company Contractor / Subcontractor (names recorded here)	General Data			Designated Speed Events			Fatigue Events Fatigue Management >2.15hrs	Seatbelt Events Seatbelt not engaged	Acceleration / Deceleration Events			
		Total KM driven	Number of Vehicles	Number of Drivers	IVMS Spec Rev # 1*	IVMS Spec Rev # 2	Reportable Speed Event			Harsh Acceleration	Harsh Braking	Excessive Harsh Braking	
Speed Category 1	Speed Category 2	Speed Category 3											
January													
February													
March													
April													
May													
June													
July													
August													
September													
October													
November													
December													
* Reporting Requirements follow Rev #1 will cease by 30 June 2020													
References													
Safer Together IVMS Technical Specifications, 2020													
APPEA Sharing Safety Solutions: IVMS Minimum Settings for Light Vehicles													
APPEA Sharing Safety Solutions: IVMS Minimum Settings for Heavy Vehicles													
Land transportation safety recommended practice, International Association of Oil & Gas Procedures, London, July 2011													
Land transportation safety recommended practice, Guideline Note 12, International Association of Oil and Gas Procedures, London, July 2011													



## Appendix B: IVMS Event Data Table

Event Category	Rule Parameters	Report Parameters	Rule Name	Monthly Performance Report - Headings
Exceeding speed limit	<ul style="list-style-type: none"> <li>• &gt;=5kph instantaneously (verified by GPS) (event) or</li> <li>• &gt;=5kph for &gt;=5 sec (verified by GPS)(<b>Reportable event</b>)</li> </ul>	Not required As per rule	ST - exceeding speed limit	Exceeding Speed Limit
Drive without seatbelt	<ul style="list-style-type: none"> <li>• Any motion &gt;=5kph for &gt;=5 sec (<b>Reportable event</b>)</li> </ul>	As per rule	ST - seatbelt not engaged	Seatbelt not engaged
4WD disengaged on unsealed roads (provision for data capture)	<ul style="list-style-type: none"> <li>• Any motion &gt;40kph for 5 mins &amp; 4WD not engaged on an unsealed (public or private) road</li> </ul>	Operator Dependent	ST - 4WD not engaged	4WD not engaged
Harsh deceleration / braking	<ul style="list-style-type: none"> <li>• &gt;12kph/sec (event) – Light vehicle</li> <li>• &gt;10kph/sec (event) – Heavy vehicle</li> </ul>	As per rule As per rule	ST - Harsh deceleration/braking - LV ST - Harsh deceleration/braking - HV	Harsh Deceleration Harsh Deceleration
Excessive braking	<ul style="list-style-type: none"> <li>• &gt;18kph/sec (<b>Reportable event</b>) – Light vehicle</li> <li>• &gt;13kph/sec (<b>Reportable event</b>) – Heavy vehicle</li> </ul>	As per rule As per rule	ST - Excessive harsh braking - LV ST - Excessive harsh braking - HV	Excessive Harsh Braking Excessive Harsh Braking
Harsh acceleration	<ul style="list-style-type: none"> <li>• &gt;12kph/sec (event) – Light vehicle</li> <li>• &gt;10kph/sec (event) – Heavy vehicle</li> </ul>	As per rule As per rule	ST - Harsh acceleration - LV ST - Harsh acceleration - HV	Harsh Acceleration Harsh Acceleration
Breaks (Journey Management - Light Vehicles only)	<ul style="list-style-type: none"> <li>• 1hr 45mins continuous driving (audible alert in vehicle)</li> <li>• &gt;2hrs without a 15min (continuous) break by individual (event)</li> <li>• &gt;2hrs 15 min of continuous driving by individual (<b>Reportable event</b>)</li> </ul>	Not required - audible alert only  >2hrs without a 15 mins (continuous) break by individual >2 hrs 15 mins of continuous driving by individual	Not required - audible alert only  ST - Fatigue Management > 2:00 hrs ST - Fatigue Management > 2:15 hrs	Not required - audible alert only  Not required - not a reportable event Fatigue Management >2:15hrs
Impact Detection/ possible accident	<ul style="list-style-type: none"> <li>• Recommended Event – not reportable</li> </ul>	No required	ST - Impact Detection / possible accident	No required - not a reportable event
Rollover Detection	<ul style="list-style-type: none"> <li>• Mandatory as recommended by IVMS provider</li> </ul>	As per rule	ST - Rollover Detection	Rollover Detection



## Appendix C: Example – Organisational IVMS Exception Report

Vehicle Rego	Driver	Reporting Group	Event	Start date	Start time	End time	Duration	Value (kph)	Zone/Location	Start Street	End Street	Start Lat/Long	End Lat/Long	Reportable Events as per montly report
ABC123	J James	Operations - West	ST - Exceeding Speed >=5km/h for >=5 sec	9/07/2019	12:22:12	12:22:52	0:00:40	88	CSG_80km	Smith St, Roma	Smith St, Roma			Exceeding speed limit
JBC124	D Bell	HSE	ST - Exceeding Speed >=5km/h for >=5 sec	10/12/2019	9:40:10	9:40:25	0:00:15	109	CSG_100km	Black St, Chinchilla	Black St, Chinchilla			Exceeding speed limit
JBC127	D Bell	HSE	ST - Exceeding Speed >=5km/h for >=5 sec	11/12/2019	2:22:12	2:22:19	0:00:07	66	OE_Condabri_GPF_50km	Taroom	Taroom			Exceeding speed limit
ABC129	P Paul	Operations - West	ST - Seatbelt not engaged	12/12/2019	5:00:00	5:00:07	0:00:07	6	Miles	Miles Airport	Miles Airport			Seatbelt Not Engaged
ABC130	R Robb	Operations - West	ST - Fatigue Management >2:00hrs	13/12/2019	12:00:00	2:00:47	2:00:47	N/A	CSG_80km	Taroom	Taroom			Not a reportable event
DBC123	S Sam	Pipeline Oeprations	ST - Fatigue Management >2:00hrs	14/12/2019	2:00:00	2:22:52	2:22:52	N/A	CSG_80km	Taroom	Taroom			Fatigue Management >2:15hrs
JBC127	G Green	Drilling and Completion	ST - Exceeding Speed >=5km/h for >=5 sec	11/12/2019	2:22:12	2:22:52	0:00:40	90	CSG_80km	Warrego Road, Miles	Warrego Road, Miles			Exceeding speed limit
JBC127	G Green	Drilling and Completion	ST - Exceeding Speed >=5km/h for >=5 sec	15/12/2019	2:22:12	2:22:52	0:00:09	73	OE_Reedy Creek_GPF_60km	Yuleba	Yuleba			Exceeding speed limit
JBC127	G Green	Drilling and Completion	ST - Exceeding Speed >=5km/h for >=5 sec	11/12/2019	2:22:12	2:22:52	0:00:40	127	Dullangari	Dullangari	Dullangari			Exceeding speed limit
DBC123	S Sam	Pipeline Oeprations	ST - Exceeding Speed >=5km/h for >=5 sec	14/12/2019	10:00:00	10:00:04	0:00:04	71	Q_Asset 1_60km	Roma	Roma			Exceeding speed limit
DBC123	S Sam	Pipeline Oeprations	ST - Exceeding Speed >=5km/h for >=5 sec	14/12/2019	11:00:00	11:00:16	0:00:16	67	Q_Asset 2_60km	Roma	Roma			Exceeding speed limit