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# **PORT BOTANY CONTAINER MOVEMENT EFFICIENCY SCHEME**



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**A SCHEME USING THE ROAD INFRASTRUCTURE  
MANAGEMENT APPLICATION FOR ROADS AND  
MARITIME SERVICES**

**SEPTEMBER 2019**

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## PORT BOTANY CONTAINER MOVEMENT EFFICIENCY SCHEME

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## ABOUT US

Transport Certification Australia (TCA) is the Australian entity responsible for providing assurance in the use of telematics and related intelligent technologies.

We manage the National Telematics Framework, which brings transport operators, road managers, heavy vehicle regulators, other regulators and third-party business partners together on a common digital business platform.

The National Telematics Framework:

- Provides a national platform for the use of telematics and related intelligent technologies
- Supports different applications across regulatory, contractual and commercial needs
- Supports different levels of assurance
- Is outcome-focussed and encourages innovation.

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# 1 INTRODUCTION

## 1.1 PURPOSE

The Port Botany Container Movement Efficiency scheme (“the scheme”) is a scheme administered by Roads and Maritime Services (RMS) to:

- improve the safety and efficiency of freight movements between Port Botany and freight centres in the greater Sydney area; and
- improve access and road infrastructure investment decisions.

To participate in the scheme, Transport Operators must conform with the requirements specified within the *New South Wales Class 3 Port Botany Container Movement Efficiency Notice 2019*, Part B (“the Notice”) published on the National Heavy Vehicle Regulator (NHVR) website.

Participation in the Road Infrastructure Management (RIM) application, which is administered through TCA as part of the National Telematics Framework (NTF), is one of these requirements.

The use of the RIM application for the scheme provides RMS with visibility on network-wide vehicle movements across the road network.

Data received through the RIM application will be aggregated, de-identified and processed by TCA to enable the generation of reports for use by RMS and other participating road managers via the Telematics Analytics Platform (TAP).

## 1.2 SCOPE

This document describes the scheme and how it will be used with the RIM application.

The following information is included:

- the scheme parameters;
- key scheme processes; and
- roles and responsibilities.

## 1.3 BACKGROUND

Established in 2014, the Cargo Movement Coordination Centre (CMCC) works with road carriers, rail operators, stevedores and related supply chain stakeholders to maximise use of existing network capacity and continuously improve the efficiency of cargo movement through Port Botany, Port Kembla and regional NSW.

A network of road and rail links allows freight to be transported more efficiently between Port Botany to freight centres in the greater Sydney area. The scheme monitors vehicle movement and speed along this network, and will assist CMCC in the optimisation of cargo movement between Port Botany and freight centres.

The RIM application is offered at a Level 1 Assurance (see Appendix A for definition).

The use of the RIM application for the scheme:

- enables the collection of data from enrolled vehicles between Port Botany and freight centres in the greater Sydney area;
- provides relatively simple entry requirements for Transport Operators;
- allows Transport Operators to self-assess whether they meet the requirements of the scheme, and enrol eligible vehicles;
- allows Application Service Providers (ASPs), or Transport Operators who provide their own systems, to self-assess whether they meet the requirements of RIM;

- 
- does not provide any data to RMS; and
  - does not require type-approval of telematics in-vehicle units (IVUs), certification of services, or auditing of Application Service Providers (ASPs).

*Note: The RIM application can be used for a variety of purposes. In this document, the RIM application is described in the context of the scheme – a scheme with specific business requirements associated with the standard operation of the RIM application.*

### **Parameters**

Vehicles are monitored with respect to parameters of location, time and vehicle identity.

## **1.4 REFERENCES**

The documents referenced by this scheme are as follows:

- Transport Certification Australia (TCA). (2019). *Road Infrastructure Management Functional and Technical Specification*. Transport Certification Australia. Melbourne, Australia.
- Transport Certification Australia (TCA). (2019). *Telematics Business-to-Business Data Exchange Functional and Technical Specification*. Transport Certification Australia. Melbourne, Australia.
- National Heavy Vehicle Regulator (NHVR). (2019). *New South Wales Class 3 Port Botany Container Movement Efficiency Notice 2019*, Part B. National Heavy Vehicle Regulator, Fortitude Valley, Australia.

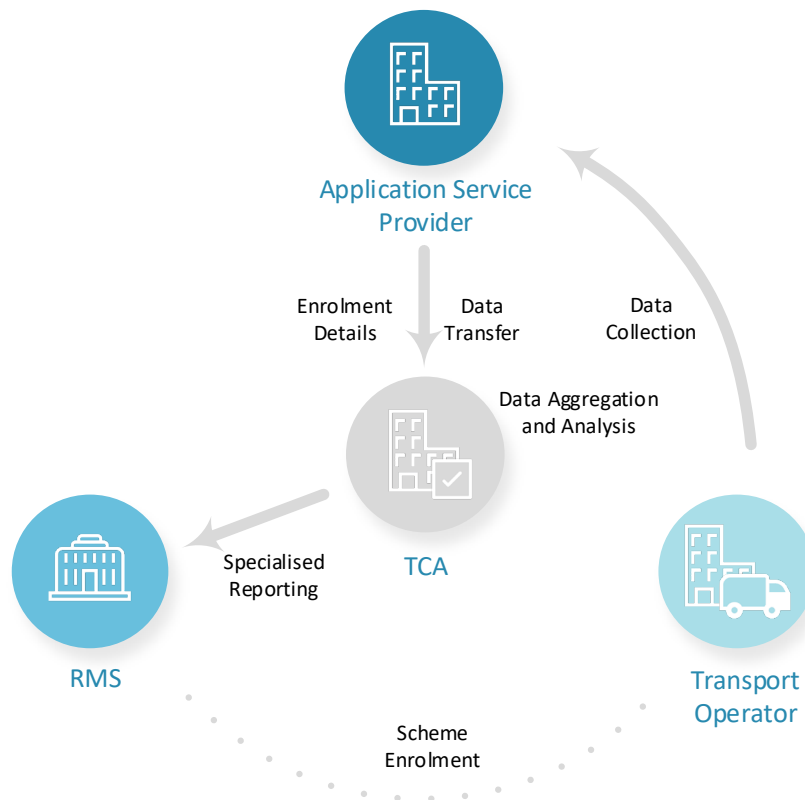
## 2 PORT BOTANY CONTAINER MOVEMENT EFFICIENCY SCHEME

### 2.1 PARTICIPANTS

Figure 1 outlines the key interactions between participants for the use of the RIM application for the scheme:

- RMS, as the Authority of the scheme, will access road usage reports through TAP using telematics data collected through RIM;  
*Note: Telematics data is not made available to RMS.*
- Transport Operators are vehicle operators that agree to enrol vehicles into the scheme, and consent to their data collected through RIM to be used for the intended purpose by TCA and road managers;
- ASPs offer telematics services (hardware, software and associated processes) that TCA has registered for RIM; and
- TCA administers RIM and its schemes within the NTF, ensuring that data security and privacy dimensions are managed. TCA receives vehicle enrolment details from Transport Operators via ASPs, and makes ASP–Transport Operator Agreements available to participants. TCA also receives telematics data from ASPs; performs data aggregation, de-identification and processing; and makes road usage reports available to RMS and other participating road managers via TAP as agreed between RMS and TCA.

**Figure 1: Scheme Participants and Key Interactions**



*Note: The ASP may also be the Transport Operator.*

*Interactions between scheme participants are consistent with interactions between RIM application participants, and are not specific to the scheme.*

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## 2.2 SCHEME PARAMETERS

This section describes the constraints and assumptions that will be used to deliver the RIM application for the scheme.

a. Devices

The telematics device used in the scheme is a telematics IVU or similar.

b. ASPs

TCA will register ASPs to provide services for the RIM application.

c. Scheme Participation

ASPs will enrol vehicles in RIM at the request of the Transport Operator.

The ASP will manage key steps of enrolment including approval, and as necessary, cancellation and replacement. There will be no interim enrolment.

Transport Operators are expected to be more inclined to have their vehicles monitored through RIM based on RMS transparently communicating the intended use of RIM, and obtaining assurance and safeguards from TCA that de-aggregated, identifiable data collected through RIM will not be used for other, undisclosed purposes (such as compliance and enforcement).

The Transport Operator will self-assess whether it meets scheme entry requirements as published in Part B of the Notice on the NHVR website. The Transport Operator will notify the ASP that they intend for vehicles to enrol in the scheme, and will provide details of vehicles enrolled and no longer enrolled to the ASP.

Figure 2 shows the pre-enrolment steps for the scheme.

Figure 3 shows the reporting processes for the scheme

Figure 4 shows the enrolment cancellation and reporting processes for the scheme.

d. Data Collection

The telematics device (i.e. telematics IVU or similar) used for the scheme shall collect position data at intervals of no greater than 1 minute and no less than 1 second, and as determined by the ASP.

e. Data Records

The telematics device will generate position records.

f. Data Reporting

The ASP shall transfer data records collected through RIM to TCA no less frequently than each calendar month.

For this scheme:

- the preferred data reporting mechanism is TDE RESTful API, otherwise FTPS in accordance with Tier 3 Data Exchange (as described in *Telematics Business-to-Business Data Exchange Functional and Technical Specification*); and
- the data reporting format will be JSON.



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g. Data Processing and Reports

TCA will perform data transformation, data aggregation, de-identification and processing functions on data obtained from position records. TCA will make data reports for the scheme available to RMS and other participating road managers through TAP.

TCA will perform basic data cleaning, which includes:

- removal of duplicates;
- removal of anything that is not in the prescribed format;
- removal of alarm data; and
- if necessary, changing column names.

Incomplete or unacceptable data records will not be included in data processing.

*Note: The type, number and frequency of road usage reports will be subject to agreed terms reached between TCA and RMS.*

A **Road Usage Report** will be made available to RMS on a monthly basis via TAP. It is anticipated that RMS will use standard RIM measures and dimensions, such as those shown in Table 1. The title and content can be adjusted to fit the needs of RMS.

**Table 1: Road Usage Report**

<b>Report Content</b>	<b>Examples</b>
Aggregated measures	<ul style="list-style-type: none"><li>• Count of vehicles traversing a specified road infrastructure asset</li><li>• Speed of vehicles (derived from consecutive position records) traversing a specified road infrastructure asset</li></ul>
Dimensions	<ul style="list-style-type: none"><li>• Defined time period (year, month, week, day, hour, minute)</li><li>• Vehicle type (when available)</li><li>• Direction of travel.</li></ul>
Typical reporting	<ul style="list-style-type: none"><li>• Count of the total number of traversals monitored by day of week (over defined time periods), in each direction, by vehicle category</li><li>• Average vehicle speed when monitored vehicles traverse a specific road infrastructure asset (over defined time periods)</li><li>• Trends of changes to road infrastructure usage over time</li><li>• Distribution of vehicle speeds for monitored vehicles traversing a defined road infrastructure asset</li><li>• Heat map showing count of vehicles traversing a specified road infrastructure asset, and the total number of traversals</li></ul>

A **Scheme Participation Report** will be made available to RMS on a monthly basis via TAP. This report may include the following standard measures and dimensions as shown in Table 2.

**Table 2: Scheme Participation Report**

Report Content	Examples
Measures	<ul style="list-style-type: none"> <li>• Count of all vehicles participating in the scheme</li> <li>• Count of vehicles participating in the scheme that TCA received data from</li> <li>• Vehicles participating in the scheme that TCA did not receive data from for at least 30 consecutive days</li> </ul> <p><i>Note: Reporting of this measure will include vehicle identities. A participating vehicle will only be included in this measure if, without a satisfactory explanation, it has not provided data for at least 30 consecutive days.</i></p> <ul style="list-style-type: none"> <li>• Count of Transport Operators with vehicles participating in the scheme</li> <li>• Count of ASPs reporting data for vehicles participating in the scheme</li> </ul>
Dimensions	<ul style="list-style-type: none"> <li>• Transport Operator</li> <li>• ASP</li> </ul>
Typical reporting	<ul style="list-style-type: none"> <li>• Month-on-month trends of data related to scheme participation</li> <li>• Count of the total number of traversals monitored by day of week (over defined time periods), in each direction, by vehicle category</li> </ul>

## 2.3 KEY SCHEME PROCESSES

Figure 2 outlines the key actions taken by each participant during the pre-enrolment stage of the operation of the scheme.

*Note: This process assumes that TCA has already registered the ASP to provide RIM application services.*

**Figure 2: Pre-Enrolment Process**

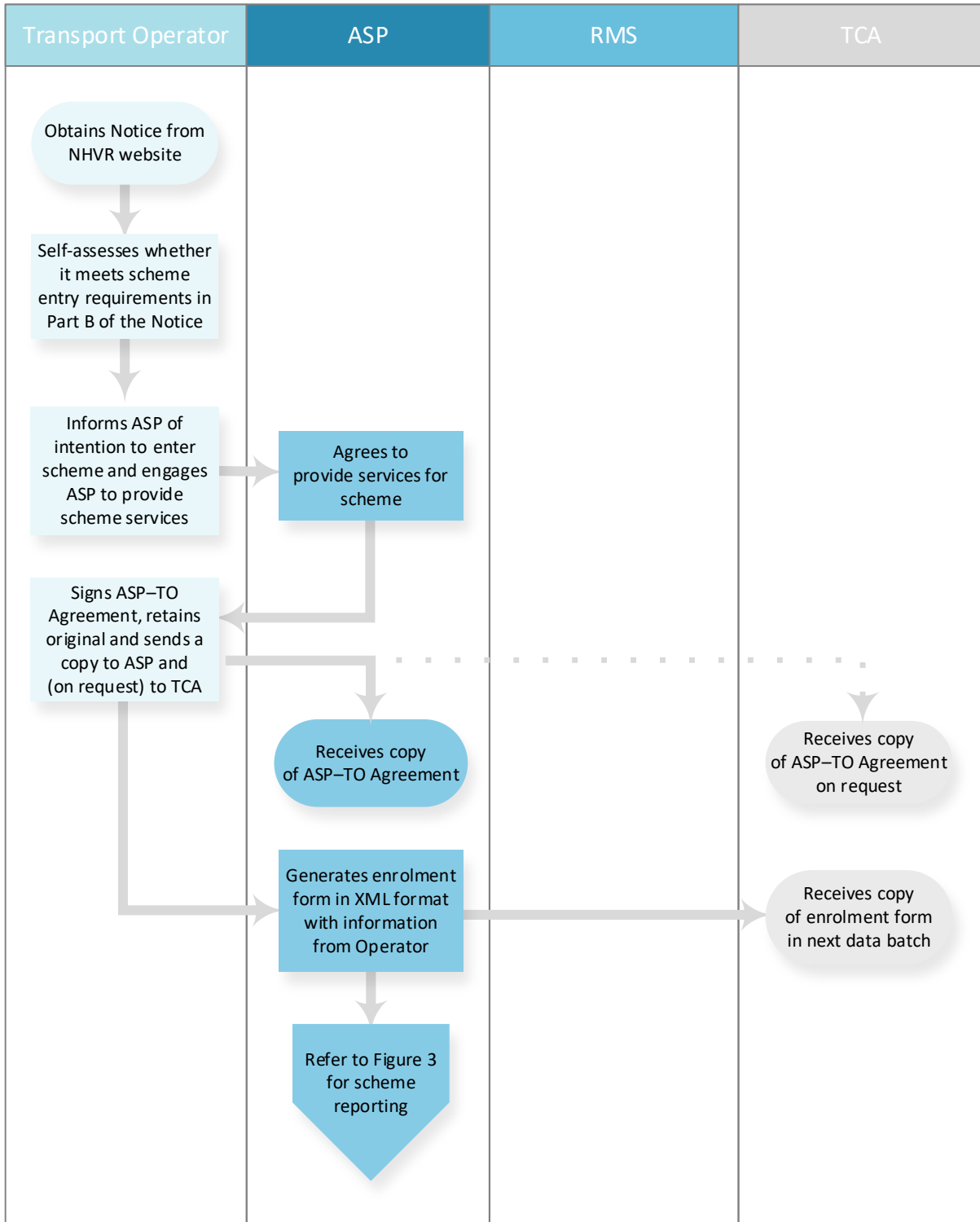
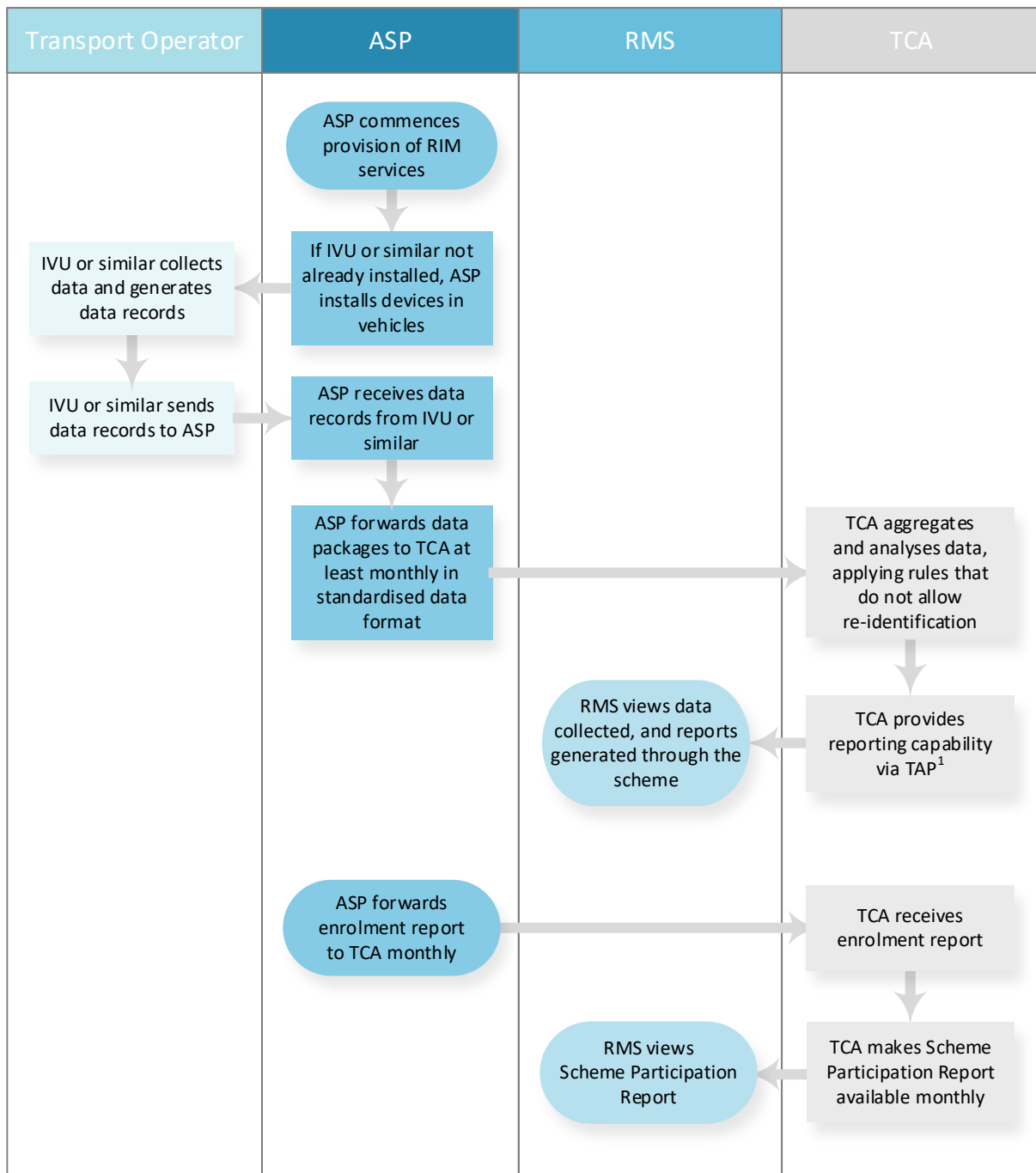


Figure 3 outlines the key actions related to data collection, record generation and reporting.

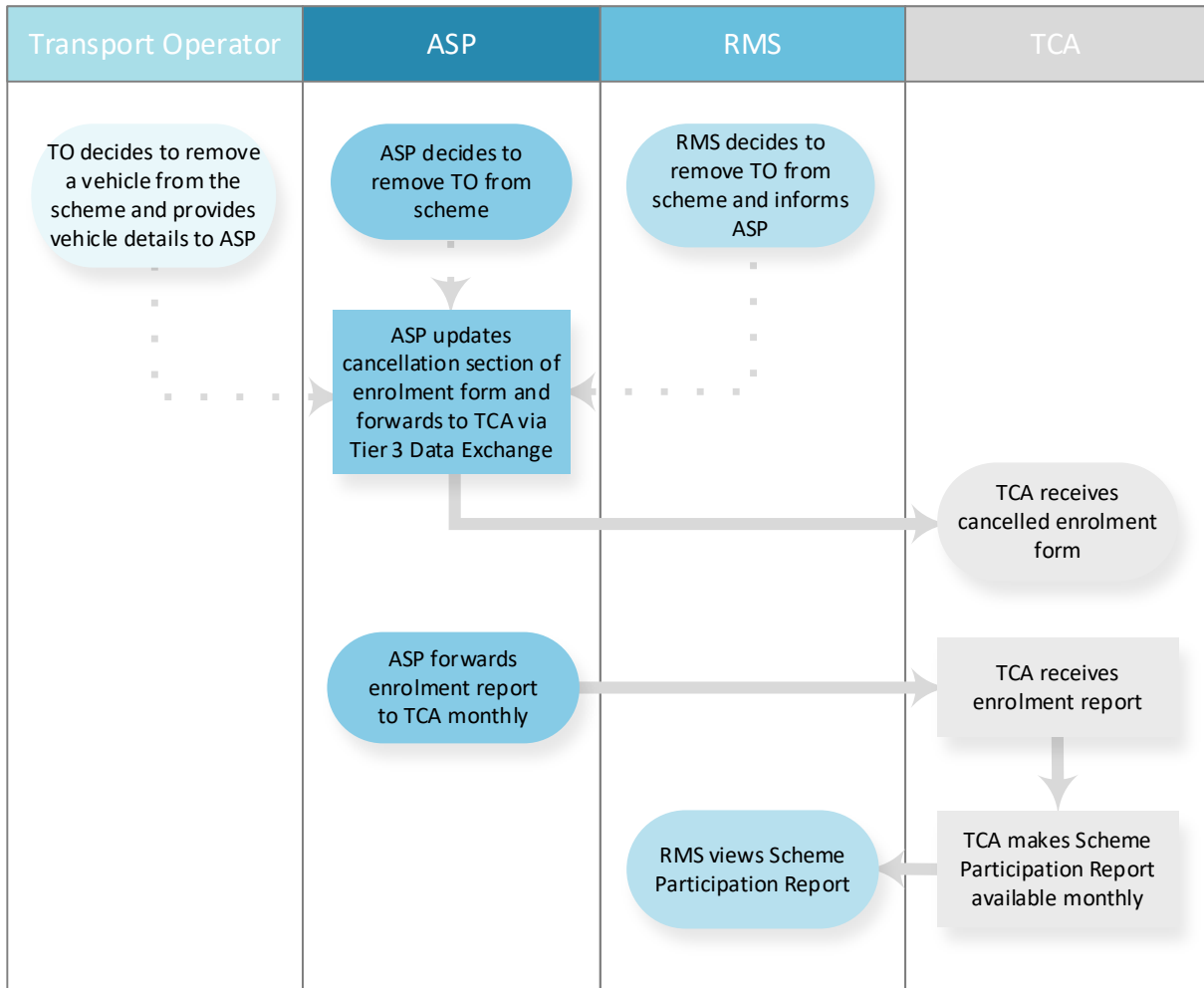
**Figure 3: Reporting Processes**



1. Data will be updated at least monthly.

Cancellation of scheme participation may be initiated by the Transport Operator, RMS or the ASP. Figure 4 outlines the key actions to discontinue enrolment of a vehicle in the scheme.

**Figure 4: Enrolment Cancellation and Reporting Processes**



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## 2.4 ROLES AND RESPONSIBILITIES

In delivering the objectives of the scheme, **TCA** will:

- provide a document (this document) describing the use of the scheme as part of the RIM application;
- produce or maintain collateral, as necessary, to support the scheme. Examples include the provision of current versions of:
  - *Road Infrastructure Management Functional and Technical Specification;*
  - *Telematics Business-to-Business Data Transfer Functional and Technical Specification;*
  - *Telematics In-Vehicle Unit Functional and Technical Specification.*
- support the reporting of data records via Tier 3 Data Exchange using a RESTful API, with these records formatted using JSON;
- support the reporting of enrolment forms and enrolment reports using a RESTful API, with these documents formatted using XML;
- inform ASPs of the scheme details and entry conditions;
- produce an ASP–Transport Operator Agreement for use with the scheme and make it available to ASPs;
- ensure that the TAP is set up to enable RMS to obtain reports generated by the scheme,
- maintain the cloud environment and databases to support the ingestion of data from the RIM application, etc.;
- produce terms and conditions, which formalise the relationship between TCA and the ASP with regard to ASP registration;
- verify that an ASP meets requirements to provide RIM application services;
- provide RMS with reports outlined in 2.3g via TAP; and
- ensure the confidentiality of ASP data is maintained.

**RMS** will:

- develop necessary policy documentation required by RMS for the scheme;
- undertake program coordination activities related to the scheme with TCA;
- access reports outlined in 2.2g via TAP, and review data trends and numbers of enrolled vehicles

**ASPs** will:

- interact with TCA to establish the delivery mechanism for provision of data packages to TCA (noting that a data package includes data records, enrolment forms and enrolment reports);
- receive notification from Transport Operators regarding the enrolment status of vehicles in the scheme, and forward this information to TCA using an agreed mechanism on a monthly basis;
- provide the ASP–Transport Operator Agreement to a Transport Operator once an agreement to provide application services for the scheme has been made;
- be responsible for the installation, operation and maintenance of telematics devices and the reporting of data received from those devices;
- in the event of a device malfunction: liaise with the Transport Operator and/or device supplier to resolve the issue;
- provide back office capability to process collected data records as required by the scheme; and
- deliver data records to TCA, using agreed data delivery mechanism, required data formats and meeting data reporting requirements.

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**Transport Operators** will:

- access scheme rules and entry conditions on the RMS website and determine whether they meet those conditions;
- obtain the Notice from the NHVR website and ensure compliance with Part B of the Notice requirements for the scheme;
- upon self-assessment that scheme entry conditions are met, notify the ASP of its intention to enrol in the scheme;
- agree to share data collected by its ASP with TCA for the scheme using a signed ASP–Transport Operator Agreement;
- follow rules for enrolment in the scheme;
- store original signed ASP–Transport Operator Agreement and forward copies to the ASP and TCA (on request);
- install telematics devices and engage an ASP to provide application services for the scheme; and
- notify the ASP of the date that a vehicle or the Transport Operator will no longer participate in the scheme.

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## A ACRONYMS AND DEFINITIONS

### ACRONYMS

Acronym	Definition
ASP	Application Service Provider
CMCC	Cargo Movement Coordination Centre
FTPS	File Transfer Protocol Secure
IVU	in-vehicle unit
NTF	National Telematics Framework
TAP	Telematics Analytics Platform
RMS	Roads and Maritime Services
TO	Transport Operator
UTC	Coordinated Universal Time



## DEFINITIONS

Term	Definition
application	A capability of the NTF that provides business value to stakeholders, delivered as an assembly of policy, business components and technical components, within in the context of an identified level of assurance.
Application Service Provider (ASP)	A service provider that has been registered by TCA as meeting the requirements of one of more telematics applications. This may also be the Transport Operator.
ASP–Transport Operator Agreement	A written agreement between an ASP, a Transport Operator and TCA which sets out the terms on which the ASP will provide application services to the Transport Operator.
Authority	An entity, associated with a Jurisdiction, responsible for the administration of one or more NTF applications. An Authority may appoint an administrator to perform its functions. <i>See also Jurisdiction.</i>
data collection period	A whole number of days in the UTC time zone for which all application data is provided. Successive data collection periods are contiguous.
data package	A package of information sent via Tier 3 Data Exchange for a data collection period
data record	A discrete and defined set of data elements, including a (unique) record number, and record date time (of data record generation), produced for a device for a data collection period.
enrolment	Both the process and outcome by which a Transport Operator enters an Authority’s scheme. Each vehicle must be enrolled for each scheme it participates in. Enrolment also confirms the application and conditions (if applicable) that the vehicle is monitored under.
enrolment form	An electronic document that formally and simultaneously records the enrolment of a vehicle within a scheme, and within the application required by that scheme.
enrolment report	A summary of enrolments relevant to a given Authority for a specified reporting period, including any aggregated data required by specific applications.
Jurisdiction	A geographical area containing a road network (i.e. typically an Australian state or territory).
level of assurance	An assurance level that supports telematics applications, structured around the intended use of a telematics application, risks being managed, and the needs and expectations of consumers and other stakeholders.
Level 1 Assurance	Self-assessment of data and no independent oversight of a telematics application
Monitoring Application	A telematics application where the vehicle is enrolled (or participates) in a scheme and monitored via installed type-approved telematics device(s), with data records transferred to the ASP back office. The following apply: <ul style="list-style-type: none"> <li>no operating conditions are specified, and no event reports are generated or provided to the Authority; and</li> <li>all data pertaining to the application is provided to TCA via Tier 3 Data Exchange.</li> </ul>
scheme	The generic term for a specific use of an application linked to delivering a policy objective.
telematics device	The primary telematics unit which monitors vehicle parameters.

Term	Definition
Tier 1 Data Exchange	A web services solution where structured information is exchanged that complies with requirements such as authentication, security, privacy and certainty of delivery. It includes exchanges of information related to a vehicle's enrolment in telematics applications, conditions and adherence to those conditions.
Tier 2 Data Exchange	The human-initiated (rather than automated) exchange of business-related information and advice. Typical exchanges via this tier include reporting of issues and resolutions, correspondence regarding recognition of the ASP to provide application services, advice regarding information and communications technology (ICT), data assurance and other reporting.
Tier 3 Data Exchange	The packaging and delivery of data packages, comprising data records and enrolment-related artefacts. Data packages have several uses which include data analysis by the recipient, data assurance, and for research purposes.
Transport Operator	An entity that operates one or more vehicles eligible to enter a scheme.



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