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# RIM ZEHV Monitoring Scheme (NSW) (Trial)



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**A scheme trial using the Road Infrastructure  
Management (RIM) application for Transport for NSW**

**May 2024**

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## About Us

Transport Certification Australia (TCA) is a national organisation that provides assurance services relating to transport technologies and data to enable improved public purpose outcomes from road transport.

Priority outcome areas enabled by TCA services include improved road safety, transport efficiency, freight productivity, asset management and sustainability.

Key aspects of TCA include:

- An independent not-for-profit entity, with government oversight
- Administration of the National Telematics Framework, including its rules, specifications, agreements, digital infrastructure and other supporting services
- Assurance services that support but are appropriately separated from regulators, policy makers and enforcement activities, and underpin telematics applications and associated information and data services
- Advice that is based on evidence and a deep subject matter knowledge
- Trusted partner to both government and industry stakeholders, enabling a nationally consistent open market, with services covering all road vehicle types and associated digital infrastructure.

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# 1 Introduction

## 1.1 Purpose

This document describes the RIM ZEHV Monitoring Scheme (NSW) ('scheme'), which is associated with the Road Infrastructure Management (RIM) application.

The scheme is being trialled and is made available by Transport for NSW to enable monitoring of eligible zero emission heavy vehicles (ZEHV) with trailers operating at equivalent General Mass Limits (GML) or equivalent Concessional Mass Limits (CML) on the ZEHV network in New South Wales (NSW).

## 1.2 Scope

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

The following information is included:

- Common scheme features
- Key scheme processes
- Roles and responsibilities of scheme participants.

## 1.3 Background

The NSW Government has an objective to achieve a 50% reduction in emissions on 2005 levels by 2030 and to reach net zero emissions by 2050. The use of ZEHVs on approved parts of the NSW road network will help further that goal.

A ZEHV is a new or retrofit vehicle, with a gross vehicle mass (GVM) or aggregate trailer mass (ATM) of over 4.5 tonnes mass, that generates no tailpipe carbon emissions measured in terms of carbon dioxide equivalent.

This scheme trial is part of the broader 'TMA and RIM ZEHV Monitoring Scheme Trial' for Transport for NSW, which includes the following separate documents:

- RIM ZEHV Monitoring Scheme (NSW), for ZEHVs at up to 18.0 tonnes on the tandem drive axle, or up to 10.5 tonnes on the single drive axle, or operating with a tri-drive axle; with trailers that operate at equivalent GML or CML<sup>1</sup>
- TMA ZEHV Monitoring Schemes (NSW), for ZEHVs that either:
  - Operate at up to 18.0 tonnes on the tandem drive axle, or up to 10.5 tonnes on the single drive axle, with trailers at equivalent Higher Mass Limits (HML)<sup>2</sup>; or
  - Operate above 18 tonnes and up to 18.5 tonnes on a tandem drive axle, and are fitted with a Smart On-Board Mass (OBM) system, with trailers operating at equivalent GML, CML or HML (see footnotes).

*Note: ZEHVs enrolled in a TMA ZEHV Monitoring Scheme (with or without Smart OBM), which is a higher level of assurance, can also operate trailers at equivalent GML or CML masses on the ZEHV network and do not need to be enrolled in the RIM ZEHV Monitoring Scheme (NSW).*

The scheme trial was developed by Transport for NSW to determine whether ZEHVs are suitable for the freight task currently performed by heavy vehicles with combustion engines, and assess their impact on the ZEHV network in NSW.

A unique feature of the RIM ZEHV Monitoring Scheme (NSW) as part of the scheme trial is the ability to source additional data that will provide insight into the impact of these vehicles on the network. This includes:

- Obtaining the tare mass of the enrolled prime mover or rigid truck, and vehicle registration data;
- Pairing it with data records of the enrolled vehicle; and
- Visualising movements of the de-identified data to inform the performance of the trial.

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<sup>1</sup> GML and CML are referred to in the *New South Wales Class 3 Zero Emission Vehicle Mass and Dimension Exemption Notice* as M1 and M2 masses respectively.

<sup>2</sup> HML is referred to in the *New South Wales Class 3 Zero Emission Vehicle Mass and Dimension Exemption Notice* as M3 mass.

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To participate in the scheme, a transport operator ('Operator') must conform with the requirements specified within the instrument of access approval, which is the *New South Wales Class 3 Zero Emission Vehicle Mass and Dimension Exemption Notice* ('Notice') issued by the National Heavy Vehicle Regulator (NHVR)<sup>3</sup>.

Enrolment in the RIM application is one of the requirements that must be met by the Operator. Enrolment in the RIM application is performed by the registered or certified Application Service Provider (ASP) selected by the Operator<sup>4</sup>.

The ASP is responsible for:

- The installation of a telematics device or similar in the vehicle (if the vehicle is not already fitted with a telematics device)
- The collection of data from vehicles enrolled in accordance with the requirements of the RIM application for the scheme.

The ASP provides data to TCA. TCA will process the data to enable the generation of reporting for use by Transport for NSW (and other bodies authorised by the Authority) via the Telematics Analytics Platform (TAP).

The RIM application<sup>5</sup> is offered at Level 1 Assurance (see Appendix A for a definition of Level 1 Assurance).

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<sup>3</sup> Participation in the scheme trial does not exempt an Operator from the requirement to comply with conditions set out in any Notice or permit under which they are operating.

<sup>4</sup> If an entity is both an ASP and an Operator, any responsibilities described in this document for either an ASP or an Operator will apply to the combined entity.

<sup>5</sup> The RIM application can be used for a variety of purposes. In this document, RIM is described in the context of the schemes.

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## 2 RIM ZEHV Monitoring Scheme (NSW)

### 2.1 Trial Objectives

The trial will commence when ASPs monitoring vehicles operating in the trial start sending data to TCA via approved mechanisms. The trial will run for 24 months after commencement, and its efficacy will be assessed at the end of that period.

As part of the trial, the scheme will be limited to ZEHVs (as described in the Notice), with trailers operating at GML or CML in NSW, that have installed telematics devices or similar for use at Level 1 Assurance or higher.

The trial has several objectives that will be used to determine its success. The trial will:

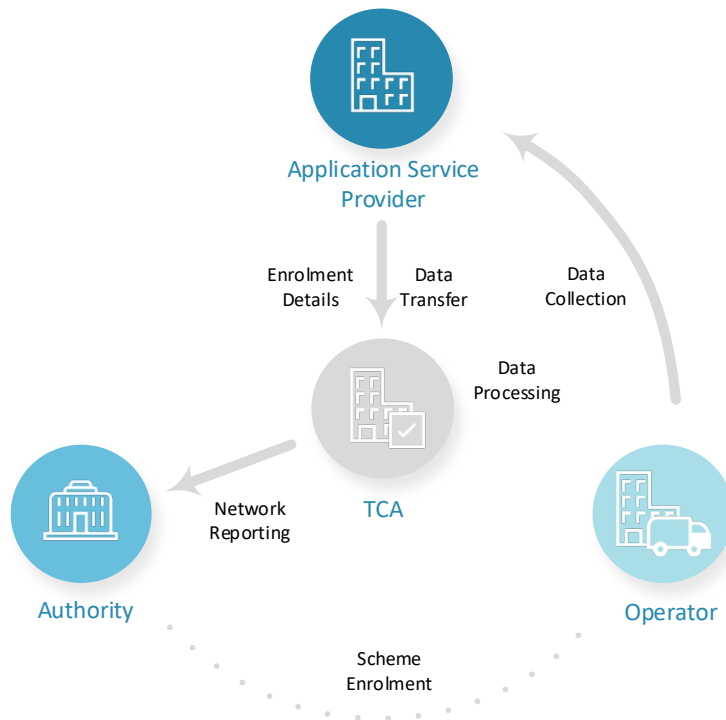
- Enable ZEHVs enrolled in the scheme to obtain access to approved parts of the NSW road network (as described in the Notice)
- Make telematics data of ZEHVs enrolled in the scheme available to the Freight Branch at Transport for NSW (and other bodies authorised by the Authority, such as councils and relevant third parties) with agreed graphical representation via TAP or specialised reporting method
- Enable Transport for NSW to derive meaningful information from telematics data of the RIM ZEHV Monitoring Scheme (NSW) to:
  - Determine the suitability and reliability of ZEHVs to perform the freight task compared with heavy vehicles with combustion engines
  - Assess the impact of ZEHVs on approved parts of the NSW road network.
- Obtain feedback from Transport for NSW about aspects of the trial and use that feedback to refine the requirements for the operational phase of the scheme.

### 2.2 Participants

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

- Transport for NSW, as the Authority of the scheme, requires the monitoring, with reporting, of the Operator's vehicle(s) as a condition of the Authority allowing the Operator and its vehicle(s) to participate in the scheme.
- Operators are vehicle operators that agree to enrol vehicles into the scheme, and consent to their data collected through the RIM application to be used for the intended purpose (as defined by the Authority and agreed to by the Operator in the ASP–Operator Agreement).
- ASPs, registered by TCA, offer telematics services (hardware, software and associated processes) to enable enrolment of eligible vehicles in the RIM application (as well as other applications available within the National Telematics Framework [NTF]), collection of data from installed telematics devices and reporting of data to TCA.
- TCA administers the RIM application and its schemes within the NTF, ensuring that data security and privacy concerns are managed. TCA receives vehicle enrolment details from Operators via ASPs, and makes ASP–Operator Agreements available to participants. TCA also receives telematics data from ASPs, sources additional data required by the trial (such as tare mass of the enrolled prime mover or rigid truck), performs data processing; and makes standard and specialised reporting available to the Authority (and other bodies authorised by the Authority) via TAP as agreed between the Authority and TCA, and in accordance with the intended purpose as agreed by the Operator in the ASP–Operator Agreement.

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



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

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



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## 2.3 Scheme Parameters

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

a. ASP Registration

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

b. Enrolment

ASPs will enrol vehicles in the RIM application and the scheme at the request of the Operator.

The ASP will manage key steps of enrolment including approval, and as necessary, cancellation and replacement.

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.

c. Devices and Data Collection

The device used in the RIM application is a telematics device or similar.

The telematics device or similar will collect:

- Position data at intervals of no greater than 1 minute and no less than 1 second (as determined by the ASP)
- Date and time data.

d. Data Reporting

The ASP shall transfer data records collected through the RIM application to TCA no less frequently than each calendar month, and as described in *Road Infrastructure Management Functional and Technical Specification*.

e. Data Analysis and Reporting

TCA will perform data transformation, data aggregation, de-identification and processing functions on data obtained from position records. TCA will make data reporting for the scheme available to the Authority and other bodies authorised by the Authority (such as councils and third-party asset owners) through TAP.

For the purposes of the scheme trial, TCA will seek to source the tare mass of the prime mover or rigid truck of an enrolled vehicle. TCA will then seek to match the tare mass of the prime mover or rigid truck of an enrolled vehicle to its data records.

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
- If necessary, changing column names.

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

For the purposes of the scheme trial:

- TCA will report additional de-identified non-RIM data types, using a format agreed with the Authority, that will indicate:
  - Tare mass of the enrolled prime mover or rigid truck
  - Vehicle type (i.e. prime mover or rigid truck)

- 
- TCA will provide to the Authority, using a format agreed with the Authority, specialised reporting that includes:
    - Origin-destination data
    - Distance travelled
    - 'Hotspot' reporting (i.e. reports showing graphical representations that include statistical analyses of vehicle movement at locations nominated by the Authority).

*Note: The type, number, frequency and graphical output of specialised reporting will be subject to agreed terms reached between TCA and the Authority.*

A Road Usage Report will be made available to the Authority via TAP.

## 2.4 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**

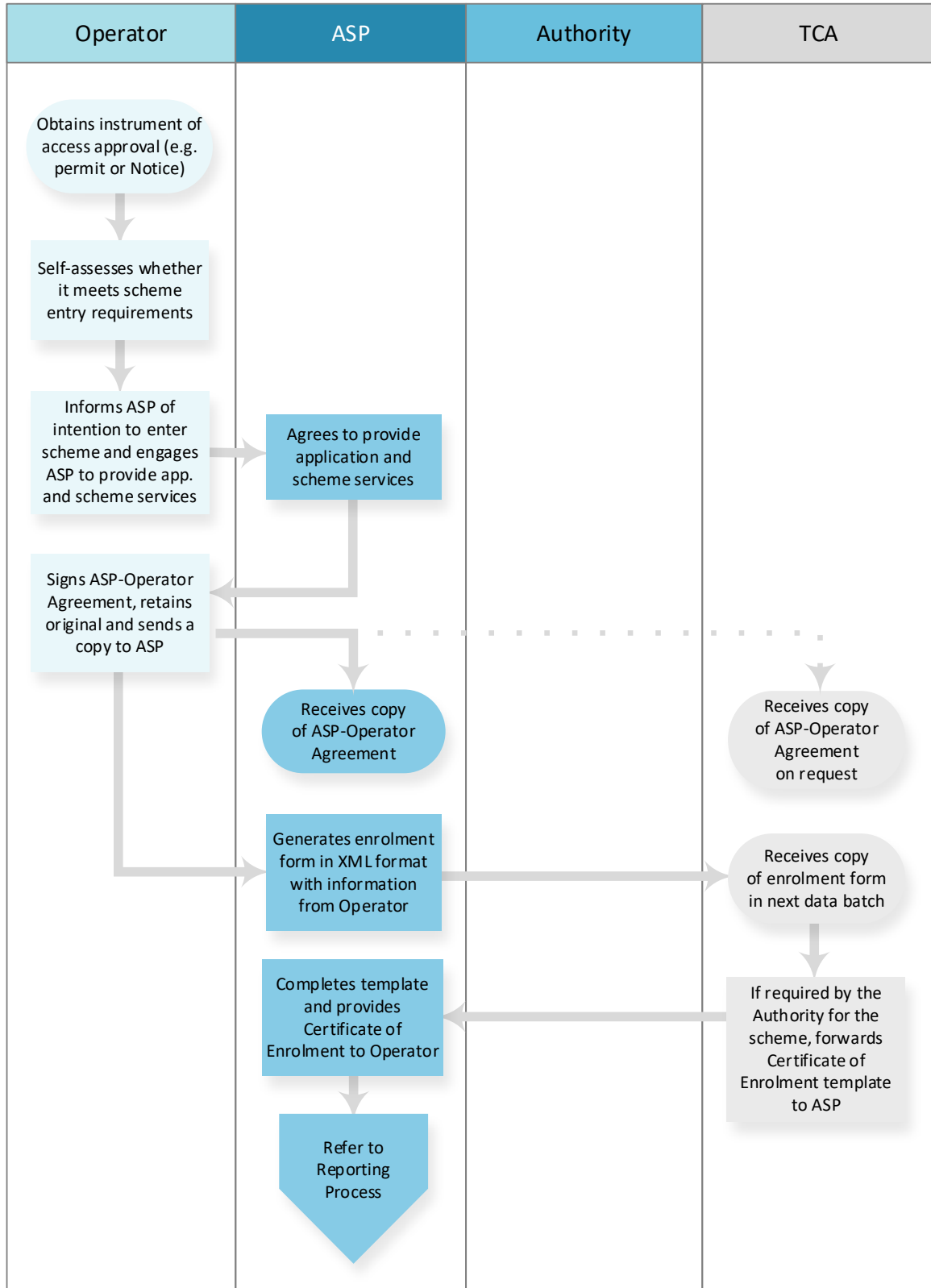
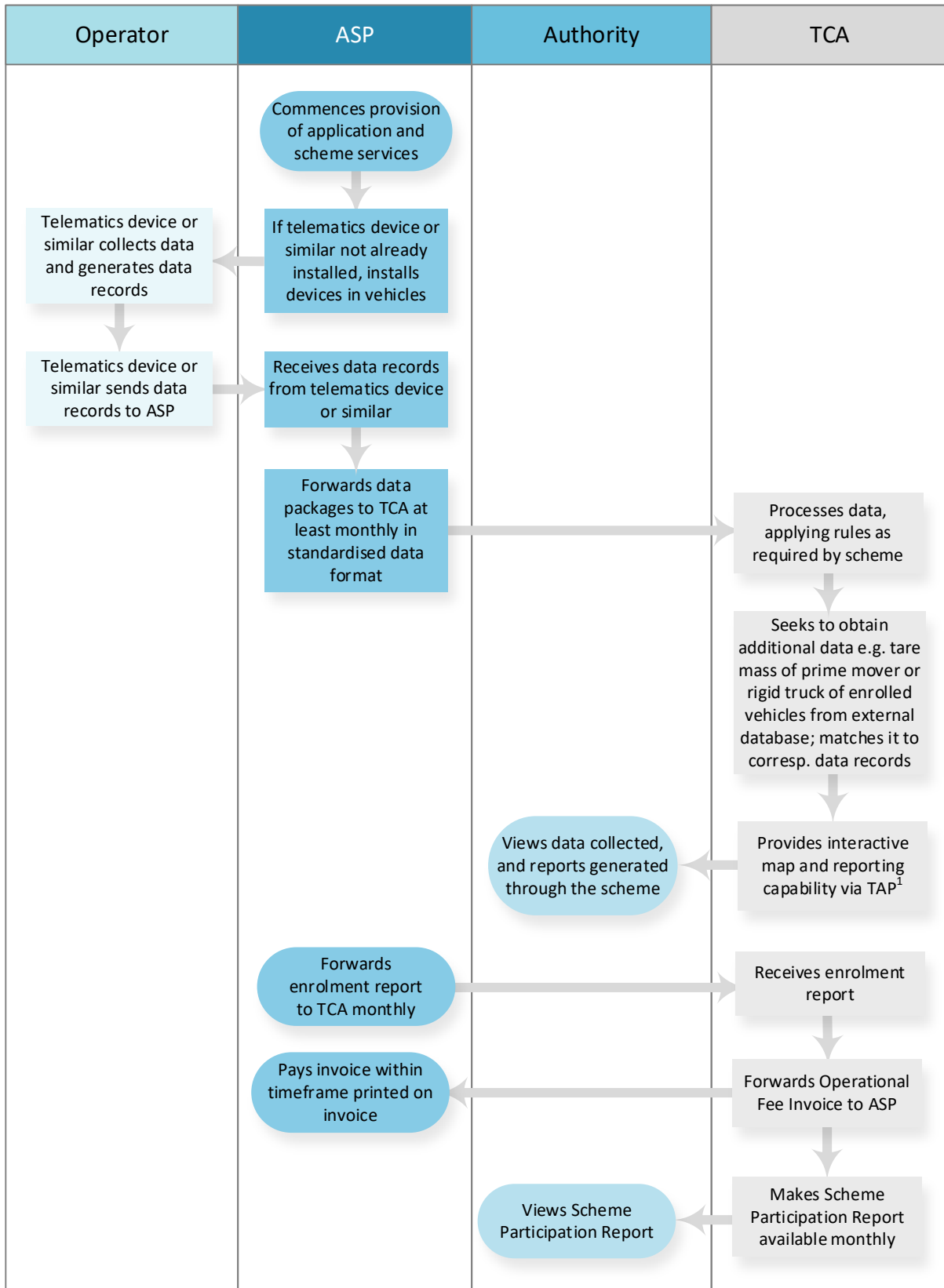


Figure 3 outlines the key actions related to data collection, record generation and reporting.

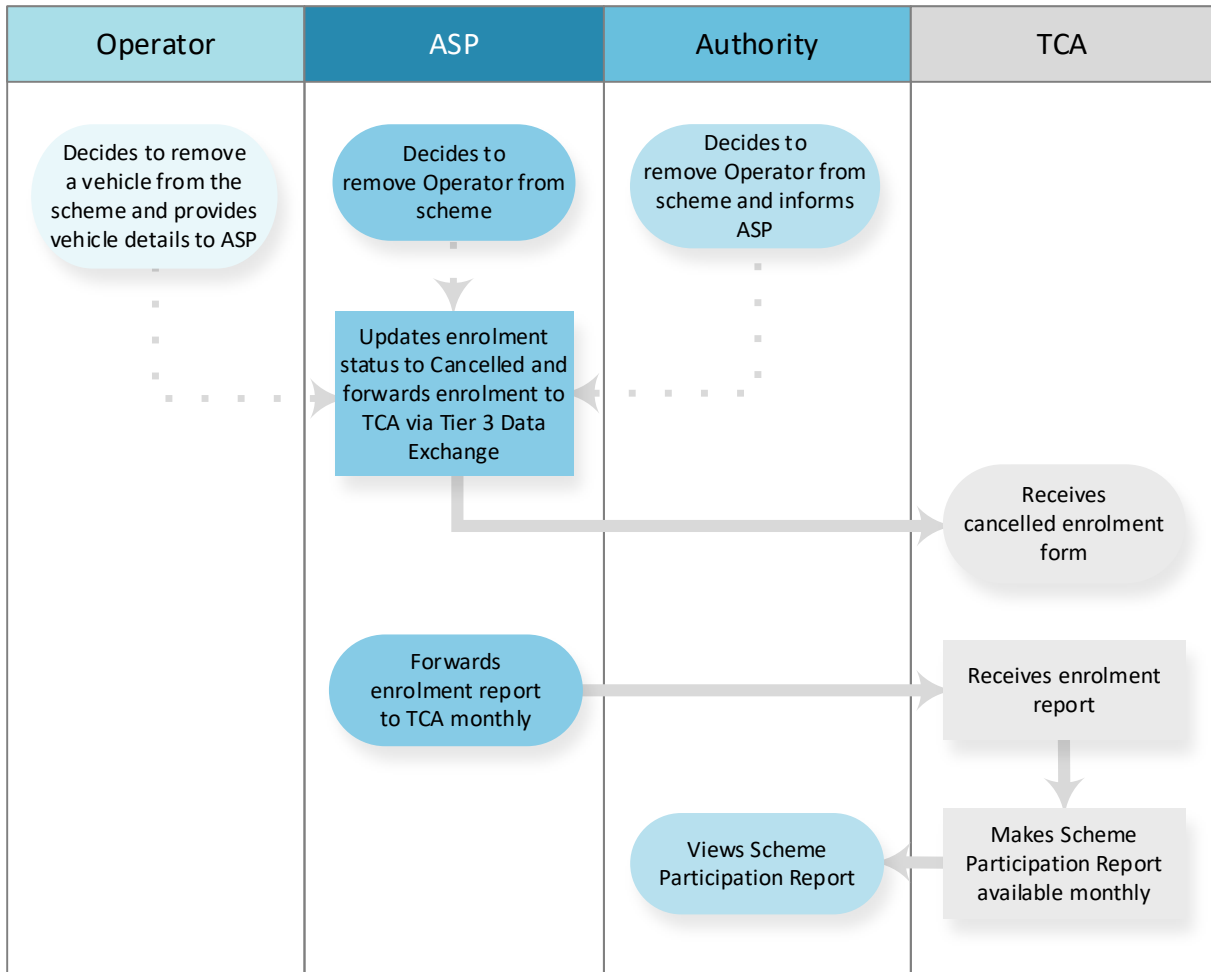
**Figure 3: Reporting Processes**



1. Data will be updated at least monthly. For the purposes of this trial, TCA will make other specialised reporting available to the Authority as described in 2.3e.

Cancellation of scheme enrolment may be initiated by the Operator, the Authority or the ASP. Figure 4 outlines the key actions to cancel enrolment of a vehicle.

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



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## 2.5 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, and stating its operation in the trial
- 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 Exchange Functional and Technical Specification*
- Support the reporting of data records via Tier 3 Data Exchange using a RESTful API, with these records formatted using a JSON format
- Support the reporting of enrolment forms and enrolment reports using a RESTful API, with these documents formatted using an XML format
- Inform ASPs of scheme details and entry conditions
- Produce a ASP–Operator Agreement for use with the scheme and make it available to ASPs
- Ensure that TAP and other reporting mechanisms are set up to enable the Authority and other bodies authorised by the Authority to access reporting generated by the scheme (in accordance with the intended purpose as agreed by the Operator in the ASP–Operator Agreement);
- Maintain the cloud environment and databases to support the ingestion of data from the RIM application
- Verify that an ASP meets requirements to provide RIM application services
- Provide registered ASPs with the Certificate of Enrolment template;
- At the end of each month, forward Operational Fee Invoices to ASPs upon receipt of enrolment reports;
- Seeks to source the tare masses of the prime mover or rigid truck of an enrolled vehicle from a recognised external database
- Seeks to match the tare masses of the prime mover or rigid truck of an enrolled vehicle, and data obtained from its enrolment form, to its data records
- Provide the Authority with reporting outlined in 2.3e via TAP
- Ensure the confidentiality of ASP data is maintained

**The Authority** will:

- Maintain policy documentation required by the Authority for the scheme
- Undertake program coordination activities related to the scheme with TCA
- Access reporting outlined in 2.3e via TAP, and review data trends and numbers of enrolled vehicles
- In conjunction with TCA, communicate scheme-related policy changes to industry and stakeholders.

**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 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–Operator Agreement to an Operator once an agreement to provide application services for the scheme has been made

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- Be responsible for the installation (if not already installed), operation and maintenance of telematics devices (or similar) and the reporting of data received from those devices
  - If required by the Authority, provide Certificates of Enrolment to enrolled Operators, using the template received from TCA, and coordinate their removal from vehicles no longer enrolled in the scheme
  - Pay Operational Fee Invoices received from TCA, generated upon receipt of enrolment reports, within the timeframe shown on the invoice
  - In the event of a device malfunction: liaise with the Operator and/or device supplier to resolve the issue
  - Provide back-office capability to process collected data records as required by the scheme
  - Deliver data records to TCA, using agreed data delivery mechanism, required data formats and meeting data reporting requirements.

**Operators will:**

- Access scheme rules and entry conditions on the Authority website and determine whether they meet those conditions
- Obtain the Notice from the NHVR website and ensure compliance with its 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–Operator Agreement
- Follow rules for enrolment in the scheme
- Store original signed ASP–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
- Notify the ASP of the date that a vehicle or the Operator will no longer participate in the scheme.

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## A Acronyms and Definitions

### Acronyms

| Acronym | Definition                        |
|---------|-----------------------------------|
| API     | application programming interface |
| ASP     | Application Service Provider      |
| CML     | Concessional Mass Limits          |
| GML     | General Mass Limits               |
| HML     | Higher Mass Limits                |
| NHVR    | National Heavy Vehicle Regulator  |
| NTF     | National Telematics Framework     |
| RIM     | Road Infrastructure Management    |
| TAP     | Telematics Analytics Platform     |
| TMA     | Telematics Monitoring Application |
| UTC     | Coordinated Universal Time        |
| VIN     | vehicle identification number     |
| ZEHV    | zero emission heavy vehicle       |

### 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 or certified by TCA as meeting the requirements of one of more telematics applications. This may also be the Operator.   |
| ASP–Operator Agreement             | A written agreement between an ASP, an Operator and TCA which sets out the terms on which the ASP will provide application services to the Operator, and the intended purpose for collecting data from the Operator’s vehicle(s) enrolled in the scheme. |
| 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>   |
| Concessional Mass Limits (CML)     | An allowance by the National Heavy Vehicle Regulator that allows National Heavy Vehicle Accreditation Scheme (NHVAS) members to utilise mass limits up to 5% above GML (subject to conditions) provided the operator is accredited under the NHVAS.      |



| <b>Term</b>               | <b>Definition</b>   |
|---------------------------|---|
| 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 generated by a device.  |
| enrolment                 | Both the process and outcome by which an 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.  |
| General Mass Limits (GML) | Mass limits that apply generally to a heavy vehicle or to components of a heavy vehicle as imposed by Schedule 1 of the Heavy Vehicle National Law.   |
| Higher Mass Limits (HML)  | An allowance by the National Heavy Vehicle Regulator that provides a significant increase in the productivity of road freight transport heavy vehicles by allowing particular vehicles to access additional mass entitlements, subject to the following conditions: <ul style="list-style-type: none"> <li>• Operators of vehicles or combinations running at HML on tri-axle groups are accredited under the Mass Management Module of the National Heavy Vehicle Accreditation Scheme (with an accreditation label fitted to the hauling unit).</li> <li>• Vehicles are fitted with certified road-friendly suspension.</li> <li>• Vehicles are travelling on an authorised route.</li> </ul> |
| 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.   |
| Operator                  | An entity that operates one or more vehicles eligible to enter a scheme.  |
| 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.  |
| 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 certification and re-certification, advice regarding information and communications technology (ICT), data assurance and other reporting.  |

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| Term                               | Definition   |
|------------------------------------|--|
| 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. |
| zero emission heavy vehicle (ZEHV) | A new or retrofit vehicle, with a gross vehicle mass (GVM) or aggregate trailer mass (ATM) of over 4.5 tonnes mass, that generates no tailpipe carbon emissions measured in terms of carbon dioxide equivalent.                |

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## B Data Element Reference Values

Refer to the following when entering values into data elements for Scheme or Authority Code – for example, in an enrolment form or enrolment report.

**Table B.1: Scheme Name and Authority Code**

| <b>Scheme Name<br/>(full)</b>    | <b>Scheme Data Element Value<br/>(e.g. for enrolment form or report)</b> | <b>Authority Code<br/>Data Element Value</b> |
|----------------------------------|--|--|
| RIM ZEHV Monitoring Scheme (NSW) | RIMZEVNSW  | NSW  |

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