



*Austroads*

Research Report  
AP-R629-20



## Framework and Tools for Road Freight Access Decisions

# Framework and Tools for Road Freight Access Decisions

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## Abstract

Austrroads has commissioned this research report to review existing heavy vehicle road access guidelines and tools used by jurisdictional and local government road managers across Australia and New Zealand. Based on this review and gap analysis, a decision making framework was developed to support road managers to consistently and efficiently benefit from these existing tools in the future. The report is also intended to be a resource repository for jurisdictions, particularly local government agencies which generally do not have the same level of resources as jurisdictional road managers.

This report presents the results of a review of national and jurisdictional access decision making tools including a literature review of existing research reports and international practices. There was extensive stakeholder consultation through interviews and a survey with the National Heavy Vehicle Regulator, jurisdictions, local government and industry associations.

Five recommendations were developed addressing the following areas:

- update jurisdictional material in the light of this report's findings
- identify documents to be placed on the Austrroads website
- move to network assessments for Class 1,2 and 3 vehicles
- develop nationally consistent Restricted Access Vehicle guidelines
- conduct further research to support local government road managers in terms of resource material, education and training.

## Keywords

Heavy vehicles, road access, access assessment, road freight

ISBN 978-1-922382-12-2

Austrroads Project No. NEF 6209

Austrroads Publication No. AP-R629-20

Publication date August 2020

Pages 96

## About Austrroads

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Austrroads' purpose is to support our member organisations to deliver an improved Australasian road transport network. To succeed in this task, we undertake leading-edge road and transport research which underpins our input to policy development and published guidance on the design, construction and management of the road network and its associated infrastructure.

Austrroads provides a collective approach that delivers value for money, encourages shared knowledge and drives consistency for road users.

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- Transport for NSW
- Department of Transport Victoria
- Queensland Department of Transport and Main Roads
- Main Roads Western Australia
- Department of Planning, Transport and Infrastructure South Australia
- Department of State Growth Tasmania
- Department of Infrastructure, Planning and Logistics Northern Territory
- Transport Canberra and City Services Directorate, Australian Capital Territory
- Commonwealth Department of Infrastructure, Transport, Regional Development and Communications
- Australian Local Government Association
- New Zealand Transport Agency.

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## Acknowledgements

Judy Oswin, Kieran Sharp and Peter Damen.

This report has been prepared for Austrroads as part of its work to promote improved Australian and New Zealand transport outcomes by providing expert technical input on road and road transport issues.

Individual road agencies will determine their response to this report following consideration of their legislative or administrative arrangements, available funding, as well as local circumstances and priorities.

Austrroads believes this publication to be correct at the time of printing and does not accept responsibility for any consequences arising from the use of information herein. Readers should rely on their own skill and judgement to apply information to particular issues.



## Summary

Heavy vehicle access approval conditions vary across Australia. The Heavy Vehicle National Law (HVNL) provides the overarching regulatory framework for heavy vehicle access, (mass, dimension and loading). The HVNL has been adopted, with some derogation, in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria. Western Australia and the Northern Territory have not adopted the HVNL and decisions on road access are made under jurisdictional law. New Zealand also operates under its own regime.

In this context, Austroads commissioned this research to review existing heavy vehicle road access tools used in jurisdictions across Australia and New Zealand. Based on this review and gap analysis, a decision making framework was developed to support road managers to consistently and efficiently benefit from these existing tools in the future. The report is also intended to be a resource repository for jurisdictions and particularly local government (LG) which generally does not have the same resources available to them as jurisdictional road managers.

Even though jurisdictions which operate under the HVNL have the same regulatory framework, road access decisions are made by the relevant road manager (jurisdiction and LG) and other miscellaneous owners such as forestry or national parks who utilise their own policies, procedures and decision making tools.

In meeting these objectives, this report presents a review of national and jurisdictional access decision making tools including a literature review of existing domestic research reports and international practices. Consultation was extensive with all Australian jurisdictional road managers, the National Heavy Vehicle Regulator (NHVR), New Zealand and several LGs being interviewed. Additional LGs and road transport industry associations were also surveyed.

A gap analysis was undertaken of national and jurisdictional access decision making tools, highlighting the similarities and differences between their processes. Areas for potential future consideration in the development of local and national access policies and tools were identified. A decision making framework and repository was developed for jurisdictional and LG road managers to access. Seven guiding principles for access assessment decisions are outlined in the report.

Issues that are part of any decision making process but were out of scope, included bridges and structures assessment and third party access. Whilst not investigated in any great detail, attention was paid to these two issues to provide a wider understanding of issues in access decision making. The current review of HVNL was also discussed as issues that were raised in this review may impact directly on future considerations of heavy vehicle access.

The following recommendations are made based on the report:

1. Jurisdictions review the guidance material, identify any gaps in their respective assessment practices and consider harmonising practices with other jurisdictions.
2. All relevant guidance tools and supporting documents identified in this report are placed on the Austroads website and a governance process is developed to ensure their continued currency and relevance.
3. For HVNL regime jurisdictions, support the development of separate Restricted Access Vehicle assessment guidelines for each of Classes 1, 2 and 3 drawing from identified road manager tools, NHVR guidance publications and other assessment documents.
4. NHVR, jurisdictional and LG road managers investigate developing a network assessment model predominately for Class 2 heavy vehicles but also other classes for jurisdictions within the NHVR regime.
5. Further research to be conducted on how to provide support and resources to assist LGs in making informed and efficient decisions on heavy vehicle access for jurisdictions under the NHVR regime.

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# 1. Introduction

## 1.1 Purpose

The purpose of this report is to review existing heavy vehicle road access tools used in jurisdictions across Australia and New Zealand and selected international countries. Based on this review and gap analysis, a decision making framework has been developed to support road managers to consistently and efficiently leverage from these existing tools in the future.

The Heavy Vehicle National Law (HVNL) provides the overarching regulatory framework for heavy vehicle access, (mass, dimensions, loading). The HVNL has been adopted, with some derogation, in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria. Western Australia and the Northern Territory have not adopted the HVNL with decisions on road access made under jurisdictional law. New Zealand also operates under its own regime.

Even though jurisdictions which operate under the HVNL have the same regulatory framework, road access decisions are made by the relevant road manager - state, local government (LG); and other miscellaneous owners such as forestry or national parks utilising their own policies, procedures and decision making tools.

This project will assist:

- heavy vehicle operators who are seeking consistent and timely decision making with respect to access and compliance
- road asset owners who have access to a repository of road access tools, guidelines and supporting documents to assist them in making clear and consistent decisions on road access assessments.

Stakeholders, including road managers, who were consulted as part of the process, expressed support for the intent of this work on the basis that consistent decision making provides an overall systemic efficiency that enables a consistent assessment of safety issues inherent in road access decisions. In this respect uniformity of approval when an operator is seeking access approval for a route that crosses several jurisdictions is crucial as one rejection can impact on the entire route. The work was also aimed at LG and other smaller road managers, who do not always have the resources and expertise to develop localised material and investigate best practice and procedures.

This review of road access tools acknowledges that safety is of paramount importance when road managers are assessing access applications.

## 1.2 Scope

This scope of this work includes:

- a review of existing road manager decision making assessment tools used by jurisdictions to assess Class 1, 2 and 3 road freight access requests
- a gap analysis of existing road manager decision making assessment tools
- the development of a decision making framework and guidelines located in a central repository to support road managers to more efficiently leverage off these existing tools.

Other supporting reports and documents have also been reviewed.

This report is pitched at a high level, pointing to areas where efficiencies and best practice could be considered for use collectively. The report acts as a precursor for further detailed work on delivering identified best practice.



## 1.3 Out of Scope Associated Issues

### 1.3.1 Bridges and Structures

It was determined during the course of this project that, while bridges and structures are part of any road access assessment, specific guidance on bridges and structures assessment was not part of this project brief. Bridges and structures assessment is usually referred to structural engineers in other sections of state or territory road jurisdictions or in some cases to an independent assessor. Engineers primarily rely upon AS5100 Part 7-2017 that outlines the processes and factors for undertaking a heavy vehicle bridge assessment. However, the research identified a number of bridge assessment guidance documents with three Austroads documents thought to be of particular value:

- *Higher Order Bridge Assessment in Australia* (Austroads 2018)
- *Investigation and Development of Bridge Formulae for Inclusion in the Performance Based Standards* (Austroads 2020)
- *Review of Axle Spacing Mass Schedules and Future Framework for Assessment of Heavy Vehicle Access* (Austroads 2014).

These are discussed in Sections 4.3.5, 4.3.6 and 4.3.7 respectively.

### 1.3.2 Third Party Access

A consideration in approvals for Restricted Access Vehicle (RAV) movements, which sits outside a road manager's control, is approval of access for infrastructure owned by third party entities. While approaches differ between road managers, third party entities such as rail infrastructure managers and utility managers (eg telecommunications/power line managers), still need to grant consent for the use of RAVs over/under/on their infrastructure. It is worth noting that road managers are required under rail law to have an interface agreement with any rail manager.

#### Process under HVNL

The HVNL accounts for other laws requiring third party approvals. It prohibits the National Heavy Vehicle Regulator (NHVR) from issuing an 'operative' permit when an operator requires a third party approval, but has yet to receive it.

The HVNL allows the road manager to give consent to, and the NHVR to issue, the permit by making it conditional on the operator receiving the third party approval. The permit only becomes operative if and once the operator receives that approval. Alternatively, the road manager may deny consent and/or the NHVR may withhold granting the permit until third party approval is given.

As non-road infrastructure is usually not part of HVNL, their managers may not be included as a 'road manager' in the NHVR portal. This can be an issue for permit access requests that require third party approval. For example, in South Australia, the Department of Planning, Transport and Infrastructure (DPTI) as a road manager, may request a copy of clearance from a third party entity prior to providing consent to the NHVR. The onus is on the client to obtain the correct approvals, which sometimes does not happen. For notice consent requests, the responsibility in practice is on the road manager to consult with third parties.

There is the risk that a road manager can make a quick decision in regard to road access, but then be delayed by a third party in regard to obtaining their permission. Furthermore, an approved route may need to be changed because a third party provider does not agree to access, or imposes a cost to access. Another issue is that information about potential infrastructure owned by another party is not widely available.

## Process for jurisdictions outside the HVNL

For Western Australia and the Northern Territory, approval by the operator is sought from the third party and then provided to the road agency for incorporation into the approval process.

Western Australia provides the contact details of third party agencies on its Main Roads Heavy Vehicle Services (HVS) website to assist operators.

Of importance to note is that for jurisdictions either within the NHVR regime or outside it, the processes are largely similar. However, it is more streamlined in Western Australia, for example, as it deals more directly with the road agency as last in the approval process.

### 1.3.3 Higher-Order Network Initiatives

This report has uncovered some themes that both government and industry have identified as worthy of consideration. Collectively, these can be grouped as network initiatives. Whilst not core to the scope of this research report, it is consistent with identifying gaps in best practice and represents thinking on how to improve the efficiency and effectiveness of heavy vehicle access applications. Following are examples identified in the HVNL review.

#### Electronic mapping and data sharing

Several stakeholders identified that access to reliable geospatial intelligence through electronic mapping would be a great benefit. These maps could be developed by technology providers using the NHVR mapping services and would enhance the transitioning of written permits to a graphical system with dynamic maps.

In terms of database and data sharing, road managers were supportive of collecting aggregated movement information and making it publicly available to enable the development of targeted policy solutions. This would include the upgrading of the NHVR portal to facilitate data sharing from state agencies of bridges, pavements and sensitive assets for access by the NHVR and road managers. LG road managers thought that this would be of great benefit and could also have application for third party owners of infrastructure.

#### Resourcing and education for effective and timely LG assessment

LGs agreed that most issues in heavy vehicle access decision making are process and resourcing related. LGs stated that virtually everything about heavy vehicle access decision-making is more challenging because of resourcing and staff expertise. Improving resources at all levels, greater education and support for the tools to undertake assessment of the road network would be very beneficial. A number of LGs suggested the NHVR and/or state governments should provide these resources and training.

Ideas for improving the ability of LGs to efficiently make informed access decisions included mapping tools and data sharing through the compulsory use of telematics. The Western Australian approach has in part addressed this issue through control of the assessment process in partnership with LGs.

#### Network assessment opposed to individual route assessment

The development of a 'network approach', involving greater use of notices and pre-approvals where appropriate to streamline application processes was identified a number of times in the National Transport Commission (NTC) review of the HVNL and a number of jurisdictions are already progressing down this path. This information could then be linked with the NHVR portal which would benefit operators and road managers alike.

The NHVR commented that a risk-based framework would enable a shift from the current practice of road managers consenting to individual heavy vehicles (types) to one in which they consent to the parameters of a road or bridge. It stated that it is not sustainable to develop effective heavy vehicle networks by repeatedly requesting case-by-case access consent from road managers, often for vehicles with the same risk profile.

It is interesting to note that in Western Australia, Main Roads with its control of the entire heavy vehicle access approvals process also has all bridges and structures documented and regularly assessed contributing to more efficient assessment. The Western Australian approach provides greater consistency and efficiency in access decision making.

In Tasmania, the Department of State Growth (DSG) together with local government and the NHVR have been proactive in developing approved network based access systems and associated notices to simplify access for some heavy vehicle types. Network-wide assessment was necessary to establish the networks initially, and adjustment requests following upgrade or review of a road section or bridge are managed via a defined update process. This is discussed more in Section 2.3.4.

## 1.4 Methodology

The following describes the methodology utilised in the development of this report:

1. Research
  - Identify existing road manager access decision making tools used by road managers to make road freight access decisions.
  - Undertake a literature review of supporting domestic research documents and heavy vehicle practices internationally.
  - Review submissions to the NTC's HVNL review.
2. Consultation
  - Direct consultation with members of the Project Reference Group (PRG) - NHVR, state jurisdictions and LGs on current decision making processes and tools.
  - Survey of selected LGs and industry.
3. Analysis
  - Undertake a gap analysis of the various existing road manager tools to identify areas of commonality and difference.
  - Develop a decision making framework and repository of road manager tools, guidelines and supporting research documents to assist road managers in access assessments going forward.

## 1.5 Structure of the Report

The structure of this report is as follows:

- Chapter 2: Heavy Vehicle Access Assessment in Australia and New Zealand
- Chapter 3: National and Jurisdictional Access Decision Making Tools
- Chapter 4: Literature Review and Stakeholder Input
- Chapter 5: Gap Analysis of National and Jurisdictional Access Decision Making Tools
- Chapter 6: Summary of Australian and International Literature
- Chapter 7: Decision Making Framework and Repository
- Chapter 8: Conclusions and Recommendations
- Appendix A: Consultation
- Appendix B: Literature Review
- Appendix C: Instruction Notes Example for LG Road Manager
- Appendix D: Jurisdictions' Heavy Vehicle Assessment Processes
- Appendix E: Western Australian Heavy Vehicle Classes Comparison to NHVR Classes

## 2. Heavy Vehicle Access Assessment in Australia and New Zealand

### 2.1 Overview

This section provides an explanation of heavy vehicle access decision making in Australia and New Zealand and outlines some of the issues experienced in making these decisions.

This section is set out as follows:

- description of the HVNL and the overarching assessment of processes utilised by the NHVR and which apply to six of the eight Australian states and territories
- outline of the approach taken by each state and territory (those operating under the HVNL and those which operate under jurisdictional legislative practice)
- New Zealand's approach and assessment.

### 2.2 National Heavy Vehicle Regulator and HVNL

The NHVR commenced as the national, independent regulator for all vehicles over 4.5 tonnes (t) gross vehicle mass on 10 February 2014. It administers a single set of laws for heavy vehicles under the HVNL.

The NHVR's core services listed in its annual report are:

- the provision of regulatory and safety information and guidance
- on-road safety, compliance and enforcement
- investigations and prosecutions
- National Heavy Vehicle Accreditation Scheme management and accreditation
- the Performance Based Standard (PBS) scheme, vehicle design and access approvals
- vehicle road access permit application processing
- vehicle standards, modifications and exemption permits
- national driver work diaries
- national exemption notices.

Six of the eight Australian states and territories (excluding Western Australia and the Northern Territory) have enacted the HVNL. Some jurisdictions have passed over all relevant heavy vehicle functions to the NHVR, while others deliver through the state or territory road agency under a service level agreement.

While Western Australia and the Northern Territory operate outside the HVNL, they seek to coordinate closely with the NHVR and participating jurisdictions. Examples of cooperation include data sharing and participation in various national working groups.



## 2.2.1 Road Access Decisions under the HVNL

### Regulatory framework

Road managers are responsible for making heavy vehicle access decisions for their road network and for determining appropriate access conditions. Road managers include state and territory road transport agencies, LGs and also some miscellaneous entities such as forestry agencies or national park authorities.

As outlined in Section 163 of the HVNL, <https://www.nhvr.gov.au/law-policies/heavy-vehicle-national-law-and-regulations>, the road manager may decide not to give access consent if it is determined that the heavy vehicle may:

- pose significant risks to public safety arising from heavy vehicle use that is incompatible with the geometry of the road infrastructure, traffic conditions or structural capacities
- cause damage to the infrastructure
- have an adverse effect on the community.

However, before deciding not to give consent, the road manager must give consideration to granting access subject to road or travel conditions that may avoid or significantly mitigate identified risks. Heavy vehicle access conditions exist for many reasons, including maintaining the appropriate levels of safety and reducing the impacts on roads and structures that were not designed for contemporary heavy vehicles.

### Operational delivery of road access decisions

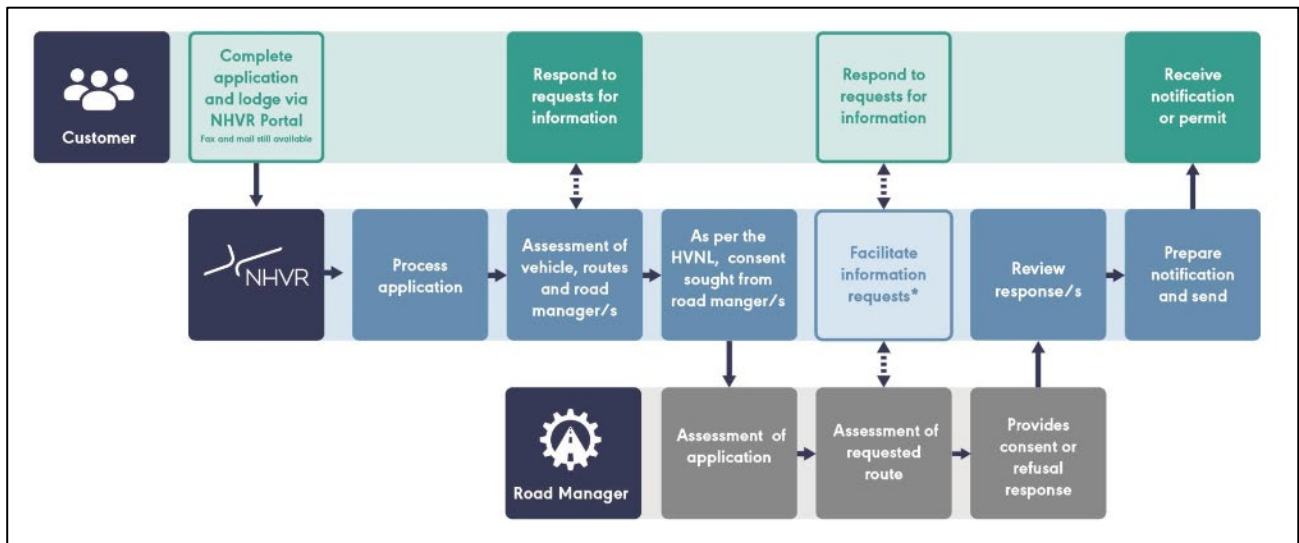
The NHVR process all Class 1, 2 and 3 permit applications made under the HVNL. These applications are made via the NHVR portal, undergo an initial assessment by the NHVR and are then referred to the relevant road manager for a final decision. The only exception to this process currently is in relation to Class 1 oversize and overmass applications for New South Wales which are submitted directly to Transport for New South Wales (TfNSW).

Figure 2.1 describes this process.

The NHVR provides a range of guidance documents to assist road managers in making consistent decisions under the HVNL. These include:

- Approved Guidelines for Granting Access
- PBS - An Introduction for Road Managers
- Network classification guidelines
- Standards and vehicle assessment rules
- Operating conditions for PBS vehicles
- Field trials to prove access can be achieved.

Figure 2.1: NHVR access approval process



Source: NHVR (2019)

## 2.3 Australian States and Territories

This section describes the approach taken by the eight state and territory road managers. The six HVNL participating jurisdictions are described first, followed by Western Australia and the Northern Territory which operate under jurisdictional legislation.

### 2.3.1 Queensland

The Department of Transport and Main Roads (TMR) is the responsible road manager for heavy vehicles on state controlled roads. Queensland operates under the HVNL.

TMR divides its assessments into Class 1 and Class 2 processes. For Class 1, the process involves an assessment of bridges and structures and state road impact. LGs are also notified if the route travels across LG roads for the same reasons. This process is usually aimed to take seven days. With Class 2 assessments, bridges and structures assessment is optional depending on the type of task. This process can take up to 32 days.

TMR has several assessment documents including:

- Route Assessment Guidelines for Multi-Combination Vehicles and PBS Vehicles in Queensland (TMR 2019a)
- Queensland Access Conditions Guide (TMR 2019b).

Key considerations in making access decisions are:

- Type of road classifications
- Geometric route assessment considerations
- Infrastructure considerations
- Amenity considerations.

TMR notes the recently developed *Local Government Heavy Vehicle Route Assessment Guidelines* (Milling; Germanchev; Ngo; Noya; Latter 2020). This document was developed under the National Asset Centre of Excellence (NACoE) banner and provides high quality guidance for LG road managers to make easy and informed access assessment decisions considering a range of issues. This document is discussed in more detail in Section 4.3.4.

TMR may in the future, consider merging its *Route Assessment Guidelines for Multi Combination Vehicles* and *PBS Vehicles Guidelines* (TMR 2019a) with the Milling; Germanchev; Ngo; Noya; Latter (2020) document in order to provide uniform assessment guidelines across state and local roads in Queensland.

TMR is also considering the preparation of a summary handbook to provide a "how to best use" the merged document for state and local road managers should the consolidation take place.

### 2.3.2 New South Wales

Roads and Maritime Services (RMS) was dissolved by an act of New South Wales Parliament on 22 November 2019. It subsequently has been merged with TfNSW as the responsible road manager for the state road network. In this report, there will be reference to RMS in documents reviewed. Whilst the corporate structure has changed, the same arrangements for the administration of heavy vehicles remain. New South Wales operates under the HVNL.

TfNSW assessment processes differ according to the class of heavy vehicle. After an application is referred by NHVR, and after due assessment, a determination is made and if approved, TfNSW processes the route approval. There is an appeals process, as there is for all jurisdictions under the NHVR regime, which the operator can initiate if the application is not approved.

Different approaches are adopted for the consideration and assessment of Class 2 vehicles compared to Class 1 and 3 vehicles. It has been recognised that Class 1 and 3 vehicles primarily undertake one-off movements compared to Class 2 vehicles which typically undertake a recurring freight task. TfNSW adopts the use of Transport Management Plans (TMP) which an operator completes and submits as part of their access permit application for Class 1 vehicle movements that meet the definition of high risk.

TfNSW has embarked on delivering the Heavy Vehicle Access Policy framework which outlines a strategic approach to heavy vehicle access for both state and local roads and its objective to deliver greater national harmonisation. It is a key action of the New South Wales Freight and Ports Plan.

TfNSW refers to various assessment guidelines and tools including:

- Over Size Over Mass Access (OSOM) decision-making framework (in draft and confidential at this stage)
- *Access Assessment and Decision-Making Framework* (RMS 2019)
- *Route Assessment Guide for Restricted Access Vehicles* (RMS 2012a)
- *NSW Route Assessment Guide – freight route investigation levels* (RMS 2012b)
- *NSW Route Assessment Guide – 4.6 metre high vehicles* (RMS 2012c)
- *NAASRA\* Guidelines – axle mass limits* (2012)
- *Australian Standard (AS) 5100-7 2017 bridge assessments* (Standards Australia)
- *Performance Base Standards Scheme – Network Classification Guidelines*, NTC (2007).

*Note: Most jurisdictions use NAASRA Guidelines – axle mass limits and Australian Standard (AS) 5100-7 2017 bridge assessments'*

TfNSW considers applications based on a holistic approach, taking into account the whole journey and consideration of the importance to the freight task. The following risk categories are considered in any access decision:

- legal/regulatory
- road safety
- rail-road safety
- work health and safety
- amenity and environment
- infrastructure loading
- property damage.

### 2.3.3 Victoria

On 1 July 2019, the Department of Transport (DoT) was formed in Victoria incorporating VicRoads. In this report, there will be reference to Vic Roads in documents reviewed. Whilst the corporate structure has changed, the same arrangements for the administration of heavy vehicles remain. Victoria operates under the HVNL.

DoT determines access for heavy vehicles depending on the route on a case by case basis. Since 2014, DoT has taken on the responsibility to coordinate approval for LG access (through the municipalities) on the gazetted network, and then map those approved LG routes. There are over 30 approved routes on the website. The split between gazetted and pre-approved routes is notionally 50/50. Maps include LG approved routes alongside approved arterial roads managed by DoT. DoT also maps the approved forestry roads managed by the Department of Environment, Land, Water and Planning.

The DoT assessment process can take some days depending on the complexity of the application. Larger Class 1 vehicles, such as platform trailers transporting indivisible loads, typically require a TMP, which is often coordinated prior to application (i.e. before the permit application is sent to the NHVR). If the route is deemed not appropriate, an application for an alternative route must be submitted separately (it should be noted that the need to resubmit is a condition and limitation of the NHVR Portal, and not a specific requirement of DoT).

The key assessment guidelines document in Victoria is the *Class 2 Heavy Vehicle Route Assessment Guidelines for VicRoads* (Advantia Transport Consulting 2019) which outlines what needs to be considered when assessing access on the Victorian road network.

Key areas of assessment are:

- geometric considerations
- structural considerations
- traffic interaction considerations
- amenity considerations
- freight planning considerations.

DoT recently commissioned Advantia Transport Consulting to develop a Class 1 Heavy Vehicle Route Assessment Guidelines in line with its Class 2 Guidelines. These guidelines will be available toward the middle of the year (2020).

In regard to Third Party approvals, DoT generally expects the operator to coordinate permissions, but in some instances – such as the transport of super loads, DoT will work with Third Parties to better facilitate the process.



### 2.3.4 Tasmania

DSG is the responsible agency for the administration of heavy vehicle policy in Tasmania and is the road manager responsible for heavy vehicle access decisions on the state road network. Tasmania operates under the HVNL.

The Heavy Vehicle Access (HVA) team receives an access request via the NHVR road manager portal and a HVA team member will acquire the case as the 'consent officer' and review it. Information will be checked for accuracy of details, potential route issues and what expertise is required for the assessment.

If potential issues are flagged, then further information is requested either directly with the operator or the NHVR case officer. Assessment tasks are raised and directed to relevant DSG expert units such as the Bridge Assets Unit for bridge capacity assessment and consideration or interaction with overhead infrastructure and the Traffic Engineering Unit for geometric traffic interaction and amenity considerations.

Responses will detail conditions to safely achieve access such as specifying how a vehicle should cross an asset and mass limits. Conditions utilised will depend on the vehicle category being considered (Class 1 OSOM, Special Purpose Vehicle, Higher Mass Limits (HML), PBS), the risk it poses and the mitigations available (pilots/escorts standard with some categories but not others).

In the case of Class 1 vehicles requiring pilot and/or escort vehicles to mitigate safety concerns, the HVA team manages this aspect. Where necessary, the HVA team will consult with the DSG Heavy Vehicle Escort team and the operator.

When all aspects of the assessment have been completed, the HVA team will formalise the response to the NHVR via the Portal – i.e. consent with timeframe and conditions, or non-consent with reasons.

Over the past five years, DSG together with LGs have undertaken a state-wide assessment of bridges and road networks. With the assistance of NHVR, DSG is developing approved network based access systems and associated notices under the HVNL to simplify access for Class 1 heavy vehicles without the need for a permit. DSG estimates that the access systems provide high levels of assessment granularity, encompassing 80% of OSOM activity and 95% of Special Purpose Vehicle (SPV) activity.

The maps available through the access systems provide operators with the ability to consider different heavy vehicles which might be suitable for the task, to select an appropriate route and to communicate issues directly with road managers.

### 2.3.5 South Australia

DPTI administers heavy vehicle matters by providing safe, reliable and efficient movements and flows of goods, services and people across the state's road networks. South Australia operates under the HVNL.

DPTI determines access for heavy vehicles depending on the type of vehicles and the route nominated to travel. If the route nominated meets the relevant assessment criteria for the vehicle type, then it can be added to a relevant RAV network. The main aim is to gazette as much of the network as possible for different vehicle types, whether it be Class 1, 2 or 3 vehicle combinations to reduce the number of permits being issued by the NHVR.

Where a road/route cannot be added to a relevant RAV network, then access could still be approved via a permit e.g. DPTI consent to NHVR for access on their roads via road manager consent.

The risks associated with granting consent to Class 1 vehicle combinations e.g. OSOM, SPV etc. generally can be mitigated through the application of conditions applied to a Road Manager consent e.g. road, vehicle and travel conditions such as warning signs, warning flags, warning lights, pilots/escorts, restricted travel times etc. Class 2 vehicle combinations are assessed in line with the PBS Scheme – Network Classification Guidelines.

The risks associated with granting consent to Class 2 vehicle combinations generally cannot all be mitigated through the application of conditions applied for road manager consent. Therefore, a risk-based assessment approach for these types of vehicle combinations assists road managers in granting/refusing access where appropriate.

Road access decisions are based around consideration of:

- the economic benefits of the proposed operation
- the need for suitable protection of the State's road system from structural damage
- the safety and convenience of all road users
- the capability of the vehicle to safely carry the load
- environmental impacts
- equitable treatment of all sectors of the industry.

Some South Australian LGs take advice and guidance from DPTI such as setting the conditions of access on requests for consents. This is more the case for smaller councils where resources/expertise in access decisions are limited.

The South Australian process is more of a checklist of sequential assessment. The DPTI first checks if there have been previous applications for the task to determine if the new application has any variations to previous permits. Preliminary checks are undertaken to determine if external parties, (such as a rail authority), are necessary and a general review of the route for any existing restrictions.

Structural assessment is then determined followed by a review of dimensional restrictions and community considerations. Route characteristics are then reviewed followed by a risk assessment.

### **2.3.6 Australian Capital Territory**

Transport Canberra and City Services (TCCS) undertake heavy vehicle access assessment under HVNL and heavy vehicle driver licensing and registration of heavy vehicles. The Australian Capital Territory operates under the HVNL. The Australian Capital Territory has a number of gazetted approved routes for specific vehicle types that allow operators to access specified roads, e.g. B-Doubles, HML vehicles, SPV etc., without the need for an individual permit.

TCCS assess all access requests for RAVs on its network using the nationally adopted *Approved Guidelines for Granting Access* (NHVR 2019a) developed in conjunction with state and territory jurisdictions and NHVR. Any access request for any restricted access vehicle is assessed on a case by case basis depending on individual mass and dimension limits and what part of the road network is being used.

### **2.3.7 Western Australia**

In Western Australia, the Commissioner of Main Roads has the authority under provisions in the *Road Traffic (Vehicles) Act 2012* to approve RAV access on a public road. Western Australia operates under its own legislation and not under the HVNL. The Commissioner has delegated this authority to Main Roads HVS. HVS administers the route assessment and approval process in order to provide efficient road access for RAVs, without having an adverse impact on road safety, the road infrastructure and public amenity.

When the application is sent to HVS, a preliminary assessment is undertaken. This preliminary assessment can uncover further assessment such as bridges and structures assessment, (this is a separate section of Main Roads), and can take up to 12 weeks but is usually less. As Main Roads also controls the assessment of application for access to LG roads it consults with the LGs and will consider applying any access conditions suggested by the LG road managers.

All route assessments must be conducted in accordance with the Route Assessment Guidelines relevant to the particular vehicle configuration and mass limit being requested. RAVs which are operated as a commercial business or for profit are required to be approved under the Western Australian Heavy Vehicle Accreditation Scheme. This includes the development and maintenance of the RAV networks and concessional loading schemes that are available to heavy vehicle operators.

HVS is responsible for coordinating the necessary route assessments and approving RAV access where appropriate for all roads open to and used by the public in Western Australia taking into account matters including:

- safety
- structural and vehicular suitability
- orderly and efficient use of roads.

Western Australia utilises a specific set of heavy vehicle classifications.

Western Australia has several assessment guidelines including:

- *RAV Access Approval Process – Road Managers Guide* (Main Roads WA 2019a)
- *Standard Restricted Access Vehicle Route Assessment Guidelines* (Main Roads WA 2019b)
- *Guidelines for Approving RAV Access* (Main Roads WA 2018).
- *WA Performance Based Standards (PBS) Scheme – Application and Approval Process* (2019c)
- *WA Performance Based Standards (PBS) Scheme – Standards and Vehicle Assessment Rules* (April 2020)

### 2.3.8 Northern Territory

The responsible agency in the Northern Territory for heavy vehicle administration is the Department for Infrastructure, Planning and Logistics (DIPL). The Northern Territory operates under its own legislation not the HVNL.

Complying vehicles have as-of-right access under the *Motor Vehicle Act 1949*, and the Registrar of Motor Vehicles has exemption powers for OSOM vehicles. There is no approval process for complying vehicles. Road Agency Compliance staff apply the Permit Guidelines for OSOM vehicles (including referrals to other authorities where required).

## 2.4 New Zealand

The responsible agency in New Zealand for heavy vehicles administration is the New Zealand Transport Agency (NZTA). New Zealand's policy and practices are discussed in detail in:

- Chapter 3 - National and Jurisdictional Access Decision Making Tools - Section 3.10
- Chapter 4 - Literature Review and Stakeholder Input - Section 4.2.4.

## 2.5 Local Government

The Local Government Association of Queensland (LGAQ) and several LGs were on the PRG. These were:

- Greater Dandenong Council
- Toowoomba Regional Council
- District Council of Streaky Bay
- Walcha Shire Council.

These PRG members provided valuable insight from a LG perspective. A summary of their responses is located in Section 4.5.1 and more detailed accounts are in Appendix A.

## 3. National and Jurisdictional Access Decision Making Tools

The following section outlines key documents utilised by the NHVR, Australian jurisdictions and New Zealand road managers in making road access decisions. Some jurisdictions have written internal work instructions, (on how to prosecute the guidelines), but these were not made available.

### 3.1 NHVR

The NHVR provides a range of guidance documents to assist road managers. These include:

- *Approval Guidelines for Granting Access* (NHVR 2019a)
- *Performance Based Standards - An Introduction for Road Managers* (NHVR 2019b)
- *Performance-Based Standards Scheme - the Standards and Vehicle Assessment Rules* (NHVR 2020)
- *Performance Based Standards Scheme Assessor Accreditation Rules* (NHVR 2019c)
- *Performance Based Standards Scheme Vehicle Certification Rules* (NHVR 2019d)
- *Performance-Based Standards Scheme - Network Classification Guidelines* (NHVR 2007)
- *Operating Conditions of Performance-Based Standards (PBS) for Vehicles* (NHVR 2013)
- PBS approval exemptions (NHVR n.d)
- Field trials to prove access can be achieved.

The first two of these documents are considered the most relevant to this work and are now summarised.

#### Approval Guidelines for Granting Access

NHVR (2019a) is approved by Ministers under Sections 653(1)(c), 653(1)(d), and 653(1)(j) of the HVNL. It provides guidance and clarity on aspects of heavy vehicle access decision making for jurisdictions within the HVNL regime. It also provides guidance on the relationship between the NHVR and participating road managers. In this respect, the NHVR grants access considering such issues as safety on the consent of the respective road manager.

The state and local road managers make assessment of the approved NHVR permit in terms of travel conditions and road conditions which are included in the approval process. The NHVR gives road managers significant input into the access decision making process. The HVNL requires road managers to have regard to the Approval Guidelines in how they assess access consent requests made by the NHVR.

Key issues include:

- the roles and responsibilities of the NHVR, road authorities and road managers
- guiding principles on access decision making
- guidance on public safety
- guidance on efficiency and productivity
- guidance on public amenity
- guidance on the imposition of vehicle, road and travel conditions to allow access to public roads
- guidance on using conditions to manage risks
- guidance on the process to follow when an access decision is being made under the NHVR.



## Performance Based Standards - An Introduction for Road Managers

This document (NHVR 2019b) is designed to assist road managers to understand the PBS classifications. PBS vehicles are classified into four levels. Table 3.1 outlines these classifications. Section 4 of this report provides insight into key components road managers must consider for PBS assessment.

If a route or network assessment has been undertaken and is determined to be unsuitable for the requested combination and/or mass limits, road managers should consider the following before refusing access:

- suggest an alternative route (only if the route does not affect another road manager's road infrastructure)
- consider reduced mass if no alternative route is available
- request a business case from the operator, so the benefits to the economy and local community can be weighed against risks. The business case may include:
  - the commodity being transported
  - the number of trips required per week
  - how the PBS vehicle will improve the efficiency of the freight task compared to the use of prescriptive vehicles (e.g. anticipated reduction in trips using PBS vehicle)
  - the local business involved and benefits to the community.
- request a route/bridge assessment (in some cases at the operator's expense).

**Table 3.1: PBS Classifications**

Level	Equivalent prescriptive vehicle configuration	Network access
PBS 1	19m prime mover and semitrailer	General access
PBS 2	26m B-double	26m B-double network
PBS 3	36.5m Type I road train	36.5m Type I road train network
PBS 4	53.5m Type II road train	53.5m Type II road train network

Source: NHVR

## 3.2 Queensland

TMR has several assessment documents including:

- *Route Assessment Guidelines for Multi-Combination Vehicles and PBS Vehicles in Queensland* (TMR 2019b)
- *Queensland Access Conditions Guide – route and operational access conditions for heavy vehicles* (TMR 2019a).

### 3.2.1 Route Assessment Guidelines for Multi-Combination Vehicles and PBS Vehicles in Queensland

This document (TMR 2019b) assists officers in assessing the suitability of state-controlled roads proposed for the operation of both prescriptive Multi-Combination Vehicles (MCV) such as B-Double and road train combinations and PBS vehicles.

The guidelines should be used to assist in exercising engineering judgment, rather than strict technical benchmarks, ensuring that the major relevant factors have been considered in the route assessment process.

The information in the guidelines has been obtained from various internal and external sources and incorporates the latest reference material available. However, the guidelines are subject to on-going review and users can therefore expect the information to change as and when further research and standards are developed and become available.

The guidelines discuss consultation processes that, where a heavy vehicle route intersects with an asset owned by another stakeholder, consultation should occur with the asset owner. For example, when the road intersects with a railway level crossing, the appropriate railway owner should be contacted. Consultation should also occur with local police where appropriate.

It is essential that routes for the operation of these vehicles be selected so as to minimise risk to other road users and property whilst facilitating efficient freight movement.

The guidelines will only apply to new route assessments. MCV routes, which have been approved prior to 30 June 2007 and continue to perform satisfactorily, will not be subject to these guidelines.

This document may also assist in the upgrading of roads to a suitable standard for future MCV access.

Key considerations include:

- Type of road classifications
  - general access roads
  - restricted access roads
  - PBS - classified roads
- Geometric route assessment considerations
  - lane widths on straight and curved sections of the route
  - bridge widths
  - requirements for turns, intersections and roundabouts
  - cross fall and super elevation
  - clearance time at signalised intersections
  - warning times at controlled level crossings
  - stacking distance at intersections and level crossings
  - sight distance generally and at uncontrolled level crossings
  - overtaking provision
  - entry lane length onto main roads and highways
  - overhead clearance
  - off-street parking
  - grades
- Infrastructure considerations
  - pavements
  - bridges and culverts
  - floodways and causeways
  - traffic interaction
- Amenity considerations
  - adjacent land use
  - noise
  - exhaust emissions
  - airborne dust, water spray/splash.

It is recommended that TMR officers undertake a combination of desk-top assessment, physical inspection and liaison with other parties if the asset is owned by other parties.

The guidelines describe various technical aspects of what should be addressed including:

- the suitability of intersections to provide a sufficient clear area for the movement of MCVs
- the presence of any road hazards and possible treatments
- the measurement of noise impacts.

### **3.2.2 Queensland Access Conditions Guide**

This document (TMR 2019b) provides specific time, route and/or location restrictions and other additional conditions for the movement of excess dimension heavy vehicles and combinations carrying indivisible and special purpose combinations in Queensland.

Whilst it is more of an informative document for operators wishing to understand the condition of moving such loads, it provides context to this report.

## **3.3 New South Wales**

As indicated in Section 2.3.2, TfNSW refers to various assessment guidelines and tools. Brief details of the four most relevant guidelines are now provided.

### **3.3.1 Access Assessment and Decision-Making Framework**

This document (RMS 2019) was developed for making decisions on higher risk movements for Class 1 and 3 OSOM vehicles. As a framework document, it screens areas where a TfNSW officer may be required to exercise judgment based on experience when assessing risk to safety, network productivity and road infrastructure. It is not intended to replace current assessment processes or relevant standards but to supplement them by providing a standardised approach to the treatment of high risk movements.

The framework serves to assist the TfNSW assessment officer in ensuring that all issues have been covered through a thorough process prior to and when using this tool.

A separate checklist is used depending upon the application type including:

- consent request – mass check
- oversize combination dimensions – decision making framework
- curfew and condition exemptions
- a request to extend the permit duration period.

### **3.3.2 Route Assessment Guide for Restricted Access Vehicles**

This document (RMS 2012a) outlines consistent procedures and assessment criteria for the determination of the suitability of roads for heavy freight vehicles. The guide is aimed to provide assistance to:

- LGs for local and regional roads
- TfNSW officers for state and other roads.

This guide is broken down into sections as indicated:

- types of freight vehicles
- management of the application
- information for applicants
- assessment procedures
- appeal process.

Of most relevance to this project are the guideline assessment procedures.

On receipt of an application the TfNSW coordinator identifies the current level of RAV access and confirms the need or otherwise for assessment of:

- the application for 4.6 metres (m), regardless of the vehicle configuration
- HML applications – these require that the route is already approved for the vehicle. A route can be assessed for the vehicle configuration at GML and then HML loading
- all roads that need assessment and the relevant access authority.

Initial assessment takes place which identifies the road manager's authority relevant to the route. A road safety assessment is undertaken if necessary. The person responsible for carrying out the desk-top investigation and field work must be competent in the areas required in the guide.

More technical assessments such as bridge load capacity are carried out by engineers with expertise in this area. Risk is also an important consideration. The document suggests that risk assessment will be undertaken if:

- an issue identified in the assessment does not meet the investigation level
- an issue identified during consultation has not been specifically addressed in the assessment and needs to be separately considered.

This evaluation may show that:

- the risk is acceptable for the route
- a particular treatment for the risk can be implemented
- the risk is considered unacceptable.

This document is used in conjunction with the *Route Assessment Guide – Freight Route Investigation Levels* and the *Route Assessment Guide – 4.6 metre High Vehicles*.

### **3.3.3 NSW Route Assessment Guide – Freight Route Investigation Levels**

This document (RMS 2012b) provides technical assessment of infrastructure characteristics for routes that are proposed for use by RAVs. It is used for the assessment of Class 2 and Class 3 vehicles and also vehicles operating at HML.

The document provides the following risk categories:

- legal/regulatory
- road safety
- rail-road safety
- work health safety
- amenity and environment
- infrastructure loading
- property damage.

This document is a technical check list that the assessor would undertake to ensure all matters are addressed correctly to make an informed assessment.



### 3.3.4 NSW Route Assessment Guide – 4.6 Metre High Vehicles

As with (RMS 2012b), this document (RMS 2012c) provides technical assessment in support of the (RMS 2012a). Chiefly it addresses access for loads where infrastructure on the route is between 4.3 m and 4.6 m high. It is worth noting that HVNL gives unrestricted road access for specified semi-trailers. This guide refers to investigation levels which are primarily vertical clearance in relation to overhead objects and structures. The risk categories in this document are the same as for 'Route Assessment Guide – Freight Route' document. The guide provides a comprehensive methodology for determining vertical clearance.

## 3.4 Victoria

Key documents are:

### 3.4.1 Class 2 Heavy Vehicle Route Assessment Guidelines for VicRoads

The key assessment guidelines document in Victoria is the (Advantia Transport Consulting 2019) which outlines what needs to be considered when assessing access on the Victorian road network.

Key areas of assessment are:

- geometric considerations
- structural considerations
- traffic interaction considerations
- amenity considerations
- freight planning considerations.

Under these headings are a number of technical subheadings that assessors need to consider. The last assessment consideration, freight planning, is not of a technical nature but rather an assessment against future land planning along the route which could impact on the route being approved if future incompatible land use is planned. In this respect, access may be granted on a temporary basis.

The above areas of consideration can be grouped into:

- Mandatory – minimum required assessment for route classification
- Desirable – beneficial to include when performing a route classification.

Of note in the document is the use of a tiered risk management and compliance approach.

The three tiers of risk are:

- Category A  
This category is the lowest risk with all areas complying with the areas of assessment listed above.
- Category B  
This category is the mid-tier level of risk management. It is generally an average between Category A and C and is generally acceptable for access decisions.
- Category C  
This category requires some risk mitigation and should be carefully considered.

Route assessments are undertaken initially as a desktop examination, with a field examination considered, if necessary, after the desk top exercise. Consideration should include consultation with port and rail engineers, police and councils (if necessary), and in conjunction with NHVR officers.

### 3.4.2 Road Design Note 04-01 Heavy Vehicle Network Access Considerations V2

A further document reviewed was the (Vic Roads 2019) document for road design requirements to accommodate heavy vehicle access. This document provides future proofing of the network to accommodate Class 1 and 2 vehicles.

## 3.5 Tasmania

### 3.5.1 Tasmanian Class 1 Load Carrying Vehicle Guide

The Tasmanian Class 1 Load Carrying Vehicle Guide (NHVR/DSG 2017) explains the types of Class 1 load-carrying vehicles that are eligible for operation under the Tasmania Class 1 (Load Carrying) Heavy Vehicle Mass and Dimension Exemption (Notice) 2017 (the Notice).

There are three mass schemes defined under this guide denoted by an 'A', 'B' or 'C' suffix to the vehicle designators. Greater levels of access are available as the mass suffix progresses - a mass suffix of 'A' has the least network access while a mass suffix of 'C' has the greatest network access.

It is split into two parts.

Part 1 defines the vehicle designators and outlines descriptions and general dimensional requirements. It contains the definitions of the vehicles eligible to operate under the Tasmania Class 1 (Load Carrying) Heavy Vehicle Mass and Dimension Exemption (Notice) 2017.

Part 2 defines the legally permissible masses as provided for in the Notice. It contains some of the permissible masses for vehicles eligible to operate under Tasmania Class 1 (Load Carrying) Heavy Vehicle Mass and Dimension Exemption (Notice) 2017.

These two parts provide the correct reference information for operators to make informed decisions on access.

### 3.5.2 Review of Gazetted High Productivity Vehicle Route Network

The High Productivity Vehicle (HPV) network review is based on:

- national guidelines for PBS, adjusted to better fit Tasmanian conditions
- Forestry Tasmania road construction manuals
- Department of Infrastructure, Energy and Resources (DIER) road construction specifications
- other Australian jurisdictional requirements.

This review in 2011 considered the Tasmanian networks for 26m long B-doubles and 25m long truck and dog combinations, and includes as an attachment the route assessment guidelines and checklists for HPVs. This is also utilised for PBS vehicles, including a range of assessment criteria used by other jurisdictions such as geometry and amenity considerations.

In conjunction with these guidelines, when considering Class 2/PBS applications DSG also utilises:

- the *Performance Base Standards Scheme – Network Classification Guidelines* (NTC 2007).
- the Victorian Government's *Class 2 Heavy Vehicle Route Assessment Guidelines* (Advantia Transport Consulting 2019)
- *Truck Impact Chart* (Australian Trucking Association Technical Advisory Procedure, 2018).

### 3.5.3 Heavy Vehicle Access Management System - Class 1 Special Purpose Vehicles Notice

In conjunction with NHVR, Tasmania has developed 'Heavy Vehicle Access Management System - Class 1 Special Purpose Vehicles' (DSG). The development of this system involved screening bridges to identify those that may not have adequate strength to facilitate access; assessing these bridges to determine their structural capacities; and assessing the various road geometry challenges to identify appropriate access conditions.

The interactive system provides operators with the ability to enter the metrics of their vehicle (which can be saved). It then produces a network wide map allowing industry, road managers and customers to view the roads that have access and any conditions that apply.

## 3.6 South Australia

### 3.6.1 Assessment Guidelines for Road Manger Consent Decisions in South Australia

DPTI have developed a guideline to aid in making access decisions giving consideration to:

- the economic benefits of the proposed operation
- the need for suitable protection of the State's road system from structural damage
- the safety and convenience of all road users
- the capability of the vehicle to safely carry the load
- environmental impacts
- equitable treatment of all sectors of the industry.

In conjunction with this guideline, DPTI utilises internal mapping systems and Geographic Information System information at its disposal. It provides information on:

- structures on the DPTI network e.g. bridges, culvert information, railway level crossings
- accident/crash history
- speed limits
- lane widths and other relevant road information
- aerial imagery that is used to undertake turn path assessments at intersections (AutoCAD software).

Within the guideline there are separate assessment criteria for Class 1 applications and Class 2 applications.

#### Class 1 criteria

The following is taken into consideration:

- allowable mass and axle spacing, e.g. for different types of applications such as low loader combinations, platform trailers etc.
- structural loading assessments, e.g. requirement for assessment undertaken of the structures on the nominated route (DPTI roads only) by DPTI structural engineers
- network constraints, e.g. overhead clearances, horizontal clearances etc.
- pilot and escort requirements, e.g. according to dimensions and area travelling within the state
- third party requirements. e.g. if certain dimensions/masses are exceeded
- over dimensional bypasses and established roads. e.g., is the application adhering to approved origin and destination routes
- permit conditions to mitigate the risk. e.g. signs, flags, lighting, time restrictions and when to apply them.

## Class 2 criteria

The assessment criteria related to a Class 2 vehicle assessment is referenced from the Performance Based Standards Scheme – Network Classification Guidelines.

Some of the technical and physical considerations include:

- low speed swept path, e.g. what turning movements are permitted if the vehicle combination is crossing the centre-line or painted islands, crossing queue lanes, tracking off road space, using adjacent lanes to turn etc.
- lane widths, e.g. minimum lane width requirements are specified and a risk assessment may consider average annual daily traffic counts, road condition/quality, sight distances, sealed/unsealed shoulders
- bridge widths, e.g. all bridges and culverts on the nominated route must be assessed
- structural loading assessment, e.g. assessment may need to be undertaken of the structures on the nominated route, (DPTI roads only), by DPTI structural engineers
- overtaking opportunities
- railway level crossings, e.g. the ability to safely store within the designated queue area and pass through the crossing safely
- entry length onto main roads/highways, e.g. minimum entry lane lengths that should be considered
- approach visibility (stopping distance) and safe intersection sight distance
- gradient, e.g. must ensure that the proposed vehicle operating at maximum allowable gross mass is able to maintain a minimum speed on upgrades including:
  - horizontal curvature
  - overhead clearance. e.g. clearance should be at least 200 mm above the height of the proposed vehicle for rigid overhead obstructions
  - parking. e.g. the spacing requirements and minimum clearance distances from the pavement edge of the parked vehicle at different speed limits.
- amenity considerations/community consultation. e.g. when granting road manager consent or gazetting a new route, the impacts to the amenity along the route must be considered. Sensitive land uses which can be negatively affected may include but are not limited to:
  - residential areas
  - commercial/industrial areas
  - schools
  - hospitals
  - aged care facilities
  - religious facilities
  - Aboriginal land
  - areas with significant movements of pedestrians and cyclists
  - recreational areas.

## Risk assessment

The use of any type of vehicle within a road network will rarely be free of risk. The provision of a safe network for use by all road users is the responsibility of all road managers. The use of the road network by a RAV does not necessarily increase the danger to other road users provided that potential risks are identified and mitigated correctly. The identification, assessment and control of risks associated with use by these vehicles are fundamental to the route assessment process.

Risk management involves the systematic application of management policies and practices to the task of identifying, analysing, evaluating, treating, monitoring and communicating risk. A Class 2 vehicle combination is assessed in accordance with the 'PBS – Network Classification Guidelines'. The document describes a minimum standard that is applicable for different vehicle performance levels.

A risk-based assessment approach for these types of Class 2 vehicle combinations assists road managers in granting/refusing access where appropriate. In areas where the risk is lower, access could be approved even if it is slightly contrary to the 'PBS – Network Classification Guidelines'. In addition, road managers may also consider the following components when deciding to grant access or not:

- historic approval, e.g. previous consents are a key indicator which describe the risks already accepted. If a vehicle with similar vehicle performance or dimensions has already been granted access to a route without any issues, then access may be granted in light of this information
- accident and crash history. e.g, crash history is a key indicator of the risks associated with granting access to larger combinations restricted access vehicles
- speed, e.g. as speed limits increase, the risk to road safety also increases as the consequences are greater
- traffic volumes and vehicle composition, e.g. as traffic flows increase the impacts to road safety also increase.

From an access decision making point of view, in South Australia the main issues lie with granting access for Class 2 vehicle combinations due the ongoing nature of the freight task and the various growing types of vehicle combinations. DPTI's freight network cannot always mitigate the risks for a Class 2 vehicle combination.

### 3.7 Australian Capital Territory

TCCS undertake heavy vehicle access assessment under HVNL and assess all access requests for RAVs on their network using the nationally adopted NHVR guidelines (2019).

### 3.8 Western Australia

Western Australia has several assessment guidelines including:

- *RAV Access Approval Process – Road Managers Guide* (Main Roads WA 2019a)
- *Standard Restricted Access Vehicle Route Assessment Guidelines* (Main Roads WA 2019b)
- *Guidelines for Approving RAV Access* (Main Roads WA 2018).
- *WA Performance Based Standards (PBS) Scheme – Application and Approval Process* (2019c)
- *WA Performance Based Standards (PBS) Scheme – Standards and Vehicle Assessment Rules* (2020)

#### 3.8.1 RAV Access Approval Process – Road Managers Guide

The document (2019a) provides guidance on HVS process when assessing and approving a road for RAV access.

The following criteria should be considered when providing comment:

- if the road width is suitable for the level of RAV access being requested
- if steep grades are evident that may cause safety concerns
- if any railway level crossings have insufficient stacking distance and sight distance
- if the sight distances at intersections are sufficient.

The road manager will also need to determine:

- the state of the road and conditions to be applied to RAV access
- access conditions to limit or monitor RAV access
- road maintenance and improvement conditions
- consideration of maintenance contributions
- road improvement contributions
- alternatives to RAV network access
- assessment processes and timeframes.

### **3.8.2 Standard Restricted Access Vehicle Route Assessment Guidelines**

This document (2019b) serves as the lead document for access assessment guidance.

It should be used in conjunction with:

- Framework for Adding Roads on the RAV Networks; (under review)
- Framework for Downgrading Local Roads on the RAV Networks; (under review)
- Framework for Using Consultants to Assess Local Government Roads for Inclusion on the RAV Network; (not relevant to this project)
- Guidelines for Approving RAV Access.

The RAV Route Assessment Form is also available on the HVS website.

There is also a specific assessment document of Tri-Drive Route Assessment.

Assessment requires:

- the principles of heavy vehicle operation, including vehicle configurations, maximum dimensions and axle load limits
- heavy vehicle dynamic performance characteristics, including limitations on the ability of heavy vehicles to accelerate, brake, ascend grades and negotiate corners
- heavy transport issues, legal requirements and permit systems
- road safety concepts and principles.

When considering a potential route, a desktop assessment using all available information is undertaken. In some cases, this initial assessment will identify particular physical constraints, such as posted bridge load limits and road width deficiencies, which may render the route unacceptable without the need for further assessment.

Assessment criteria include:

- traffic data
- structures
- overhead clearance
- rural road widths
- urban and town road widths
- provision of overtaking
- steep ascending grades
- turning at intersections
- railway level crossings
- off road parking
- other road users
- slowing and stopping.



Community amenity is also a key assessment criterion including noise, vibration; dust and dirt, and alternative modes of transport.

Consultation is mandatory with local communities.

### 3.8.3 Guidelines for Approving RAV Assessment

This document (2018) is a summary of the objectives of heavy vehicle assessment.

Its principles state:

- where the assessment identifies the road meets all the relevant route assessment guidelines, the road can be added to the relevant RAV network
- where the assessment identifies the road does not meet all the relevant route assessment guidelines, however reasonable conditions can be applied to mitigate any associated risks, the road can be added to the relevant RAV network
- where the assessment identifies the road does not meet all the relevant Route Assessment Guidelines and applying reasonable conditions is not likely to mitigate any associated risk or is not likely to be complied with, the road should not be added to a RAV network. However, access approval may still be granted under individual permit, following additional assessment based on the individual access requirement
- where the assessment identifies the road does not meet all of the relevant route assessment guidelines, regard should be given to the historic performance of similar vehicles on the route, subject to relevant upgrades being made to the route within a reasonable time.

The guidelines also map out risk management under the following headings of public safety and level of risk. They then identify a number of areas where risk may be managed with conditions including:

- swept path concerns
- gradient concerns
- road width concerns
- stacking distance concerns
- road infrastructure concerns
- network performance considerations
- use of signage.

### 3.8.4 WA Performance Based Standards (PBS) Scheme – Application and Approval Process

The document (2019c) outlines PBS requirements within Western Australia. The state's PBS Scheme may be followed if an operator only intends to use the PBS vehicle in Western Australia.

If a national approval is sought, the national PBS process should be followed. Main Roads is committed to supporting the use of innovative PBS vehicle combinations that result in safer and higher productivity vehicles on its roads.

To further improve safety, it is mandatory for PBS vehicles in Western Australia to be fitted with the following, as a minimum standard:

1. Prime Movers must be fitted with an Antilock Braking System (ABS) or an Electronic Braking System (EBS).
2. All Semi-Trailers must be fitted with EBS, with a fully functional Rollover Stability System (RSS) and a Controller Area Network (CAN) connection.
3. Converter Dollies are not required to be fitted with EBS or RSS.

Due to PBS vehicles often being larger and/or heavier than prescriptive vehicles, they may be route restricted and may be subject to monitoring via the Intelligent Access Program.

### **3.8.5 WA Performance Based Standards (PBS) Scheme – Standards and Vehicle Assessment Rules**

This (2020) document outlines the standards and vehicle assessment rules for attaining PBS accreditation. It steps out guidance on:

- requirements
- concessions
- additional mandatory requirements
- minimum axle spacing requirements
- variations
- 60 metre Road Train signage specifications.

## **3.9 Northern Territory**

### **3.9.1 Assessment Guidelines and Tools**

The Northern Territory provides permits for heavy vehicles carrying livestock and for OSOM loads. DIPL does not have a specific road manager assessment guide but does use TMR's guidance on livestock vehicle dimensions for consistency in cross border trips.

Permit guidelines for OSOM vehicles provide guidance for OSOM loads.

The document is broken down into several sections:

- permit system:
  - a SPV that, by construction, exceeds the legal mass and/or dimension limits (e.g. cranes, drill rigs, plant-type vehicles)
  - low loaders and load platforms that are specially designed for the carriage of a large indivisible item or are carrying a large indivisible item
  - vehicles and combinations that transport indivisible loads
  - agricultural machines, agricultural implements or agricultural combinations.
- permit classification and types:
  - permits are classified in accordance with the level of control required over:
    - time of travel
    - route selection
    - operating conditions
    - whether the permit is a single trip/specific permit or a period/general permit.
- trip or specific permit
- period or general permit
- OSOM.

## 3.10 New Zealand

### 3.10.1 Vehicle Dimensions and Mass Permitting Manual (Vol 1)

The NZ Transport Agency (2017) is an extensive technical document of 445 pages.

The purpose of this manual is to:

- state the NZTA's current policies, standards, processes and procedures for the permitting of vehicles exceeding standard dimension and mass limits
- give comprehensive guidance to transport operators about the requirements for applying for and operating under a permit for a vehicle exceeding standard dimension and mass limits
- be a transparent body of knowledge of how the NZTA assesses and issues such permits
- share this knowledge with local road controlling authorities and provide a reference tool for issuing overweight, High Productivity Motor Vehicle (HPMV) higher mass or specialist vehicle permits for local roads
- give guidance to designers and manufacturers of heavy commercial vehicles.

The manual is divided into two volumes:

- Volume 1: Applying for and operating under a vehicle dimension and mass permit
- Volume 2: Processing vehicle dimension and mass permit applications.

Each volume consists of separate parts that cover general information or a specific permit type. Parts are further divided into numbered chapters and sections for easy referencing and finding of information.

Figure 3.1 provides a high-level overview of the structure of the NZTA manual.

#### Criteria for issuing permits

Before issuing a permit to exceed prescribed mass limits, a road controlling authority (RCA) must consider:

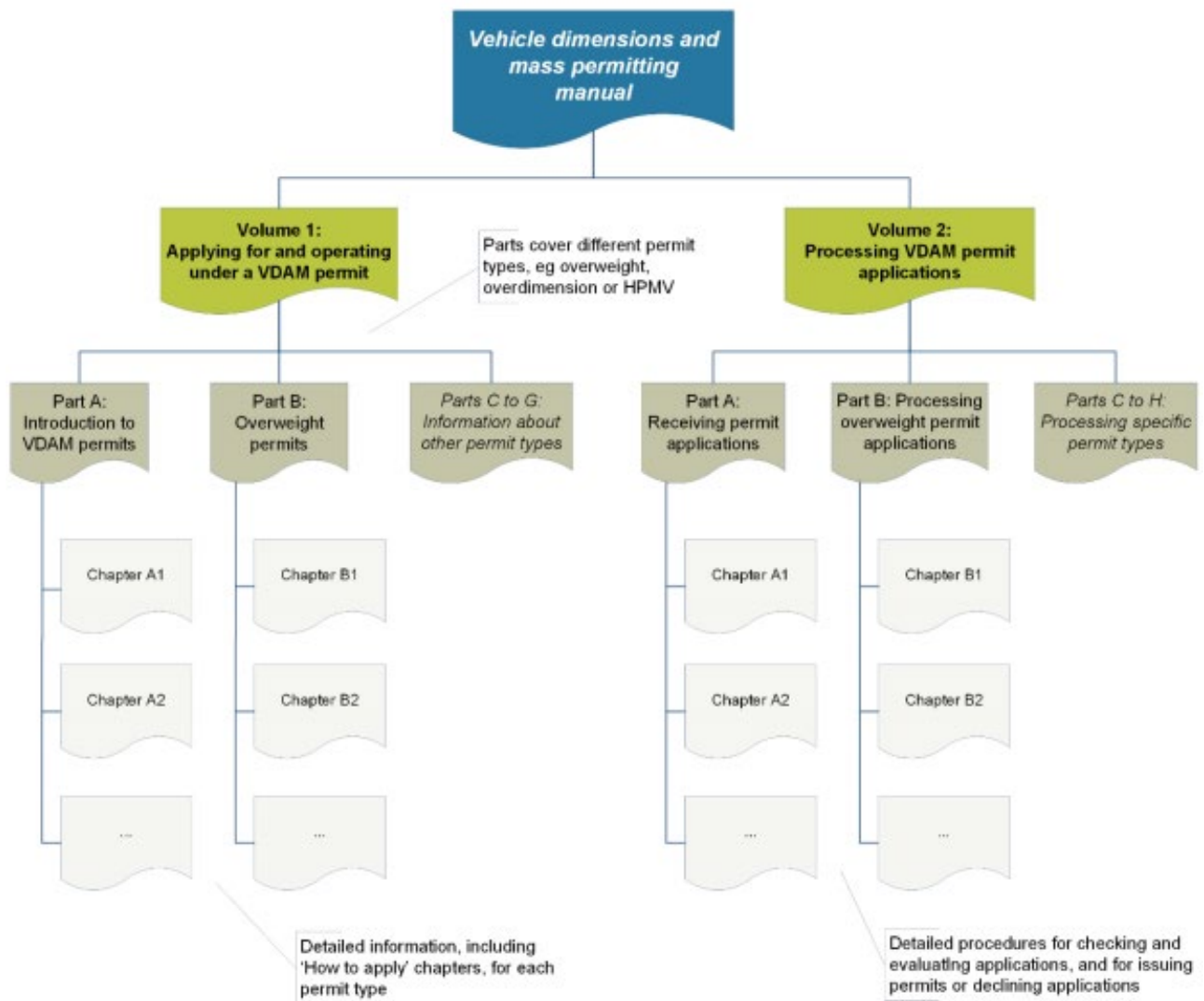
- the safety of the vehicle
- the safety of road users
- the durability of roads and bridges on the route the vehicle may travel on. As part of assessing the safety aspects of a permit application, a RCA may check an operator's safety and traffic offending history.

When issuing HPMV over length permits, the Transport Agency must apply the same criteria as above. In addition, it must be satisfied that the vehicle has the equivalent safety performance of a standard motor vehicle for the proposed route on the permit. A vehicle is considered to meet this requirement if it is a pro-forma design approved by the NZTA or meets the agency's safety performance requirements.

When issuing an over dimension permit, the NZTA considers:

- potential effects on other traffic, such as congestion or safety risks
- whether risk management measures proposed by the operator are adequate
- the safety record of the operator.

Figure 3.1: Structure overview of vehicle dimensions and mass permitting (Vol 1)



Source: NZTA

## 4. Literature Review and Stakeholder Input

### 4.1 Overview

This section presents the findings of a national and international literature search of existing tools used by various jurisdictions and road agencies to assess road freight access requests. Canada, the European Union, South Africa and New Zealand were the core focus of the international review as these countries were deemed to have many similarities with the Australian PBS framework.

At the commencement of this work it was hoped that the international jurisdictions studied would be able to provide policy and/or procedural level documentation. Except in the case of New Zealand, this granularity of documentation was either not in existence, or not able to be located, despite contact with nominated international contacts. In considering the approach to heavy vehicle access in these countries the analysis has focused on the approach to heavy vehicle access using performance based assessments.

In the Australian context, there has been consideration of a variety of publications and reports, as well as jurisdictional and industry based policies and guidelines. To supplement these published documents, input was sought from LG, industry operators and PBS assessors to provide additional insight into decision making and access issues in Australia.

### 4.2 International Literature

#### 4.2.1 Canada

Canada is a large country with a sparse population. There are ten provinces and three territories in Canada, and each is responsible for vehicle size and weight regulation. To improve consistency over the regulations governing the weights and dimensions of heavy vehicles operating across Canada, the Council of Ministers of Transportation and Highway Safety endorsed a Memorandum of Understanding (MoU) in 1988. As part of this MoU, a Task Force on Vehicle Weights and Dimensions Policy was also established.

Since the original agreement was established in 1988, 10 amendments have been prepared and endorsed by the Council of Ministers, with the latest version being January 2019 (Task Force on Vehicle Weights and Dimensions Policy, 2019). While significant efforts have been made since 1988, harmonisation of vehicle weight and dimension regulation continues to be a top priority in Canada (Canadian Intergovernmental Conference Secretariat n.d). Further information on the regulations of individual provinces and territories are shown in Appendix Table B3.

#### Canadian regulatory approach

PBS was first introduced in the mid-1980s to harmonise heavy vehicle weight and dimension regulations in Canada (International Transport Forum (ITF), 2019). It was based on rigorous scientific study and engineering methods to analyse pavement and vehicle performance.

The research was conducted through a scientifically structured size and weight research program which included full scale testing of vehicles and pavements, and computer simulation analysis of vehicle dynamic performance.

During the study, it became apparent that a regulatory framework was essential to assist provincial regulators with the harmonisation work. Therefore, a set of objective metrics were created to help establish the technical principles to underpin a framework. Findings of the study also showed that the configuration of the vehicle, i.e. the axle layout and load distribution is profoundly influenced by the stability, control characteristics and compatibility of the vehicle with highway geometry. Based on these observations, the following objectives were established to assist with the regulatory principles of the size and weight policy development and to (ITF, 2019):

- encourage the use of the most stable heavy vehicle configuration through the implementation of practical, enforceable weight and dimensions limits
- balance the available capacities of the national highway transportation system by encouraging the use of the most productive vehicle configurations relative to their impact on the infrastructure
- provide the motor transport industry with the ability to serve markets across Canada using safe, productive, nationally acceptable equipment.

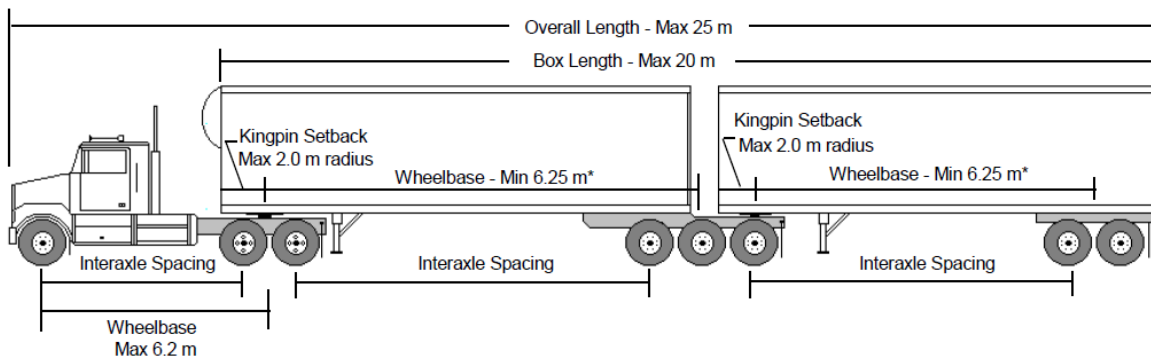
The Canadian road access system is split into two categories.

- common freight vehicles
- high productivity limited access vehicles.

### Common freight vehicle

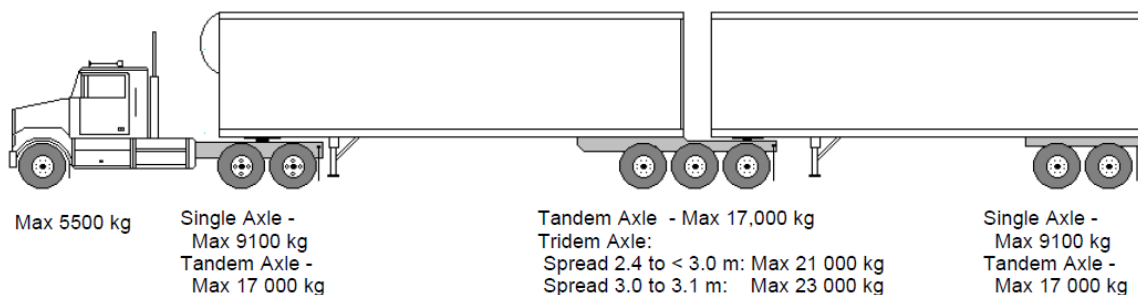
For common freight vehicles, PBS and vehicle parameter sensitivity analysis are used to create a set of 'vehicle envelopes' to define the general layout of a vehicle including ranges for certain component variables such as axle spacing and hitch placement. An example of the vehicle envelope is shown in Figure 4.1 and Figure 4.2.

**Figure 4.1: Dimensional limits and reference definitions for Canadian Vehicle Envelope System**



Source: Task Force on Vehicle Weights and Dimensions Policy, 2019

**Figure 4.2: Mass limits and reference dimensions for Canadian Vehicle Envelope System**



Source: Task Force on Vehicle Weights and Dimensions Policy, 2019



A breakdown of the dimensional and mass limits for the Canadian Vehicle Envelope System is shown in Table B1 and B2.

### High productivity limited access vehicle

HPVs are less common and are outside the envelope parameters allowed for common freight vehicles. A performance based assessment is used to determine acceptability for road use and access. The HPVs are operated under special permit programs governed by strict operating conditions in most provinces in Canada. The structure and enforcement mechanism of the policy places more rigorous safety conditions than found in other vehicle classes. Failure to achieve the required safety performance can result in the special permit being revoked.

The special permit system requires the operator to be trained according to the Canadian Trucking Alliance's 'Longer Combination Vehicle Driver's Manual' (ITF, 2019). For example, in Alberta, drivers must obtain an annual certificate indicating that they have met the requirements related to the type of licence, training, driving experience, fitness and criminal records. There are restrictions on where the vehicle can operate including hours of operation, (time of day), and vehicle dimensions, such as wheelbase, hitch offset and dolly drawbar length.

There are also operational requirements such as adverse weather restrictions, ensuring vehicles tracking and do not sway, and ensuring vehicles do not cross opposing lanes of traffic unless necessary (ITF, 2019).

## 4.2.2 European Union

In Europe, heavy vehicles are required to comply with rules on weights and dimensions set by Directive 96/53/EC. This directive focuses on ensuring road safety and avoidance of damage to infrastructure such as roads, bridges and tunnels (Council of the European Union (EU), 1996). This document has since been amended to become Directive (EU) 2015/719 (European Parliament and of the Council, 2015).

It allows member states' vehicles which comply with the dimension and weight limits access to international transport operations within their territories. The Directive is also aimed at preventing national operators benefiting from undue advantages over their competitors from local state based operators when performing national transport operations (European Commission, 2020).

According to the Directive, vehicles of up to 40 t of gross vehicle mass, a maximum of 16.5 m in length (18.75m for road trains), 2.6 m in width and 4 m in height are allowed to travel freely on the road networks of member states. However, member states are able to decide on derogations from these rules for vehicles used in national transport.

Higher capacity vehicles are generally referred to in Europe as Longer and/or Heavier Vehicles (LHVs). LHVs also known as mega trucks, gigaliners, eurocombis and ecoliners, which measure up to 25.25 m in length and 60 t in weight are currently allowed in some parts of the EU.

With an agenda for greener and lower carbon transportation, Directive (EU) 2015/719 grants derogations on maximum lengths by adding new features such as aerodynamic devices to the rear of the vehicle or by redefining the geometry of the cabin in order to improve the driver's field of vision, safety and comfort. Derogations on weights are also allowed for vehicles powered by alternative fuels (European Parliamentary Research Service - EPRS - 2014).

To facilitate the development of intermodal transport, the EU suggested an increase of 150 millimetres in length for trucks carrying 45 foot containers (13.72 m) which are increasingly used in inter-continental and European transport. However, these longer trucks are only permitted to travel up to 300 kilometres (km) from the port of unloading. The use of LHVs is only permitted for journeys crossing a single border with the condition that two Member States have issued approval for their use and the conditions under the Directive are met, i.e. special permits delivered by national authorities, inseparable loads without significant hindrance of competition and road infrastructure (EPRS 2014).

## European modular system

The European Modular System (EMS) was developed when Sweden and Finland joined the EU in the 1980s. At that time, both Sweden and Finland were unable to apply the EU rules in weights and dimensions as they had been allowing longer and heavier vehicles on their roads prior to their entry. To enable foreign transporters to compete on equal terms in Sweden and Finland, a compromise was reached to increase the allowable vehicle length and weight all over the EU, on the condition that existing standardised EU modules were used.

EMS is a concept allowing combinations of existing loading units (modules) into longer and sometimes heavier vehicle combinations to be used, or shorter ones when local conditions dictate. This is a key advantage as it offers flexibility for vehicles to adapt to different situations. Additionally, since it is based on existing equipment, implementation can be much easier and faster while adapting to local conditions. Figure 4.3 shows the multiple combinations of EMS. It allows national authorities to authorise trucks longer than the 'normal' maximum for a heavy truck of 16 m in length and a gross vehicle mass of 40 t.

Currently in the EU, High Capacity Vehicles (HCVs) in the form of EMS combinations are allowed in Belgium, Denmark, Finland, most German federal states, the Netherlands, Portugal, Spain and Sweden (European Automobile Manufacturers Association, n.d).

The EMS allows freight operators to work beyond the general limitations that are imposed on road transport vehicles with the condition that European Loading Units are used. It improves road freight transport efficiency and reduces environmental impact. Some of the benefits of EMS (The European Express-Carriers Association n.d) are that it:

- helps meet growing transport demand in Europe – freight transport activity is estimated to increase by 82% between 2005 and 2050. EMS will have a positive effect as it supports the development of intermodal transport solutions.
- reduce fuel consumption – since two EMS substitute three regular road train rucks, there will be significant energy savings.
- reduce emissions – EMS helps the EU in reducing 20% CO<sub>2</sub> by 2020. This has been demonstrated in a recent trial in Denmark.
- reduce transport costs for operators – the Netherlands experience shows cost savings of between 25% and 40% for specific routes.

Figure 4.3: Multiple combinations of EMS

## EUROPEAN MODULAR SYSTEMS (EMS)

### What is EMS?

EMS is a flexible concept whereby existing loading units (modules) of trucks are re-arranged into longer and sometime heavier vehicles – depending on the volume to be transported and roads to be travelled. EMS is one solution to optimise road transport capacity.

### Multiple combinations can exist:<sup>1</sup>



**EMS CAN BE:**



UP TO 25,25 METERS LONG



MAX 60 TONNES

WITH A MAXIMUM WEIGHT OF 60 TONNES

Source: The European Express-Carriers Association, n.d.

## Freight and logistics in a multimodal context (FALCON)

There is a need for a uniform cross border framework which permits HCVs on designated routes, and which permits HCVs that are more productive than those permitted by EMS in order to make more substantial headway in the reduction of carbon emissions (de Saxe et al. 2018).

The FALCON project is a collaborative effort funded by the Conference of European Directors of Roads (CEDR) aimed at reducing carbon emissions targeted by the European Commission and to assess the feasibility of a suitable framework for cross border HCV transport in Europe (de Saxe et al. 2018).

The FALCON project is closely related to the use of PBS. The PBS assessment is usually conducted at the vehicle design stage as it allows the vehicle to be optimised with well-defined desirable characteristics. The FALCON project is examining the use of PBS as a mechanism to create freight vehicles with a lower carbon footprint, better safety performance and compatibility with the infrastructure (ITF 2019).

The plan was to first formulate a representative fleet of heavy vehicle combinations carrying modular loading units in collaboration with the industry. The fleet would then be simulated against a wide range of potential performance standards sourced from various countries. Findings from the simulation coupled with expert advice would then form a draft recommendation for a PBS framework for Europe (de Saxe et al. 2018).

This project is currently ongoing with work related to the refinement of criteria for European conditions and final recommendations on the inclusion of certain standards in the proposal. A list of final recommendations was proposed for a PBS framework in the European FALCON project in ITF (2019). These are shown in Table B4.

## Proposed road access classification for PBS vehicles in Europe

HCVs are generally longer than the typical freight vehicles and are only suitable via certain routes or roads. Using the Australian PBS framework as a baseline (Table 4.1 outlines the existing Australian road access classification system), the proposed road access classification system for PBS vehicles in Europe is shown in Table 4.2 below. Existing road network characteristics, regulations and geography were considered in the preparation of the European system.

**Table 4.1: Australian road access level classification**

Road access level	Permitted vehicle length	Permitted routes	Performance criteria
Level 1	≤ 20 m	Unrestricted road access	Most stringent
Level 2	≤ 30 m	Significant freight routes	
Level 3	≤ 42 m	Major freight routes	
Level 4	≤ 60 m	Remote areas	Least stringent

Source: de Saxe et al. (2018)

**Table 4.2: Proposed European road access level classification**

Road access level	Permitted routes	Notes
Level 0	Unrestricted road access	Stricter manoeuvrability criteria for city access for garbage trucks, home delivery, etc.
Level 1	Existing truck routes	Includes EU/UK roundabout manoeuvre
Level 2	Significant freight routes	Approximately equivalent to EMS vehicles
Level 3	Major freight routes	Approximately equivalent to EMS 2 vehicles

Source: de Saxe et al. (2018)

In Australia, Level 1 vehicles are allowed to access all the Australian road network and the performance criteria are most strict. Level 2, 3 and 4 road access accommodate longer vehicle combinations that are restricted to increasingly smaller subsets of the road network, and have less strict criteria for some standards. Level 4 in particular caters for the longest vehicles called ‘road trains’ operating in remote regions in Australia, and has the least strict performance criteria (de Saxe et al. 2018).

However, the concept of ‘unrestricted road access’ as shown in the Australian system is considered inappropriate for equivalent Level 1 European vehicles. Instead, it was replaced with ‘existing truck routes’ to avoid the possibility of long articulated heavy vehicles travelling through medieval European cities amongst other things. The UK/ EU roundabout test would be enforced for this level.

A new ‘Level 0’ was included in the proposed European road access classification to account for city-level freight activities such as garbage collection and home grocery delivery. It is envisaged that additional stricter manoeuvrability tests (yet to be defined) representative of small city intersections will be imposed. This allows for the possibility of higher capacity vehicles to serve these industries in the future, provided that these vehicles can be shown to meet the strict manoeuvrability criteria as well as other city-level requirements for noise and air pollution.

Level 2 and 3 (Table 4.2) were deemed approximately equivalent to the Australian system, with the observation that Level 1 would typically serve EMS-type vehicle combinations, and Level 2 would serve EMS-2 type combinations. As mentioned earlier, Level 4 was deemed non-applicable to European conditions.

### 4.2.3 South Africa

The National Road Traffic Act (NRTA) (Act 93 of 1996) and the National Road Traffic Regulations (NRTTR) prescribe limitations on the dimensions, axle and mass for vehicles travelling on public roads. Vehicles or loads that do not comply with these limitations and/or are unable to be dismantled without disproportionate effort, expense or risk of damaging the road infrastructure, are classified as abnormal loads. An exemption permit may be issued to allow movements of these abnormal loads on public roads for a limited period of time. These exemption permits are issued by provincial offices in terms of guidelines developed by the Abnormal Loads Technical Committee (ALTC).

The legally permissible length and the allowable length under the exemption permit are shown in Table 4.3 and Table 4.4. Other legally permissible dimensions for all goods vehicles in South Africa are:

- to be no more than 2.6 m wide and shall not exceed 12 t.
- overall height of 4.3 m, together with its load measured from ground level.

**Table 4.3: Maximum overall legal length**

Vehicle type	Overall length (m)	Comments
Single vehicle	12.5	Excluding semi-trailer
Articulated vehicle	18.5	Truck-tractor and semi-trailer
Other combinations of vehicles	22.0	Interlinks, multiple trailers

Source: Department of Transport (2010)

**Table 4.4: Maximum overall length per vehicle (under permit)**

Vehicle type	Overall length (m)	Comments
Rigid vehicles	20	Including mobile cranes
Foundation diggers	23	
Articulated vehicles	26	Truck-tractor and semi-trailer
Combinations of vehicles	28	Truck, dolly and semi-trailer

Source: Department of Transport (2010)

In South Africa, a pilot project, based on PBS principles, and known as 'Smart Trucks' was initiated in 2004. It is being led by stakeholders from the Council of Scientific and Industrial Research (CSIR), government, industry and academia. Operators participating in this project are certified through the Road Transport Management System (RTMS). RTMS is a self-regulation accreditation scheme based on the national standard SANS 1395.

The introduction of self-regulation was part of a long-term plan to encourage the industry to establish sound vehicle management practices. The underlying reason was high truck fatal crash rates and breakdowns resulting in deaths and injuries; frequent lane closures; and high levels of emissions due to increased congestion on highly trafficked routes. Vehicle crashes and breakdowns were the result of a combination of driver speeding, lack of driver training and inadequate servicing and maintenance (ITF Nordengen, de Saxe & Berman 2019).

By June 2018, there were 282 vehicles operating under Smart Trucks. Under Smart Trucks, Level 1 and 2 vehicles range from 18.6 m to 30.0 m with a combination of weight ranging from 56.8t to 82 t. The Level 3 and four vehicles are allowed to operate either in remote areas or on private mines. The maximum size and weight are up to 42.8 m in length and 185 t in combination mass (ITF 2019, 2018).

The introduction of a PBS related framework in South Africa has led to a 12% reduction in fuel consumption and greenhouse gas emissions, a 13% reduction in road wear impact, a 39% reduction in road crashes, and 22% fewer truck kilometres travelled (Nordengen et al. 2018). Table 4.5 below is a case study of Dawn Logistics showing a significant cut in crashes, fines, driver error and breakdowns (ITF 2019).

**Table 4.5: Heavy vehicle operational statistics for Dawn Logistics (2013 to 2017)**

Year	Fines	Crashes	Driver error	Breakdowns
2013	218	37	19	57
2014	232	26	11	46
2015	56	17	5	33
2016	48	26	4	20
2017	46	20	5	22

Source: Nordengen et al. (2018)

#### 4.2.4 New Zealand

In 2010, New Zealand made an amendment to the Vehicle Dimensions and Mass rule to enable the operation of HPMVs. The amendment included small increases in the axle load limits and a revised bridge formula which allowed higher weights without imposing upper limits on gross weight or vehicle length. Under the permit, regulators are allowed any weight and length combination provided that the vehicle can operate safely and within the limits of the infrastructure. In practice, the upper limit for length is 23–25 m and the gross combination weight is constrained by the bridge formula with a maximum mass of 61 t but most vehicles are limited to 58–59 t (ITF 2019, de Pont, Hutchinson & Smith 2018).

Initially, these HPMVs could operate with general access on the entire network at the standard legal maximum weight of 44 t and, an increased weight on approved routes. HPMVs pay more road user charges (RUC) to reflect the additional wear and tear they inflict on the infrastructure. State highway road managers largely support this approach because the maintenance of the state highways is fully funded by RUCs. However, as local authority road maintenance is 50% funded by local rate payers, these authorities are less prepared to allow access to HPMVs (de Pont et al. 2018).

To address this issue of approval for local authority roads, NZTA proposed a compromise known as 50MAX vehicles. 50MAX vehicle combinations have one more axle than conventional 44 t vehicle combinations, meaning the overall truck load is spread further and there is no additional wear on roads per tonne of freight.

This means 50MAX gives operators an option to carry increased payloads on parts of the network that, while economically important to New Zealand, carry lower volumes of freight. The increased payloads of 50MAX can lead to economic benefits for producers, customers and communities. Allowing bigger trucks on New Zealand roads reduces the number of truck trips needed to move the same amount of freight.

This concept has now been widely accepted by local road authorities as these vehicles have shown less impact on pavement wear. As a result, the accessibility of 50MAX covers nearly the whole of New Zealand.

Information about 50MAX such as eligibility for permit, map of 50MAX route, proforma designs, application forms and others can be obtained from the NZTA website (NZTA n.d.). A flow chart of whether a vehicle is eligible for a 50MAX permit on the desired travel routes is shown in Figure B3.

### 4.3 Australian Literature

This section covers the review of relevant Australian heavy vehicle technical assessment reports and abstracts, as well as jurisdictional policies. Some of the reports provided useful information for this report. However, it was noted that some of these reports are quite dated and were written pre-HVNL implementation. As stated in Section 1.3.1, this section also contains some documents relating to bridges and structures assessment.



### 4.3.1 Guidelines for Assessing Heavy Vehicle Access to Local Roads

Austroads (2010) developed guidelines to assist LGs and operators when considering restricted access vehicles on LG roads. It was noted that the regulatory environment is different from jurisdiction to jurisdiction and was developed pre-HVNL.

The guidelines are divided into three categories:

- general access vehicles
- restricted access gazetted notices
- restricted access by permit.

The guidelines were primarily designed to assist LGs and commercial operators in their decision making by consolidating information and focusing on the following two areas:

- a strategic approach to managing freight on local roads
- a step by step approach to analysis and decision making.

#### Key findings

The guideline set out in a methodical manner advice and guidance for LG road managers to assess applications. The guidelines are structured in five key parts:

- Part A - Context
- Part B - Principles for Freight Planning
- Part C - Assessment Process
- Part D – Technical attachments
- Part E – Assessment template.

#### Relevance to this project

The document is relevant to this report in several areas as indicated above. However, it is worth noting that this guideline is ten years old and predates HVNL.

### 4.3.2 Local Road Access for High Productivity Freight Vehicles

Austroads (2018b) report examined the status of PBS networks on LG roads and the challenges LGs face in assessing access. The report outlined the contemporary barriers to local road access through extensive consultation and the challenges that LG road managers face compared to state and territory road managers.

Some of the key barriers included:

- misunderstanding of the finite freight task and how PBS can carry more freight
- misunderstanding of the PBS scheme
- perceived risks to safety, infrastructure or amenity
- mistaking PBS vehicles for OSOM
- expecting swept path width to be too great
- misunderstanding of the relationship between PBS network and existing network
- distinguishing the difference between Class A and B networks

- axle group loads being the same
- difficulty interpreting a PBS vehicle approval
- staff changes and loss of corporate knowledge
- lack of NHVR support although it must be noted that this issue has been addressed to some extent since the release of this publication.

Seven real life case studies were compiled to demonstrate how road managers overcame various concerns.

### **Key findings**

The report uncovered key issues of the lack of understanding of PBS, resource shortages and areas of improvement in the HVNL. These were at the forefront of impediments to LG road managers making more informed decisions.

### **Relevance to this project**

The report is highly relevant to this report in several areas indicated above. Furthermore, comments gathered during consultation were consistent with consultation in this report. Most relevant was the lack of support in the understanding of how to assess PBS and education is one of the key solutions.

### **4.3.3 Guidelines for Multi-Combinational Vehicle Route Access Assessment**

Austrroads (2000) investigated how each jurisdiction carried out assessments for heavy vehicle access. The report did not encompass “innovative” vehicles (precursor to PBS).

### **Key findings**

The report found that the assessment using the existing standards met the requirements of road managers. It recognised that guidelines cannot replace sound judgement and local knowledge but a schedule of emerging issues was developed focusing on several key route-related issues that needed to be addressed.

### **Relevance to this project**

Whilst some of the assessment issues used are still relevant today, the report is somewhat dated such as the introduction of PBS categories.

### **4.3.4 Local Government Heavy Vehicle Route Assessment Guidelines**

Milling; Germanchev; Ngo; Noya; Latter (2020) is designed to assist LG road managers in Queensland assess the suitability of prescriptive heavy vehicles and PBS vehicles accessing LG routes under HVNL within Queensland. The report does not provide guidance on route assessment for OSOM loads or SPVs.

These guidelines aim to ensure factors are considered during the route assessment process including:

- geometric performance
- road safety implications
- structural capacities
- pavement impact
- amenity considerations.

These guidelines allow road managers to provide approval in certain cases where routes do not meet the requirements permitted by imposing additional access conditions such as speed or curfews.

The guidelines do not replace existing assessment tools but rather provide additional guidance for LG road managers to consider access requests.

## **Key findings**

The following sections offer some relevant information in relation to this report:

- Section 6 - Application of the Guidelines - provides guidance on the various type of truck types and combinations.
- Section 7 - Granting Access to the Road Network - provides guidance on issues that require consideration such as safety, infrastructure and amenity. It also outlines the conditions that may be placed on the permit.
- Section 8 - Risk Assessment - provides advice for LG road managers on how to assess risk such as establishing the context, risk treatments, and monitoring and review. Section 8.3 steps through the risk assessment process for informed decisions.

## **Relevance to this project**

This document is highly relevant by providing the latest advice and guidance for LG road managers in Queensland. It most likely will have application in other jurisdictions.

### **4.3.5 Higher Order Bridge Assessment in Australia**

Austrroads (2018a) provides a comprehensive summary of how each jurisdiction undertakes bridge and structure assessment. It also has an extensive international literature review. The report is structured similarly to this project in undertaking a gap analysis and developing a framework of guidelines.

In terms of each jurisdiction, the report outlines how each road manager assesses bridges based on the Australian Standard AS5100 7-2017 and then outlines how each jurisdiction may deviate from the code according to local conditions.

## **Key findings**

The survey results indicated that the majority of the jurisdictions adopted a tiered approach to bridge load assessment of existing structures. Some jurisdictions were developing targeted standards and codes for guidance for the management of older or deficient structures. Higher order assessments were defined and permitted providing for consistent and transparent results. The report also found that most countries reviewed also had formalised, tiered assessment processes. Most of the countries reviewed also adopted a reliability-based assessment for higher levels of assessment.

## **Relevance to this project**

This report serves as a similar purpose to this project's objective and provides similar guidance for bridge assessment in each jurisdiction.

### 4.3.6 Review of Axle Spacing Mass Schedules and Future Framework for Assessment of Heavy Vehicle Access

Austrroads (2014) addresses the development of a framework and methodology to assess heavy vehicle applications to use the bridge network on a nationally consistent basis. Whilst the framework and methodology are applicable to LGs, the methodology developed requires the underlying assessment work to be undertaken by the relevant jurisdictions.

#### Key findings

- regulatory structure:
  - NHVR to be a single point of contact for applicants wishing to gain heavy vehicle access across bridges
  - a move to service levels (or loading levels) identifying typical capacities when discussing a route performance to enable more efficient assessments.
- proposed framework:
  - appropriate service levels to be determined with relevant jurisdictions based on historical design and current legal and gazetted loadings
  - a primary loading configuration and associated co-existing vehicles to be adopted as a base case for bridge assessment
  - a primary loading configuration to be adopted.

#### Relevance to this project

The report has some significance in terms of providing a framework for assessment of bridges and structures and provides guidance on further work that is required.

### 4.3.7 Investigation and Development of Bridge Formulae for Inclusion in the Performance Based Standards

#### Summary

The recently completed Austrroads (2020) focused on reviewing the current PBS Tier 1 bridge formulae and identified issues through analytical review of possible PBS vehicle load effects that can be achieved.

This project reviewed and modified where necessary, the Tier 1 assessment process used to assess heavy vehicle access in Australia.

This was achieved through:

- assessing current national and international practice around the use of bridge formulae to assess heavy vehicle access to bridges
- engaging with stakeholders to determine issues with the current PBS Tier 1 approach for bridge assessment
- investigating the current formulae using current day assessment techniques and making recommendations regarding the current formulae based on a more comprehensive methodology that includes shear and pier reactions, making recommendations on updating the current bridge formulae approach and associated processes
- developing a framework for an asset optimisation approach.

Further work was conducted following this report and a 'Heavy Vehicle Bridge Assessment System Scoping Study' is nearing completion.

## Key findings

Specifically, the Reference Group resolved that:

- the current bridge formulae are not a suitable basis to gazette nationally consistent access routes
- the implementation of a line model comparison framework and database should be seen as a priority to improve productivity in a nationally consistent, safe and reliable way but cost and time need to be carefully considered
- where possible, road authorities will gazette routes where appropriate, as an interim measure.

The report recommends that a line model comparison methodology be tested and implemented to drive a nationally consistent vehicle assessment framework.

While the original motive for the project was issued with PBS access, the system under consideration would be suitable for all heavy vehicle assessments.

## Relevance to this project

This report is another important bridge assessment document that offers road managers advice on bridge assessment for PBS vehicles.

### 4.3.8 Future Challenges of Changing Agricultural Equipment

Austroads (2016) reviewed jurisdictional policies on agricultural vehicle mass and dimensions and differences between current and future policies. It also undertook technical assessments to investigate the impacts. The report was divided into three sections:

- Stage 1 - understand the driving forces behind future changes to agricultural equipment.
- Stage 2 - quantify the potential safety and infrastructure impacts of the equipment.
- Stage 3 – collate the findings of Stages 1 and 2.

## Key findings

The report found that the identified limitations and variations should be addressed to ensure risks are managed and to provide greater clarity and certainty to the agricultural industry. Furthermore, there is potential for policy and procedures to be harmonised across jurisdictions.

## Relevance to this project

The report highlighted the differences in how road managers make assessments on accessibility across jurisdictions and the challenges faced by road managers in keeping abreast with the constant changes in dimensions of agricultural equipment.

### 4.3.9 Restricted Access Vehicle Route Assessment Case Study

Hay & Bereni (2019) describes the benefits of the Restricted Access Vehicle Route Assessment Tool (RAVRAT) for LG road managers in assessing heavy vehicle access assessments. It articulates the history of the development of RAVRAT and its two main components, PBS and OSOM.

## Relevance to this report

This report discusses the gaps and benefits of RAVRAT in the context of LG road managers making assessment of HV access.

### 4.3.10 Transport Operator Experiences with Oversize Overmass Permitting

The VTA (2019) report presented views from transport operators in applying for, progressing, and interacting with regulators and road managers in obtaining, OSOM permits.

#### Key findings

- Given the complexity and level of customisation in OSOM access, an account manager approach for non-routinely approved permits should be adopted.
- NHVR to consider and adopt a tier-based permit turnaround application process with an associated cost structure.
- Greater transparency in and more timely responses to OSOM permitting.

#### Relevance to this project

This report identifies the issues facing road managers in understanding the complexity of making due assessment of OSOM permits in a timely manner.

### 4.3.11 Truck Impact Chart

The 'Truck Impact Chart is part of a Transport Advisory Procedure' (ATA 2018) and was developed to assist operators and asset managers in assessing the impact of HPVs. The chart is used to assist with access determination. Only some of the chart applies in Western Australia and the Northern Territory, given neither have adopted the HVNL. The chart is a technical advisory guide.

#### Relevance to this project

The report shows that safer, longer trucks can move more with less, reduce emissions, reduce fuel consumption, have a better safety record and are driven by more experienced drivers who have had to meet tougher licensing requirements.

### 4.3.12 Review of Oversize Overmass Access Arrangements

At the instigation of the Commonwealth Government, a review was conducted to understand and address OSOM movement capacity constraints. The Department of Infrastructure, Regional Development and Cities (2018) commissioned the report which discusses:

- current access arrangements for OSOM
- current practices and principles used by road managers
- factors that contribute to approval times from application to issuing permits
- impact on road managers and industry from existing OSOM access arrangements
- best practice arrangements
- variations in OSOM access arrangements and permit approval processes between jurisdictions and LGs
- priority matters to be considered by the NTC review of HVNL
- strategies to reduce the number of access permits issued and time taken to issue permits.

#### Key findings

The review identified that improvements are required to support the efficient assessment and operation of the OSOM transport task.



## Relevance to this project

The review identified several themes that were consistent in the consultation. Some of those were relevant to this report including:

- communication between road managers when more than one application is required on the planned route
- inconsistency of rules across different jurisdictions
- capacity of road managers to assess permits
- data reporting on assessment processes and historical route and load data
- capability and training relating to process and assessment.

## 4.4 Heavy Vehicle National Law - Review

*Note: Further information on the HVNL is located in Appendix B.*

The NTC is currently undertaking a review of the HVNL. The NTC has divided the submission comments into four key themes:

- fatigue management
- vehicle standards and safety
- safe people and practices
- access.

Access is the most relevant issue to this report. In June 2019 the NTC released a discussion paper “Access to Suitable Routes”. Key areas in this paper were:

- access arrangements that optimise the use of infrastructure, vehicles and resources
- access decisions that apply as broadly as possible
- quicker, simpler access to decision making
- clear responsibility and accountability.

### 4.4.1 Key Themes Relevant to this Report

From the submissions, the NTC broke the responses down into the following themes:

- access decision-making process
- access decision-making timeframes
- vehicle classification systems
- road manager challenges and examples of best practice
  - external review
  - role of data and technology
  - expanding as-of-right access
  - using the right tools to accelerate decisions
  - other access issues not covered in the issues paper.

The responses were organised into:

- government
  - local government
  - industry
  - peak bodies.
1. Key themes to come from the submissions were:
  2. Improved route assessment processes and systems.
  3. Resourcing issues, shortages in personnel and expertise is challenging for LGs and can impact on accurate and timely delivering of approvals.
  4. The collaborative approach demonstrated between DSG and LGs was highlighted as a good template.
  5. Greater use of in vehicle technology, electronic mapping, and database and data sharing.
  6. Support for the development of a network approach including greater use of notices and preapprovals.
  7. First time approval should set a precedent for identical subsequent approvals.

The full summary of responses is located in Appendix B Table B7.

## 4.5 Stakeholder Input

### 4.5.1 Interviews

#### NHVR

- The development of specific tools for a particular application type would be beneficial e.g. the Tasmanian model of assessing structures for cranes producing very granular data (specific to a particular crane). There is potential to use this approach for other heavy vehicle types.
- The RAVRAT was primarily developed for LG use but has not been taken up as much as expected.
- This work will assist in mitigating challenges such as staff turnover/loss of expertise of LG road managers through better resources. Clear and consistent assessment guidelines can assist incoming road managers in making informed assessments in a timely manner.
- While a common assessment procedure would be useful, there is a need to maintain flexibility e.g. if a road does not strictly meet requirements in relation to a permit application, other factors could be considered like average daily traffic count and population density when making a final decision.
- Some existing assessment tools such as the NTC PBS network classification assessment have some flexibility and this notion should be further explored.

#### State/Territory road managers

- Developing technical information sheets for education and guidance would be helpful for LGs. There is also the need to consider the cumulative impacts in the assessment of the freight task.
- This report should feed into a second project for Austroads to develop a generic guideline for all road managers and jurisdictions on conducting access assessments for all classes of heavy vehicles. Road managers/jurisdictions could still have their own supplements to reflect jurisdictional local conditions.
- A repository of assessment practices and procedures from jurisdictions would be beneficial and important for developing 'best practice' across all jurisdictions, (e.g. could feed into future updates to NHVR Assessment Guidelines for Granting Access).

- Better mapping will result in easier permit assessment. More gazetted maps equals a reduction in permits. More pre-approved maps equals a reduction in the time it takes to issue a permit.
- Increased support and allocation of resources to streamline assessment procedures (such as the LGAQ/TMR project) would prove beneficial.

## Local government

- In Queensland, the newly developed Milling; Germanchev; Ngo; Noya; Latter (2020) report provides LG road managers with flexibility through a risk-based assessment methodology (see Section 4.3.4). The intent of the NACoE guidelines is to provide LG road managers, (and particularly ones with less knowledge of heavy vehicle impacts), an easy guide to assess permits.

It will have a checklist which is very valuable for LG road managers and the LGAQ believes that there is potential to incorporate this into RAVRAT. There are some LGs that are risk averse to the extent that it can affect approval of heavy vehicle applications. The handbook will assist these LG road managers to make more considered decisions.

- LGAQ is interested in advocating for the need for greater research around heavy vehicle loading effects on bridges and culverts to support LGs as road managers and is interested in Tasmania's DSG bridges and structures assessment program.
- There is value in pre-approval processes to streamline approvals. Acquiring more data to match vehicle type to route at a more granular level would provide for better and more streamlined assessment.
- LG struggles to understand the evolving PBS specifications and needs assistance with this. LG also struggles with assessment on a periodical basis for their bridges and structures and needs assistance from state road agencies. LGs do not have the resources to undertake the detailed analysis required on a periodical basis.
- LG needs to be mindful of flexibility in assessing the impact to their networks if applications are one off or limited.
- Sometimes LG road managers require additional information as it can be difficult to assess on information provided.
- Some LGs suffer from lack of resources for heavy vehicle applications and this is an area where support from outside would be beneficial. LGs also see merit in standardised processes for assessment.
- The most limiting factor for assessment is determining the vehicle mass on the bridges and structures or for width of OSOM loads. They are assessed on their merits.
- Some LGs do not have documented criteria as such for assessment but do have detailed knowledge of their network and assets to make informed decisions.

## PBS assessors

- PBS design optimisation increasingly requires assessment beyond the traditional four PBS Levels and Class A and B networks. Route specific assessments are more challenging for LG road managers to process.
- Decentralised decision making means that LG officers have less exposure and experience compared to centralised state based road managers with access to subject matter experts.
- PBS requires more assessment which means less experienced assessors are confronted with more complex assessments.
- New types of PBS trucks may see a review of existing classifications into the future.
- With the potential for flexibility on classes of PBS, more education and training of road managers, (particularly for LG road managers), may be warranted.
- Training on assessment software platforms is better than handbooks, especially for assessors that do not have extensive experience.

### 4.5.2 Survey

Whilst this research report is aimed at providing road managers with intelligence on tools and supporting literature available nationally and internationally, it was thought prudent to seek further comment from LG and the industry. This additional input was sought via:

- input from LGs
- input from industry.

The full summary of input from these sources can be found in Appendix A.

Key themes of input from LGs and industry are outlined below.

#### Local government

- Greater documentation on load assessment in relation to bridges and structures would be helpful.
- Guidance and tools such as RAVRAT are not always used in larger and better resourced councils due to knowledge of their networks, good officer experience and expertise and their own assessment processes are comprehensive and cover any issues with applications. However, such tools and guidance would assist smaller LGs with fewer and less experienced assessors.
- Pre-approval is supported as a method to streamline applications and processing.
- Acquiring more data to match vehicle type to route at a more granular level would provide for better and more streamlined assessment.
- The emergence of new vehicle types including PBS can sometimes make it difficult for LG road managers to accurately assess permits such as bridge assessment.
- A guide/handbook/online support would be beneficial for LG road managers, particularly in relation to vehicle types and their characteristics.
- Common databases linked to NHVR would be worthy of investigation and this should also assist applicants who do not understand road manager concerns and priorities to select better routes.
- Many LGs will need to have a strong incentive to adopt any external systems for route assessments and asset data storage, including resourcing in the initial setup.
- The most limiting factor for assessment is determining the vehicle mass on the bridges and structures or for width of OSOM loads.
- LGs struggle to understand the evolving PBS specifications and need assistance with this. LGs also struggle with assessment on a periodical basis for their bridges and structures and need assistance from state road agencies. LGs do not have the resources to undertake the detailed analysis required on a periodical basis.
- Ideally, the development of a bridges and structures permit register would assist greatly with making timely assessment. Councils will generally understand the assets they have, however in order to approve larger loads, LGs must have confidence the structure is capable and ongoing regular testing is required to ensure that this remains the case. A list of heavy vehicle combinations that can use a certain structure could be developed and maintained, allowing for quick decision making.
- For repeat applications, if the network has not materially changed since an operator's previous application, then a new application should be a quick decision. The decision could be accelerated by linking previously approved routes/vehicles with the new application in the portal. This would serve as a reminder of previously approved applications.
- Assessment tools used by road managers need to run through a practical application test.
- Flexibility of applications taking into account local issues should be applied.
- Larger combinations would add efficiency while not necessarily impacting any more on the network.

- Faster permit decisions are more likely when a road manager understands the capacity of their road network. Road managers face challenges when making access decisions under the HVNL.
- The volume of permits received by LG road managers has increased dramatically, particularly within high growth areas where capacity has become more of an issue for councils.
- Applications provided to LG operators are not always of a high standard, which impacts on how quickly they can be processed.
- LGs can sometimes receive access requests for routes and sites they do not believe are feasible or desirable.
- The ageing network is a fundamental long-term challenge facing LGs and their ability to authorise freight access.
- There are inconsistencies in route assessments and decision-making processes under the HVNL.
- There are challenges of ensuring compliance and enforcement within the HVNL - adherence with permit conditions are another concern for LGs.
- The first and last mile of the freight task is crucial for industry, but the interplay of roads and their environments creates challenges for LGs linked to the amenity and safety of residents.
- Vehicle classification in the future would benefit from the provision of support to LG road managers to access anonymous telematics data that will assist in developing knowledge of what vehicle moves where, when and how often.
- Many of the barriers to local road access for HPVs can be more effectively addressed through a targeted response via collaboration, increased transparency and data sharing, and by addressing knowledge gaps and resourcing issues in councils, rather than by increased regulation.
- LGs will play a key role in the crucial challenge of brokering potential solutions to liveability issues, when managing the safety and amenity challenges of freight, particularly within congested urban areas.

### **Industry operators**

- The current system is a regulatory burden.
- The HVNL process is cumbersome and does not support an efficient and manageable process that would allow for the variations of vehicle size and dimension.
- Accurate assessment in a timely manner is required.
- Repetitive assessments for the same heavy vehicles on the same route are inefficient.
- There is need for more network assessment for Class 2 vehicles.
- Creation of vehicle envelopes would cover many access applications.
- The permits tool should encourage LGs to consider the wider economic/public safety impact of their permit access decisions.
- Road managers need to run through a practical application test as greater size trucks would improve efficiency while not necessarily impacting any more on the network.

## 5. Gap Analysis of National and Jurisdictional Access Decision Making Tools

### 5.1 Commonality and Difference in Assessment Methods

#### 5.1.1 Analysis of State Road Agency Guidelines and Tools

This section reviews the current guidelines and decision making tools available from jurisdictions. State and Territory guidelines and decision making tools were predominantly aimed at Class 2 type heavy vehicles but also included Class 1 and other types. Some jurisdictions are currently preparing new assessment tools for Class 1 but these are not at the time of writing available but would be worthy inclusions in the repository of decision making tools when finalised.

Notwithstanding that safety is of paramount importance when road managers are assessing access applications, five assessment criteria used by all agencies in making road access decisions were identified:

1. Geometric performance
2. Structural performance
3. Traffic interaction
4. Amenity
5. Freight planning.

*Note: The last criterion considered freight productivity, general activity and growth as areas that are not the traditional assessment criteria yet are increasingly being considered as part of assessments.*

Table 5.1 illustrates the relative uniformity of jurisdictional assessment against the five criteria. The high level criteria were broken down into sub-criteria to provide a more granular understanding of factors considered in decision making. Whilst all jurisdictions largely addressed all sub-criteria, some placed greater emphasis on certain elements, and there were variations in how the sub-criteria were interpreted.

While there was broad similarity between jurisdictions in their approach there were some differences identified:

- Tasmania lists the need for guideposts and reflectors on routes.
- South Australia takes into consideration guideposts and reflectors on routes as part of their geometric assessment.
- Only some states link lane width to traffic volume on more remote routes.
- Queensland, Western Australia, South Australia and Tasmania identified route crash data in assessment.
- New South Wales identified the impact on endangered flora and fauna as a consideration.
- New South Wales and Western Australia asked if alternative modes of transport – namely rail – had been investigated before the heavy vehicle application request was submitted
- Victoria and Queensland identified emissions from vehicles.



Table 5.1: State road agency guidelines' assessment criteria

Assessment criteria	Sub criteria	QLD	NSW	VIC	TAS	SA	WA	NZ	NT	ACT
Geometric performance	Lane widths in straight road sections	✓	✓	✓	✓	✓	✓	✓	N/A	✓
	Lane widths on curved road sections	✓	✓	✓	✓	✓	✓	✓		✓
	Lane widths on bridges	✓	✓	✓	✓	✓	✓	✓		✓
	Lane width to traffic volume	✓			✓	✓	✓			
	Overtaking provision	✓	✓	✓	✓	✓	✓			
	Signalised intersections	✓	✓	✓	✓	✓				✓
	Stacking distance	✓	✓	✓	✓	✓	✓			
	Railway level crossings	✓	✓	✓	✓	✓	✓	✓		
	Acceleration lane lengths onto main roads and highways	✓		✓	✓	✓	✓			
	Sight distance	✓	✓	✓	✓	✓	✓			✓
	Swept path	✓	✓	✓	✓	✓	✓	✓		✓
	Overhead clearance	✓	✓	✓	✓	✓	✓	✓		✓
	Off road parking	✓		✓		✓	✓			
	Grade and route topography	✓		✓	✓	✓	✓	✓		
	Guide posts/reflectors				✓	✓				
	Cross fall	✓		✓	✓		✓	✓		
Structural performance	Pavement capacity	✓	✓	✓				✓		
	Bridges and culverts capacity	✓	✓	✓	✓	✓	✓	✓		✓
	Floodways/causeways	✓	✓		✓		✓	✓		
Traffic interaction	Traffic volume/composition	✓		✓	✓	✓	✓	✓		✓
	Heavy vehicle route signage		✓	✓	✓	✓				✓
	Other road users	✓	✓	✓	✓	✓	✓			✓
	Speed restrictions			✓		✓				
	Route crash assessment	✓			✓	✓	✓			
Amenity	Noise and vibration	✓	✓	✓			✓			
	Emissions	✓		✓						
	Adjacent land use: schools, tourist attractions, hospitals	✓	✓	✓	✓	✓				✓
	Air quality/airborne dust	✓	✓	✓			✓			
	Endangered flora and fauna		✓							
	Community consultation		✓			✓	✓			
Freight planning	Evaluation against planning proposals	✓		✓		✓	✓			✓
	Proximity to existing or alternate routes			✓	✓		✓			✓
	Productivity improvement or benefits		✓	✓	✓	✓				
	Freight generation									
	Alternative modes			✓			✓			

## 6. Summary of Australian and International Literature

### 6.1 Australian Literature

Twelve Australian documents were reviewed in this report. Seven were Austroads publications, one from DIRDC, two from ARRB and two from industry.

This section will not discuss the two from industry (ATA 2018) and (VTA 2019) but they do serve to show industry is providing guidance for their members in applying for access permits and it would be beneficial for road managers to review these documents from a 360 degree perspective.

The documents provide a range of information that will be useful for state and particularly LG road managers to better inform themselves. Notwithstanding that some of the documents were dated, they still provided good advice. Table 6.1 summarises the documents.

**Table 6.1: Australian supporting reports**

	Document	Summary
1	<i>Guidelines for Assessing Heavy Vehicle Access to Local Roads</i> (Austroads 2010),	This report, whilst 10 years old, was a well laid out structured five-part assessment guide for LG road managers.
2	<i>Local Road Access for High Productivity Freight Vehicles</i> (Austroads 2018)	This report identified some key issues about the understanding of PBS vehicles. This document is very useful for LG road managers in assessing PBS vehicles.
3	<i>Guidelines for Multi-Combinational Vehicle Route Access Assessment</i> (Austroads 2000)	This report found that the assessment using the existing standards met the requirements. Whilst some of the assessment issues used are still relevant today, the report is somewhat dated such as regarding the introduction of PBS categories.
4	<i>The Local Government Heavy Vehicle Route Assessment Guidelines</i> (Milling; Germanchev; Ngo; Noya; Latter 2020)	This report had very relevant information for LG road managers, including guidance on the various truck types and combinations in relation to safety, infrastructure and amenity, approval with conditions and how to assess risk. This document provides the latest advice and guidance for LG road managers in Queensland and has application in other jurisdictions.
5	<i>The Higher Order Bridge Assessment in Australia</i> (Austroads 2018)	This report is valuable and in effect is a gap analysis document for bridges and structures assessment in each jurisdiction. Of particular note is the tiered approach for assessment of bridges and structures.
6	<i>Investigation and Development of Bridge Formulae for Inclusion in the Performance Based Standards</i> (Austroads 2020)	This report is another important bridge assessment document that offers road managers advice on bridge assessment for PBS vehicles.
7	<i>Review of Axle Spacing Mass Schedules and Future Framework for Assessment of Heavy Vehicle Access</i> (Austroads 2014).	This report addresses the development of a framework and methodology to assess heavy vehicle applications to use the bridge network on a nationally consistent basis. It has some significance in terms of providing a framework for assessment of bridges and structures and provides guidance on further work that is required.
8	<i>Future Challenges of Changing Agricultural Equipment</i> (Austroads 2018)	This report addressed Class 1 issues and found that the identified limitations and variations should be addressed to ensure risks are managed to provide greater clarity and certainty to the agricultural industry. The report highlighted the differences in road managers making assessments on accessibility across jurisdictions and the challenges faced by road managers in keeping abreast with the constant changes in dimensions of agricultural equipment.

	Document	Summary
9	<i>Restricted Access Vehicle Route Assessment Case Study</i> (Hay & Berini 2019)	This investigated the benefits of the RAVRAT for LG road managers in assessing heavy vehicle access assessments. It articulates the history of the development of RAVRAT and its two main components being PBS and OSOM.
10	<i>Review of Over Size Over Mass Access Arrangements</i> (DIRDC 2018).	The review identified that improvements are required to support the efficient assessment and operation of the OSOM transport task.

## 6.2 International Literature

Table 6.2 provides a summary of the key similarities and differences in the policy framework underpinning access decisions and approaches, particularly those based on performance based assessment.

**Table 6.2: Comparative international assessment**

	Regulatory and policy underpinnings	Heavy vehicle access approach	Performance based assessment
Australia	HVNL applied, with some derogations in six jurisdictions Two jurisdictions operate under state legislation	Heavy Vehicle Permits Designated routes for specific vehicle classes	National PBS legislation. Classifies heavy vehicles based on freight task as follows: <ul style="list-style-type: none"> <li>• General access</li> <li>• Class 1</li> <li>• Class 2</li> <li>• Class 3</li> </ul>
Canada	The Council of Ministers of Transportation and Highway Safety endorsed a Memorandum of Understanding (MoU). As part of this MoU, a Task Force on Vehicle Weights and Dimensions Policy was established.	Canadian Vehicle Envelope System used for common freight vehicles. High productivity limited access vehicles operate under special permit programs governed by strict operating conditions in most provinces	Performance based assessment used to harmonise weight and dimensions
European Union	Weight and dimensions governed by Directive (EU) 96/53/EC.	The European Modular System (EMS) was developed to: <ul style="list-style-type: none"> <li>• enable international transportation and help the growing transport demand in Europe</li> <li>• reduce fuel consumption</li> <li>• reduce emissions</li> <li>• reduce cost</li> </ul> Proposed European road access level classification	The FALCON project utilises a performance based framework to provide increased access based on: <ul style="list-style-type: none"> <li>• lower carbon footprint</li> <li>• better safety performance</li> <li>• compatibility with the infrastructure.</li> </ul> The agenda is green transport
South Africa	The National Road Traffic Act (NRTA) and the National Road Traffic Regulations (NRTR)	Exemptions are issued by provincial offices developed by the Abnormal Loads Technical Committee (ALTC)	Pilot project based on PBS principles known as “Smart Truck”
New Zealand	Vehicle Dimensions and Mass Permitting Manual Vol 1	Over length HPMV permit Higher mass HPMV permit	50MAX

## 7. Decision Making Framework and Repository

This project called for the development of a decision making framework and a structured central repository of documentation to support road managers. This chapter provides:

- guiding principles for access assessment decisions
- a repository of tools and guidelines and supporting assessment documents.

As indicated in Section 1.3.1 the repository also lists three supporting research documents as important but not core to this project.

### 7.1 Guiding Principles for Access Assessment Decisions

NHVR (2019) sums up effectively the principles for access decisions. It outlines seven principles for consideration in making access decisions.

1. Issue notices rather than permits
  - efficiency gain by both the road manager and the operator by streamlining the access decision process
2. Try to minimise the number of notices by grouping similar things
  - the modification of minor elements to an existing notice to be permitted for the same transport task
3. Promote vehicles offering higher productivity
  - initial consideration should be given to heavy vehicles delivering higher productivity
4. Ensure routes are appropriate for the vehicle
  - if issues of safety, road asset preservation and amenity can be met, then high productivity vehicles should be supported
  - if the route will compromise these considerations then alternative routes should be found
5. Consider route and network wide benefit
  - notwithstanding an assessment consists of individual elements and sections of the route, the overall decision for access should take into account the importance of the whole route and the importance of that route within the whole network.
6. Use template conditions on notices and permits
  - the use of templates is encouraged to ensure equity, fairness and consistency
7. Manage access through a proactive approach
  - adopt a philosophy of proactively managing heavy vehicle access to the network
  - identify patterns in applications for the network
  - engage industry and the community who have an interest in heavy vehicle access.

#### 7.1.1 Considerations in Granting Access

In the context of permitting larger and more efficient transportation of freight, the key considerations for road managers in granting access are safety, road asset protection and amenity with this last point a key consideration for LGs.

The Milling; Germanchev; Ngo; Noya; Latter (2020) discusses these items in terms of:

- Safety
  - reduced crashes associated with fewer trips
  - benefits of advanced technologies fitted to new and modern vehicles
  - reduced crashes associated with PBS compliant vehicles.
- Infrastructure preservation (road asset)
  - reducing pavement deterioration relative to volume and mass of vehicles on routes.
- Amenity
  - minimising impact on residential communities, effects of traffic flows and noise generation.

Similarly, Main Roads (2018) considers access, with efficiency, sustainability, asset protection, public safety and amenity.

### 7.1.2 Risk Management

Risk management is a consideration for road managers when making informed decisions on access.

NHVR (2019a) states that a risk is significant if it has a high likelihood of occurrence or will have a serious or major consequence. Conversely a risk that is unlikely to occur or will have a minor impact is not a significant risk.

DoT Victoria (2019) identifies a tiered approach to risk management with three categories:

- Category A – Low risk: acceptable for when expanding the heavy vehicle network
- Category B – Mid risk: usually used for one off permits but can be applied for minimum network application.
- Category C – High risk: some form of risk mitigation for approval to be given.

The Milling; Germanchev; Ngo; Noya; Latter (2020) report identifies that a risk management process, particularly from a LG perspective, aims at both minimising the potential for damage, loss, injury and death and maximising positive outcomes in terms of efficiency, safety, productivity and public acceptance. The International Organisation for Standardisation (ISO) standard ISO 31000:2018 describes the principles, framework and process for managing risk including the core tasks of identifying, analysing, and evaluating risks.

The report also discusses the importance of risk management in providing the road manager with a consistent and methodical approach for assessing (Figure 7.1).

If undertaken correctly it:

- removes ambiguity
- enables a balanced approach between improved heavy vehicle productivity and the above principles
- prioritises risk treatment options
- provides a mechanism for LGs to evaluate level of risk.

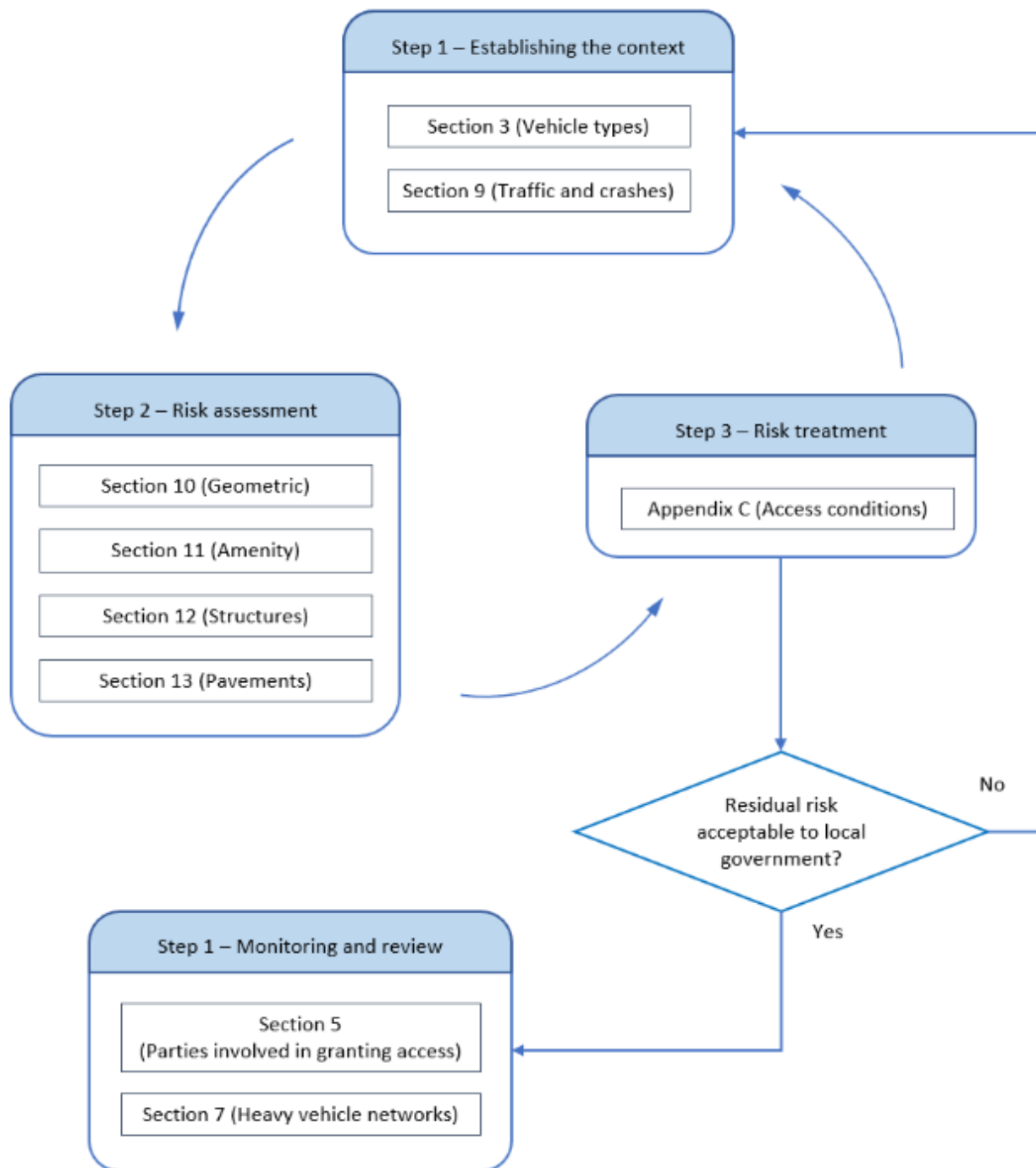
### Using conditions to manage risk

NHVR (2019a) outlines how the use of conditions provides road managers the flexibility to permit access while managing the impact of previously mentioned responsibilities for safety, road asset protection and amenity.

Conditions could include:

- For the risk of road infrastructure damage:
  - only permitting a particular commodity or product to be transported
  - only permitting the RAV to carry the load when necessary
  - reimbursement of cost for damage to the road asset or additional maintenance
  - lower speeds on sections of the route.
- For the risk of adverse effects of noise, emissions, traffic and dust:
  - restricting the use of engine brakes on decline
  - restricting operations at certain times of the day
  - limiting operations in time of inclement weather to reduce the risk of congestion
  - ensuring that an approved Traffic Management Plan is followed.
- For incompatible vehicle use with other road users, the road asset or traffic conditions:
  - RAVs should be accompanied by a pilot or escort vehicles
  - RAVs must ensure headlights are on
  - the operator must consult with entities along the route to ensure there is no impact from infrastructure such as overhead power lines or telecommunications infrastructure.

Figure 7.1: Risk management framework for heavy vehicle route evaluation



Source: (Milling et al 2020)

## 7.2 Repository of Tools and Guidelines and Supporting Assessment Documents

An assessment has been made of the relative value of documents assessed as part of this work, for inclusion in a centralised repository for use by all road managers.

Table 7.1 outlines the tools/guidelines used by Australian jurisdictions and New Zealand road agencies, NHVR supporting guidelines and other supporting technical documents identified and describe how these documents may be of use for all road managers.



Table 7.1: Assessment tools, guidelines and supporting guideline documents

State/ organisation	Road manager assessment tools	Class reference	Relevance to road managers	
Queensland	Route Assessment Guidelines for Multi-combination Vehicles and PBS Vehicles in Queensland	1; 2 PBS	High	
	Queensland Access Conditions Guide		High	
New South Wales	Access decision-making framework (in draft and confidential at this stage).	1; 3	High	
	Route Assessment Guide for Restricted Access Vehicles	2; 3	High	
	NSW Route Assessment Guide – freight route investigation levels	2; 3	High	
	NSW Route Assessment Guide – 4.6 metre high vehicles	2; 3	High	
Victoria	Class 2 heavy vehicle route assessment guidelines for VicRoads	2	High	
	Road Design Note 04-01 Heavy Vehicle Network Access Considerations V2	1; 2	High	
Tasmania	Tasmanian Class 1 Load Carrying Vehicle Guide	1	High	
	Heavy Vehicle Access Management System - Class 1 SPVs.	1	High	
	Review of Gazetted High Productivity Vehicle Route Network	2	High	
	Truck Impact Chart.	PBS; 2		Medium
South Australia	Assessment Guidelines for Road Manger Consent Decisions in South Australia	1; 2; PBS	High	
Aust Capital Territory	NHVR – Approved Guidelines for Granting Access.	1,2,3	High	
Western Australia	RAV Access Approval Process – Road Managers Guide	RAV1-10 All types	High	
	Route Assessment Guidelines		High	
	Guidelines for Approving RAV Assessment		High	
	WA Performance Based Standards (PBS) Scheme – Application and Approval Process		High	
	WA Performance Based Standards (PBS) Scheme – Standards and Vehicle Assessment Rules		High	
Northern Territory	No documents (Uses TMR’s livestock vehicle dimensions guidance)	N/A		
Other supporting documents				
NHVR	Approved Guidelines for Granting Access	All	High	
	PBS - An Introduction for Road Managers	PBS	High	
	Network Classification Guidelines	All	Other NHVR supporting reference documents not assessed as all are relevant.	
	Standards and vehicle assessment rules	PBS		
	Operating conditions for PBS vehicles	PBS		
Other national documents that are used by jurisdiction and local road managers	National Association of Australian State Road Authorities (NAASRA)* Guidelines – axle mass limits. TfNSW noted that most jurisdictions used NAASRA	2;3	High	
	Australian Standard (AS) 5100 – bridge assessments	2;3	High	
	Freight Investigation Levels for non-PBS Class 2 heavy vehicles	PBS	High	
	NTC PBS Guidelines	PBS	High	
NACoE	Heavy Vehicle Route Assessment Guidelines	2; 3	High	

State/ organisation	Road manager assessment tools	Class reference	Relevance to road managers	
Austroads	Guidelines for Assessing Heavy Vehicle Access to Local Roads	2	High	
	Local Road Access for High Productivity Freight Vehicles	2	High	
	Guidelines for Multi-Combinational Vehicle Route Access Assessment	PBS		Medium
	Local Government Heavy Vehicle Route Assessment Guidelines	2	High	
	Higher Order Bridge Assessment in Australia	2; PBS	High	
	Investigation and Development of Bridge Formulae for Inclusion in the Performance Based Standards	PBS	High	
	Review of Axle Spacing Mass Schedules and Future Framework for Assessment of Heavy Vehicle Access	2		Medium
	Future challenges of Changing Agricultural Equipment	1		Medium
ARRB	Restricted Access Vehicle Route Assessment Case Study	1 PBS		Medium
DIRDC	Review of Ove Size Over Mass Access Arrangements	1		Medium

## 8. Conclusions and Recommendations

The scope of this report was to:

- review existing jurisdictional road manager decision making assessment tools used by jurisdictions to assess Class 1, 2 and 3 road freight access requests
- undertake a gap analysis of existing road manager decision making assessment tools
- develop a decision making framework and guidelines as a structured central repository to support road managers to more efficiently benefit from these existing tools.

This report provides a systemic review, highlighting areas where efficiencies and best practice could be considered for use by individual road managers as well as in development of consistent national processes and tools.

### 8.1 Key Findings and Recommendations

#### 8.1.1 Existing Road Manager Decision Making Assessment Tools

A total of 22 guidance documents were reviewed. There was considerable variation in the coverage and focus of these documents eg: single vehicle class; multiple vehicle classes; jurisdictional specific; generic used by several jurisdictions. The guidance material was assessed for gaps between jurisdictions (Table 5.1) and whilst it was found that the guidance tools were similar in nature, some gaps did exist across Classes 1, 2 and 3.

Notable differences were:

- Tasmania listed the need for guideposts and reflectors on routes
- SA takes into consideration guideposts and reflectors on routes as part of their geometric assessment.
- Only some states linked lane width to traffic volume on more remote routes
- Queensland, Western Australia, South Australia and Tasmania identified route crash data in assessment.
- New South Wales identified the impact on endangered flora and fauna as a consideration
- New South Wales and Western Australia asked if alternative modes of transport – namely rail – had been investigated before the heavy vehicle application requests were submitted
- Victoria and Queensland identified emissions from vehicles.

#### Recommendation 1

Jurisdictions review the guidance material, identify any gaps in their respective assessment practices and consider harmonising practices with other jurisdictions.

### 8.2 Repository of Guidance Material and Supporting Documents

One of the objectives of this report was to build a repository of guidance assessment tools for access by jurisdictions and LG road managers. There was some discussion at the start of this project about how the repository would be accessed with options for layers of information. e.g. general material would be publicly available with some password protected areas for more sensitive internal work instructions.

The national and jurisdictional specific documents were valuable. However, most of the guidance material provided was already available on websites. Where it had not been published on the web, jurisdictions said they would make it available. Therefore, it was decided that a secure server approach was not necessary.

In addition to the jurisdictional and national material, an extensive number of technical documents were also identified. Of these, ten (including three on bridges and structures) were identified as likely to be particularly useful in supporting road manager decision making.

Publication of the identified material would be most useful, particularly if it was available through a single website. This would be specifically advantageous and efficient for LG road managers.

The Austroads website would be an appropriate single point of publication. A governance process is needed to ensure that procedural documents on the repository are updated as revisions are made. Further, a periodic literature scan should be undertaken to determine if other new material should be added, or literature retired.

### Recommendation 2

All relevant guidance tools and supporting documents identified in this report are placed on the Austroads website and a governance process is developed to ensure their continued currency and relevance.

## 8.3 Development of a Consistent Assessment Guidance Tool

There was some discussion on the parameters of this report with respect to identifying gaps (to what use) or deeper analyses on the various ways the respective road managers undertook assessments (how to use and why). It was confirmed that the report was about identifying gaps.

However, the PRG recognised that further work was required to investigate the 'how to and why' as part of developing a standardised access tool for use across the jurisdictions. This report would form the foundation of the development of a consistent assessment guideline. TfNSW has proposed this follow up work be titled 'National Restricted Access Vehicle Access Assessment Guideline'.

The objectives of the project were to develop a national technical guideline that will fit within the framework developed in this report. The objectives of the guideline are to:

- provide a nationally consistent and transparent methodology for all RAV access assessments
- provide technical standards that can be applied to access assessments
- apply the methodology and standards across all state and council roads
- ensure a single guideline that covers all classes of RAVs.

The benefits of undertaking this project are:

- a national access assessment methodology and technical standards for RAVs
- a nationally consistent and transparent access assessment approach
- increased support and guidance for road managers
- a single national technical guideline for access assessments.

### Recommendation 3

For HVNL regime jurisdictions, support the development of separate Restricted Access Vehicle assessment guidelines for each of Classes 1, 2 and 3, drawing from identified road manager tools, NHVR guidance publications and other assessment documents.

Whilst not strictly within scope, the remaining two observations and recommendations are listed given the information provided through the consultation and survey feedback as well as submissions to the NTC's HVNL review.

## 8.4 Network Assessment for More Efficient Assessment

There was support for more network based assessments of key LG routes so assessments do not have to be undertaken on an individual basis. This is particularly the case for Class 2 assessment but also applies to other classes of heavy vehicles. There are two jurisdictions that already promote this approach - Tasmania and Western Australia.

Over the past five years, DSG together with LGs have undertaken a state-wide assessment of bridges and road networks, and with the assistance of NVHR have developed approved network based access systems and associated notices under the HVNL to simplify access for Class 1 heavy vehicles without the need for a permit. DSG estimates the access systems provide high levels of assessment granularity, encompassing 80% of OSOM activity and 95% of SPV activity.

The maps available through the access systems provide operators with the ability to consider different heavy vehicles which might be suitable for the task and select an appropriate route, and communicate issues directly with road managers.

Sitting outside the NHVR regime, Main Roads HVS assesses all applications for heavy vehicle permits regardless of whether they are state roads or LG roads. LGs are key partners in the shared responsibility of safe and efficient access within Western Australia and manage 88% of the state's road network.

When the route or part of the route is on LG roads, HVS consult with the LG road managers when assessing RAV access and seek their comments. HVS makes a final determination on the application of any access conditions suggested by the LG road managers. The advantage of this is that the application covers more than one asset owner on any given route.

### Recommendation 4

NHVR, jurisdictional and LG road managers investigate developing a network assessment model predominately for Class 2 heavy vehicles but also other classes for jurisdictions within the NHVR regime.

## 8.5 Review of Particular LG Issues

A focus for Austroads in commissioning this report was to support LG road managers. The following key issues and opportunities were raised by LGs:

- LGs not having the resources to accurately assess routes and grant approvals in a timely manner
- external support through education and training is needed such as in evolving PBS specifications
- the importance of LGs documenting procedures and practices
- better data to match vehicle type to route at a more granular level to enable streamlined assessment.

Resources and support for LG road managers were prominent in interviews and the survey. With the lack of resources and tight timelines in terms of assessment, LGs tend to move to a risk-averse position, particularly when it comes to bridges and structures access approvals.

Reference and instructional documents and maps were also raised several times as tools that could assist more confident decision making. Whilst the repository will provide road managers with a consolidated library of jurisdictional road managers' guidelines and tools as well as supporting technical reference documents, more interactive education was seen as important.

It was also identified that LGs could do more in terms of documenting their procedures and processes. A number of LGs have experienced road managers that have their expertise in their heads rather than in a manual. Knowledge transfer is important with staff turnover.

Ongoing assistance in education and training for LG road managers in emerging assessment issues evolving PBS specifications was also seen as an area of potential benefit.

Areas of focus could include:

- a LG assessment resource/guide
- a best practice template LG assessment process which could be customised for local use
- education and interactive training on emerging heavy vehicle issues, which is easy to consume in a range of geographical locations
- knowledge transfer from senior and experienced road managers to new staff.

### **Recommendation 5**

Further research to be conducted on how to provide support and resources to assist LGs in making informed and efficient decisions on heavy vehicle access for jurisdictions under the NHVR regime.

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## Appendix A Consultation

### A.1 Interviews

#### A.1.1 NHVR

NHVR is supportive of the development of a repository of access assessment tools and procedures for road managers. An important objective of this project is to identify the tools that are required for a particular application type. An example is the Tasmanian model of assessing structures for cranes producing very granular data (specific to a particular crane). There is potential to use this approach for other heavy vehicle types.

NHVR believes that LGs will benefit most from this project and notes that there are other road managers such as national parks authorities who will also potentially benefit.

The RAVRAT was primarily developed for LG use but has not been taken up as much as expected.

It is anticipated that this report will provide road managers with the opportunity to review all procedures and practices and to identify opportunities to improve their own assessment guidelines and tools. It will also assist in mitigating challenges such as staff turnover/loss of expertise of LG road managers through better resources. Clear and consistent assessment guidelines can assist incoming road managers to make informed assessments in a timely manner.

A possible outcome of this report could be a common assessment procedure, but this is not the primary objective. Flexibility in making holistic assessments for heavy vehicle access is also important. If a road does not strictly meet requirements in relation to a permit application, other factors could be considered like average daily traffic count and population density when making a final decision.

Some existing assessment tools such as the NTC PBS network classification assessment have some flexibility and this notion should be further explored.

#### A.1.2 Queensland

TMR outlined the current assessment guidelines and tools it uses. The main assessment guide is the TMR (2019a).

However, of particular note is the recently developed Heavy Vehicle Route Assessment Guidelines (Milling; Germanchev; Ngo; Noya; Latter 2020) document under the NACoE banner. This guide provides high quality guidance for LG road managers to make easy and informed access assessment decisions considering a range of issues.

TMR may in the future, consider merging of its 2019b with the NACoE document that will provide uniform assessment guidelines across state and local roads in Queensland.

TMR is also considering a summary handbook to provide a "how to best use" the NACoE document for state and local road managers should the consolidation take place.

### A.1.3 New South Wales

It was noted by TfNSW that different approaches are adopted for the consideration and assessment of Class 2 vehicles compared to Class 1 and 3 vehicles. It was recognised that Class 1 and 3 vehicles primarily undertake one-off movements compared with Class 2 vehicles which typically undertake a recurring freight task.

TfNSW indicated that engagement is undertaken with local councils, particularly for Class 2 vehicle movements. TfNSW indicated that RAVRAT is not used by all councils in NSW and there are some challenges with the OSOM module.

TfNSW also adopts the use of TMP which an operator completes and submits as part of their access permit application for Class 1 vehicle movements that meet the definition of high risk.

TfNSW thought that developing technical information sheets for education and guidance would be helpful for LGs and emphasised the importance in considering the cumulative impacts in the assessment of the freight task.

TfNSW supports this research report as a foundational piece of work to identify what documents currently exist and what gaps there are as well as differences between jurisdictions. It believes that this should feed into a second project for Austroads to develop a generic technical guideline for all road managers and jurisdictions on conducting access assessments for all classes of heavy vehicles.

This technical document and road managers/jurisdictions could still have their own supplements to reflect jurisdictional local conditions.

### A.1.4 Victoria

DoT determines access for heavy vehicles on routes on a case by case basis. Since 2014, DoT have taken on the responsibility to coordinate approval for LG access (through the municipalities) on the gazetted network, and then map those approved LG routes. There is a Service Level Agreement with the NHVR to manage the maps on the DoT website. In addition, the maps are mirrored on the NHVR website.

The maps are kept up to date and continue to be expanded. There are currently 32 maps (soon to grow to 36) on the DoT website. All map data is open source and available to the public. The split between gazetted and pre-approved routes is notionally 50/50. Maps include LG approved routes alongside approved arterial roads managed by DoT. DoT also map the approved forestry roads managed by the Department of Environment, Land, Water and Planning.

DoT's view is that better mapping including the release of more maps and the expansion of gazetted and pre-approved networks, will reduce the need for permits and take the pressure off DoT's consent and structure assessment teams.

Increased support and allocation of resources to streamline assessment procedures (such as the LQAQ/TMR project) would prove beneficial.

### A.1.5 Tasmania

The DSG is the responsible agency for the administration of heavy vehicle policy in Tasmania. DSG is proactive in developing systems that simplify access arrangements for operators and reduce the burden for road managers through efficient and comprehensive assessments. To this end, over the past five years DSG and Tasmanian LG authorities have undertaken a state-wide assessment of bridges and road networks to provide comprehensive access for Class 1 heavy vehicles without the need for a permit, using web-viewers accessible to operators.

DSG estimates this data provides high levels of assessment granularity, encompassing 80% of OSOM activity and 95% of SPV activity.

### A.1.6 South Australia

DPTI determines access for heavy vehicles depending on the type of vehicles being used and the route nominated to travel.

If the route nominated to travel meets the relevant assessment criteria for the vehicle type, then it can be added to a relevant RAV network. The main aim is to gazette as much of the network as possible for different vehicle types, whether it be Class 1, 2 or 3 vehicle combinations to reduce the number of permits being issued by NHVR.

Where a road/route cannot be added to a relevant RAV network, then access can still be approved via a permit eg DPTI consent to NHVR for access on their roads via a road manager consent.

The assessment criteria for Class 1 vehicle combinations vary quite significantly in contrast to the assessment criteria for a Class 2 combination.

#### Class 1 vehicle combination

The risks associated with granting consent to Class 1 vehicle combinations eg OSOM, SPV etc generally can be mitigated through the application of conditions applied to a Road Manager consent eg Road, Vehicle and Travel conditions.

#### Class 2 vehicle combination

Class 2 vehicle combinations are assessed in line with the Performance Based Standards Scheme – Network Classification Guidelines. The risks associated with granting consent to Class 2 vehicle combinations e.g. B-Doubles, Road Trains etc. generally cannot all be mitigated through the application of conditions applied to a Road Manager consent. Therefore, a risk-based assessment approach for these types of vehicle combinations assists assessors in granting/refusing access where appropriate.

Some South Australian LGs take advice and guidance from DPTI such as DPTI setting the conditions of access on requests for consents. This is more the case for smaller councils where resources/expertise in access decisions is limited.

### A.1.7 Australian Capital Territory

The Australian Capital Territory has a number of gazetted approved routes for specific vehicle types that allow operators to access specified roads, e.g. B-Doubles, HML vehicles, SPVs etc., without the need for an individual permit. TCCP assess all access requests for RAVs on its network using the nationally adopted NHVR (2019a) developed in conjunction with state and territory jurisdictions and NHVR.

Any access request for any restricted access vehicle is assessed on a case by case basis depending on individual mass and dimension limits and what part of the road network is being used.

### A.1.8 Western Australia

Main Roads HVS assesses all applications for heavy vehicle permits regardless of whether they are state roads or LG roads. HVS is responsible for developing, administering and granting RAV access with appropriate conditions, considering matters including safety, structural and vehicular suitability and the orderly and efficient use of roads, while meeting the needs of the transport industry.

This includes the development and maintenance of the RAV networks and concessional loading schemes that are available to heavy vehicle operators.

HVS is responsible for coordinating the necessary route assessments and approving RAV access where appropriate for all roads open to and used by the public in Western Australia taking into account matters including safety, structural and vehicular suitability and the orderly and efficient use of roads.

During this process, HVS may consult with Main Roads' Structures Engineering Branch, Materials Engineering Branch and Regions to understand the impact proposed access may have on the road infrastructure, prior to making a final decision on an access application.

When the route or part of the route is on LG roads, HVS will consult with the LG road managers when accessing RAV access and seek their comments and will consider applying any access conditions suggested by the LG road managers.

LGs are key partners in the shared responsibility of safe and efficient access within Western Australia and manage 88% of the state's road network.

### **A.1.9 Northern Territory**

The responsible agency in the NT for heavy vehicle administration is the DIPL.

DIPL does not have a specific road manager assessment guide but does use TMR's guidance on livestock vehicle dimensions for consistency in cross border trips.

### **A.1.10 New Zealand**

New Zealand has a policy of permitting heavy vehicles on its network and rarely refuses as the network is in good condition to permit access.

Permits are assessed by a dedicated permit group although applications are divided into regions for assessment. Assessment is made on mass and dimensions.

New Zealand has a prescribed HPMV network. LGs have various degrees of expertise to make assessments and the national government assists if necessary. Most LG networks, including bridges and structures, are in good condition to permit access as the national government has maintained these at a high level.

For OSOM permits, New Zealand has a four-category permit structure. Category 4 requires an access transport plan.

### **A.1.11 Local Government Association of Queensland**

The LGAQ provided comment generally on issues facing LGs. LGs can currently use the NTC PBS guidelines and the PBS RAVRAT which incorporates the guidelines and is freely available to LGs. However, most LG lower order roads would not meet the requirements of the NTC guidelines.

The NACoE guidelines are an addition to NTC/RAVRAT assessment, but LG road managers can refer to the NACoE guidelines as a supplementary resource.

LGAQ is interested in advocating for the need for greater research around heavy vehicle loading effects on bridges and culverts to support LGs as road managers and is interested in Tasmania's DSG bridges and structures assessment program.

Heavy vehicle assessments often require input from multiple decision makers such as regions within state jurisdictions or bridge engineers from different teams. This adds complexity and potential inconsistency in decision making.

The intent of the NACoE guidelines is to provide LG road managers, (and particularly ones with less knowledge of heavy vehicle impacts), an easy guide to assess permits.



It will have a checklist which is very valuable for LG road managers and the LGAQ believes that there is potential to incorporate this into RAVRAT.

There are some LGs that are risk averse to the extent that it can affect approval of heavy vehicle applications. The handbook will assist these LG road managers to make more considered decisions.

TMR have indicated that it will consider aligning their assessment processes with NACoE guidelines but as TMR assessments are divided into regions; regional road managers may require some training to ensure consistency of assessment.

### **A.1.12 Toowoomba Regional Council**

When assessing permits, Toowoomba Regional Council generally approves applications on any road, provided the road is maintained by the council unless certain circumstances warrant otherwise. This is due to its recognition of the importance of freight to the regional economy. The council has inventory data for its bridges and structures but sees a need for greater documentation of load assessment.

The council is also interested in Tasmania's assessment and documenting of its bridges and structures. However, Toowoomba Regional Council is less supportive of the crane notice scheme pending better understanding of its bridges and structures.

The council does not use RAVRAT as they believe that knowledge of its network, good officer experience and expertise and its own assessment processes are comprehensive and cover any issues with applications. The council generally provides conditional approvals on sub-standard roads such as speed restrictions or not permitting operations during or following wet weather.

The council sees value in a pre-approval process to streamline approvals. It also has identified that acquiring more data to match vehicle type to route at a more granular level would provide for better and streamlined assessment. The council provided an Extract from their Road Operations Manual – Heavy Vehicles which guided operators to various NHVR and TMR guides.

### **A.1.13 District Council of Streaky Bay**

The District Council of Streaky Bay does not use a specific tool, (e.g. RAVRAT), as assessments are made on local knowledge of its network. There are no bridges to assess which makes it an easier process. The council believes that some LGs with limited resources might need assistance in using the assessment tools available to make more informed assessments of risk to their networks. Furthermore, assessment tools need to accommodate local conditions.

Information coming through from the operator's application is not comprehensive which requires follow up. Some applications can be for multiple years which are difficult to assess given changing circumstances on its network from year to year.

### **A.1.14 Greater Dandenong Council**

The emergence of new vehicle types including PBS can sometimes make it difficult for LG road managers to accurately assess permits such as bridge assessment.

Load assessment and swept paths are the key considerations when assessing permits, particularly for one off OSOM moves.

LGs need to be mindful of flexibility in assessing the impact to their networks if applications are one off or limited.

A guide/handbook would be beneficial for LG road managers, particularly in relation to vehicle types and their characteristics.



Sometimes LG road managers require additional information as it can be difficult to assess on information provided.

Some LGs suffer from lack of resources for heavy vehicle applications and this is an area where support from outside would be beneficial. The council also sees merit in standardised processes for assessment.

Common databases linked to NHVR would be worthy of investigation and this should also assist applicants who do not understand road manager concerns and priorities to select better routes.

Many LGs will need to have a strong incentive to adopt any external systems for route assessments and asset data storage, including resourcing in the initial setup.

The council utilises NHVR assessment documents. However, the council has provided a handover instruction sheet that is useful in the context of handing over operational guidance. This is outlined in detail in Appendix C.

### **A.1.15 Walcha Shire Council**

Walcha Shire Council uses the NHVR portal exclusively for applications and indicates that it works well. The council undertakes assessment as per normal guidelines. Most of the council's road network has been assessed and gazetted for the most common types of heavy vehicles such as B Doubles. HML and Livestock Loading Scheme applications are not required for the gazetted routes and they appear on the RMS RAV mapping. Outside these applications (such as an OSOM application) a case by case approval process takes place. When assessing PBS applications, the council usually compares a similar traditional heavy vehicle type to the comparable PBS type.

The council advises that the most limiting factor for assessment is determining the vehicle mass on the bridges and structures or for width of OSOM loads. They are assessed on their merits.

Depending on the application, certain other factors are considered such as impact on amenity. These are usually for Class 2 higher frequency freight tasks rather than one off OSOM considerations.

The council does not have documented criteria as such for assessment but does have detailed knowledge of their network and assets to make informed decisions.

The council suggests that LGs struggle to understand the evolving PBS specifications and need assistance with this. LGs also struggle with assessment on a periodical basis for their bridges and structures and need assistance from state road agencies. LGs do not have the resources to undertake the detailed analysis required on a periodical basis.

Ideally, the development of a bridges and structures permit register would assist greatly with making timely assessment. Councils will generally understand the assets they have, however in order to approve larger loads, LGs must have confidence the structure is capable and ongoing regular testing is required to ensure that this remains the case. A list of heavy vehicle combinations that can use a certain structure could be developed and maintained, allowing for quick decision making.

For repeat applications, if the network has not materially changed since an operator's previous application, then a new application should be a quick decision. The decision could be accelerated by linking previously approved routes/vehicles with the new application in the portal. This would serve as a reminder of previously approved applications.

## A.1.16 PBS Assessors

### PBS Assessor (1) Tiger Spider

PBS design optimisation increasingly requires assessment beyond the traditional 4 PBS Levels and Class A and B networks. Route specific assessments are more challenging for LG road managers to process.

Continued complexity and more granular assessments require more advanced modelling tools for PBS vehicles and route assessments.

Traditional approaches, like manual assessment, handbooks and field trials, can be too slow and cumbersome and will not support assessment volume and statutory processing times.

Decentralised decision making means that LG officers have less exposure and experience compared to centralised state based road managers with access to subject matter experts.

PBS requires more assessment which means less experienced assessors are confronted with more complex assessments.

Modern software platforms can overcome the demands put on road managers and assist by providing better tools for road access training, knowledge sharing and technical assessments. Tiger Spider have developed a Software as a Service (SaaS) tool that complements the NHVR permit transaction portal.

### PBS Assessor (2) Smedley's Engineers

PBS frameworks may become more flexible into the future. For example, length of truck or the mass of a truck could be extended beyond existing limits if the configuration proves to be overall a net benefit to the network. New types of PBS trucks may see a review of existing classifications into the future.

With the potential for flexibility on classes of PBS, more education and training of road managers, (particularly for LG road managers), may be warranted.

Training on assessment software platforms is better than handbooks, especially for assessors that do not have extensive experience.

## A.2 Survey Responses

Further consultation was undertaken through a written request of selected LGs and Local Government State Associations. Industry associations were also invited to make comment.

Those contacted were:

- all LG State Associations
- seven specific LGs representing all jurisdictions
- eight transport associations.

Responses were received from:

- three industry associations
- two LG State Associations
- one LG council.

A summary of survey responses is presented in Table A2.

Table A2: Summary of survey responses from industry and local government

Organisation	Key points from responses
Victorian Transport Association	<p>The current system of access to suitable routes has become a regulatory burden for most transport companies that are engaged in the regular movement of larger heavy vehicles. This issue is not confined to the OSOM vehicle configurations but also the access to roads by the High Productivity Freight Vehicles and larger trucks used for specific purposes.</p> <p>The granting of access through the HVNL process is cumbersome and difficult for all parties to manage.</p> <p>The current HVNL does not support an efficient and manageable process that would allow for the variations of vehicle size and dimension to be easily managed. Operators are generally confused when working through the current process of the granting of access.</p> <p>VTa endorses the creation of vehicle envelopes that would see many access applications disappear. The VTA also endorses the use of IAP as another way to reduce the number of application requests.</p> <p>The NHVR should have greater powers and not be so restricted by the current prescribed process and serious consideration must be given to removing local councils from the decision-making process or reducing their involvement in the new law.</p>
Australian Trucking Association	<p>Any permits tool should encourage councils to consider the wider economic/public safety impact of their permit access decisions. For example, the evidence shows that a smaller number of movements with larger trucks are safer than a larger number of movements with smaller trucks.</p>
Queensland Trucking Association	<p>Assessment tools used by road managers need to run through a practical application test. A number of applications are rejected, but in reality should be passed.</p> <p>This suggests that the assessment tools are not identifying on the ground realities.</p> <p>Flexibility of applications taking into account local issues should be applied.</p> <p>Larger trucks should be now accepted, (A Doubles), which do not impact any greater on the network than current B Doubles. In some cases, less so.</p> <p>This also accommodates and reflects the growing shift from bulk transport to containerisation.</p> <p>Greater size trucks would add efficiency while not necessarily impacting any more on the network.</p>
City of Launceston	<p>When making heavy vehicle access decisions, the City of Launceston process relies heavily on the network access maps produced for all of Tasmania by the DSG.</p> <p>A large portion of our road network is now under notice (no permit or assessment required) for various vehicle configurations, as a result of the DSG network access project above. For those roads and vehicles that fall outside the network access notices, the access request is assessed in terms of the vehicle dimensions and masses.</p> <p>To check vehicle dimensions, someone with knowledge of our road network will look at the requested route, (particularly any bridges on the route), and assess whether the vehicle can physically fit down the route.</p> <p>To check vehicle masses, we typically are only interested in the loadings on bridges. As part of the DSG network access project mentioned above, we had a consultant do a desktop assessment of all our bridges against a range of vehicle types, which gave us a reasonable understanding about appropriate mass limits for each bridge. So far, all the access requests have been well under the mass limits of our bridges. There may be a point in the future where we have to get a more detailed structural analysis of our bridge/s if there is a proposed loading that is close to or above the limit of the bridge.</p> <p>In future, we would like to develop network operating plan/s for Launceston, that would also help to inform heavy vehicle access decisions.</p> <p>We have also tested out the ARRB RAVRAT tool, (when it was focused on PBS vehicles), but we found it was of limited value in terms of making access decisions. But a tool of that nature could be of some use as the location to record evidence for the decision-making process.</p>
Western Australian Local Government Association (WALGA)	<p>While the situation in Western Australia is somewhat different to other states in that the LGs do not approve access, they are still expected to provide advice to Main Roads regarding access requests.</p> <p>Assessment of road geometry and bridge structural capacity is well established but there is minimal assessment of freight volume in relation to road structural capacity and surface suitability.</p> <p>There have been many cases where heavy vehicle access for a vehicle type has been approved on a road that meets the geometric requirements but without consideration for the structural capacity of the pavement to carry the volume and tonnage.</p> <p>As a result, many roads have failed prematurely leaving the LGs to pay for repairs. Surfacing suitability, particularly at intersections is also not considered when assessing requests.</p>

Organisation	Key points from responses
Municipal Association of Victoria (MAV)	<p>Improvements to systems, processes and data are already occurring under the current HVNL, for example, the targeted approach the Tasmanian Government is taking in partnership with councils and industry to increase OSOM vehicle access.</p> <p>Faster permit decisions are more likely when a road manager understands the capacity of their road network. Road managers face challenges when making access decisions under the HVNL. Councils face a balancing act in supporting productivity by increasing heavy vehicle access and their responsibility to preserve community safety and the local road network for all road users with only limited funding.</p> <p>The volume of permits received by council road managers has increased dramatically, particularly within high growth areas where capacity has become more of an issue for councils. Councils have received no additional resource and staff have had to add the permit approval task to their existing wider duties.</p> <p>In smaller councils where there is no dedicated staff resource to assess permit applications, this is a significant challenge. If councils were able to access a fee for processing permit applications, this would help them to increase internal capacity and process more applications in the required timeframe.</p> <p>Applications provided to councils by operators are not always of a high standard, which impacts on how quickly they can be processed. A minimum requirement for operators to provide more details in a permit application, including the reason local road access is required, could speed up approvals. The key considerations for councils will always be the impact of freight on their road assets, safety and amenity of their community.</p> <p>Consent – the role of local knowledge and associated costs – councils sometimes receive access requests for routes and sites they do not believe are feasible or desirable.</p> <p>However, when council road managers provide feedback on concerns to the NHVR, the focus tends to be on processing an approval as quickly as possible rather than negotiating alternative route options.</p> <p>This back and forth scenario experienced by councils has often led to delayed processing times. Councils are increasingly being expected to fund level 3 bridge and culvert structural assessments for specific NHVR access requests, particularly for OSOM and class 1 SPV applications. Funding and scheduling of assessments can cause significant delays to a council's processing time of an access request.</p> <p>Councils are part of the solution to current issues facing the freight task, but all key stakeholders including Federal and State Government, the NHVR as the regulator and industry need to collaborate more effectively to address system and knowledge gaps</p> <p>Freight infrastructure– the ALGA report National State of the Assets Project states that \$30 billion is needed to renew and replace ageing infrastructure, much of which is deteriorating from wear and tear worth \$5.5 billion a year. This is a fundamental long-term challenge facing councils and their ability to authorise freight access.</p> <p>A crucial issue for councils is the capacity to assess roads, bridges and culvert infrastructure, which will deliver higher productivity, particularly for identified strategic freight routes and deliver a safer freight task in the future. Councils would be able to utilise updated intelligence to inform their bridge capital works programs and planning for maintenance and renewal.</p> <p>A better evidence base and understanding of the road network could potentially lead to councils gazetting and pre-approving more access permits.</p> <p>Inconsistencies in route assessments and decision-making processes under the HVNL – for example, there is no consistent route assessment process applied by road managers, with only some using the RAVRAT. For operators and the NHVR to be able to track how permit applications are progressing, updates to the current NHVR manager portal are required.</p> <p>Introducing a tool for council road managers to create summary reports on statistics, such as the number of applications received and processed in a given month, would be of value to the NHVR and councils.</p> <p>Challenges of ensuring compliance and enforcement within the HVNL – adherence with permit conditions is another concern for councils. Vehicles will often use local roads that run through residential areas to access arterial roads, contrary to the permit conditions. Councils have no power to enforce the conditions.</p> <p>Consideration should be given to granting council officers the powers to be able to enforce access infringements on their local road networks. It is also well known that some industry operators run 'hot' without appropriate permits, which is a serious safety concern for councils.</p> <p>The first and last mile of the freight task is crucial for industry, but the interplay of roads and their environments creates challenges for councils linked to the amenity and safety of residents. Freight journeys tend to start and finish within a congested road network posing safety concerns for residents.</p>

Organisation	Key points from responses
	<p>Land use planning and infrastructure design do not yet include first and last mile considerations to ensure future levels of freight access will be accommodated – especially for higher productivity vehicles. Some metropolitan councils are reviewing their long-term land use framework plans to minimise heavy vehicle traffic on local roads.</p> <p>Councils can play a key role in brokering potential solutions to liveability issues including managing congestion, after-hours curfews and trialling innovative road surfaces.</p> <p>Vehicle classification in the future would benefit from the provision of support to council road managers to access anonymous telematics data, that will assist in developing knowledge of what vehicle moves where, when and how often. By providing support to council assessment of new categories of vehicles, councils will be better prepared for the newest and safer heavy vehicles being introduced to the network</p> <p>Many of the barriers to local road access for higher productivity freight vehicles can be more effectively addressed through a targeted response via collaboration, increased transparency and data sharing and by addressing knowledge gaps and resourcing issues in councils, rather than by increased regulation.</p> <p>Councils will play a key role in the crucial challenge of brokering potential solutions to liveability issues, when managing the safety and amenity challenges of freight, particularly within congested urban areas.</p>

## Appendix B Literature Review

### B.1 Canada – Vehicle Envelope System

Table B1: Provincial and jurisdictional information in Canada

Jurisdiction	Website
British Columbia	<a href="http://www.th.gov.bc.ca/cvse/">http://www.th.gov.bc.ca/cvse/</a>
Alberta	<a href="http://www.transportation.alberta.ca/3.htm">http://www.transportation.alberta.ca/3.htm</a>
Saskatchewan	<a href="https://www.saskatchewan.ca/business/transportation-and-road-construction/information-for-truckers-and-commercial-trucking-companies">https://www.saskatchewan.ca/business/transportation-and-road-construction/information-for-truckers-and-commercial-trucking-companies</a>
Manitoba	<a href="http://www.gov.mb.ca/mit/mcd/mce/index.html">http://www.gov.mb.ca/mit/mcd/mce/index.html</a>
Ontario	<a href="http://www.mto.gov.on.ca/english/trucks/">http://www.mto.gov.on.ca/english/trucks/</a>
Quebec	<a href="https://www.transports.gouv.qc.ca/fr/modes-transport-utilises/vehicules-lourds/Pages/vehicules-lourds.aspx">https://www.transports.gouv.qc.ca/fr/modes-transport-utilises/vehicules-lourds/Pages/vehicules-lourds.aspx</a>
New Brunswick	<a href="http://www2.gnb.ca/content/gnb/en/departments/dti/trucking.html">http://www2.gnb.ca/content/gnb/en/departments/dti/trucking.html</a>
Prince Edward Island	<a href="http://www.gov.pe.ca/law/regulations/pdf/R&amp;15-5.pdf">http://www.gov.pe.ca/law/regulations/pdf/R&amp;15-5.pdf</a>
Nova Scotia	<a href="http://www.gov.ns.ca/tran/trucking/vehicleghtsdims.aspx">http://www.gov.ns.ca/tran/trucking/vehicleghtsdims.aspx</a>
Newfoundland and Labrador	<a href="http://www.hoa.gov.nl.ca/hoa/regulations/rc010081.htm#5">http://www.hoa.gov.nl.ca/hoa/regulations/rc010081.htm#5</a>
Yukon	<a href="http://www.gov.yk.ca/services/cat_trans.html">http://www.gov.yk.ca/services/cat_trans.html</a>
Northwest Territories	<a href="http://www.justice.gov.nt.ca/">http://www.justice.gov.nt.ca/</a>

Source: Task Force on Vehicle Weights and Dimensions Policy, n.d.

Table B2: Breakdown of mass limits for Canadian Vehicle Envelope System

Weight	Limit
<b>Axle Weight Limits:</b>	
Steering Axle	Maximum 5 500 kg
Single Axle (dual tyres)	Maximum 9 100 kg
<b>Tandem Axle:</b>	
Axle Spread 1.2 m - 1.85 m	Maximum 17 000 kg
<b>Tridem Axle:</b>	
Axle Spread 2.4 m to less than 3.0 m	Maximum 21 000 kg
Axle Spread 3.0 m to 3.1 m	Maximum 23 000 kg
<b>Gross Vehicle Weight Limits:</b>	
Five Axles	Maximum 40 700 kg
Six Axles	Maximum 48 600 kg
Seven Axles	Maximum 56 500 kg
Eight Axles	Maximum 62 500 kg

Source: Task Force on Vehicle Weights and Dimensions Policy, 2019

**Table B3: Breakdown of dimensional limits for Canadian Vehicle Envelope System**

Dimension	Limit
Overall Length	Maximum 25 m
Overall Width	Maximum 2.6 m
Overall Height	Maximum 4.15 m
Box Length	Maximum 20.0 m
<b>Tractor:</b>	
Wheelbase	Maximum 6.2 m
Tandem Axle Spread	Minimum 1.2 m/Maximum 1.85 m
<b>Lead Semitrailer</b>	
Wheelbase	Minimum 6.25 m
Kingpin Setback	Maximum 2.0 m radius
Tandem Axle Spread	Minimum 1.2 m/Maximum 1.85 m
Tridem Axle Spread	Minimum 2.4 m/Maximum 3.1 m
Track Width (extreme outer width)	Minimum 2.5 m/Maximum 2.6 m
Fifth Wheel Position	No more than 0.3 m behind the centre of the rearmost axle on the semitrailer
<b>Second Semitrailer</b>	
Wheelbase	Minimum 6.25 m
Kingpin Setback	Maximum 2.0 m radius
Tandem Axle Spread	Minimum 1.2 m/Maximum 1.85 m
Tridem Axle Spread	Minimum 2.4 m/Maximum 3.1 m
Track Width	Minimum 2.5 m/Maximum 2.6 m
* Sum of Semitrailer Wheelbases	Maximum 17.0 m
<b>Inter-axle Spacings</b>	
Single Axle to Single or Tandem Axle	Minimum 3.0 m
Tandem Axle to Tandem Axle	Minimum 5.0 m
Tandem Axle to Tridem Axle	Minimum 5.5 m
Tridem Axle to Tridem Axle	Minimum 6.0 m

Source: Task Force on Vehicle Weights and Dimensions Policy, 2019



## B.2 Europe - FALCON

**Table B4: Performance based standards framework for Europe in the FALCON project**

Performance Standard	Include?	Recommendations
Driveability		
Startability	Y	Consider reducing L1 to 12%. Allow jurisdictions to review criteria based on local road grades.
Gradeability A (Maintain motion)	Y	Consider reducing criteria in accordance with adjustments on startability. Allow jurisdictions to define limits on local conditions.
Gradeability B (Maintain speed)	Y	Appropriate as is (aligned to speed limits).
Acceleration Capability	Y	Review criteria. Allow jurisdictions to review the criteria based on local intersection and crossing geometries.
Manoeuvrability		
Low-Speed Swept Path	Y	Criteria too lenient – review against existing European road geometries and roundabout standards.
Frontal Swing	Y	Criterion can possibly be reduced to 0.5 m for all levels, based on the fleet assessed. However there is no documented need to reduce the limit below the current 0.7 m.
Difference of Maxima	(review)	Potentially too complicated, and not aligned with direct safety risk. Could be removed or replaced with a single standard. Requires further investigation.
Maximum of Difference	(review)	
Tail Swing	Y	Criteria can possibly be reduced to 0.3 m for all levels (subject to further investigation). Car-carriers should be included in further investigations.
Steer-Tyre Friction Demand	Y	The $\leq 80\%$ requirement is possibly too high and should be reviewed.
EU turning circle	Y (L1)	Applicable as an additional test for Level 1-type vehicles.
Netherlands turning circle	N	Found to offer no additional information vs. LSSP, while requiring multiple different manoeuvres to assess longer vehicle combinations.
High-speed stability		
Static Rollover Threshold	Y	Applicable as is.
Rearward Amplification (last trailer)	Y	Criterion of 2 requires further review, as appropriate to the rear trailer method, and once the vehicle designs have been optimised further.
Rearward Amplification (RRCU)	N	Last trailer method preferable, as the standard has been decoupled from assessing direct rollover risk.
Dynamic Load Transfer Ratio	Y	A better indication of rear trailer rollover risk in transient manoeuvres. The criterion of 0.6 may require review in parallel with RA=2.
High-Speed Transient Offtracking	Y	Vehicle and lane widths are similar to Australia and so the criteria may be transferable, but Level 1 vehicles may use minor roads of width 2.5 or 2.75 m. This requires further investigation.
Yaw Damping Coefficient	Y	Applicable as is.
Tracking Ability on a Straight Path	N	Found to be highly correlated with HSTO, and prone to simulation error due to complexity.

High-Speed Steady-State Offtracking	N	Found to be highly correlated with vehicle length, but also influenced by vehicle mass. Can be used to inform vehicle length limits per road access level, however for very heavy vehicles (i.e. higher than the loading conditions considered in this study), the influence of mass may become a limiting factor.
Winter conditions		
Low friction braking	Y	The faultless function of ABS system is necessary for braking stability of HCVs in winter.
Steer-Tyre Friction Demand	N	Shown to be correlated with high friction performance for the fleet considered. High friction criteria could be set accordingly to ensure low friction performance.*
Drive-Tyre Friction Demand	N	Correlated with high friction performance, and found to be less meaningful than steer tyre friction demand, due to the dissimilar direction of the forces in a two-axle drive bogie.. High friction criteria could be set accordingly to ensure low friction performance.
Low friction startability	N	Temporary drive axle load proportioning should be permitted to increase drive axle loads as required for starting.
Low friction high-speed standards	N	A speed reduction to 60 km/h was found to ensure comparable performance to high friction conditions.
Infrastructure		
Bridge-loading	Y	The proposed methodology is to: (1) define suitably representative bridge structures to consider which may be region-specific, (2) assess the impact of the representative fleet on the bridges as demonstrated, and (3) fit a suitable bridge formula to the results, matching the order of the formula as required, which could be fitted according to the most aggressive effect.
Road wear impact	Y	The proposed methodology is to: (1) use combination 2.1 loaded to 40 t as the reference, (2) select representative road structures applicable to the region (~3), (3) compute the aggressiveness of 2.1 on the road structures as the maximum permitted aggressiveness, (4), assess the aggressiveness of the proposed new vehicle, which should not exceed that of 2.1. Note that aggressiveness should be scaled by payload mass or volume, depending on which is more appropriate for regional traffic.

\* For the most accurate results, friction demand should be simulated in winter conditions. However, if it is practical to perform all simulations in summer conditions without the need for winter-specific models, then correlation between summer and winter performance can be investigated (as done here) for the specific fleet under concern, and used to set a safe performance level to ensure both summer and winter performance.

Source: ITF (2019)

## B.3 New Zealand – 50MAX

Figure B.1: Eligibility for 50MAX permit



4

**Will you be able to travel from origin to destination without route restrictions?**

YES

Go to question 5

NO

Click here to apply for a higher mass HPMV permit

**Region-wide permits:** 50MAX permits allow permitted vehicles to travel on any road within a designated region except on structures, roads or local roads listed as restricted on the permit.

Make sure you check your route carefully for any restrictions on a journey where you would be operating under a 50MAX permit. Note that in some areas, you may only be allowed to travel on state highways.

To find out if your desired route has any restrictions, view the maps that display restricted structures and roads [here](#)

5

**Do you understand the 50MAX restrictions?**

YES

You can apply for a 50MAX permit

**50MAX restrictions:**

1. You can only load up to the Class 1 mass limits as per the VDM Rule for individual axles, axle sets and the other combinations of axles.
2. You can travel on any road in the permitted region EXCEPT on any structures and local roads specifically restricted in the permit.

**What gross mass can you apply for under a 50MAX permit?**

The gross mass (GM) limit on a 50MAX permit depends on the distance between the first and the last axle in your vehicle combination. To find out the maximum gross mass that you can apply for, refer to the table below.

Axle Spacing	50MAX Final
16.0 but less than 16.8	44
16.8 but less than 17.4	45
17.4 but less than 18.0	46
18.0 but less than 18.6	47
18.6 but less than 19.4	48
19.4 but less than 20.0	49
20.0 or more	50

**Permit may be less than GM applied for**

The GM on a 50MAX permit may be less than the GM applied for if your vehicle rating indicates that it is not capable of safely carrying the maximum load specified in the table above.

**What does it cost to apply for a 50MAX permit?**

50MAX HPMV permits are available for the North Island and the South Island. The fee is \$54.55 excluding GST per island.

**What you need to apply**

To apply for a 50MAX permit, you need to have:

- A TSL number
- Registration numbers for all vehicle units you wish to apply for
- A 50MAX HPMV Attributes Check form completed and signed by a Transport Agency approved Heavy Vehicle Specialist Certifier for each vehicle combination applied for (you may apply for up to 5 combinations with one prime mover)
- The 50MAX pro-forma design that matches your vehicle and includes the specific dimensions for your vehicle (view and download the designs [here](#))

**APPLY**

Source: NZTA n.d.

## B.4 Review of the Heavy Vehicle National Law

Table B5: Key comments on the review of the Heavy Vehicle National Law

Stakeholder	Comments
<b>Access decision-making process</b>	
Government	Whether the problems could be best solved with legislative reform or whether improvements of non-legislative elements, (such as improved route assessment processes and systems), could provide a better outcome.
Local government	Are best placed to make access decisions on their road networks and were not supportive of any changes to the HVNL that would seek to undermine the role and authority of councils to grant access to their local road networks.
Operators	Permit conditions are often included by mistake, or are repetitive, contradictory, impractical, vague or incomplete.
Peak bodies	Access approvals process is viewed as opaque and does not provide operators with clarity of the decision-making process.
<b>Access decision-making timeframes</b>	
Government	
Local government	If decision making delays are due to resourcing issues, shortages in personnel or expertise, uncertainty/incomplete knowledge of infrastructure and tolerances, or poor-quality applications, then tighter timeframes will not be met.
Operators	N/A
Peak bodies	N/A
<b>Road manager challenges and examples of best practice</b>	
Government	
Local government	<p>LGs agreed that most issues are process and resourcing related and not due to the law. LGs stated that virtually everything about heavy vehicle access decision-making is more challenging for councils than for state jurisdictions.</p> <p>Improving resources at all levels and greater education and support with the tools required to undertake assessment of the road network.</p> <p>It is challenging for councils to assess roads, bridges and culvert infrastructure within existing resources, yet these assets are an important part of assessing and granting access.</p> <p>The system would work better if constrained councils were properly compensated for their role, mapping tools were improved and data sharing through the compulsory use of telematics was introduced.</p> <p>Most LGs referred to the partnership and collaborative approach adopted by the Tasmanian Government as the 'gold standard' and should be considered by other jurisdictions.</p>
Operators	N/A
Peak bodies	<p>Greater resources and education should be available to road managers.</p> <p>Challenges could be addressed through providing a dedicated officer in each state to work with councils to provide advice on heavy vehicle access.</p>
<b>Role of data and technology</b>	
Government	<p>State and LGs, the NHVR, operators, drivers, peak bodies and others consider:</p> <ul style="list-style-type: none"> <li>the use of in-vehicle technology</li> <li>the use of technology for electronic mapping</li> <li>capturing data for the purpose of creating a database and sharing data.</li> </ul> <p><b>In vehicle technology</b></p> <p>Government departments recommended that the HVNL should recognise the role of telematics in supporting improved heavy vehicle access decision-making while also being agnostic on the form of telematics.</p> <p>A technology provider suggested the development of a standard national classification and mapping schema underpinned by a national dataset showing the confidence (risk rating) road controlling authorities have on each road segment.</p>
Local government	
Operators	
Peak bodies	

Stakeholder	Comments
	<p><b>Electronic Mapping</b></p> <p>Enforcement and regulators agreed that a key component of the future state is all stakeholders having access to reliable and accessible geospatial intelligence.</p> <p>Enforcement and regulators explained that technology providers would be able to leverage national heavy vehicle data and mapping services.</p> <p>Transitioning written permits to a graphical system with dynamic maps.</p> <p><b>Database and data sharing</b></p> <p>Proposed a new access decision-making approach that builds and collects road and structural data for a national database across the entire road network.</p> <p>Enforcement and regulators were supportive of collecting de-identified aggregated movement information and making it publicly available to enable the development of targeted policy solutions.</p> <p>Upgrading the NHVR portal and compelling data sharing from state agencies to reduce the need for permits. Information on the assessment of bridges, pavements and sensitive assets could be shared through a database accessible by the NHVR and road managers.</p>
<b>Expanding as-of-right access and permits</b>	
Government	<p>Proposed that the review should encourage the development of a 'network approach', involving greater use of notices and pre-approvals where appropriate to streamline application processes.</p> <p>Road and structural assessments for all roads and structures should be undertaken using a nationally consistent approach. This information could then be linked with the NHVR portal and would benefit operators and road managers alike.</p> <p>The NHVR commented that a risk-based framework would enable a move from the current practice of road managers consenting to individual heavy vehicles (types) to one in which they consent to the parameters of a road or bridge. It stated that it is not sustainable to develop effective heavy vehicle networks by repeatedly requesting case-by-case access consent from road managers, often for vehicles with the same risk profile.</p>
Local government	<p>Cautioned that as-of-right access could put their liability at jeopardy due to other legal responsibilities.</p> <p>Questioned the expansion of as-of-right access over individual authorisation.</p>
Operators	N/A
Peak bodies	Peak bodies were supportive of moving to an as-of-right system for access once a heavy vehicle complies with relevant mass and dimension limits.
<b>Using the right tools to accelerate decisions</b>	
Government	<p>LG, state government, industry peak bodies, the NHVR, operators and others talked about the tools needed to accelerate access decisions. This included precedents, permit fees, envelopes and delegation of powers.</p> <ul style="list-style-type: none"> <li>• <b>Precedents</b></li> </ul> <p>Peak bodies, operators and technology providers agreed that the approval of a first-time permit should allow for future identical or substantially similar permits to be granted automatically.</p> <p>A technology provider also stated that meta-data relating to access permits should be made available so that future applicants can see what has been allowed where and under what conditions.</p> <ul style="list-style-type: none"> <li>• <b>Envelopes</b></li> </ul> <p>The development of heavy vehicle envelopes could accelerate access decision-making. These envelopes would specify the maximum permissible mass and dimension as well as specific requirements related to axle spacing and loading.</p> <ul style="list-style-type: none"> <li>• <b>Delegation of Powers</b></li> </ul> <p>Providing road managers with delegate powers could accelerate access decision making. NTC should undertake a comprehensive consultation with all road managers, especially LG, to determine whether a delegation option is being sought and the reason it is needed.</p> <p>Industry suggested that by allowing, (or requiring), 500 plus road managers to make access determinations, the HVNL is implicitly allowing this variation and subsequent delays in a significant portion of cases.</p> <p>Peak bodies suggested allowing road managers to delegate their responsibilities, in whole or in part, to another authority under a new HVNL.</p>
Local government	
Operators	
Peak bodies	

Stakeholder	Comments
<b>Other access issues not covered in the issues paper</b>	
Local government	LGs stated that improved education for councils on the complexities of the vehicle classification system and access to enhanced data could help councils better identify PBS vehicles. LGs raised the issue of third-party assets in their submission. It was suggested that by engaging the asset owners and treating them as road managers, decision-making timeframe and financial burdens would be reduced.



# Appendix C Instruction Notes Example for LG Road Manager

## Shire of Cardinia

### Accessing permits that require assessing

1. Log-in
2. Select Manage Access Permits
3. Select “Track the progress of your consents and parent case” or Case tracker under Access permits on side bar
4. Click on permit to open it up

### Steps to assessing a permit

1. Open permit
2. Determine vehicle
3. Determine and assess route
  - a. Request further information
    - i. Adjust route, request assessment, etc.
4. Making a Decision

The following is a quick guide on how to go about assessing permits from a Council perspective. It provides basic guidance on how to use the NHVR portal but not in specific detail. If more detail is required on how to use the portal access the Help Centre from the Help button on the top right corner to get guides on how to use the portal.

### Process of assessing permit

1. Open permit
2. Determine type of vehicle (type, mass, width, length)
  - a. If PBS you will need to scroll down to attachments to get mass information. The top section will inform you what PBS Level is being applied for.
  - b. If renewal a copy of the previous permit should be above route description, otherwise it should be in attachments.
3. Assess route by selecting Route Management tab.
4. Select Start Assessment (skip if request assessment has already been started)
5. Review each waypoint set (if multiple)

Things to look for when assessing:

- If the road is near municipal boundary, that the NHVR has sent request to correct municipality (if not send an information request to NHVR to get it updated or reject request)
- If any roads are privately managed (i.e. not managed by Council so shouldn't be approved by Council)
- Bridges. Bridges layer is on [GIS system] under the [layer name], bringing up this data will allow you to determine if the bridge is suitable or if conditions apply.

- If unable to determine try to use a comparison vehicle with similar axle grouping. If no comparison is possible an alternative route should be suggested or if none available an assessment will be required.
- School zones – permit condition should restricted vehicle to outside school times.
- Traffic management devices – vehicle may be issues getting around or potentially damage them
- Road suitable for vehicle
  - Able to get around intersection? Usually this is left for the operator to assess unless it is likely to result in damage to infrastructure
  - Good check to see if assessment has been done by operator is if they are using sealed routes rather than unsealed routes. Many go for most direct route based on routing software and don't check route.
- Short cut routes rather than using VicRoads arterials
  - Should only be granted if access address on road
  - (Road name)is a regularly requested route
  - Determine if a no through access condition is require unless delivering or picking up
- Request is for all Council roads – reject this application with suitable reasons, these reasons can generally be reasonably generic reasons to meet each criteria (most of these vehicles will be able to access using PBS L1 and can apply for specific routes when required to use the extra bit of mass available).

#### Further information

1. Select Case Management tab
2. Select Requests tab
3. Select Information Request (or select subject to view response to previous requests)
4. Follow procedures below for different type of request (apart from alternate route proposal most follow the same process as bridge assessment requests)

#### Propose alternate route (default selection)

1. Before going to Case Management, on Route Management Screen:
  - a. Review all waypoint sets and adjust waypoints as required.
    - i. Waypoints can be dragged as required
    - ii. A new waypoint can be added by selecting a point mid way along the route
    - iii. Waypoint can be reordered by dragging to reorder on side panel
  - b. Once all waypoint sets are satisfactory click “Save Alt” button.
  - c. Remember route id of this alternate route that was just created
2. Follow steps above to make request
3. Select Route ID from drop down list
4. Add comments explain changes and reasoning for proposed route
5. Click submit request
6. Wait for customer to respond
7. Check response
  - a. If accepted, check that route has been updated to current route being assessed. If not submit request to NHVR (Additional Information required from regulator) to get it updated. Once route matches proceed to approval.
  - b. If rejected, determine if current route is acceptable or if it needs to be rejected.

**Notes:**

- Missing road sections – the NHVR maps have some sections on their mapping software missing. In these cases, you may need to create a new waypoint set and break the route into two parts.
- Other Road Managers – if the route change affects a road for another road manager the route can only be changed if the other road manager has not yet assessed their roads. If this occurs there are two options: restricting changes to only your roads or rejecting the application (usually the later will be required).

**Additional bridge assessment required** (this option works for any type of structures)

1. Select “Additional bridge assessment required”
2. Explain where structure is and issues.
3. Click Submit request

**Notes:**

Council can facilitate the quote for applicant (they will need to pay directly), most recent quote was ~\$2,000 per structure. Council will require copy of report for our records. They can also arrange their own assessor but will need to provide evidence of assessor's qualifications.

**Decisions**

1. Select Decisions tab
2. Click subject Decision: Approval
3. Select Approval, Approval with Conditions or Refusal
4. Follow steps below based on selection in step 3

**Approval**

1. Click Submit request

**Approval with conditions**

1. Add standard condition from condition library (select “Add standard conditions” tab)
2. Add any conditions not in standard conditions in comments
3. Add any additional comments if required (e.g. notification of potential road works)
4. Click Submit request

**Common conditions used by [Council]**

Conditions Library under Add Standard Conditions tab:

- RS04 - Speed restriction - Unsealed roads - The heavy vehicle is restricted to a maximum speed limit of 60kph on the approved unsealed roads, except where a traffic sign indicates a lower speed limit. (Note: speed can be changed. [Council] uses 60km/h)
- RT05 - Time of travel - School Hours - The heavy vehicle must not travel during school zone restriction times on <road> between <time> hours and hours. (Note: hours should be 0830 and 1600. These will need to be added upon selection)

Conditions added as comments:

- No through access on <road(s)> unless delivering/picking up from an address along this road or side road accessed from this road.
- At the [Road name] and [Road name] intersection this vehicle is restricted to a right turn into [Road name] and left turn out of [Road name]. (Note: this is due to the acute angle of the intersection not making the other turns possible within the road width)

Notes:

NHVR is updating this conditions section of portal at time of writing so conditions library and how to select conditions may change.

**Reject**

1. Select which roads are being refused  
(even if only rejecting one road the entire application has to be rejected unless you can get applicant to agree to route change that drops the road that has to be rejected)
2. Click refuse roads button
3. Select refusal reason from drop down list
4. Click Ok
5. Add Refusal comments. These must clearly cover at least one of the following reasons to comply with:
  - a. Likely to cause damage to road infrastructure
  - b. Impose adverse effects on the community including noise, congestion etc.
  - c. Pose significant risk to public safety arising from heavy vehicle use that is incompatible with road infrastructure or traffic conditions.

Only reason the above do not need to be included is if Council is not responsible for providing consent.
6. Click Submit Request

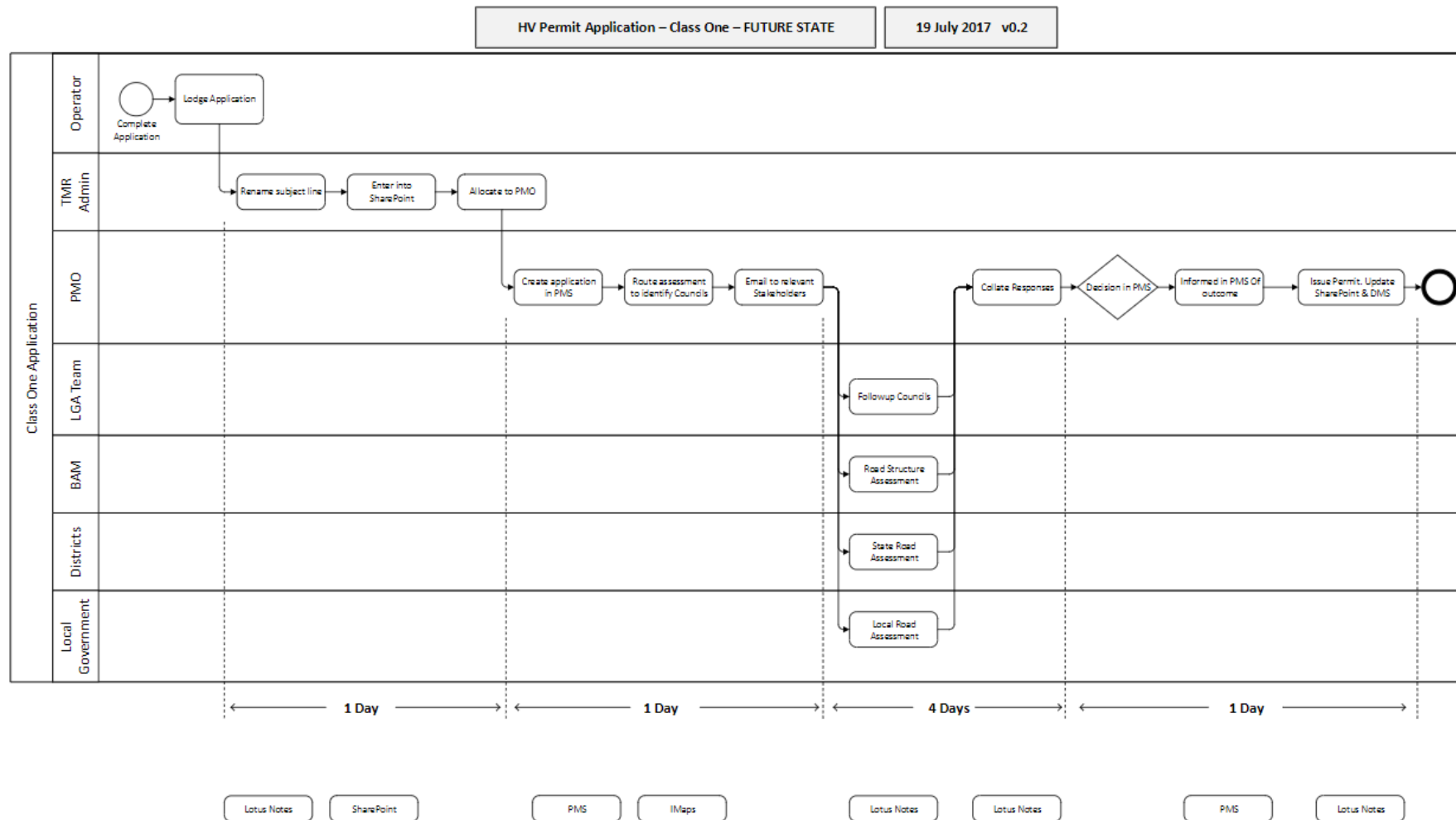
Notes:

Many renewals have been for routes that have recently been gazetted/pre-approved, in these cases reject the request and advise that rejection reason is that routes are gazetted/pre-approved so Council does not need to provide consent.

*Source: Christopher Marshall (PRG Member)*

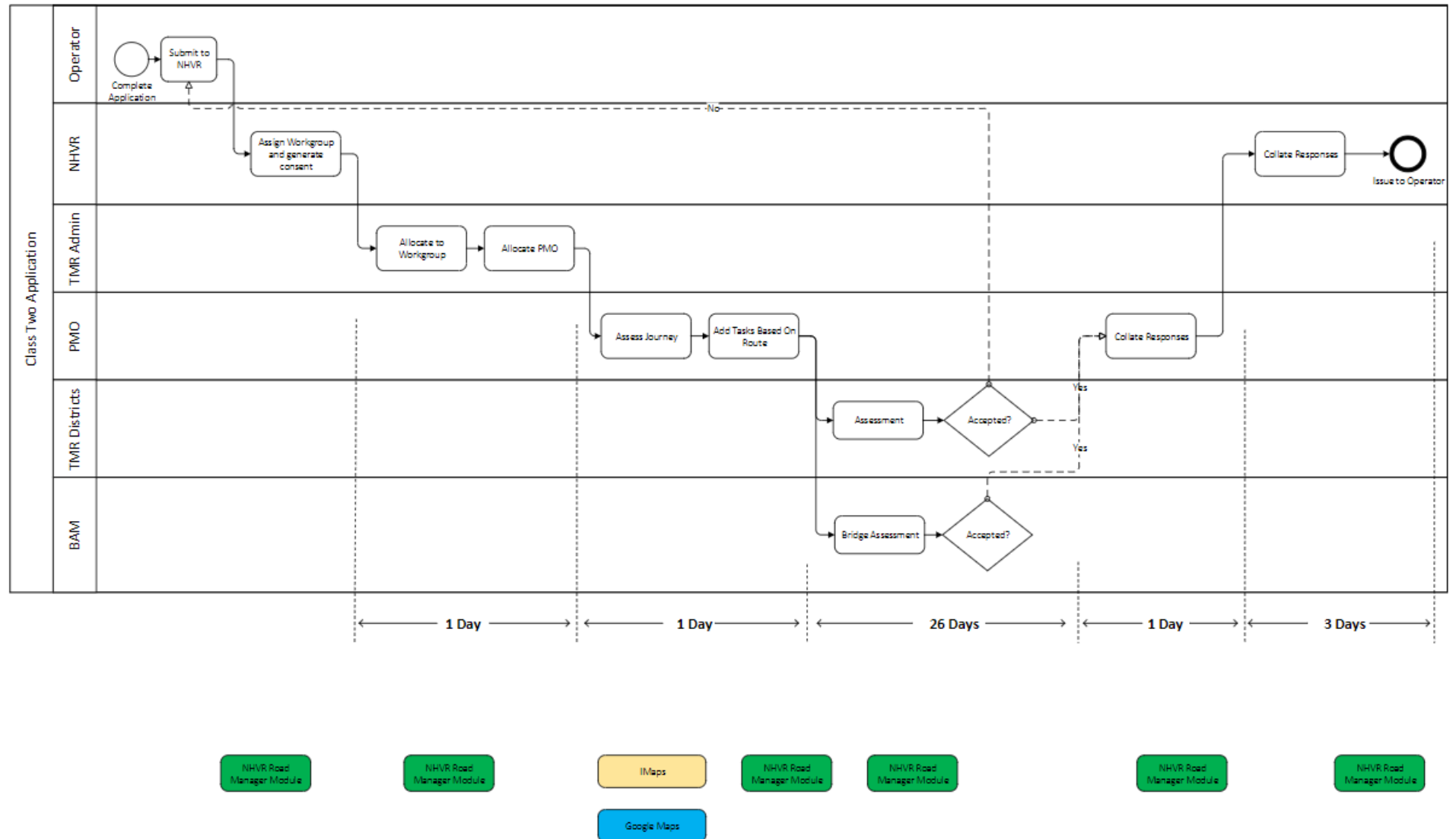
# Appendix D Jurisdictions Heavy Vehicle Assessment Processes

## D.1 Queensland



HV Permit Application – Class Two – FUTURE STATE

19 July 2017 v0.2

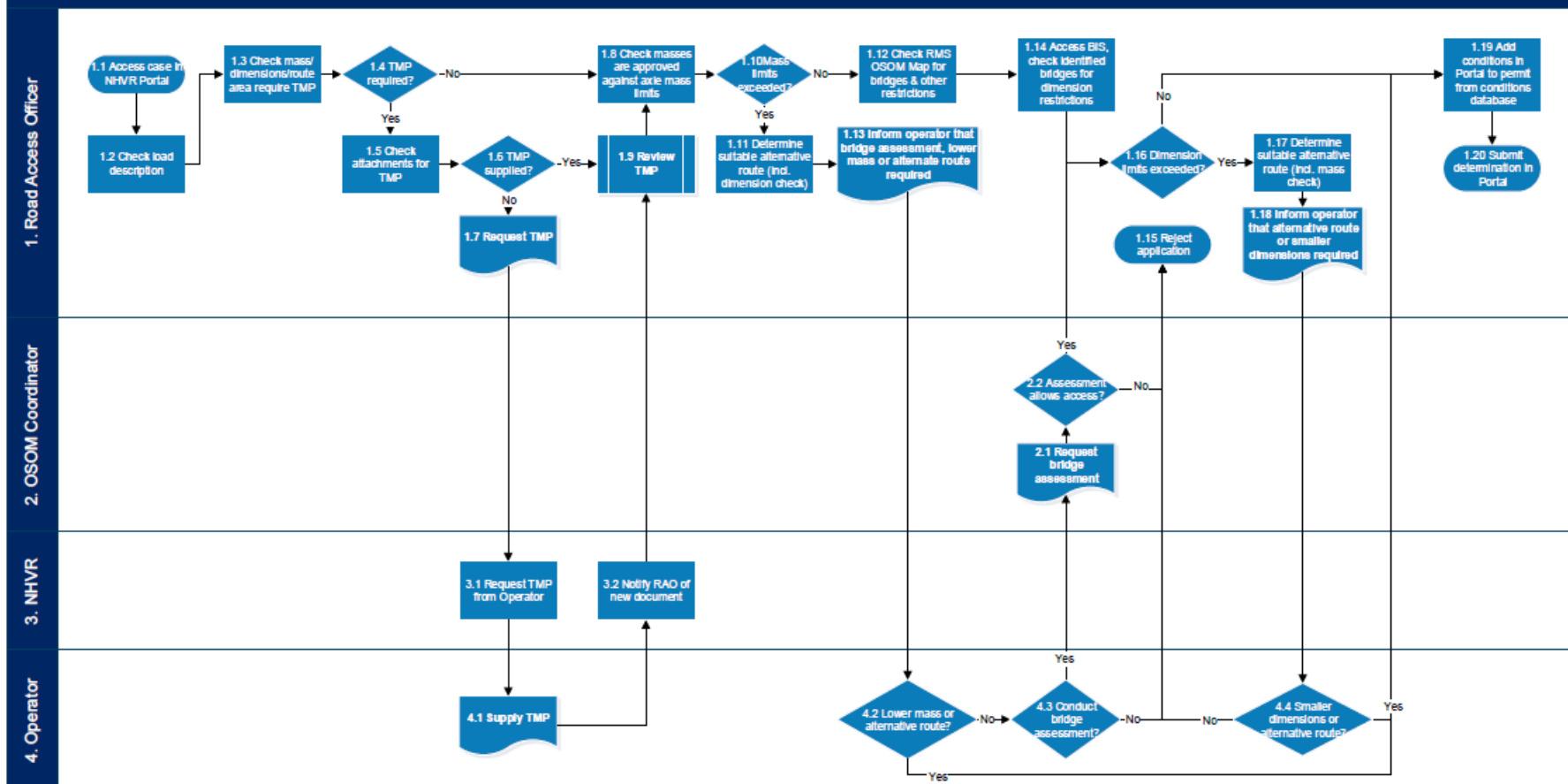


## D.2 New South Wales

### D.2.1 Class 1 Assessment

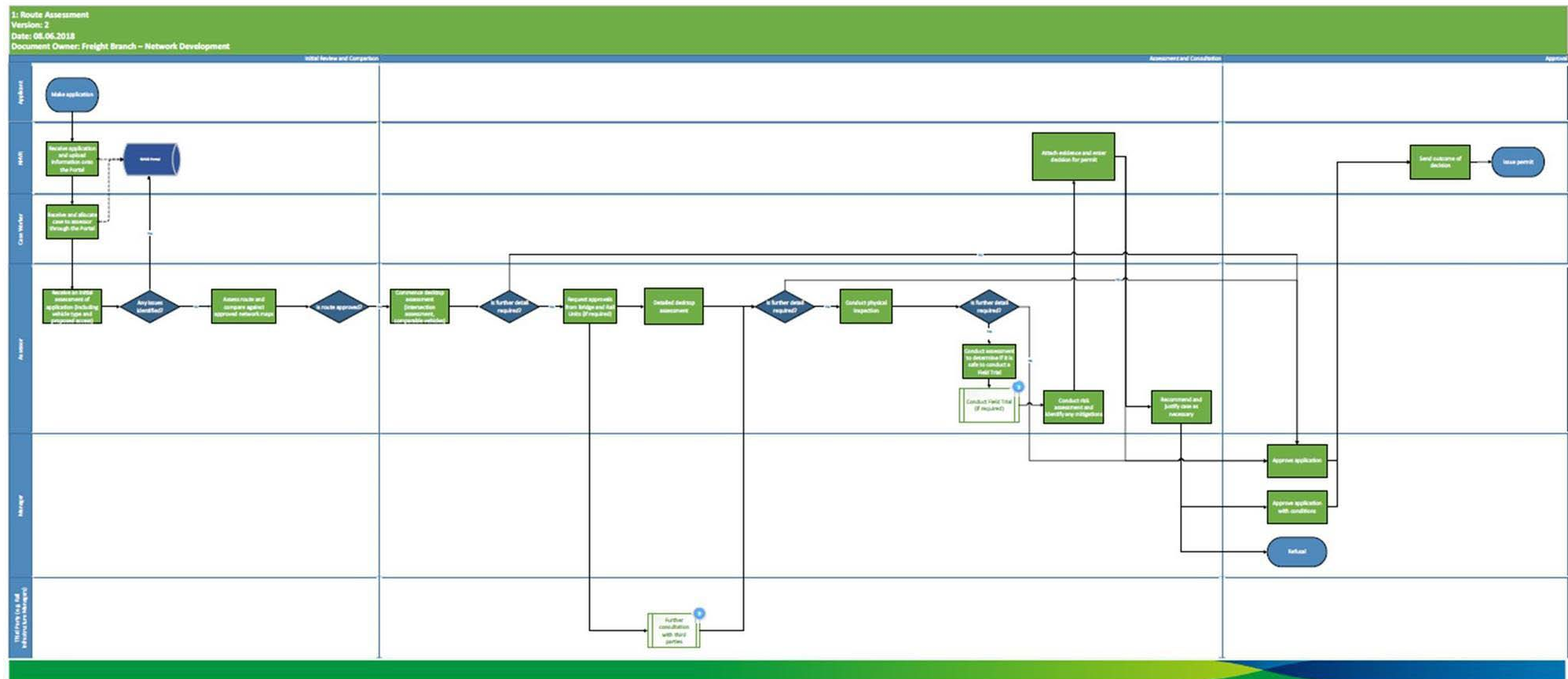


#### Assess Consent Request Application Operator through NHVR



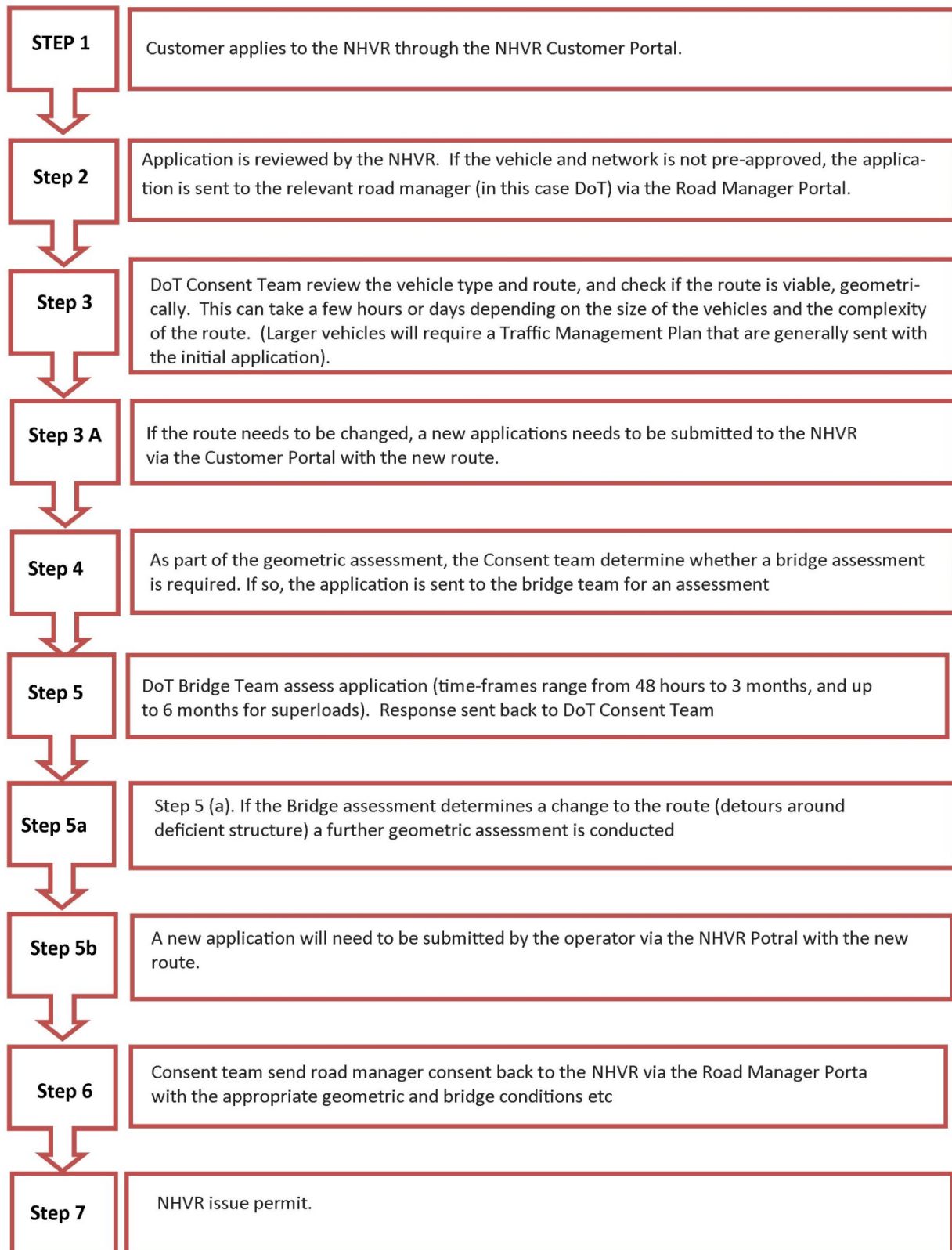


## D.2.2 Class 2 Assessment



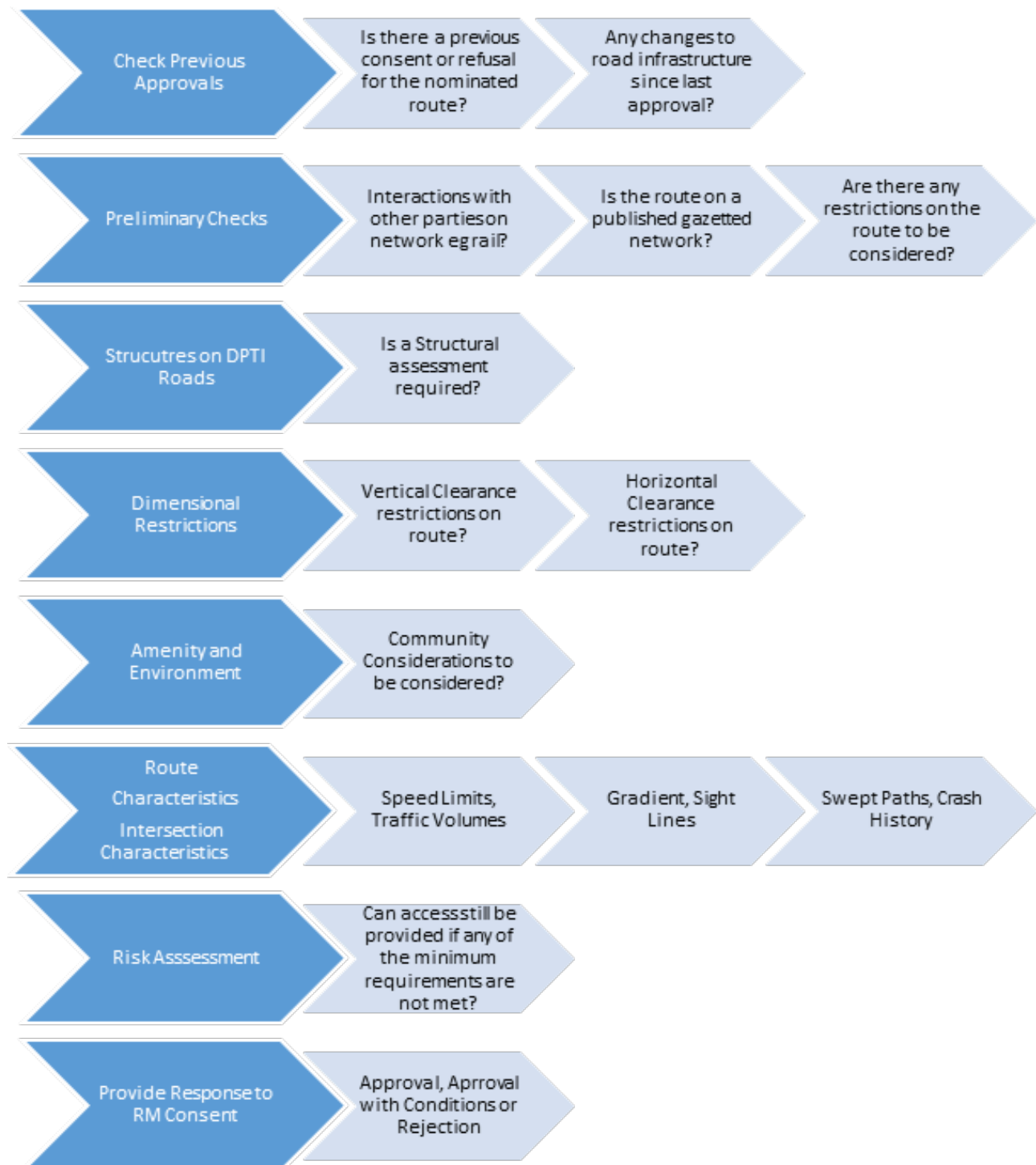
Source: TfNSW

## D.3 Victoria



Source: DoT Victoria

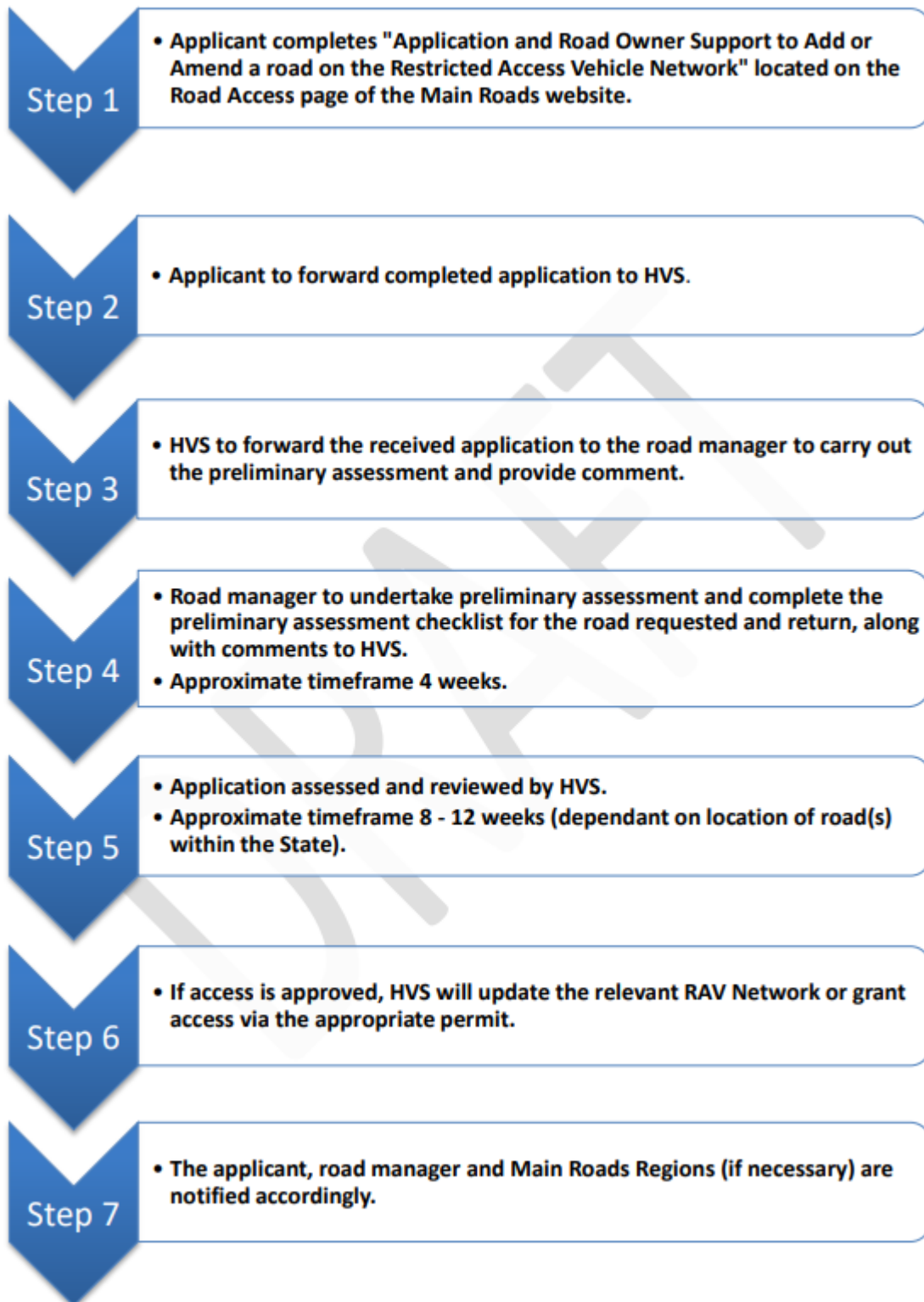
## D.4 South Australia



Source DPTI

Note: The 'Structures on DPTI Roads', 'Dimensional Restrictions', 'Amenity and Environment', 'Route Characteristics' and 'Intersection Characteristics' sections can all be bundled into the Technical and Physical aspects we consider as part of DPTI's assessment.

## D.5 Western Australia



Source: Main Roads

## D.6 Tasmania

### STEP 1

Customer applies to the NHVR through the NHVR Customer Portal.



### STEP 2

Heavy Vehicle Access team member will acquire the case as the 'consent officer' and review checking accuracy of details provided, potential route issues and what expertise is required for the assessment



### STEP 3

If potential issues, information requests raised with the customer or NHVR case officer – eg for extra information, route change request, etc. A phone call is sometimes most efficient in the first instance – documented in portal [note this can occur at any stage through the process]



### STEP 4

Via the portal's case management tab – assessment tasks are raised and directed to relevant DSG expert units as relevant for the case, eg Bridge Assets – bridge capacity assessment, Traffic Engineering – geometry assessment . Responses will detail conditions to safely achieve access Eg: specifying how a vehicle should cross an asset, mass limitations.

There will be variation depending on the vehicle category being considered (eg Class 1 OSOM, SPV, HML, PBS) and the mitigations available (eg pilots / escorts standard with some categories but not others)



### Step 5

Once responses from DSG expert units has been received HVA team consent officer will formalise the response via the NHVR portal.

In the case of class 1 vehicles requiring pilot &/or escort vehicles to mitigate safety concerns the HVA team manages this aspect, and where necessary will consult with DSG HV escort team and the customer

Consent with conditions is provided back to NHVR, or non-consent with reasons.



### Step 6

Assessment sent back to NHVR to issue the permit (or not) once responses from all road managers are in place

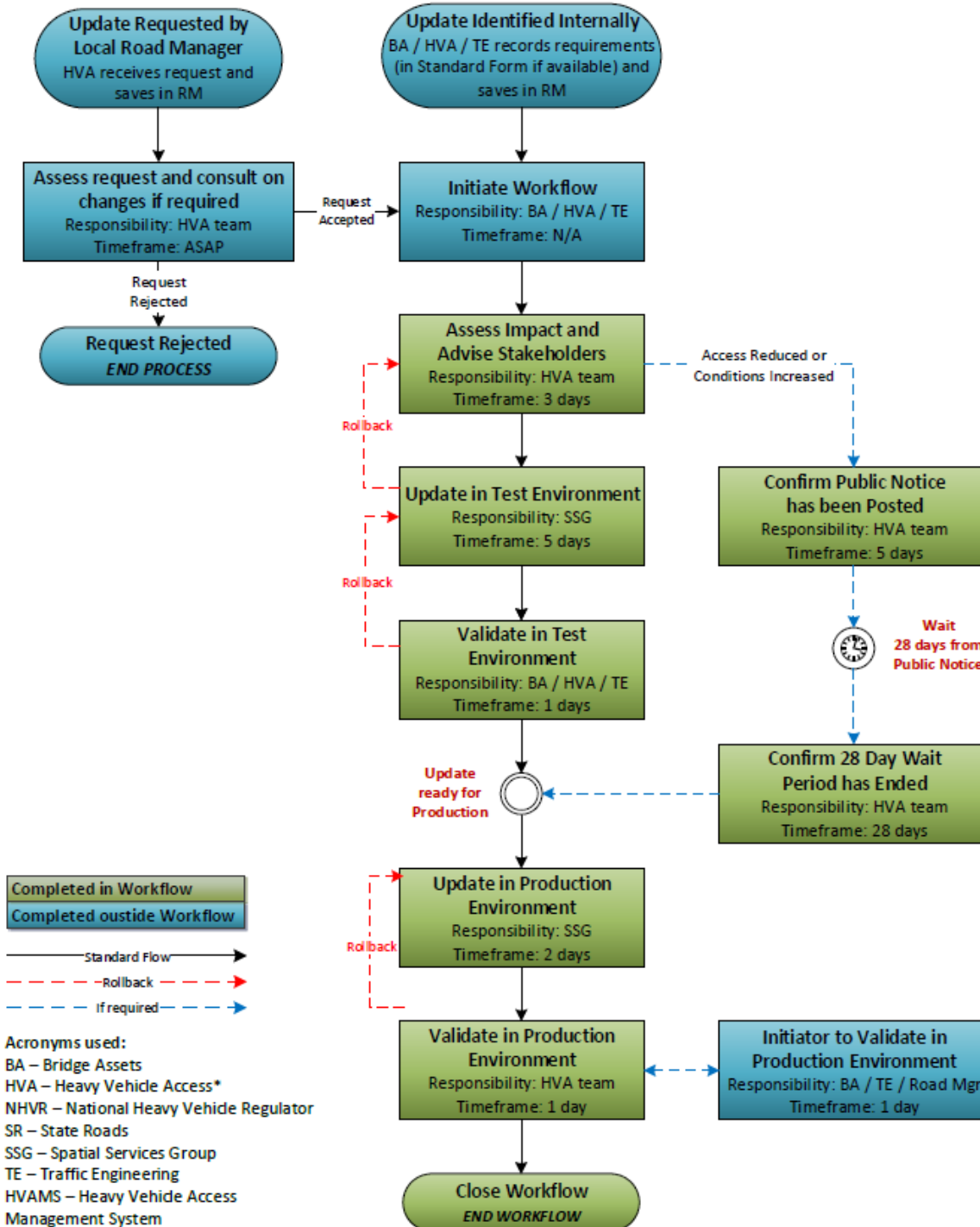
Source: DSG

Version 1.0  
File: D19/246002



# Updating the HVAMS Web Map Viewers Workflow Flowchart

*Note: In the case of urgent updates, timeframes can be adjusted within Workflow*



Source: DSG



# Appendix E Western Australian Heavy Vehicle Classes Compared to NHVR Classes

## Prime Mover, Trailer Combinations

2016

Heavy Vehicle Services

VEHICLE DESCRIPTION AND CONFIGURATION CHART (RAV) – PRIME MOVER, TRAILER COMBINATIONS EXAMPLES				Axle Spacing (m)	Length (m)	Mass (T) (Maximum Permitted Class)	RAV Network
Category 1	(A) PRIME MOVER, SEMI TRAILER TOWING A PIG TRAILER (B) PRIME MOVER TOWING AN OVERHEIGHT SEMI TRAILER (C) SHORT B-DOUBLE (D) TWINSTEER PRIME MOVER TOWING SEMI TRAILER			(A) A (B) A (C) A (D) A	≤20 ≤19 ≤20 ≤19	50 42.5 50 47.5	Network 1
Category 2	(A) PRIME MOVER, SEMI TRAILER TOWING A PIG TRAILER (B) PRIME MOVER TOWING SEMI TRAILER (C) B-DOUBLE (D) SHORT B-TRIPLE (E) CAR CARRIER SEMI TRAILER			(A) A (B) A (C) A (D) A (E) A	≤27.5 ≤20 ≤27.5 ≤27.5 ≤25	65.5 47.5 67.5 87.5 42.5	Network 2
Category 3	(A) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER			(A) B	≤27.5	84	Network 3
Category 4	(A) PRIME MOVER, SEMI TRAILER TOWING 4 AXLE DOG TRAILER			(A) A	≤27.5	87.5	Network 4
Category 5	(A) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER (B) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER AND CONVERTER DOLLY (C) B-DOUBLE TOWING A CONVERTER DOLLY (D) B-TRIPLE			(A) B (B) B (C) A (D) A	>27.5, ≤36.5 >27.5, ≤36.5 >27.5, ≤36.5 >27.5, ≤36.5	84 84+d 87.5+d 84	Network 5
Category 6	(A) PRIME MOVER, SEMI TRAILER TOWING 4 AXLE DOG TRAILER (B) B-TRIPLE (C) PRIME MOVER SEMI TRAILER TOWING A 6 AXLE TRAILER & CONVERTER DOLLY			(A) A (B) A (C) A	>27.5, ≤36.5 >27.5, ≤36.5 >27.5, ≤36.5	87.5 87.5 87.5+d	Network 6
Category 7	(A) PRIME MOVER, TOWING SEMI TRAILER AND B-DOUBLE (B) B-DOUBLE TOWING A DOG TRAILER			(A) A (B) A	>27.5, ≤36.5 >27.5, ≤36.5	107.5 107.5	Network 7
Category 8	(A) PRIME MOVER, SEMI TRAILER TOWING 2 X DOG TRAILERS (B) PRIME MOVER, SEMI TRAILER TOWING A DOG TRAILER AND CONVERTER DOLLY (C) B-DOUBLE TOWING A DOG TRAILER (D) PRIME MOVER, SEMI TRAILER TOWING A B-DOUBLE			(A) B (B) B (C) A (D) A	>36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤445 >36.5, ≤445	120.5 84+d 107.5 107.5	Network 8
Category 9	(A) PRIME MOVER, SEMI TRAILER TOWING 2 X DOG TRAILERS (B) B-DOUBLE TOWING A CONVERTER DOLLY CONNECTED TO 2 SEMI TRAILERS (C) PRIME MOVER, SEMI TRAILER TOWING B-TRIPLE (D) B-DOUBLE TOWING 2 DOG TRAILERS (E) DOUBLE ROAD TRAIN TOWING B-DOUBLE TRAILERS (F) PRIME MOVER, SEMI TRAILER TOWING A 6 AXLE DOG TRAILER AND CONVERTER DOLLY			(A) A (B) A (C) A (D) A (E) A (F) A	>36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5	127.5 127.5 147.5 147.5 147.5 87.5+d	Network 9
Category 10	(A) PRIME MOVER, SEMI TRAILER TOWING 2 X DOG TRAILERS (B) B-DOUBLE TOWING A CONVERTER DOLLY CONNECTED TO 2 SEMI TRAILERS (C) PRIME MOVER, SEMI TRAILER TOWING B-TRIPLE (D) B-DOUBLE TOWING 2 DOG TRAILERS (E) DOUBLE ROAD TRAIN TOWING B-DOUBLE TRAILERS (F) PRIME MOVER, SEMI TRAILER TOWING A 6 AXLE DOG TRAILER AND CONVERTER DOLLY			(A) A (B) A (C) A (D) A (E) A (F) A	>36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5 >36.5, ≤53.5	127.5 127.5 147.5 147.5 147.5 87.5+d	Network 10
NOTES							

1. Operators using a category of RAV outlined in this document must operate that RAV in accordance with the OPERATING CONDITIONS and only on the network specified.

2. These diagrams are a visual indication of the vehicle only.

3. Operators must refer to the OPERATING CONDITIONS for the full vehicle description.

4. The height of the vehicle can exceed 4.3 m but MUST NOT exceed 4.8 m when it is:  
(i) built to carry livestock or; (ii) carrying a crane to carry livestock or; (iii) carrying vehicles on more than one deck or; (iv) carrying a multi-modal container or; (v) carrying a large indivisible item or; (vi) When operating with an appropriately licensed over height curtain side or panel trailer.

5. Maximum height of Pig Trailer must not exceed 3.5m.

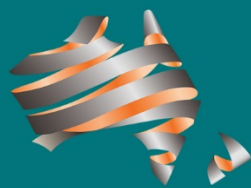
Heavy Vehicle Services  
Tel: 136 HVO (466)  
Email: hvs@mainroads.wa.gov.au  
Website: www.mainroads.wa.gov.au



mainroads  
WESTERN AUSTRALIA

Source: Main Roads - <https://www.mainroads.wa.gov.au/Documents/Truck%5E2C%20Trailer%20Combinations%20-%20Vehicle%20Categories%20-%20As%20at%20November%202016.RCN-D16%5E23740543.PDF>





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