Investigating the Benefits of the Restricted Access Vehicle Route Assessment Tool in Local Governments’ Decision Making Process

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Abstract:
The Restricted Access Vehicle Route Assessment Tool (RAVRAT) was developed as a pre-emptive response to the implementation of the Heavy Vehicle National Law (HVNL) by the National Heavy Vehicle Regulator (NHVR). The HVNL requires Local Governments to perform the functions of a Road Manager to determine access for heavy vehicles (vehicles with a gross vehicle mass ≥ 4.5 tonnes). This paper presents on the background development of the RAVRAT and the assessment of its capability to aid Local Governments in assessing suitability for heavy vehicle access.

Heavy vehicle policy and legislation was reviewed to determine how access to the public road network is granted. Heavy vehicles that do not meet the prescriptive regulations set out in the HVNL are classified as Restricted Access Vehicles (RAVs), which are required to operate under commonwealth gazette notices (notices) or authorisation permits (permits). Local Governments may be required to conduct a route assessment when RAVs request access to routes that are not permitted under an existing notice or permit. The capabilities of RAVRAT were evaluated and assessed against the requirements of the Local Governments route assessment methodology to determine if the tool provides the capability required to assess the route and determine access.

The results of the evaluation determined that the RAVRAT is a suitable tool to facilitate local government route assessments, improve road safety, and improve transport logistic efficiency. The RAVRAT also contributes to legislative compliance resulting in better community road safety outcomes and productivity benefits to industry and Local Governments.

Keywords: Heavy vehicle, Freight, Route assessment, PBS, OSOM
Introduction

In 2014 The National Heavy Vehicle Regulator (NHVR) took over the handling of legislation pertaining to the access of heavy vehicles (vehicles with a gross vehicle mass ≥ 4.5 tonnes). During this transition, the NHVR implemented the Heavy Vehicle National Law (HVNL), outlining the legislation for heavy vehicles, which includes four regulation documents. The implementation of the HVNL includes a clause in Section 12 (1)(b) which states that local governments are classified as road managers for any local roads within their jurisdiction (Queensland Government, 2018). This requires local government to respond to access requests for their local road network and, where required, undertake route assessments to determine access. To assist Local Governments, the Australian Road Research Board (ARRB) developed the Performance Based Standards Route Assessment Tool (PBSRAT) which was later rebranded to be the Restricted Access Vehicle Route Assessment Tool (RAVRAT) when more functionality was added. RAVRAT’s use was aimed at Local Governments with the intent to provide a consistent methodology to undertaking a route assessment using the Performance Based Standards Scheme – Network Classification Guidelines.

This paper will focus on two main points, these being:

- A high level review of existing heavy vehicle legislation and regulation that is in place to determine local governments’ responsibilities and how access is granted. Demonstrate how RAVRAT can assist local governments in the heavy vehicle access decision making process.
- A review of the development of RAVRAT and the assessment of its capabilities to aid local governments in assessing suitability of their local road network for heavy vehicle access. This will include how RAVRAT’s assessment method compares against the Performance Based Standards Scheme – Network Classification Guidelines.

Method

Existing Regulation

Currently six out of eight states within Australia, including Queensland (QLD), New South Wales (NSW), Victoria (VIC), Australian Capital Territory (ACT), Tasmania (TAS) and South Australia (SA) operate under the HVNL and its subsequent regulations. The HVNL commenced on 10 February 2014 in participating jurisdictions, with the law first adopted by QLD in 2012, and subsequently adopted in the remaining states in the following years:

- New South Wales – 2013
- Victoria – June 2013
- Australian Capital Territory – 2013
- Tasmania – 2013
South Australia – 2013

Each state and territory passed a law that would either adopt or duplicate the HVNL (QLD) as a law in that state or territory, in some cases with minor modifications.

The HVNL that was adopted in all participating jurisdictions states in Section 12 (1)(b) “The following entity is declared to be the road manager for a road in this jurisdiction for the purposes of the Heavy Vehicle National Law (Queensland)—

(b) for a road controlled by a local government authority—the local government authority;” (Queensland Government, 2018).

This clause essentially states that a local government authority is declared to be a road manager for any local government roads within their boundaries. This requires local governments to respond to access requests that may have previously gone to the state road authority. Local governments may also be required to undertake route assessment to determine suitability of access on their local road network. RAVRAT’s focus is to assist local governments undertake these route assessments using a consistent methodology that is supported by the PBS guidelines to provide them with a defensible position to access requests.

There are three main methods for heavy vehicles to access the public road network, these being through prescriptive vehicle regulations, commonwealth gazette notice or under a mass or dimension exemption permit.

Heavy vehicles that comply with prescribed mass and dimension requirements outlined in the Heavy Vehicle (Mass, Dimension and Loading) National Regulation (MDL Regulation) are permitted to operate on all public road networks in participating jurisdictions. The MDL Regulation defines the mass, dimension and loading limits of prescriptive heavy vehicles. Vehicles that exceed prescribed mass, dimension or loading are classified as restricted access vehicles which must operate under commonwealth gazette notice or a mass or dimension exemption permit.

Heavy vehicles that are classified as restricted access vehicles are eligible to access the public road network through the use of a commonwealth gazette notice which may exempt, for a period of not more than 5 years, a stated category of class 1, 2 or 3 heavy vehicle from a prescribed mass or dimension requirement (Queensland Government, 2018). Local governments acting as road managers must provide an access decision for the grant of these gazettes for roads within their local jurisdictions. This is stated in Sections 118 (1)(b)

“The Regulator may grant a mass or dimension exemption (notice) for a category of heavy vehicles only if—

(b) each relevant road manager for the exemption has consented to the grant” (Queensland Government, 2018)

and Section 139 (1)(b)
“The Regulator may grant a class 2 heavy vehicle authorisation (notice) only if—

(b) each relevant road manager for the authorisation has consented to the grant” (Queensland Government, 2018).

This states that a mass or dimension exemption notice may only be granted if each road manager, the local government in this instance, consents to the grant. Vehicles that do not exceed prescribed mass and commonwealth gazette notice mass and dimension limits must operate under a mass or dimension exemption permit.

Heavy vehicles that are classified as restricted access vehicles and are ineligible to operate under a commonwealth gazette notice may be eligible to operate under a mass or dimension exemption permit. The regulator may issue a permit which may exempt, for a period of not more than 3 years, a stated category of class 1,2 or 3 heavy vehicle from a prescribed mass or dimension requirement (Queensland Government, 2018). The HVNL states in Section 124 (1)(b)

"The Regulator may grant a mass or dimension exemption (permit) for a heavy vehicle only if—

(b) each relevant road manager for the exemption has consented to the grant” (Queensland Government, 2018) and in Section 145 (1)(b)

“The Regulator may grant a class 2 heavy vehicle authorisation (permit) for a class 2 heavy vehicle only if—

(b) each relevant road manager for the authorisation has consented to the grant” (Queensland Government, 2018).

This states that a mass or dimension exemption permit may only be granted if each road manager, the local government in this instance, consents to the grant. These exemption permits have caused a dramatic increase in local governments work as there is ever growing interest in higher productivity vehicles which exceed prescribed mass, requiring route assessments to be conducted. This is coupled with a short time frame for an access decision response due to Section 156 (1) of the HVNL which states “If the Regulator asks a road manager for a road for the road manager’s consent to the grant of a mass or dimension authority, the road manager must decide to give or not to give the consent—

(a) within—

(i) 28 days after the request is made, unless subparagraph (ii) applies; or

(ii) if this section applies because the road manager gave the Regulator a notice of objection to the grant under section 167—14 days after giving the notice of objection; or

(b) within a longer period, of not more than 6 months after the request is made, agreed to by the Regulator” (Queensland Government, 2018).
This clause limits the time that a local government can take to respond to an access request, thus increasing the strain on local governments, that may already be under resourced. While it is possible for local governments to request a longer time period to perform a route assessment this may not be sufficient due to the amount of permit applications or lack of knowledge in assessing a route. RAVRAT includes technology which is able to assist in reducing local government response times by reusing elements from past assessments in order to eliminate duplication of work during assessments.

The legislation and regulation currently have placed an onerous task on local governments, requiring them to make access decisions in a short timeframe. While this has provided local governments with more control over access to their local road network, it also adds to their workload. RAVRAT provides a stable, easy to use system for local governments that have not previously had to assess their local road network for restricted access vehicles.

Development of RAVRAT
ARRB was first approached by the Municipal Association of Victoria (MAV) in 2011 to assist in creating a tool that could help local governments with the heavy vehicle access decision making process. The development of the tool in collaboration with the MAV was officially started 2011 and continued through to its initial launch in June 2012 under the name Performance Based Standards Route Assessment Tool (PBSRAT) (Austroads, 2016). This was originally envisioned as a tool specifically for assessing a route using ARRB’s (2012) PBS Network Classification Guidelines for Local Government, to determine a Performance Based Standards (PBS) classification level for the route. This PBS classification level could then be used to determine suitability of PBS or freight vehicles using the Table 1 below, which shows the relationship between PBS and freight vehicles.

Table 1 Road classes for access by Scheme vehicles (National Transport Commission, 2007)

<table>
<thead>
<tr>
<th>Road Class</th>
<th>Scheme vehicle performance level</th>
<th>Maximum vehicle length (m)</th>
<th>Similar present vehicle description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>1</td>
<td>20 *</td>
<td>From passenger cars to single articulated</td>
</tr>
<tr>
<td>Level 2A</td>
<td>2</td>
<td>26</td>
<td>B-double</td>
</tr>
<tr>
<td>Level 2B</td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Level 3A</td>
<td>3</td>
<td>36.5</td>
<td>Double road train (Type I)</td>
</tr>
<tr>
<td>Level 3B</td>
<td></td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Level 4A</td>
<td>4</td>
<td>53.5</td>
<td>Double road train (Type II)</td>
</tr>
<tr>
<td>Level 4B</td>
<td></td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

* Level 1 is subject to a 50 t gross mass limit, posted local restrictions and restrictions or limitations specified by the jurisdiction.

In 2015, ARRB was contacted by the Local Government NSW (LGNSW) and Transport for NSW (TfNSW) to enhance the functionality of PBSRAT to accommodate oversize and/or overmass vehicles (Eastwood & Hense, 2015). Through a consultation process with LGNSW, TfNSW, Roads and Maritime Services (RMS) and users the OSOM Expert module was developed to assess road access
for a wider range of heavy vehicles. When this module was released the tool was rebranded to the Restricted Access Vehicle Route Assessment Tool to indicate to users that it could now cater for any restricted access vehicle and just PBS or freight vehicles. Figure 1 below shows the original website after the tools rebranding to RAVRAT.

In September 2018, ARRB launched RAVRAT 2.0 through a strategic partnership with NHVR and assistance from Local Government Associations. The relaunch of RAVRAT has allowed ARRB and NHVR to provide access to the tool for free to all Local Governments and State Road Authorities in participating jurisdictions under the HVNL. Figure 2 below shows the new RAVRAT 2.0 website.
Comparison of Guidelines
RAVRAT contains two main assessment modules used for performing a route assessment, these are the PBS Expert module and the OSOM Expert module. This section will look at the guidelines used in the assessment methodology and whether these are comparable to recognised guidelines.

PBS Expert Module
The assessment methodology implemented in the PBS Expert module of RAVRAT is based on ARRB GROUP’s (2012) PBS Network Classification Guidelines for Local Government. “This document defines guidelines for the consistent classification of the Performance Based Standards (PBS) network at the local government level” (ARRB GROUP, 2012). This document is a reworked version of the National Transport Commission’s (NTC) (2007) Performance Based Standards Scheme – Network Classification Guidelines, which is targeted towards state road authorities and other major road asset owners. It has been recognised that not all guidelines from the NTC document can be applied directly to a local road network as gaps exist and some guidelines are not completely suitable (ARRB GROUP, 2012). ARRB’s reworked guidelines were aimed to address issues found in the NTC guidelines when being applied to a local road network. These two PBS guidelines are both recognised by the NHVR as suitable methods of determining access for both PBS and freight vehicles.

RAVRAT translates the guidelines into a simple electronic question and answer format which removes the need for the numerous tables that are used to determine PBS classification in the guidelines. Due to the dramatic shift in how the guidelines are represented in RAVRAT it is difficult
for a user to determine if all requirements of the assessment have been met. The below table shows a comparison between the ARRB guidelines and what is present in RAVRAT in order to determine any gaps that may be present.

Table 2 Comparison of PBS guidelines and RAVRAT guidelines

<table>
<thead>
<tr>
<th>Classification guidelines</th>
<th>ARRB guidelines</th>
<th>RAVRAT guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road and lane width</td>
<td>✅</td>
<td>✔️ Unsealed rural roads missing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Curve widening potential issues Bridge lane widths issues</td>
</tr>
<tr>
<td>Overtaking</td>
<td>✅</td>
<td>✗</td>
</tr>
<tr>
<td>Signalised intersections</td>
<td>✅</td>
<td>🔴</td>
</tr>
<tr>
<td>Railway crossings</td>
<td>✅</td>
<td>✔️</td>
</tr>
<tr>
<td>Approach sight distance</td>
<td>✅</td>
<td>✔️</td>
</tr>
<tr>
<td>Vertical clearance</td>
<td>✅</td>
<td>✔️</td>
</tr>
<tr>
<td>Grades</td>
<td>✅</td>
<td>✔️</td>
</tr>
<tr>
<td>Stacking distances</td>
<td>✅</td>
<td>✔️</td>
</tr>
<tr>
<td>Storage lanes</td>
<td>✅</td>
<td>✗</td>
</tr>
<tr>
<td>Bridges, overpasses and culverts</td>
<td>✅</td>
<td>✔️</td>
</tr>
<tr>
<td>Swept path of turning manoeuvres</td>
<td>✅</td>
<td>✔️</td>
</tr>
</tbody>
</table>

Green Cells with a tick indicate it meets the classification guidelines
Orange cells with a caution sign indicate it partially meets the classification guidelines
Red cells with a cross indicate it does not meet the classification guidelines

From this comparison table it can be seen that while RAVRAT adheres to the guidelines for the majority of the assessment, in some instances it neglects or does not correctly represent the guidelines. This is true for the following issues:

- Unsealed rural roads – RAVRAT does not include the guidelines for unsealed rural roads within its lane width calculations, this can lead to inaccuracies in PBS classifications. While it is possible to assess unsealed roads within RAVRAT it produces a marginally more lenient
classification. This can be detrimental for local governments that contain a high percentage of unsealed roads in their jurisdiction.

- **Curve widening** – RAVRAT only requests minimum lane width for the whole length of road and does not make a distinction between the curve and road itself. This could lead to stricter PBS classifications than intended.

- **Bridge widths** – RAVRAT does not use the correct information from Table 2.12 of ARRB’s guidelines to determine minimum bridge width. It instead uses the same classification as road and lane width from the guidelines. This could lead to higher than intended classifications being given for lane widths on bridges.

- **Overtaking** – Overtaking has not been included within RAVRAT as overtaking does not necessarily restrict the route in terms of access. Therefore, how the classification is applied depends on the needs of the local government.

- **Storage lanes** – Storage lanes have not been included as this does not require any significant steps to determine if it meets requirements or not. Including this would most likely slow the overall process.

While RAVRAT incorporates ARRB’s PBS guidelines for the majority of assessment criteria, there are minor gaps in the tool’s assessment process. This is evident in the issues identified above predominantly for unsealed rural roads, curve widening and bridge widths. Overtaking and storage lane classifications, while still important to the decision making process, may increase assessment times by including them in RAVRAT and can be undertaken without the tool’s assistance. While some functionality is not fully incorporated into RAVRAT, this does not diminish its ability to assist Local Government in the route assessment process. RAVRAT provides a structured methodology for local government to assess routes within their local jurisdiction with confidence. The methodology used is sound as it for the main part reflects that of the PBS classification guidelines developed by ARRB and allows for local government to make informed decisions regarding their network.

**OSOM Expert Module**

The OSOM module is the second main assessment module used for performing a route assessment in RAVRAT. The assessment methodology that is implemented into the OSOM module is based on ARRB’s report titled Assessment Criteria Guidelines – OSOM Module, these guidelines were developed in conjunction with TfNSW, RMS, LGNSW and users of RAVRAT (Eady & Chong, 2015). These guidelines were originally developed when TfNSW’s Freight and Regional Development Division was tasked with delivering a more efficient and effective freight system in NSW through the NSW Freight and Ports Strategy (F&PS) (Eastwood & Hense, 2015). Task 1D-5-2 of the F&PS (the OSOM guidelines) was aimed at providing Local Government with the ability to better assess OSOM movements on their local road network (Eastwood & Hense, 2015). This module will not be discussed in detail within this report as the guidelines used were developed specifically for RAVRAT and there are no comparable documents.

The criteria that are used in the OSOM expert module are as follows:

- **Horizontal clearance**
- Maximum incline
- Pavement & surfacing
- Stacking distance
- Vertical clearance
- Excessive road grade
- Sight distance
- Signal timing
- Storage lanes
- Structures
- Railway crossings
- Swept paths

These guidelines met the criteria requested by TfNSW and RMS and have now been successfully implemented into RAVRAT’s OSOM module. This could be investigated further by comparing these guidelines to existing OSOM legislation, gazette notices and permits to determine any comparisons in resulting classification.

Discussion
Gaps in RAVRAT’s assessment process
RAVRAT’s PBS Expert Module delivers an easy to understand and use tool that incorporates the majority of assessment criteria from the PBS Network Classification Guidelines for Local Government, however there are gaps in the assessment process. These gaps have been identified previously in the report and reiterated below:

- Unsealed rural roads – guideline not included within the tool’s lane width calculations, potential to cause inaccuracies in PBS classification level. While it is possible to assess unsealed roads in the tool, it produces a marginally more lenient classification. This missing guideline can be detrimental for local governments that contain a high percentage of unsealed roads in their jurisdiction.
- Curve widening – only minimum lane width for the whole length of road is used instead of two separate values for curve width and road. This could lead to stricter PBS classifications than intended.
- Bridge widths – the tool does not use the correct information from Table 2.12 of ARRB’s guidelines to determine minimum bridge width. It instead uses the same classification as road and lane width from the guidelines. This could lead to higher than intended classifications being given for lane widths on bridges.
- Overtaking – Overtaking has not been included within RAVRAT as overtaking does not necessarily restrict the route in terms of access. Therefore, how the classification is applied depends on the needs of the local government.
• Storage lanes — Storage lanes have not been included as this does not require any significant steps to determine if it meets requirements or not. Including this would most likely slow the overall process.

Overall these gaps in RAVRAT’s assessment procedure do not reduce the effectiveness of the tool, however it may reduce local governments in rural areas uptake as it does not explicitly state that it handles rural unsealed roads. The remaining gaps in the assessment process, in most cases lead to a stricter PBS classification than expected. This should be address in the future to ensure accurate representation of the guidelines to determine the correct PBS classification outcomes from an assessment.

RAVRAT’s OSOM Expert module also delivers an easy to understand and use tool that in this case uses assessment criteria that was developed by ARRB in consultation with project partners. These assessment criteria were approved by TfNSW and RMS to be used in RAVRAT’s OSOM Expert module. However, there are no comparable guidelines to those developed for RAVRAT, therefore it is difficult to gauge their credibility even though they are approved by TfNSW and RMS. This could be investigated further by comparing these guidelines to existing OSOM legislation, gazette notices and permits to determine any comparisons in resulting classification and conditions applied.

Use benefits of RAVRAT

RAVRAT provides local government with a consistent method of assessing their local road network for the suitability of restricted access vehicles. This tool implements the PBS guidelines contained within the PBS Network Classification Guidelines for Local Government, which are endorsed by ARRB and NHVR. The tool also implements the OSOM guidelines contained within the Assessment Criteria Guidelines – OSOM Module, which is endorsed by ARRB, TfNSW and RMS. The use of these documents in the development of RAVRAT provide local governments with a defensible position when using the tool to make heavy vehicle access decisions. Having this defensible position can save councils time if an access decision is challenged as RAVRAT can output a report detailing the assessment that was undertaken to come to that decision. This gives local governments confidence in the access decisions they have made.

This tool also includes the automatic reuse elements (roads, intersections, bridges, etc) of past assessed routes in any future routes that use the same elements. This means that if local government receives applications for two routes that used 80% of the same route elements, they would be able to assess the first route and all common elements would transition automatically to the second route. This saves local government enormous amounts of time that may have been used reassessing portions of routes as they did not know it had already been assessed. If enough of a local governments local road network is assessed through RAVRAT this could be a dramatic reduction in duplicated assessments and a decrease in response times for NHVR’s 28 day response requirement.

From the incremental assessment of a local government’s road network in RAVRAT it is possible to determine routes or networks that could be gazetted for use by restricted access vehicles. Within RAVRAT it is possible to run a report that outputs all assessed routes and their PBS classification.
From this a local government could select routes which are appropriate to be gazetted, this would in turn reduce the required number of permit applications that the local government would have to respond to.

CONCLUSION

From the review of RAVRAT and heavy vehicle legislation and regulation it can be determined that RAVRAT has the potential to provide great benefits to local governments and assist them in meeting their legislative requirements. While the tool does have some gaps in its assessment capability, these are not hugely detrimental, and the tool is still very beneficial.

RAVRAT provides local governments with a recognised and consistent methodology for route assessments leading to a defensible position for the access decision. Local governments can also expect a reduction in response times and permit application numbers if using the tool to its full potential. This can be achieved by making use of the tool for the majority of route assessments to ensure automatic element reuse happens and using the tool to determine routes that can be gazetted to reduce permit applications.

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