

Cost benefit analysis of revised access regime for oversize overmass vehicles

A final report for the Department of Transport and Main Roads Executive Summary   
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# Executive summary

The need for a revised access regime

The Department of Transport and Main Roads (TMR) is responsible for managing Queensland’s state road network, including access for heavy vehicles. As the state road manager, TMR is responsible for supporting heavy vehicle access while meeting its asset management and safety obligations.

The existing class 1 access regime was developed in the 1980s and based on 1970s engineering standards.1 This was a period during which class 1 vehicles were rare and their movements infrequent. While still a minority of road movements, the number of class 1 vehicles has increased significantly since the 1980s. Class 1 vehicles, including OSOM vehicles, have also become larger and heavier as vehicle technology has improved over time.

Bridge and culvert standards are designed to accommodate for the prevailing heavy vehicle fleet at the time of construction. As bridges have been developed at different times, the capacity for these bridges to accommodate modern OSOM vehicles varies. Many bridges were not designed for the modern heavy vehicle fleet.

Existing regime is unsustainable

The current access regime, which relies heavily on permits, is leading to the following poor outcomes:

* difficulty dealing with current permit volumes – existing permit process is costly and some permit renewals are expedited by the National Heavy Vehicle Regulator (NHVR) before TMR can undertake their assessment;
* no visibility of OSOM vehicle movements and masses – OSOM vehicles have significant implications for how TMR meets it safety and asset management obligations, but TMR currently has no visibility on OSOM vehicle movements or mass carried by these vehicles; and
* assets are showing signs of fatigue and deterioration – there is increasing signs that the road network is not coping with current level of OSOM vehicle movements, with several bridges showing signs of fatigue and deterioration.

Given the above, the current regime is unsustainable because it means TMR may not be able to meet its safety and asset management obligations. To address issues associated with the current access regime, TMR intends to introduce a revised access regime.

The revised access regime will be underpinned by contemporary engineering standards. It will also involve introducing an automated access system, which will be supported by telematics, and replace a significant proportion of permits and provide operators with real time access decisions.

Within this context, TMR has engaged HoustonKemp to undertake a cost benefit analysis (CBA) of introducing the revised access regime to OSOM vehicles.

Options for introducing a revised access regime

We have considered the following options in the cost benefit analysis:

* a ‘do minimum’ base case which applies contemporary engineering standards and more stringent permit application processes to address



1 TMR, *Revised class 1 vehicle access regime program*, January 2023, pp 2-4.

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some of the key issues with existing regime, but does not include an automated access system;

* option 1, where TMR introduces an automated access system supported by telematics for state-controlled roads; and
* option 2, where TMR introduces an automated access system supported

Table 1: Identified benefit categories from introducing the revised access regime for OSOM

by telematics for state-controlled roads and some local roads.

A key difference between the base case and option 1 and option 2 is the expected number of permit applications made by industry and received by TMR and local council road managers.

The ‘do minimum’ base case involves addressing some of the shortcomings associated with the existing regime by applying contemporary engineering standards without introducing the automated access system. Applying contemporary engineering standards in the absence of an automated access system will expand the number of permits that require manual structural assessments. It will also significantly increase the number of permit applications submitted by industry and assessed by TMR.

Option 1 would mean that all state-controlled roads are included in the automated access system, which is supported by telematics, thereby reducing the need for operators to apply for permits to use the state road network and the need for TMR to assess permit applications.

Option 2 would make the automated access system, supported by telematics, available to local council road managers as well. This reduces the need for local council road managers to assess permits, and further reduces the need for operators to apply for permits. Table 1 sets out the benefits we have identified. We have also identified the following costs:

* costs incurred by TMR to introduce the revised access regime;
* industry costs associated with installing and operating in-vehicle telematics; and
* costs to collect necessary local road asset data.

Avoided time delays from no longer needing a permit

Ability to respond to unexpected road closures

Benefit category Description of benefit

Operational flexibility

Reduced stress for operators

Admin savings on permit applications

TMR planning and investment benefits

Improved ability for industry operators to plan for the future

Improved access decision making by local council road managers

Improved ability to respond to state emergencies

Improved ability to comply with access conditions

OSOM operators generally receive less than 2 weeks of notice to undertake a task, which is less than the average turnaround time for permits. Delays can lead to significant economic cost to end consumers. Reduced use of permits means there are less delays to end customers.

Single permits are route specific. When there is an unexpected road closure, industry may need to wait for the road to clear, thereby leading to delays. Having a network to travel on means operators could complete the task by travelling on alternative routes.

The automated access system allows operators to modify the route or vehicle configuration for a task at the last minute, thereby allowing operators to select the most optimal vehicle and route.

The permit process is stressful for many operators. Reducing the number of permits required will reduce the stress for operators.

The permit process is time consuming for OSOM operators, TMR and local council road managers. Reducing the number of permits therefore reduces the administrative costs incurred by operators, TMR and local council road managers.

Information on OSOM vehicle movement and mass can help TMR understand asset deterioration and network demand, thereby allowing TMR to better prioritise its forward work program.

The revised access regime will provide greater transparency on access they can have for different vehicle configurations. Operators could use this information to assist with business planning and to decide which vehicles they purchase in the future.

Local council road managers may not have the necessary asset information and/or technical expertise to make informed access decisions. The automated access system means access decisions are made automatically based on asset capability.

OSOM vehicles are needed to respond to certain states of emergency and disaster recovery activities – e.g., to transport cranes or other equipment to site of emergency. Having an automated access system will allow OSOM vehicles to be deployed more quickly.

Access to the data provided by telematics software, including smart on- board mass, combined with the automated access system, will help operators comply with the access conditions.



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The revised access regime is expected to deliver significant benefits

Overall, our analysis shows that both option 1 and 2 are expected to deliver significant economic benefits to Queensland.

In present value (PV) terms, option 1 is expected to:

* in the low benefits scenario:
  + deliver economic benefits of $932.4 million;
  + have an economic cost of $118.4 million; and
  + result in net benefits of $814 million, with a benefit cost ratio of 7.87; and
* in the high benefits scenario:
  + deliver economic benefits of $3,289.3 million;
  + have an economic cost of $106.8 million; and
  + result in net benefits of $3,182.6 million, with a benefit cost ratio of 30.81.

In PV terms, option 2 is expected to:

* in the low benefits scenario:
  + deliver economic benefits of $1,125.6 million;
  + have an economic cost of $130.5 million; and



* result in net benefits of $995.1 million, with a benefit cost ratio of 8.62; and
* in the high benefits scenario:
  + deliver economic benefits of $4,784.5 million;
  + have an economic cost of $130.1 million; and
  + result in net benefits of $4,654.4 million, with a benefit cost ratio of 36.78.

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We note that benefits we have quantified are proportionate to the reduction in permits numbers, with the exception of TMR planning and investment benefits. Option 2 delivers more benefits as it has the potential to further reduce permits when compared to option 1. Further, the incremental net benefits associated with option 2 over option 1 ($181.1 million to $1,471.8 million) demonstrate the importance of including local councils in the revised regime.

Table 2 summarises the results of our analysis across the low benefits scenario and the high benefits scenario for each option.

Table 2: Overall economic results ($ million, PV)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Benefit/cost category** | **Option 1** | | **Option 2** | |
|  | Low scenario | High scenario | Low scenario | High scenario |
| Avoided time delays from not needing a permit | 686.4 | 2745.6 | 844.8 | 4037.9 |
| Industry admin savings | 27.4 | 33.6 | 33.7 | 49.4 |
| Ability to respond to unexpected closures | 2.7 | 28.8 | 3.4 | 42.4 |
| Operational flexibility | 103 | 343.2 | 126.7 | 504.7 |
| Avoided stress for industry | 0.8 | 8.1 | 1 | 12 |
| TMR admin savings | 107.7 108 | | 107.7 108 | |
| TMR planning and investment | 4.4 | 21.9 | 4.4 | 21.9 |
| Local council admin savings | 0 | 0 | 4 | 8.2 |
| **Total benefits (PV)** | **932.4** | **3289.3** | **1125.6** | **4784.5** |
| HVAMS system costs | 5.8 | 5.8 | 6.7 | 6.7 |
| TMR TCA costs | 0.5 | 0.5 | 0.5 | 0.5 |
| Operator telematic costs | 112.1 | 100.4 | 112.1 | 100.4 |
| Road manager data collection | 0 | 0 | 11.2 | 22.4 |
| **Total costs (PV)** 2 | **118.4** | **106.8** | **130.5** | **130.1** |
| **Net benefits (PV)** | **814** | **3182.6** | **995.1** | **4654.4** |
| **BCR** | **7.87** | **30.81** | **8.62** | **36.78** |

2 Generally, where there is uncertainty, we assume costs to be higher in the low benefits scenario. However, we note that road manager data collection costs are higher in the high benefits scenario for Option 2. This is because we assume that more local councils will sign up

to the automated access system in the high benefits scenario. In order to achieve this higher level of local road coverage, higher data collection costs will need to be incurred.



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