

**Monitoring, Evaluation and Review of the  
Vehicle Dimensions and Mass Rule implementation  
May 2011 to April 2013**

*6 May 2014*

*V5.0 Final*

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## 1.0 Summary

### Background

- a) The Land Transport Rule, Vehicle Dimensions and Mass Amendment 2010, Rule 41001/5, came into effect on 1 May 2010. This is the second Monitoring, Evaluation and Review (MER) report on implementation of the rule as at 30 April 2013.
- b) The rule provides for higher mass (HM) and over length (OL) permits, or a combination of both (Both OL & HM), for travel by heavy vehicles on state highways and/or local roads. There is also provision for increased length, as of right, for articulated vehicles, logging trucks, and truck and simple trailers for car and container cartage.
- c) The benefits are primarily the reductions in transport costs available from increased truck mass and/or length. The potential productivity gains are in the order of a 20 - 30% decrease in trips for the same freight task under HM and Both permits and a 10-15% decrease in trips for OL permits. Operators' cost savings are expected to flow through to increased GDP.

### Benefits

- d) The economic and transportation sector context over the period 2010 – 2013 has been one of strong growth in trailer registrations, heavy traffic counts and RUC purchases over the first two years followed by a flattening of these trends in the 2012/13 period. WIM data trends from 2010 to 2012 do not however show any increasing level of over-weight vehicle counts.
- e) The Regulatory Impact Statement (RIS) supporting the HPMV rule change estimated annual operator cost savings of \$100-200 million by year five. Based on a straight-line projection, this implies a target operator cost saving in a range of \$60 - \$120 million by the end of year three. **Operator cost savings in the year to end of April 2013 are estimated at \$60 – 80 million. These gains are in line with the range of expectations in the RIS.**
- f) Current GDP benefits arising from the \$60-80 million annual operator cost savings have not been calculated. The RIS estimated that annual operator costs savings of \$100-200 million could translate into GDP benefits in a range from \$250 million to \$500 million by year ten.
- g) Take up to date is around 25% of the HM potential estimated in 2010 and 18% of OL potential. At the time of the 2010 rule change the total NZ heavy fleet (HCV2) was estimated at around 18,000 vehicles. Approximately 12,485 vehicles were estimated to be HM capable of which approximately 2,300 might take up permits after allowing for route availability. 15,000 vehicles were estimated as OL capable of which 4,500 might take up permits after allowing for route availability.
- h) As at the end of April 2013 there were a total of 2,018 live permits held by approximately 1,400 unique vehicles as follows -

|                             | HM    | Both | OL  | Total |
|-----------------------------|-------|------|-----|-------|
| Permits as at 30 April 2013 | 1,133 | 340  | 545 | 2,018 |
| Unique vehicle plates       | 571   |      | 822 |       |

- i) There are around 4,500 trucking companies in New Zealand. HPMV uptake is concentrated in 322 firms for OL and 269 firms for HM and Both.

- j) A total of 162 million kilometres were run by HPMV vehicle combinations for the year to end of April 2013. This total consisted of 123 million OL kilometres (76%), 12 million HM kilometres (7%) and 26 million kilometres for Both OL and HM (16%).
- k) The 162 million HPMV kilometres, known as “H-miles” for purposes of NZTA’s key performance indicator (KPI) reporting, represents 10% of the 1.6 billion total “heavy” heavy vehicle RUC kilometres (RUC classes: 6,14,19, 300s, 400s and HPMV) over the same annual period.
- l) Top industry segments in terms of estimated annual kilometres travelled to end of April 2013 for all permit types are: general freight (48%), logs (24%) and general bulk (9%).
- m) Current annual operator cost savings are estimated in the table below in a range from \$60 - \$80 million. This is based on the following estimates of RUC kilometres purchased by HPMV plated vehicles and efficiencies made relative to servicing the same freight task with class one vehicles. The operational costs savings are calculated at \$3 per kilometre avoided, which incorporates assumptions of:
- (i) neutral infrastructure impact to service the fixed freight task and therefore exclusion of RUC charges, and
  - (ii) recognition of a small increase in vehicle operating costs.

| HPMV Permit type   | RUC Kilometres purchased 2012/13              | Proportion of RUC kms for which gains are achieved          |                                     |
|--|---|---|-------------------------------------|
|  |   | LOW<br>75 % of RUC kilometres                               | HIGH<br>100% of RUC kilometres      |
|  |   | Operator productivity gain %<br>Annual operator cost saving |                                     |
| Overlength (OL)  | 123 million km                                | 15% gain<br>\$40 m  | 15% gain<br>\$53 m                  |
| Both OL & HM   | a) OL RUC [Dist. licences]<br>16.7 million km | Range - typically 25% gain<br>\$5 m                         | Range – typically 25% gain<br>\$7 m |
|  | b) HM RUC [H-Licences]<br>9.5 million km      | 15% gain<br>\$8 m   | 15% gain<br>\$11 m                  |
| Higher mass (HM)   | 12 m km                                       | Range - typically 25% gain<br>\$7.0m                        | Range – typically 25% gain<br>\$9 m |
| <b>Total operator cost saving on permitted vehicles @ 3.00 / km.</b>                             |   | <b>\$60 million</b>   | <b>\$80 million</b>                 |
| <b>As of right gains</b> (Car haulage & articulated truck & semi trailers).                      |   | <b>\$8 million</b>  | <b>\$16 million</b>                 |
| <b>TOTAL OPERATOR COST SAVINGS</b>   |   | <b>\$68 million</b>   | <b>\$96 million</b>                 |
| <b>Safety</b> (reduced crash exposure).  |   | <b>\$2 million</b>  | <b>\$3 million</b>                  |
| <b>Total annual economic gain</b> before consideration of administrative & infrastructure costs. |   | <b>\$70 million</b>   | <b>\$99 million</b>                 |

- n) The rule change also provided for as-of right length increases to articulated truck and trailers and car and container transporters. The annual value of the operator cost savings could be in the order of \$8-16 million. (Articulated trucks \$7 – 14 million, and car transporters \$1-2 million). The benefits to empty container carriers remains largely unfulfilled and is subject to calls for further pro-forma designs.

**Safety**

- o) HPMVs are required to have higher safety specifications than class one vehicles. Crash data shows that over the past three years HPMV over length trucks have been involved in one fatal crash per 78 million kilometres travelled. This compares well with a rate of one fatal crash per 59 million kilometres travel for the general “heavy” heavy fleet. Over the same three-year period, higher mass HPMVs have been involved in one fatal crash per 41 million kilometres. This is higher than the general heavy fleet. This is not necessarily a concerning trend given the statistical variability of crash data over short time periods.
- p) The crash data is for trucks that have had a HPMV permit at some stage over the three-year period. It is unknown whether the trucks were in HPMV mode at the time of a crash. Of the four higher mass fatal crashes in the one-year period to April 2013, the truck driver was not noted as being at fault in any of the incidents.
- q) Further safety gains are received from the reduced crash exposure arising from the reduced travel required to complete the same freight task. These benefits could be in the order of \$2-3m a year at current levels of HPMV uptake.

**Route availability**

- r) Securing council support for provision of the “last mile” of HPMV routes is the key challenge to HPMV uptake given the importance of “last mile” availability.
- s) Investigation and investment plans are well advanced for all State Highway components of investment routes. A second tranche of State Highway investment routes are also under investigation. Investment routes make up 4,527 km of both State Highways and local roads. There are 4,000 state highway bridges on investment routes, of which 57 need strengthening in the North Island.
- t) NZTA actual investment to achieve gains made has been well less than forecast. The RIS estimated \$100 million route investment costs in the first four years and \$150 million in ten years. The strengthening costs of \$12.4m for 26 bridges in the upper north island alone are not significant relative to the benefits.
- u) Route availability statistics and maps, while somewhat out of date as at end of April 2013 provide a useful tool for measuring state highway availability. Measures to report availability of local roads would also be useful to gauge progress – accepting that this is an area NZTA can only influence rather than directly control.

**Road User Charges (RUC) now incentivise HPMV uptake**

- v) RUC changes in August 2012 have shifted RUC from a marginally negative, to a positive factor in decisions to take up an HPMV permit. By moving to 48 tonne operation and increasing from eight to nine axles, RUC per payload tonne could decrease by 17%.

**Enforcement and compliance issues**



- w) High infringement costs if permit conditions are breached have been a concern for operators. Axle weigh flexibility provisions and a Memorandum of Understanding on enforcement policy, agreed in late 2012 between NZTA, Police and the industry, have gone some way to resolving this constraint on permit uptake.

#### **Operators' experience**

- x) A random phone survey of operators with permits indicated acceptable levels of overall satisfaction with NZTA's performance with regard to over length permitting. The NZTA's time taken, decisions made and customer service for OL permitting are also mostly very reasonable. This reflects a process that is relatively straight forward compared with higher mass permits.
- y) NZTA's performance on higher mass permitting in comparison shows neutral satisfaction overall. Time taken is slightly unreasonable while reasonableness with decisions made and customer service are marginally on the positive side. This 2013 result is a slight improvement on operator perceptions of NZTA performance in 2011. Operator experience of RCA processing could be a key risk for the 50MAX initiative if operators are required to make a large number of direct approaches to Councils for these permits.
- z) In contrast to NZTA performance, operators' views of Council (RCA) performance remains as poor as it was in 2011. Time taken and customer service and overall satisfaction is considered mostly unacceptable. Quality of decisions made is considered mixed or neutral. This suggests that operators largely accept the outcomes of Councils' decision making, but the time taken and customer service along the way needs improvement.
- aa) Operators identified the need for improvements to permitting processes in 2011 and this remains urgent.

#### **Councils' [Road Controlling Authorities ("RCAs")] experience]**

- bb) Officers from a sample of ten councils were phone interviewed along with Local Government New Zealand (LGNZ). RCAs in general believe that permitting processes are working well overall but still need streamlining. Centralisation of permitting, if local knowledge can be retained, is supported by some. Application processing fees are insufficient.
- cc) RCAs have considerable uncertainty over infrastructure impacts on local roads of poorer quality compared with state highways. The evidence base for the impact of HPMVs compared with the counterfactual situation of the same freight task serviced by class one vehicles remains unconvincing for RCAs. This uncertainty, combined with concerns over availability of NZTA funds if negative impacts eventuate, is resulting in a cautious approach to route availability.
- dd) LGNZ have indicated that in the main they support the findings of this report. Their greatest concern is that sufficient funds may not be forthcoming from NZTA in the event of extensive unanticipated infrastructure damage. While NZTA believe the likelihood of this risk eventuating is low, LGNZ would like to see an increased financial assistance rate apply to any extensive damage, in a similar manner to flood damage funding. LGNZ would also like to see a review of the thresholds for investment route funding.
- ee) Many RCAs would like to regain control of the general access provided to over length HPMVs, which are seen as creating infrastructure damage and safety issues. No empirical evidence has been provided to support these concerns however. Opinion appeared to be split strongly

in either support or opposition to the proposed further general access for 50-MAX vehicles. NZTA officers however report increasing support for this initiative.

- ff) While most operators are considered to be of reasonable quality, assurance on compliance is considered poor. Councils usually have no relationship with CVIU, whose resources are stretched anyway and rarely, if ever, cover local roads. H plates are also considered of no use for enforcement.
- gg) Further emphasis is recommended on RCA relationship building, data gathering and monitoring of impacts by NZTA. There were reports that RCAs were not sufficiently involved – for example in the design of permitting process and on the axle weight & loading group.

#### **Government officer views (NZTA, MOT and CVIU)**

- hh) NZTA staff report that customers see the process as their greatest fear. Stalling of the permitting process improvement programme is reported to be disappointing and action is required urgently.
- ii) The standard operating procedures (HPMV manual) has been useful, however this standardised existing procedures only. Further steps are required to streamline the process and to provide timely management information. Auditing of actual practice against standard procedures is now required.
- jj) Good progress is reported in terms of State Highway availability through the investment route programme. The local road last mile of investment and other routes will however continue to be the largest challenge.
- kk) Compliance issues remain a key concern, for which the Weigh right initiative is an intended solution.
- ll) The 50MAX initiative to provide widespread state highway and local route access to nine-axle pro-forma vehicles is strongly supported by government staff.

#### **Bridge impacts**

- mm) Good progress has been made on bridge availability on State Highways where around only 40 bridges remain unavailable at 50 tonnes for 50MAX pro-forma designed vehicles. NZTA staff have very positive views on the infrastructure benefits of HPMVs. Many bridges were last analysed in 1960s with very conservative assessments of capacity. The HPMV initiative has prompted the collection of very useful data on capacity and useful lives.
- nn) Best practice is now defined in the Bridge Manual, which consciously pushes bridges harder. The new approach has required mitigation measures, which typically involve more monitoring. The investigation costs have been low and the payback from reduced restrictions is therefore thought to be high, even if bridges need replacing 10 years earlier.
- oo) The bridge investigation process nationwide is almost complete and funding requests are now well progressed through NZTA's Planning & Investment (P&I) business group. Councils could learn the NZTA's lessons of optimising the life cycle benefits of bridge assets.

#### **Pavement impacts**

- pp) NZTA pavement staff continue to expect some decreased pavement costs from the reduced axle loadings and reduced trips HPMVs require for a given freight task. It was reported that

the HPMV rule change has been conservative and axle weights could be increased.

- qq) Road User Charges are based on pavement wear increasing to the fourth power of increased axle loading. State Highways and Local roads tend to have much the same wide range of pavement strengths. However, State Highways tend to have far fewer pavement issues because the average pavement wear to weight relationship is far lower than the average for local roads. NZTA advice remains that RCAs should not issue permits on weaker pavements. Across the State Highway network an increase in loading (equivalent standard axles) of only 2.92% was estimated in 2010 to result from use of HPMVs to service a fixed freight task and assuming an efficiency gain from the use of HPMVs. Any impact of HPMVs relative to class one vehicles should therefore be small and not likely to be separately identifiable amongst other factors impacting pavement wear.
- rr) There are possible increases in surface scuffing and polishing from HPMVs, but there is no current evidence. It is expected that surface scuffing and polishing from the increased weight of HPMVs will be no worse than class one after allowing for trip decrease. A Performance Testing Group is now established and HPMV could be part of their brief.
- ss) NZTA has existing and some recently initiated research or testing capability as follows. It is recommended these systems include coverage of HPMV impacts.
- ARRB research on the relationship between the number of heavy vehicles and surface polishing.
  - Annual High-speed data collection on road geometry has some potential ability to test HPMV surface impacts.
  - A new traffic speed deflection (TSD) tool is expected to cover all HPMV investment routes including the local road component.

**Concerns over management arrangements for HPMV permitting.**

- tt) Good progress has been in some areas of HPMV permitting. As recommended in the 2011 MER report, standard operating procedures in the form of the “HPMV manual” have been developed. However, management information for day-to-day oversight of permitting and further analysis of permits by industry type and kilometres travelled has become increasingly inaccessible, unreliable and out of date. HM processing delays reached a crisis point in late 2012/early 2013. The HPMV database tool was only ever designed with limited life and now needs upgrading. Urgent attention is required to the operational systems and data necessary to support HPMV implementation. A reliable HPMV key performance indicator (“H-miles” KPI) for NZTA Board reporting will also require these improvements.
- uu) The concerns over permit data accuracy are a symptom of underlying problems with HPMV management arrangements. Provision of HPMV capable infrastructure and permitting is a complex set of functions that span across almost all NZTA business groups. There are serious risks arising from the cumulative impacts of the following features of current arrangements:
- Governance is with a committee.
  - There is no single manager within NZTA with the necessary authority to manage the HPMV business.
  - Permitting operations are spread across two business groups with activity at both national and regional offices.
  - Regional office functions are variously inhouse or outsourced.
  - Supporting technology to provide management oversight of HPMV permitting does not

provide reliable or timely data.

- vv) The May 2013 report to the VDM steering group has already recognised these concerns. This report noted “ *significant risk of lost reputation and not meeting industry expectations if the NZTA cannot demonstrate a clear vision and delivery on all business improvement aspects for permitting heavy vehicles.*”

**Media scan**

- ww) Transport industry media coverage of HPMV has tended to be positive with some negative discussion of route restrictions and speed of permit processing. General media coverage has also contained a mix of positive (economic gains) and negative issues. An important point however is that the negative discussion of issues such as road wear and safety concerns has addressed heavy vehicles in general and has not singled out HPMVs.

**Summary and conclusions**

- xx) Systems for the effective management of HPMV permitting and data are in very poor condition. This poses significant risks to the NZTA and needs to be addressed urgently.
- yy) HPMV benefits in terms of operator cost savings flowing through to GDP growth are in line with expectations at the time of the rule change in 2010.
- zz) The NZTA has made good progress with addressing state highway infrastructure constraints.
- aaa) The major challenge is for the NZTA to secure wide spread Council support for improved provision of local road access for HPMVs.

## 2.0 Introduction

The Land Transport Rule, Vehicle Dimensions and Mass Amendment 2010, Rule 41001/5, came into effect on 1 May 2010 (“2010 VDM rule”). The rule provides for higher mass (HM) and over length (OL) permits, or permits for a combination of both HM and OL, travel by heavy vehicles on state highways and/or local roads. There is also provision for increased length, as of right, for articulated vehicles, logging trucks, and truck and simple trailers for car and container cartage.

These HPMV permit types should not be confused with overweight (OW) and over-dimension (OD) permits designed for indivisible loads such as house removal or heavy machinery transport. These permit types are outside the scope of this report as there has always been provision for these vehicle types to exceed normal Class one dimensions and/or mass standards. The 2010 VDM rule did not change these provisions.

OW and OD permit conditions could include reduced speed on road and/or bridges and requirements in many cases for pilot vehicles. The philosophy behind HPMV in contrast is that the vehicle must be able to travel on the open road and cross bridges at Class one speeds and not further disrupt the flow of traffic.

### 2.1 Terms of reference

This is the second Monitoring, Evaluation and Review (MER) report on implementation of the rule as at 30 April 2013. A report on the first year of the rule implementation was published late in 2011. This first report explored a range of potential monitoring and evaluation measures. The Terms of Reference dated 15 April 2013 (Appendix 1: Terms of Reference) provides the following scope of current work:

- *Estimation of current annualised net economic impact of HPMV operations and estimation of potential future net benefits over 20 years.*
- *Assessment of the impacts of the 2010 VDM Amendment on:*
  - *Road user safety.*
  - *Infrastructure, including structures and pavements.*
  - *Achieving the policy objectives stated in the RIS.*
- *Feedback on HPMV systems, administration and processing from:*
  - *Operators.*
  - *RCAs, including NZTA.*
  - *CVIU.*
- *Identification of appropriate performance measures for ongoing monitoring of the HPMV system.*
- *Improvements to the legal, operational, technical and technological systems supporting the HPMV system.*
- *Review of recommendations from the previous Monitoring Evaluation and Review in 2011.*
- *Case studies of successful implementation.*

The TOR details the following six information requirements to support the scope of work:

1. *Economic impact*
2. *Impact on infrastructure*
3. *Impact on safety*
4. *Operator experience*
5. *RCA feedback*
6. *CVIU feedback*
7. *Ongoing reporting frameworks*

## **2.2 Project Governance**

The project is steered by a cross-agency group with membership from the NZ Transport Agency (NZTA), the Ministry of Transport (MoT) and the New Zealand Road Transport Forum.

As was the case in 2011, two main workstreams underpin this 2013 MER report -

- Phone surveys of operators, road controlling authority (RCA) officers and central government staff. In 2013 we moved from a web-based survey of operators to a phone-based survey methodology.
- Analysis of application and road user charge (RUC) purchase data.

## **2.3 Report structure**

This report is structured as follows:

- **Section 3.0** Discussion of all HPMV applications received and permits approved and analysis of RUC applications.
- **Section 4.0** Analysis of RUC kilometres purchased. This data underpins the assessment of operator cost savings.
- **Section 5.0** Economic benefits.
- **Section 6.0** Safety performance.
- **Section 7.0** Operator experience.
- **Section 8.0** Local government issues.

### 3.0 Nature of applications, approved & declined permits

The focus of this section is the analysis of approved permits over the three-year period from 1 May 2010 to the end of April 2013. All three High Productivity Motor Vehicle (HPMV) permit types are considered. These comprise permits for higher mass (HM) permits for over length (OL) and permits for both HM and OL (Both). Approved permits are analysed by:

- Industry or load type.
- Company location.
- Vehicle configuration type.
- RUC class.
- Number of unique registration plates with permits.
- Number of companies with permits.

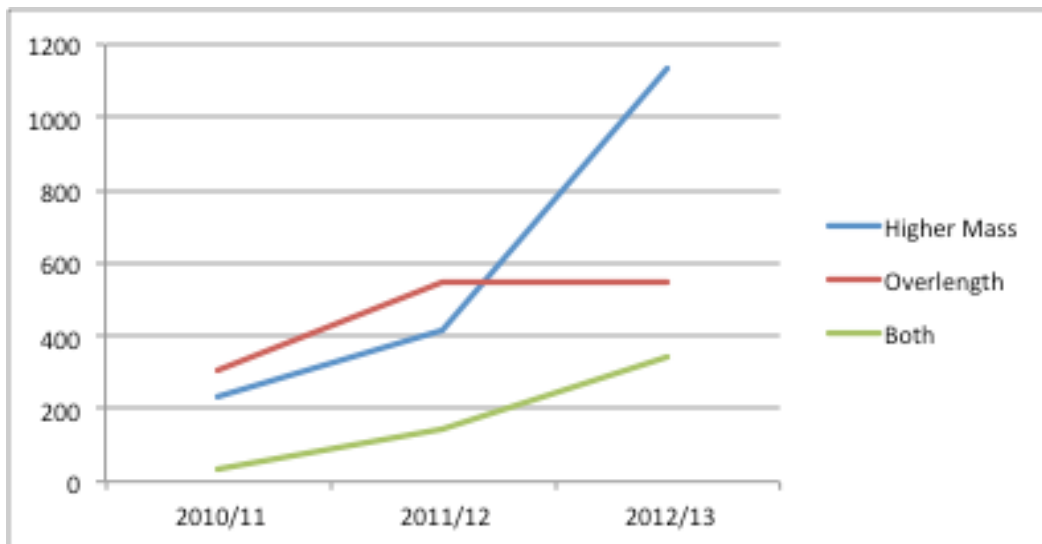
A more limited discussion is made on the nature of permit applications, permits in progress and declined applications.

#### 3.1 Approved permits

At the end of the first year of the rule implementation (from May 2010 to April 2011), there were 501 approved HPMV permits (comprising 148 HM, 15 both and 338 OL).

Total permits have climbed to 2,018 as at the end of April 2013 comprising: 1,133 HM, 545 OL and 340 Both. Higher mass permit numbers have since 2011/12 outstripped OL permits, which have flattened off in numbers.




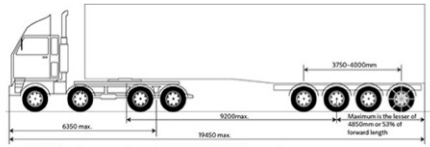
Figure 1 Approved permits by type 2010/11 to 2012/13.



**3.1.1 Approved permits by vehicle type**

**Table 1** shows the four main vehicle types receiving HPMV permits. These are the 8 and 9 - axle rigid truck and trailers, and to a lesser extent, the 8-axle B-train and the articulated truck towing a quad semi trailer.

**Table 1. Description of two main vehicle configuration types receiving HPMV permits.**

| Description                                | Vehicle type classification  | PAT <sup>(1)</sup> type |  |
|--|--|-------------------------|--|
| 8-axle rigid truck and trailer             | R22T22<br>(4-axle rigid truck towing 4-axle trailer)                           | 891                     |    |
| 9-axle rigid truck and trailer             | R22T23<br>(4-axle rigid truck towing 4-axle trailer)                           | 914 or 915              |    |
| B-train                                    | B1232<br>(Three-axle truck towing both a three-axle and two-axle semi trailer) | 851                     |   |
| Articulated truck towing quad semi-trailer | A224   | 826                     |  |

(1) PAT Traffic is a German-based company providing Weigh in Motion and other traffic measurement systems.

**Table 2** shows the predominance of 8-axle truck and trailers (R22T22) across all permit types. 9-axle truck and trailers (R22T23) are now starting to show reasonable numbers and these vehicles dominate the “Both” permit type. Articulated trucks towing quad semi-trailers are now showing in significant numbers for both HM and OL permits, and are nearing a total almost equivalent to B-trains.



**Table 2. Approved HM OL and Both permits by vehicle combination type.**

|                        | Vehicle Type             | Higher Mass (HM) | Overlength (OL) | Both (HM + OL Permits) | Total        |
|------------------------|--------------------------|------------------|-----------------|------------------------|--------------|
| Articulated trucks     | A124                     | 1                | 123             | 0                      | 260          |
|                        | A134                     | 0                |                 | 0                      |              |
|                        | A223                     | 1                |                 | 0                      |              |
|                        | A224                     | 135              |                 | 0                      |              |
| B-trains               | B1222                    | 1                | 111             | 0                      | 287          |
|                        | B1232                    | 63               |                 | 3                      |              |
|                        | B1233                    | 37               |                 | 39                     |              |
|                        | B1234                    | 0                |                 | 0                      |              |
|                        | B1243                    | 0                |                 | 2                      |              |
|                        | B1343                    | 0                |                 | 0                      |              |
|                        | B2223                    | 0                |                 | 2                      |              |
|                        | B2232                    | 0                |                 | 1                      |              |
|                        | B2233                    | 0                |                 | 1                      |              |
|                        | B2234                    | 1                |                 | 3                      |              |
|                        | B2243                    | 11               |                 | 12                     |              |
| Rigid truck & trailers | R12T22                   | 89               | 279             | 42                     | 1,436        |
|                        | R22T12                   | 0                |                 | 0                      |              |
|                        | R22T22                   | 545              |                 | 93                     |              |
|                        | R22T23                   | 227              |                 | 136                    |              |
|                        | R23T22                   | 0                |                 | 2                      |              |
|                        | R23T23                   | 21               |                 | 2                      |              |
| Other                  | Truck and Simple Trailer | 0                | 30              | 0                      | 30           |
|                        | Non Pro Forma Vehicle    | 0                | 2               | 2                      | 4            |
|                        | Not specified            | 1                | 0               | 0                      | 1            |
| <b>Total</b>           |                          | <b>1,133</b>     | <b>545</b>      | <b>340</b>             | <b>2,018</b> |

### 3.1.2 Approved HM permits by RUC class

Table 3 shows the predominance of 8-axle rigid truck and trailers in the RUC classes listed for HM permits. The 53 tonne RUC type (882) predominates over the 48 tonnes type (881), which is a positive sign of increasing payload potential.

**Table 3. Vehicle types by RUC class.**

| RUC Vehicle Class | Description / Number of Axles & (RUC class)                            | Approved     | Share       |
|-------------------|--|--------------|-------------|
| 532               | Class not listed in RUC tables   | 16           | 1%          |
| 538               | Additional Licence: 4 axle truck (14) & 4 axle trailer (43)            | 46           | 4%          |
| 557               | Additional Licence: 4 axle truck (408) & 4 axle trailer (43)           | 42           | 4%          |
| 823               | Class not listed in RUC tables   | 133          | 12%         |
| 881               | Distance Licence: 4 axle truck (14) & 4 axle trailer (43) <48 Tonnes   | 347          | 31%         |
| 882               | Distance Licence: 4 axle truck (14) & 4 axle trailer (43) 48-53 Tonnes | 547          | 48%         |
| Not specified     |  | 2            | 0%          |
| <b>Total</b>      |  | <b>1,133</b> | <b>100%</b> |

### 3.1.3 Approved permits by location

Table 4 shows Christchurch, Waikato and Bay of Plenty with the highest numbers of approved permits. The absence of Auckland from near the top of this list is a possible concern.

**Table 4. Approved HM and both permits by company location.**

| APPROVED HPMV HM & BOTH PERMITS | 2010/11    | 2011/12    | 2012/13     | Share         |
|---------------------------------|------------|------------|-------------|---------------|
| Christchurch                    | 84         | 232        | 448         | 30.4%         |
| Waikato                         | 70         | 56         | 409         | 27.8%         |
| Bay of Plenty                   | 4          | 63         | 228         | 15.5%         |
| Dunedin                         | 30         | 59         | 141         | 9.6%          |
| Auckland                        | 9          | 34         | 98          | 6.7%          |
| Napier                          | 47         | 66         | 77          | 5.2%          |
| Marlborough                     | 2          | 17         | 27          | 1.8%          |
| Nelson                          | 9          | 11         | 23          | 1.6%          |
| Wanganui                        | 10         | 18         | 22          | 1.5%          |
| Wellington                      | 2          | 0          | 0           | 0.0%          |
| <b>Total</b>                    | <b>267</b> | <b>556</b> | <b>1473</b> | <b>100.0%</b> |

Analysis of approved OL permits by location is difficult because these permits are issued from a single central office in Palmerston North.

### 3.1.4 Approved permits by industry classification / load type

Classifications available from permit applications allow only a coarse assessment of industry demand. Many trucks in the bulk trades, for example, provide services to a variety of sectors. Table 5 shows the predominance of the general freight category for approved HM permits, with dairy products and logs taking second and third place.

**Table 5. Approved HM (excludes Both) permits by industry classification / load type.**

| <b>Industry Classification (Type of Load)</b> | <b>Approved</b> | <b>Declined</b> | <b>In Progress</b> | <b>Total</b> |
|---|-----------------|-----------------|--------------------|--------------|
| General Freight                               | 479             | 91              | 78                 | <b>648</b>   |
| Dairy Products                                | 145             | 16              | 0                  | <b>161</b>   |
| Logs  | 121             | 25              | 10                 | <b>156</b>   |
| Containers                                    | 117             | 18              | 23                 | <b>158</b>   |
| Aggregates                                    | 83              | 21              | 1                  | <b>105</b>   |
| Bulk Liquid                                   | 51              | 39              | 0                  | <b>90</b>    |
| Milk  | 27              | 8               | 1                  | <b>36</b>    |
| Waste   | 27              | 1               | 0                  | <b>28</b>    |
| Fertiliser                                    | 16              | 0               | 0                  | <b>16</b>    |
| Fuel  | 16              | 3               | 7                  | <b>26</b>    |
| Livestock                                     | 13              | 4               | 2                  | <b>19</b>    |
| Coal  | 11              | 3               | 0                  | <b>14</b>    |
| Food/Beverage                                 | 11              | 2               | 3                  | <b>16</b>    |
| Woodchips                                     | 9               | 2               | 0                  | <b>11</b>    |
| Timber  | 5               | 2               | 0                  | <b>7</b>     |
| Metals  | 2               | 0               | 0                  | <b>2</b>     |
| <b>Total</b>                                  | <b>1,133</b>    | <b>235</b>      | <b>125</b>         | <b>1,493</b> |

Analysis of OL permits by industry type is problematic due to data constraints. Table 13 however shows Over-length RUC purchases by industry. This is a more useful analysis as it indicates the extent to which benefits have been received by each industry sector.

### 3.1.5 Approved permits per company

A total of 322 unique companies hold OL permits and 269 unique companies hold HM permits. This analysis is clouded however by the existence of owner-drivers working for many of the larger operators. Table 6 shows that, over time, the number of OL permits is remaining steady at around 2.7 per company.

Around three to four HM permits on average are held by each company. This is significantly higher than the average number of OL permits per company.

**Table 6. Approved permits per company.**

|                              | 2010/11 | 2011/12 | 2012/13 |
|------------------------------|---------|---------|---------|
| OL permits- unique companies | 135     | 261     | 322     |
| OL permit numbers            | 339     | 698     | 885     |
| <i>OL permits / company</i>  | 2.5     | 2.7     | 2.7     |
| HM - unique companies        | 57      | 126     | 269     |
| HM- permit numbers           | 267     | 556     | 1,493   |
| <i>HM permits / company</i>  | 4.6     | 4.4     | 5.5     |

### 3.2 Applications received, work in progress and permits declined

The difference between permits received and permits approved consists of work in progress or permits declined. Analysis of permits received is problematic for a number of reasons however. In the early days of rule implementation it was understood that operators may have been encouraged to apply for permits on a prospective basis. PIOs and operators now have a reasonably clear understanding of the likely success of a permit application. Permits lodged are therefore likely to have a reasonable likelihood of success.

The more practical challenge is that the HPMV database tool data entry timeliness and quality control has not been rigorously maintained in 2013. Reliable data on applications and WIP is therefore unavailable.

#### 3.2.1 Permits in progress (HM, or both)

Table 7 shows locations in the Auckland / Bay of Plenty / Waikato triangle have the most HM permits in progress reflecting the economic scale of this area and recent upswing in permit applications. OL permits are mostly easily processed pro-forma designs and work in progress is typically very low.

**Table 7. HM and Both permits in progress by region.**

| IN PROGRESS HPMV HM PERMITS | 2012/13    | Share       |
|-----------------------------|------------|-------------|
| Auckland                    | 84         | 40%         |
| Bay of Plenty               | 61         | 29%         |
| Waikato                     | 20         | 9%          |
| Christchurch                | 16         | 8%          |
| Wanganui                    | 16         | 8%          |
| Dunedin                     | 13         | 6%          |
| Wellington                  | 1          | 0%          |
| Nelson                      | 0          | 0%          |
| Marlborough                 | 0          | 0%          |
| Napier                      | 0          | 0%          |
| <b>Total</b>                | <b>211</b> | <b>100%</b> |

### 3.3 Declined permits

Only three OL permits were declined in 2012/13, reflecting the relative ease of securing a permit for a pro-forma OL vehicle design, which make up the vast majority of overlength applications.

Declined HM permit volumes are approximately one third of approved permits. Data on declined permits needs to be interpreted with care because PIOs often advise applicants not to apply when a permit is thought to be unlikely to succeed. Data on declines cannot therefore be used to identify key route demand.

Table 8 shows that HM permit declines totalled 319 in 2012/13 compared with total approved permits of 1,133. Regions with most declines approximately matches regions with most approved permits, except for Auckland that features near the top of the list of regions with declined permits and further down the list of approved permits.

**Table 8. Declined permits by region.**

| DECLINED HPMV HM PERMITS | 2010/11 | 2011/12 | 2012/13 | Share  |
|--------------------------|---------|---------|---------|--------|
| Waikato                  | 210     | 37      | 71      | 23.5%  |
| Auckland                 | 65      | 49      | 62      | 20.5%  |
| Christchurch             | 31      | 24      | 54      | 17.9%  |
| Bay of Plenty            | 60      | 20      | 48      | 15.9%  |
| Dunedin                  | 34      | 19      | 31      | 10.3%  |
| Wanganui                 | 31      | 19      | 25      | 8.3%   |
| Napier                   | 0       | 0       | 0       | 0.0%   |
| Nelson                   | 3       | 9       | 8       | 2.6%   |
| Marlborough              | 6       | 7       | 3       | 1.0%   |
| Wellington               | 5       | 0       | 0       | 0.0%   |
|                          | 445     | 184     | 302     | 100.0% |

The most common reason listed for permit decline as shown in Table 9 is an irregular or withdrawn permit, followed closely by bridge restrictions.

**Table 9. Reasons for HM permit decline.**

| Decline reasons                                  | 2011 | 2012 | 2013 | Share  |
|--|------|------|------|--------|
| Withdrawn applications                           | 119  | 58   | 136  | 45.0%  |
| Bridge restrictions                              | 196  | 65   | 111  | 36.8%  |
| Safety concerns                                  | 15   | 16   | 21   | 7.0%   |
| Axle distance mass limits exceeded               | 73   | 8    | 15   | 5.0%   |
| Local road restrictions                          | 14   | 4    | 13   | 4.3%   |
| No permit required or other permit type required | 4    | 31   | 5    | 1.7%   |
| Other  | 24   | 2    | 1    | 0.3%   |
|  | 445  | 184  | 302  | 100.0% |

## 4.0 Analysis of RUC kilometres purchased

This section explores the RUC purchases by vehicles with approved HPMV permits. RUC kilometres purchased are the most accessible means of tracking the level of HPMV activity. *Appendix 5* discusses a range of data manipulation issues for Applications, O-Permit and RUC databases identified in 2011 and the state of progress in 2013. Data gaps and inconsistencies continue to make an easy and accurate analysis of RUC distance problematic.

### 4.1 Methodology for assessment of RUC purchases

The August 2012 changes to RUC provided specific categories for HPMV vehicle combinations. This improved the ability to analyse HM usage. A permanent RUC weight is assigned to each vehicle type being the lesser of its GVM or the maximum allowable mass under the VDAM rule 2002. Vehicles with HM or OL permits, as well as vehicles with OW and OD permits, since 2012 have had two RUC options -

- a) Make application to change the towing vehicle to an H-RUC vehicle type, which enables purchase of H distance licences in 4-5 tonne bands. This option is designed for vehicles that run at higher mass most of the time. These “800” series RUC codes are the primary source of data on utilisation of HM permits.
- b) Apply for an additional licence in one tonne bands for each additional load. Analysis shows however that purchases of additional licences by HPMV vehicles are minimal, totalling 163,000 km in 2012/13 compared with distance licences totalling 143 million kilometres.

RUC distances are calculated from the following sources –

- High Mass (HM)- calculated from “H-RUC distances purchased by trucks.
- Over length (OL) - calculated from standard RUC distances purchased by trailers. Trailer distances are used for OL permits because permitted OL trucks travel approximately 30% more distance than their permitted trailers. This possibly indicates that OL permitted trucks often haul non HPMV trailers and this distance cannot be included in the calculations. 50% of trailer distances are calculated for B-trains where there are two semi trailers in the combination.
- Both - calculated from trailer distance licences for those appearing to operate only over length, and H-RUC for those appearing to operate at higher mass.

#### 4.1.1 Permits or unique plates

It is very common for individual truck or trailer registration numbers to be associated with multiple HPMV applications and permits.

Table 10 shows the 1,473 approved HM and both permits in the year to the end of April 2013 are associated with 571 unique registration numbers. The annual trend is for trucks to be associated with an increasing number of permits with each truck in 2012/13 associated with an average of 2.6 permits.

**Table 10. Number of unique registration plates associated with approved HM and both permits.**

|   | 2010/11    | 2011/12    | 2012/13    |
|---|------------|------------|------------|
| Approved HM permits (including those with Both) | 267        | 556        | 1,473      |
| Number of unique plates                         | 137        | 257        | 571        |
| <i>Average permits per vehicle</i>              | <i>1.9</i> | <i>2.2</i> | <i>2.6</i> |

Table 11 shows that the 885 OL permits in 2012/13 were associated with 822 unique vehicles. In contrast to HM operations it appears that OL vehicles have more dedicated truck and trailer relationships.

**Table 11. Number of unique HPMV over length vehicle registration plates.**

|   | 2010/11    | 2011/12    | 2012/13    |
|---|------------|------------|------------|
| Number of unique plates (including those with Both) | 339        | 698        | 885        |
| Number of unique plates                             | 306        | 672        | 822        |
| <i>Average permits per vehicle</i>                  | <i>1.1</i> | <i>1.0</i> | <i>1.0</i> |

Unique truck plate numbers for Both permits in 2012/13 totalled 249.

#### ***4.2 Total RUC kilometres purchased on distance or H distance licences***

There are fewer OL permits, but the distances travelled are far greater than HM permits. Table 12 shows that OL permits make up 27% of permits, but 76% of activity in terms of RUC kilometres purchased. HM in contrast make up 56% of permits but only 7% of distance travelled.

The significantly greater average distance is travelled by OL trucks fits with the expectation of greater distances likely to be travelled by linehaul operators holding many of the OL permits.

This balance of higher mass and over length RUC distance travelled remains similar to that reported in 2011.

**Table 12. Annual 2012/13 RUC kilometres purchased by HPMV combinations.**

|                         | Overlength  | Higher Mass | Both OL and HM |                | Total       |
|-------------------------|-------------|-------------|----------------|----------------|-------------|
|                         |             |             | a) Overlength  | b) Higher Mass |             |
| Permit numbers          | 545         | 1,133       | 340            |                | 2,018       |
| Share of permit numbers | 27%         | 56%         | 17%            |                | 100%        |
| 2012/13 RUC kilometres  | 123,411,295 | 11,758,865  | 16,793,206     | 9,599,000      | 161,562,366 |
| Share of RUC kilometres | 76%         | 7%          | 10%            | 6%             | 100%        |

#### 4.2.1 H-Miles

The 162 million HPMV kilometres of RUC distance shown in Table 12 have been termed “H-miles” for purposes of NZTA’s key performance indicator (KPI) reporting. The “H-miles” KPI is reported as HPMV kilometres travelled as a percentage of the total heavy-heavy vehicle kilometres travelled. These H-miles represent 10% of the 1.6 billion total “heavy” heavy vehicle RUC kilometres (RUC classes: 6,14,19, 300s, 400s and HPMV) over the year to end of April 2013.

#### 4.3 RUC kilometres purchased by permitted vehicles by industry

Table 13 shows the top industry segments in terms of estimated annual kilometres travelled to end of April 2013 for the total of all permit types are: general freight (48%), logs (24%) and general bulk (9%).

“General freight” and “general bulk” are very broad definitions of load or industry types. Unfortunately the source data is of a very poor quality for any finer grained analysis. An important point to note is that the logging sector demonstrates a material level of uptake – although mainly for length rather than higher mass.

The top three OL industry types in 2011 were general bulk, general freight and logs. The top three HM industry types were: logs, general bulk and solid waste.



**Table 13. Annual RUC kilometres purchased by vehicles with HM, OL and Both permits by industry.**

| Industry Classification | Overlength         |             | Higher Mass       |             | Both              |             | Total              |             |
|-------------------------|--------------------|-------------|-------------------|-------------|-------------------|-------------|--------------------|-------------|
|                         | Total Kms          | %           | Total Kms         | %           | Total Kms         | %           | Total Kms          | %           |
| General Freight         | 64,341,699         | 52%         | 3,562,193         | 30%         | 9,718,076         | 37%         | 77,621,968         | 48%         |
| Logs                    | 32,815,171         | 27%         | 733,617           | 6%          | 4,820,870         | 18%         | 38,369,658         | 24%         |
| General Bulk            | 9,530,825          | 8%          | 1,091,465         | 9%          | 4,207,000         | 16%         | 14,829,290         | 9%          |
| Livestock               | 5,095,850          | 4%          | 9,280             | 0%          | 1,699,000         | 6%          | 6,804,130          | 4%          |
| Dairy Products          | 1,254,200          | 1%          | 2,521,025         | 21%         | 708,000           | 3%          | 4,483,225          | 3%          |
| Cars                    | 3,427,350          | 3%          | -                 | 0%          | 801,260           | 3%          | 4,228,610          | 3%          |
| Woodchips               | 1,528,000          | 1%          | 271,000           | 2%          | 1,904,000         | 7%          | 3,703,000          | 2%          |
| Fuel                    | 1,584,500          | 1%          | 303,132           | 3%          | 432,000           | 2%          | 2,319,632          | 1%          |
| Timber                  | 1,605,000          | 1%          | 18,290            | 0%          | 328,000           | 1%          | 1,951,290          | 1%          |
| Bulk Liquid             | 357,750            | 0%          | 812,250           | 7%          | 709,000           | 3%          | 1,879,000          | 1%          |
| Milk                    | 550,000            | 0%          | 331,465           | 3%          | 609,000           | 2%          | 1,490,465          | 1%          |
| Containers              | 102,000            | 0%          | 812,560           | 7%          | 342,000           | 1%          | 1,256,560          | 1%          |
| Waste                   | 195,000            | 0%          | 852,000           | 7%          | -                 | 0%          | 1,047,000          | 1%          |
| Coal                    | 119,000            | 0%          | 422,588           | 4%          | 116,000           | 0%          | 657,588            | 0%          |
| Not Specified           | 400,700            | 0%          | 18,000            | 0%          | -                 | 0%          | 418,700            | 0%          |
| Metals                  | 255,100            | 0%          | -                 | 0%          | -                 | 0%          | 255,100            | 0%          |
| Food/Beverage           | 19,150             | 0%          | -                 | 0%          | -                 | 0%          | 19,150             | 0%          |
| <b>Grand Total</b>      | <b>123,181,295</b> | <b>100%</b> | <b>11,758,865</b> | <b>100%</b> | <b>26,394,206</b> | <b>100%</b> | <b>161,334,366</b> | <b>100%</b> |
|                         | 76%                |             | 7%                |             | 16%               |             | 100%               |             |

#### 4.4 RUC kilometres purchased by vehicle type

Table 14 shows the dominance of eight-axle rigid truck and trailer, which make up 65% of HPMV RUC distance purchase for the total of both HM and OL permits. Eight axle B-trains make up 13% of total RUC purchases.

Nine-axle vehicles are starting to show in the data. The total of nine-axle rigid truck and trailers (R22T23) and B-trains (B1233) together made up around 8% of RUC purchases.

**Table 14 Annual RUC kilometres by vehicle type 2012/13.**

|                      | Overlength         |               | Higher Mass       |               | Both              |               | Total              |               |
|----------------------|--------------------|---------------|-------------------|---------------|-------------------|---------------|--------------------|---------------|
| A124                 | 475000             | 0.4%          | 0                 | 0.0%          | 220,000           | 0.8%          | 695,000            | 0.4%          |
| A134                 | 7,000,350          | 5.7%          | 0                 | 0.0%          | 502,000           | 1.9%          | 7,502,350          | 4.7%          |
| A224                 | 116,000            | 0.1%          | 889,268           | 7.6%          | 44,000            | 0.2%          | 1,049,268          | 0.7%          |
| B1232                | 18,192,716         | 14.8%         | 838,869           | 7.1%          | 2,662,000         | 10.1%         | 21,693,585         | 13.4%         |
| B1233                | 2,940,950          | 2.4%          | 180,000           | 1.5%          | 1,022,960         | 3.9%          | 4,143,910          | 2.6%          |
| B1343                | 33,000             | 0.0%          | 0                 | 0.0%          | 88,000            | 0.3%          | 121,000            | 0.1%          |
| B2232                | 150,000            | 0.1%          | 0                 | 0.0%          | 308,000           | 1.2%          | 458,000            | 0.3%          |
| B2233                | 434,000            | 0.4%          | 0                 | 0.0%          | 0                 | 0.0%          | 434,000            | 0.3%          |
| B2243                | 177000             | 0.1%          | 0                 | 0.0%          | 223,000           | 0.8%          | 400,000            | 0.2%          |
| Non proforma         | 0                  | 0.0%          | 0                 | 0.0%          | 102,000           | 0.4%          | 102,000            | 0.1%          |
| R12T22               | 817000             | 0.7%          | 686,990           | 5.8%          | 512,000           | 1.9%          | 2,015,990          | 1.2%          |
| R22T12               | 237600             | 0.2%          | 0                 | 0.0%          | 0                 | 0.0%          | 237,600            | 0.1%          |
| R22T22               | 80006453           | 65.0%         | 8,332,634         | 70.9%         | 17,322,986        | 65.6%         | 105,662,073        | 65.5%         |
| R22T23               | 5482314            | 4.5%          | 640,516           | 5.4%          | 1,692,000         | 6.4%          | 7,814,830          | 4.8%          |
| R23T22               | 1167100            | 0.9%          | 0                 | 0.0%          | 528,000           | 2.0%          | 1,695,100          | 1.1%          |
| R23T23               | 226350             | 0.2%          | 172,588           | 1.5%          | 0                 | 0.0%          | 398,938            | 0.2%          |
| Truck&Simple Trailer | 5725462            | 4.6%          | 0                 | 0.0%          | 1,167,260         | 4.4%          | 6,892,722          | 4.3%          |
| Not specified        | 0                  | 0.0%          | 18,000            | 0.2%          | 0                 | 0.0%          | 18,000             | 0.0%          |
| <b>Total</b>         | <b>123,181,295</b> | <b>100.0%</b> | <b>11,758,865</b> | <b>100.0%</b> | <b>26,394,206</b> | <b>100.0%</b> | <b>161,334,366</b> | <b>100.0%</b> |
|                      | 76%                |               | 7%                |               | 16%               |               | 100%               |               |

## 5.0 Economic benefits

Operator cost savings in the year to end of April 2013 are estimated at \$60 – 80 million. These gains are in line with the range of expectations in the RIS.

### 5.1 Introduction

The assessment of economic benefits used in the Regulatory Impact Statement was based on the methodology employed by Australian-based consultant, Bob Pearson,<sup>1</sup> to assess the potential benefits of proposed rule changes for heavier and longer trucks. The benefits are of the type generally assessed using the NZTA's *Economic evaluation manual* (EEM)– in this case, focused on operator cost reductions through reduced kilometres travelled, travel time savings and benefits from improved safety.

The benefits of transport cost savings are assumed to accrue over time to the supply chain as a whole. It is not possible to easily assess the distribution of these benefits. It continues to be expected, as was the case in the 2010 MER, that in the early days of the rule change, transport operators securing permits before their competitors would be most likely receive most of the benefits. Over time however, when increased vehicle mass and length become widespread, competitive pressures would be expected to spread the benefits of cost savings along the supply chain from supplier through to the final consumer.

Anecdotal evidence in 2013 is that in many case, the shipper of goods are expecting to receive the benefits of HPMV productivity improvements.

In summary, the following costs and benefits are assessed in this report:

- Benefits
  - Operator cost savings – HM, OL and Both, in terms of reduced trips to complete the same freight task.
  - Safety gains from reduced risk exposure from the smaller number of HPMV trips to complete the same freight task.
  - Savings in reduced inventories – This potential benefit in terms of reduced working capital for businesses, is recognised as a hypothesis, but no evidence has been uncovered to date.
- Costs
  - Administrative costs to the NZTA.
  - Operator capital costs (new trailers and/or trucks).
  - Operator compliance costs.
  - Infrastructure capital costs (principally bridge improvements).
  - Consideration of potential acceleration of infrastructure wear and tear.

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<sup>1</sup> Report to Ministry of Transport and Transit New Zealand, *Review of the potential for increasing transport productivity through concessions on heavy vehicle mass and dimension characteristics*, Bob Pearson, May 2007.

## **5.2 Methodology**

### **5.2.1 Approach to assessment of net economic benefits**

The methodology used to determine operator cost saving benefits focuses on identifying the kilometres travelled by vehicles with HM, OL and Both permits.

Spreadsheet models were used to model the benefits arising from estimates of reduced trips to service a given freight task. Assumptions and sensitivity testing were applied to this model. Key sensitivity variables are:

- The actual productivity improvement achieved on average for each kilometre of HPMV travel.
- The percentage of travel distance in which productivity benefits were actually achieved
- The value of each kilometre of travel avoided in order to service an assumed fixed freight task.
- Assumptions on any increase or decrease in vehicle operating costs.
- It is assumed that infrastructure cost impacts are neutral. This means that a fixed freight task can be serviced with no loss or gain in bridge or pavement costs.

### **5.2.2 Key limitations of the data**

There are two areas of data limitation. The first is concerns over the accuracy and timeliness of HPMV and permit records and associated OPermit and RUC databases. Recommendations for improvements to these records are made elsewhere in this report.

The second concern relates to caveats on interpretation of the data. RUC kilometres purchased provide distance travelled by permitted vehicles, but the extent to which the vehicle secured any weight or length benefits is not known. It is fair to assume however that HM operators, particularly if they are paying RUC at increased levels, would be highly incentivised to maximise their payloads. WIM data provides an indication of increased weight patterns across the fleet, but loading vehicles to the maximum tolerance limits allowed by enforcement officers from the Police's Commercial Vehicle Investigation Unit (CVIU) is widespread and clouds any ability to draw clear conclusions about HPMVs from this data source.

## **5.3 The context, 2010 to 2013, for uptake of HPMV benefits**

### **5.3.1 Context for HPMV uptake: Economic conditions**

The wider economic context for uptake of HPMVs over the period May 2010 to April 2013 is one of recovering GDP and heavy transport activity after the global economic crisis of the late 2000s. *Appendix 2* shows this close relationship between GDP and heavy vehicle traffic counts. Sections 5.3.2 and 5.3.4 discuss traffic counts and RUC purchases.

### 5.3.2 Context for HPMV uptake: Heavy traffic counts

Data for general heavy vehicle counts show that the period since 2010 has been one of generally increasing heavy vehicle traffic counts and increased average loadings of all heavy vehicles over the first two years, followed by a flattening of these trends in 2012/13.

NZTA maintains six weigh in motion sites at various sites in New Zealand. These sites are able to record the weight and pattern of axles that can identify these vehicles at speed.

*Appendix 3* shows Weigh In Motion (WIM) data for the most numerous heavy vehicle combinations with seven or more axles for the period 2001 – 2012. These vehicles and total annual passes in 2012 at the six WIM sites include:

- Seven axle truck and trailers – approximately 200,000 passes.
- Eight axle truck and trailers – approximately 700,000 passes.
- Eight axle B-Trains – approximately 200,000 passes.
- Eight axle semi trailers – approximately 125,000 passes

*Appendix 3.1* indicates that Seven + axle heavy vehicle volumes grew from 2010 to 2011 and then remained stable in 2012. This appendix also shows the growth of the nine and ten axle vehicles largely made possible by the 2010 rule change.

*Appendix 3.2* shows the average estimated gross mass per vehicle for vehicles travelling at or below their maximum GVM under class one operation. This category of vehicle would include HPMVs with permits for higher mass when they are unloaded. Vehicles with HPMV permits for higher mass, except when travelling unloaded or below 44 tonnes, would be expected to influence the “overweight” WIM category discussed below. There was a half tonne increase in average loading of eight-axle truck and trailers over the 2010-2012 period. It is unclear to what extent this might be a result of HPMV activity. Other potentially stronger influences could be improved economic conditions and related increased levels of illegal overloading. This appendix also shows consistent GVMs of around 49 tonnes for eight and nine axle vehicles. This is a positive trend to the extent these vehicles are HPMVs rather than specialist transporters on OW permits.

### 5.3.3 Weigh in motion (WIM) data – application to HPMVs

Two classifications of heavy vehicles dominate the fleet numbers able to uptake the HPMV rule benefits:

- (i) Large, rigid-truck and trailer units defined as eight axles combinations (R22T22 or PAT class 891). These vehicles dominate the NZ vehicle fleet and also dominate approved HPMV permits for both HM and OL (see Table 14)
- (ii) B-Trains with eight axles (Three-axle tractor unit towing and three and two axle semi trailer – B1232 or PAT class 851. These vehicles are the second most common vehicle combination type for HPMV kilometres travelled for both HM and OL (see Table 14).

WIM data trends from 2010 to 2012 do not however show any increasing level of overweight vehicle counts. *Appendix 3.3* shows average vehicle mass for overweight vehicles. The trend is decreasing average loadings for 8 axle truck and trailer units.

It is expected that the mass of these vehicles would increase over time as a result of the rule change – all other factors remaining equal. Unfortunately the level of systematic overloading by operators and perceived levels of enforcement activity can also affect this data, along with level of economic activity.

Data for all WIM sites in 2012 showed that a little fewer than one in five (18.6%<sup>2</sup>) of eight-axle truck and trailers (R22T22 or Pat code 891) that make up the mainstay of the NZ vehicle fleet were loaded beyond 44 tonnes. This compares with 19.1% in 2011.

An average level of overloading is in the order of 3 tonnes<sup>3</sup>. This reflects operators often loading to the 5% tolerance limits typically allowed by CVIU enforcement officers, which would typically be in the order of 2.0 tonnes for these vehicles.

### 5.3.4 Context for HPMV uptake: Heavy Vehicle Road User Charges

The period since 2010 in which HPMVs have been introduced has been a time of increasing and then flattening growth in HM RUC. Figure 2 shows a decline in class one (RUC types 6 and 14) heavy vehicle RUC. This decline was matched however by an equivalent increase in the new HPMV RUC type purchases (308, 309, 408 and 409) shown in Figure 2 and Figure 3. The August 2012 changes to road user charges introduced a new financially attractive 408 RUC category for 4 axle trucks towing 4 axle trailers. All these categories showed significant increases in kilometres travelled.

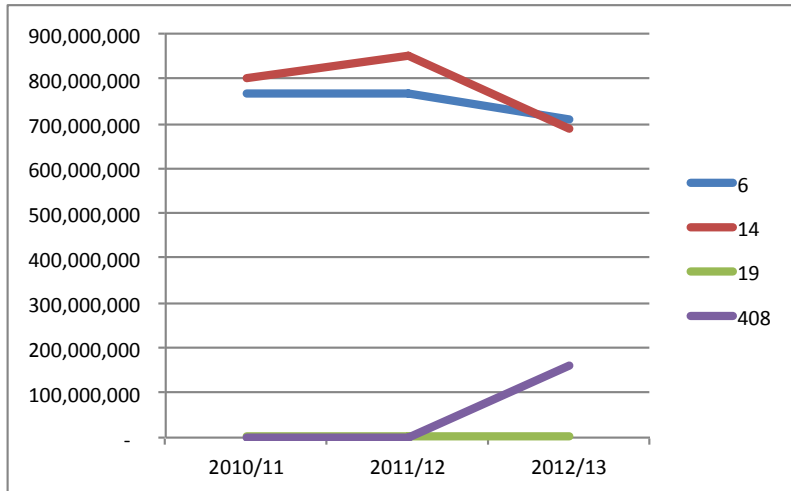
Figure 4 shows overall 3% growth for all heavy vehicles greater than 7 axles in the 2010/11 and 2011/12 period followed by flat growth in 2012/13.

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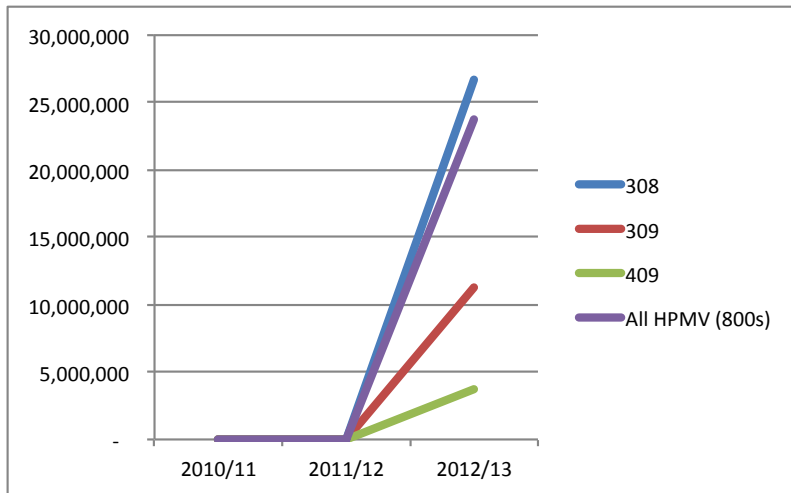
<sup>2</sup> Annual Weigh in Motion (WIM) report 2012, NZTA. 128,976 overweight volume at all sites for PAT class 891 in Table 10 as a proportion of total PAT class 891 volumes of 690,726 in Table 7.

<sup>3</sup> Annual Weigh in Motion (WIM) report 2012, NZTA. Table 17 average overweight PAT class 891 is 48.38 tonnes.

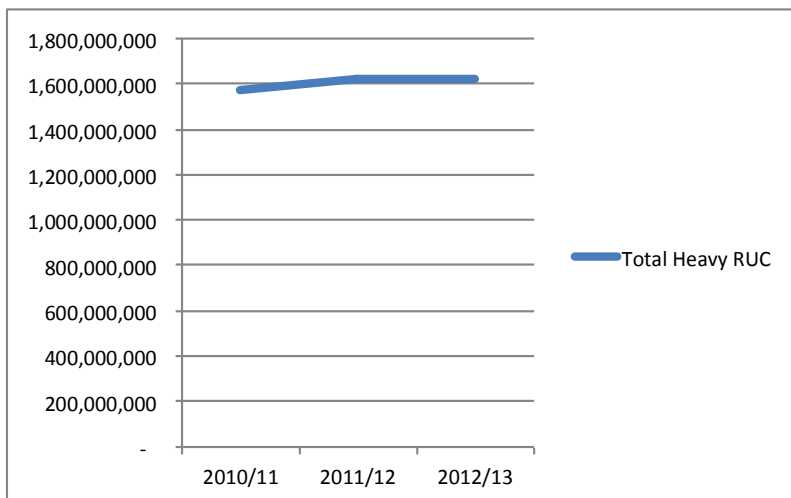
**Figure 2. RUC kilometres purchased by Class One “heavy” heavy vehicles (RUC type 6, 14 & 19) plus the 408 RUC class introduced in August 2012.**



**Figure 3. RUC kilometres purchased by HPMVs.**



**Figure 4. RUC kilometres purchased by all “heavy” heavy vehicles with seven or more axles (Class One and HPMV).**



## ***5.4 Evidence of potential benefits from the 2010 HPMV rule change***

### **5.4.1 Evidence of benefits: HM permits - Tonnes approved in the permit**

Column (G.) and (I.) of Table 15 shows the wide range of permitted payload gains used to calculate operator cost savings for purposes of servicing an assumed fixed freight task in Table 17. The productivity gains for the dominant 8-axle rigid truck and trailer are wide ranging, but are typically around 25%.

For the dominant 8-axle rigid truck and trailer (R22T22), increasing permitted gross vehicle mass (GVM tonnes) can, within limits, all flow through to increased payload. This is possible because no additional axles are required. In comparison, Column (F.) shows that 9-axle combinations are assumed to incur a one tonne increase in Tare weight relative to their next best vehicle alternative operating at 44 tonnes.



**Table 15. Permitted vehicle mass and payload gains.**

| (A.)          | (B.)            | (C.)              | (D.)                     | (E.)                | (F.)                                     | (G.)             | (H.)   | (I.)           | (J.)          |
|---------------|-----------------|-------------------|--------------------------|---------------------|--|------------------|--|----------------|---------------|
| Vehicle Type  | Industry        | Distance          | Average Permitted Tonnes | Average Tonnes Gain | Additional Tare (Tonnes) to achieve gain | Net Payload Gain | Assumed Payload (Tonnes) at 44 Tonne (Class 1) Limit | % Payload Gain | \$/km saved   |
| <b>A224</b>   | Aggregates      | 25,000            | 48.80                    | 4.80                | 0.00                                     | 4.80             | 24.50  | 19.6%          | \$3.00        |
|               | Containers      | 374,555           | 48.18                    | 4.18                | 0.00                                     | 4.18             | 24.50  | 17.1%          | \$3.00        |
|               | Dairy Products  | 65,000            | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50  | 16.3%          | \$3.00        |
|               | Fuel            | 73,000            | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50  | 16.3%          | \$3.00        |
|               | General Freight | 342,713           | 48.80                    | 4.80                | 0.00                                     | 4.80             | 24.50  | 19.6%          | \$3.00        |
|               | Livestock       | 9,000             | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50  | 16.3%          | \$3.00        |
| <b>B1232</b>  | Bulk Liquid     | 20,000            | 46.00                    | 2.00                | 0.00                                     | 2.00             | 21.75  | 9.2%           | \$3.00        |
|               | Dairy Products  | 372,000           | 52.00                    | 8.00                | 0.00                                     | 8.00             | 21.75  | 36.8%          | \$3.00        |
|               | Fuel            | 50,000            | 50.90                    | 6.90                | 0.00                                     | 6.90             | 21.75  | 31.7%          | \$3.00        |
|               | General Freight | 238,869           | 50.49                    | 6.49                | 0.00                                     | 6.49             | 21.75  | 29.8%          | \$3.00        |
|               | Milk            | 10,000            | 51.00                    | 7.00                | 0.00                                     | 7.00             | 21.75  | 32.2%          | \$3.00        |
|               | Woodchips       | 148,000           | 52.00                    | 8.00                | 0.00                                     | 8.00             | 21.75  | 36.8%          | \$3.00        |
| <b>B1233</b>  | Bulk Liquid     | 67,000            | 48.00                    | 4.00                | 1.00                                     | 3.00             | 21.75  | 13.8%          | \$3.00        |
|               | Coal            | 48,000            | 52.30                    | 8.30                | 1.00                                     | 7.30             | 21.75  | 33.6%          | \$3.00        |
|               | Containers      | 5,000             | 55.00                    | 11.00               | 1.00                                     | 10.00            | 21.75  | 46.0%          | \$3.00        |
|               | Milk            | 60,000            | 48.00                    | 4.00                | 1.00                                     | 3.00             | 21.75  | 13.8%          | \$3.00        |
| <b>R12T22</b> | Aggregates      | 161,365           | 48.50                    | 4.50                | 0.00                                     | 4.50             | 28.00  | 16.1%          | \$3.00        |
|               | Coal            | 5,000             | 49.70                    | 5.70                | 0.00                                     | 5.70             | 28.00  | 20.4%          | \$3.00        |
|               | General Freight | 520,625           | 48.04                    | 4.04                | 0.00                                     | 4.04             | 28.00  | 14.4%          | \$3.00        |
| <b>R22T22</b> | Aggregates      | 679,000           | 51.84                    | 7.84                | 0.00                                     | 7.84             | 23.75  | 33.0%          | \$3.00        |
|               | Bulk Liquid     | 518,000           | 48.00                    | 4.00                | 0.00                                     | 4.00             | 23.75  | 16.8%          | \$3.00        |
|               | Coal            | 282,000           | 50.80                    | 6.80                | 0.00                                     | 6.80             | 23.75  | 28.6%          | \$3.00        |
|               | Containers      | 433,005           | 49.50                    | 5.50                | 0.00                                     | 5.50             | 23.75  | 23.2%          | \$3.00        |
|               | Dairy Products  | 2,004,025         | 50.21                    | 6.21                | 0.00                                     | 6.21             | 23.75  | 26.2%          | \$3.00        |
|               | Fertiliser      | 75,000            | 50.00                    | 6.00                | 0.00                                     | 6.00             | 23.75  | 25.3%          | \$3.00        |
|               | Fuel            | 180,132           | 51.25                    | 7.25                | 0.00                                     | 7.25             | 23.75  | 30.5%          | \$3.00        |
|               | General Freight | 2,172,820         | 50.21                    | 6.21                | 0.00                                     | 6.21             | 23.75  | 26.1%          | \$3.00        |
|               | Livestock       | 280               | 49.00                    | 5.00                | 0.00                                     | 5.00             | 23.75  | 21.1%          | \$3.00        |
|               | Logs            | 733,617           | 51.15                    | 7.15                | 0.00                                     | 7.15             | 23.75  | 30.1%          | \$3.00        |
|               | Milk            | 261,465           | 51.00                    | 7.00                | 0.00                                     | 7.00             | 23.75  | 29.5%          | \$3.00        |
|               | Timber          | 18,290            | 52.40                    | 8.40                | 0.00                                     | 8.40             | 23.75  | 35.4%          | \$3.00        |
|               | Waste           | 852,000           | 48.60                    | 4.60                | 0.00                                     | 4.60             | 23.75  | 19.4%          | \$3.00        |
|               | Woodchips       | 123,000           | 51.00                    | 7.00                | 0.00                                     | 7.00             | 23.75  | 29.5%          | \$3.00        |
| Not Specified | 18,000          | 51.70             | 7.70                     | 0.00                | 7.70                                     | 23.75            | 32.4%  | \$3.00         |               |
| <b>R22T23</b> | Bulk Liquid     | 207,250           | 53.00                    | 9.00                | 1.00                                     | 8.00             | 23.75  | 33.7%          | \$3.00        |
|               | Dairy Products  | 80,000            | 53.50                    | 9.50                | 1.00                                     | 8.50             | 23.75  | 35.8%          | \$3.00        |
|               | Fertiliser      | 66,100            | 53.00                    | 9.00                | 1.00                                     | 8.00             | 23.75  | 33.7%          | \$3.00        |
|               | General Freight | 287,166           | 55.11                    | 11.11               | 1.00                                     | 10.11            | 23.75  | 42.6%          | \$3.00        |
| <b>R23T23</b> | Aggregates      | 85,000            | 53.00                    | 9.00                | 2.00                                     | 7.00             | 23.75  | 29.5%          | \$3.00        |
|               | Coal            | 87,588            | 63.00                    | 19.00               | 2.00                                     | 17.00            | 23.75  | 71.6%          | \$3.00        |
|               | <b>TOTAL</b>    | <b>11,758,865</b> |                          |                     | <b>Average</b>                           | <b>6.42</b>      |  |                | <b>\$3.00</b> |

**5.4.2 Evidence of benefits: HM permits - Average RUC tonnage purchased**

Table 16 shows that the most common HM vehicle, the 8-axles rigid truck and trailer (R22T22) is on average purchasing H-RUC at 50 tonnes (that is a 6 tonne increase on 44 tonne Class One operation). The additional RUC is purchased typically for short specific journeys. There are only a small number of vehicles in this category and their total distance travel is not material compared with H-RUC. These vehicles appear to have Both permits operating primarily over-length. The additional RUC is likely to represent the limited journeys for which HM is required.

**Table 16. Average RUC licence weight by vehicle type 2012/13.**

|                       | RUC Vehicle Type | Vehicle RUC Type                   | Average Licence Weight |
|-----------------------|------------------|------------------------------------|------------------------|
| <b>H-RUC</b>          | A224             | 881                                | 49,000                 |
|                       | B1232            | 885                                | 51,000                 |
|                       | B1233            | 897, 898, 883 & 873                | 50,000                 |
|                       | R12T22           | 871, 873 & 882                     | 48,000                 |
|                       | R22T22           | 881 & 882                          | 50,000                 |
|                       | R22T23           | 881, 882, 894, 895, 896 & 898      | 51,000                 |
|                       | R23T23           | 823 & 882                          | 61,000                 |
|                       | Not Specified    | 882                                | 49,000                 |
| <b>Additional RUC</b> | A224             | 532, 536, 538 & 557                | 3,000                  |
|                       | B1232            | 516 & 580                          | 10,000                 |
|                       | R12T22           | 512, 518, 532, 580, 588, 590 & 601 | 9,000                  |
|                       | R22T22           | 532, 538 & 557                     | 6,000                  |
|                       | R22T23           | 532, 538, 539 & 558                | 9,000                  |
|                       | R23T23           | 545                                | 3,000                  |

**5.4.3 Evidence of benefits: OL permits - designed productivity gains.**

Table 17 shows the range of theoretical designed productivity gains for over-length permitted vehicles. This data is used to calculate OL operator cost savings.

**Table 17. Assumed designed productivity gains for OL vehicles.**

| Over length vehicle category          | Class one payload deck length | HPMV payload deck length | Productivity gain relative to next best Class One alternative | Nature of productivity gain     |
|---------------------------------------|-------------------------------|--------------------------|---|---------------------------------|
|                                       | (m)                           | (m)                      | (%)   |                                 |
| <b>Rigid truck &amp; trailers</b>     |                               |                          |   |                                 |
| Logging 22.3 pro-forma design         | 10.00                         | 11.00                    | 10.0%   | Increase in log length capacity |
| Other rigid truck & trailers          | 16.50                         | 19.40                    | 14.9%   | Deck length increase            |
| <b>B-trains</b>                       | 16.00                         | 18.00                    | 13.0%   | Deck length increase            |
| <b>Articulated truck and trailers</b> | 13.00                         | 14.45                    | 11.2%   | Deck length increase            |

**5.4.4 Evidence of benefits: OL permits - registration data on length**

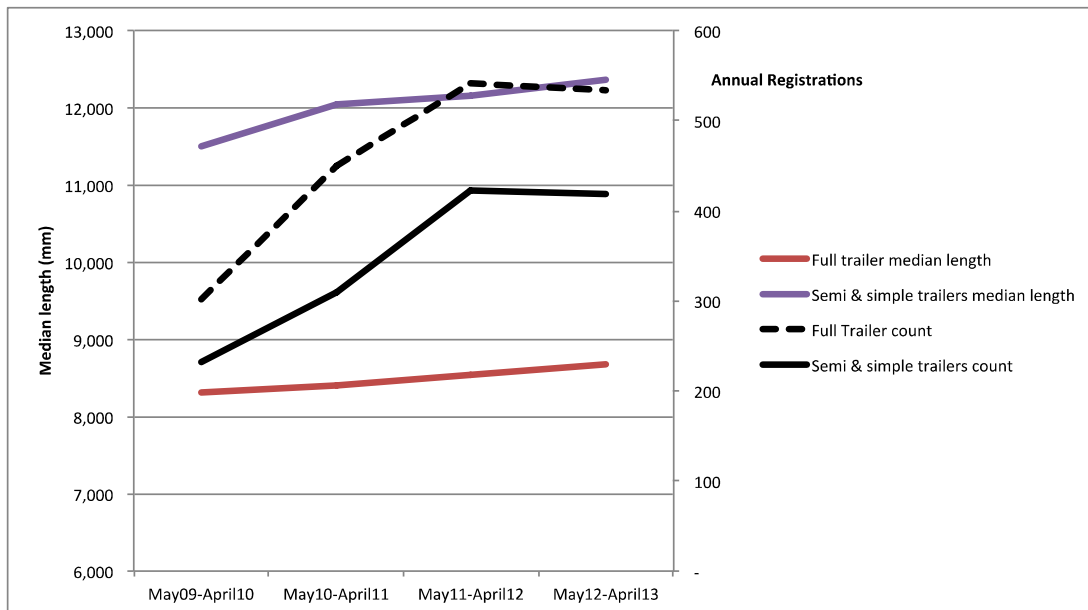
Registration data shows that heavy vehicle trailers, including both Class One and HPMV, have become materially longer since 2009. This is likely to deliver worthwhile productivity gains.

The HPMV rule change originally provided increased length increases up to 22 metres by permit and as of right increases provided to a range of vehicles. The NZTA has subsequently provided pro-forma designs up to 23 metres. Policy development is continuing in 2013 to set criteria for approval of vehicle lengths over 23 metres.

The right hand axis of Figure 5 shows that the context of trailer registration counts (solid and dotted black lines) over the period 2009 to 2013 has been a steep increase in trailer registrations in the early years and then a trailing off of growth. This may have been a result of delayed construction starts prior to 2010 when the rule provisions were uncertain.

The left hand axis of Figure 5 indicates that average full trailer length (solid red line) has increased 375mm from 8.3m to 8.6m since 2009 and average semi and simple trailer length (solid blue line) has increased 865mm from 11.5m to 12.3m. These increases represent potentially material increases in productivity.

**Figure 5. Annual trailer registration count and average length 2009 – 2013.**



Source: lengthIncreaseCalcs23Sept2013.xlsx

Table 18 provides the data graphed in Figure 5 above.

**Table 18. Annual trailer registrations and median length 2009 - 2013.**

| Trailer type           | Date range    | Length (5000+ mm) |               |                    | Length increase on 2009/10 |       |
|------------------------|---------------|-------------------|---------------|--------------------|----------------------------|-------|
|                        |               | Count             | Annual change | Median length (mm) | %                          | mm    |
| Full Trailer           | May09-April10 | 301               |               | 8,310              |                            |       |
| Full Trailer           | May10-April11 | 449               | 49%           | 8,400              | 1%                         | 90    |
| Full Trailer           | May11-April12 | 542               | 21%           | 8,540              | 3%                         | 230   |
| Full Trailer           | May12-April13 | 533               | -2%           | 8,685              | 5%                         | 375   |
|                        |               |                   |               |                    |                            |       |
| Semi & simple trailers | May09-April10 | 232               |               | 11,500             |                            |       |
| Semi & simple trailers | May10-April11 | 310               | 34%           | 12,040             | 5%                         | 540   |
| Semi & simple trailers | May11-April12 | 423               | 36%           | 12,230             | 6%                         | 770   |
| Semi & simple trailers | May12-April13 | 419               | -1%           | 13,120             | 14%                        | 1,620 |

Source: lengthIncreaseCalcs23Sept2013.xlsx

While kilometres of RUC purchased by vehicles with OL permits has been identified in sections of this report above, it is not possible to determine precisely what level of efficiency gain has been made over this distance. While extra payload is theoretically available, whether it has been utilised is not known. Utilisation will also be clouded by other factors such as general economic conditions. The estimation of cost savings from these OL vehicle types further below has therefore relied upon range estimates of likely uptake of theoretical gains. These are shown in Table 17 at 15% for rigid truck and trailers except logging, 10% for logging truck and trailers and 13% for B-trains.

The potential efficiency gains from permitted OL increases (largely for pro-forma vehicle designs) is assessed in sections of this report further below, using assumptions on the level of utilisation.

#### 5.4.5 As of right length increases – towing vehicle and semi-trailer

There is evidence of increasing very long semi trailers for articulated truck and trailers as provided, as-of-right, for these vehicles by the 2010 rule change.

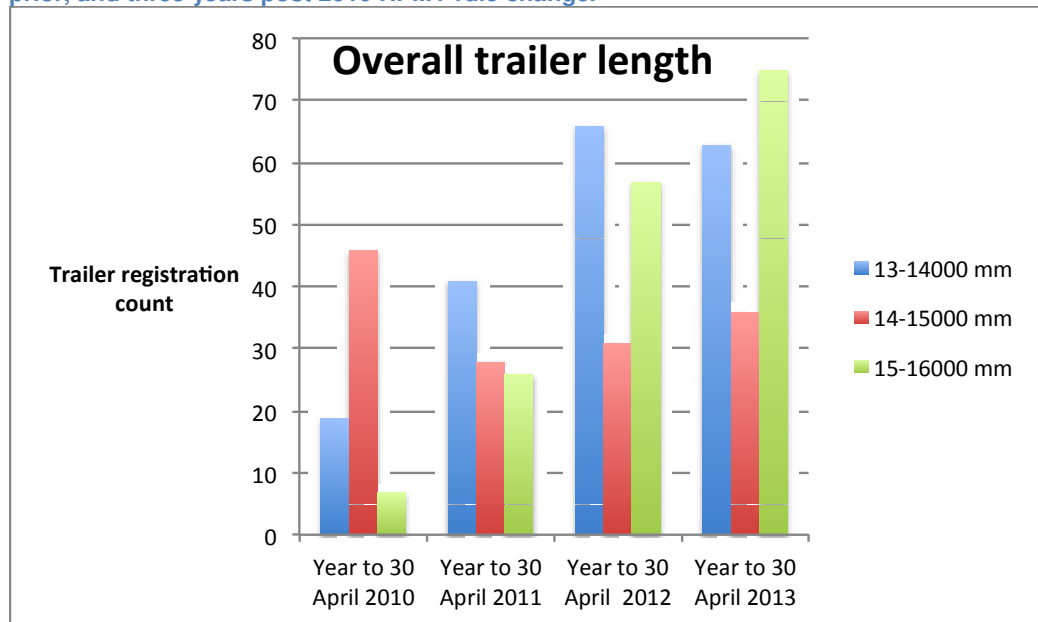
Towing vehicle and semi-trailers were provided with an as-of-right length increase from 18 to 19 metres. This would equate to a 7.7% increase in deck length assuming existing maximum deck length was typically 13 metres. It was estimated at the time of the rule change that this new rule provision could provide increased deck length and cubic capacity gains to the nearly 3,000 articulated trucks in the New Zealand fleet estimated as follows.

- A122 - 5 vehicle combinations
- A123 - 1,838 vehicle combinations
- A124 - 80 vehicle combinations
- A223 - 100 vehicle combinations
- A224 - 450 vehicle combinations
- TOTAL – 2,986 vehicle combinations

Figure 6 shows registrations of semi trailers in a wheelbase length range from 13 to 16 metres. These are dimensions at the longer end of the range that could indicate uptake of the as-of-right rule benefits. The 13 metre lower end of the range was chosen for this analysis as a length at which vehicles might start to benefit from the rule change. Lengths greater than 16<sup>4</sup> metres are considered unlikely to meet pro-forma HPMV designs and are probably special purpose vehicles for the special haulage industry operating under OW and OD permits.

Figure 6 shows growth in these longer trailers from 72 total registrations in the year preceding the rule change and climbing to 95, 154 and 174 in each subsequent year ending April 2013.

Figure 6. Annual counts of trailer registration by wheelbase length in 1 metre bands from year prior, and three years post 2010 HPMV rule change.



Source: TrailerLengthCalcs9Sept.xlsx

In conclusion, there could be in the order of 300 - 400 articulated vehicles benefiting from the rule change, probably mostly linehaul operations and travelling at 100,000 - 150,000 kilometres each year. Assuming productivity gains of 7.5%, the annual operator cost savings could be in the order of \$ 6 – 14 million per year.

As noted in our 2011 report - car transporters and logging trucks were provided with a 2-metre increase in length from 20 to 22 metres. As this simply formalised existing dispensations, no new efficiency gains are assessed for these vehicles.

<sup>4</sup> For example the 19.45m pro-forma quad semi trailer. This has around 2m from front to king pin, 9.2m from king pin to centre rear axles + 4.85m from centre rear axle to rear of vehicle = 16m trailer overall trailer length.

#### 5.4.6 As of right length increases – towing vehicle and simple trailer

Car haulage firms received from the 2010 rule change the ability to increase to 23 metres + 1.3 metres of overhang. This additional length provides an additional car payload to a total of 8 cars or a 14% productivity increase. This productivity increase has allowed costs to remain stable in the face of significant increases in the typical height of new vehicles. In the absence of the HPMV rule, car loadings would therefore have decreased. A major car haulage firm advises that 50% of their fleet has been converted to HPMV and over time 100% of the fleet will become HPMV capable. Assuming a national car haulage fleet of say 150 vehicles and a 10-14% productivity gain on 100,000 average annual kilometres at \$3/kilometre, the target annual gains to this industry segment could be in the order of \$4-6m. Actual gains to date are uncertain, but could be in the order of 30% of this target (\$1.2 to \$2.0 million).

The rule also provided for an additional 2 metres length from 20 to 22 metres for towing vehicles and simple trailers. Gross Vehicle Mass rises from a maximum of 32 to 36 tonnes. This provision is of particular benefit to operations requiring large volume at low density such as container haulage.

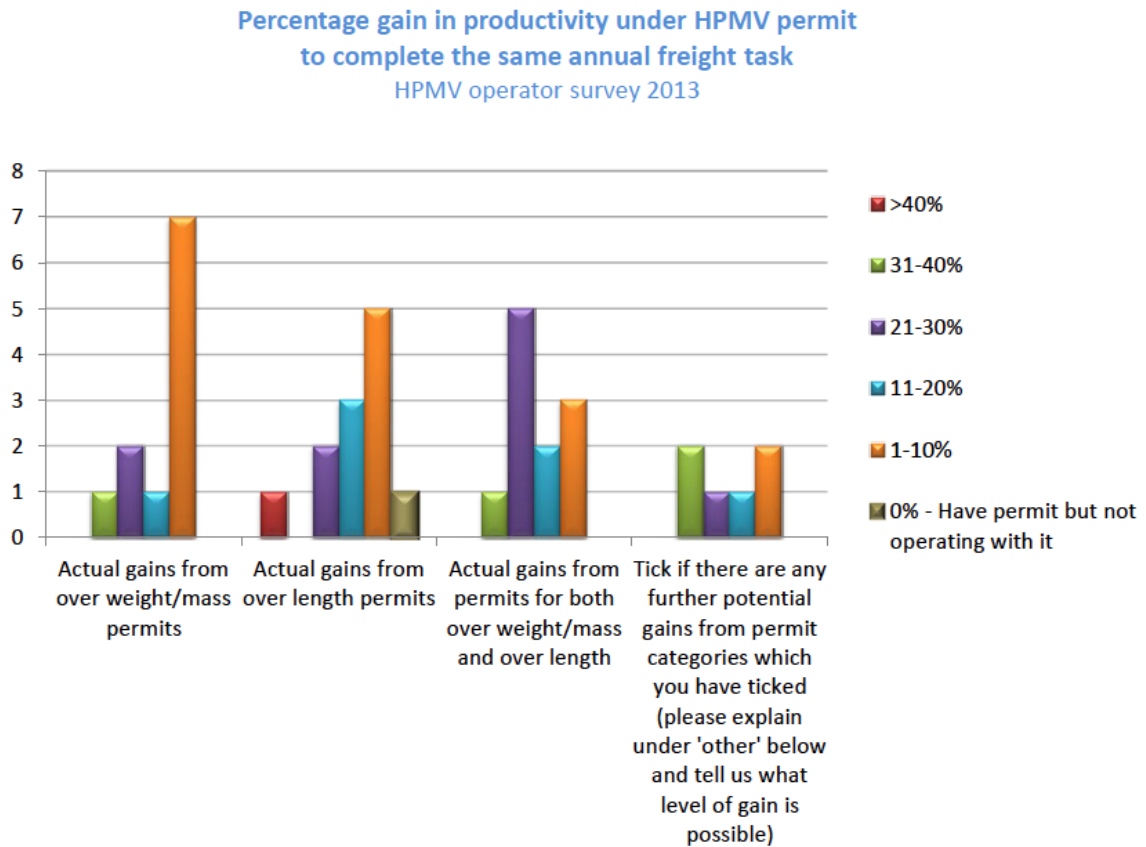
In 2011 we reported that container operations under the new rule might enable vehicles carrying either one 40 foot and two 20 foot containers OR three 20 foot containers. This set up was thought to offer a potential 50% productivity gain on carriage of empty containers. At that time we understood, that approximately 10 such rigs could be operating nationwide with scope to significantly lift this level of activity depending on the state of the economy. Industry discussions in September 2013 however indicate that these growth expectations are yet to eventuate. The desire for self-lifting gear on the vehicles is posing a constraint and creating calls for a suitable pro-forma design.

#### 5.4.7 Evidence of benefits: Indications from operators

The 2013 survey explored the decrease in travel achieved under both higher mass and over length permits. Our experience from 2011 surveys is that it is very difficult to get informed, quantified estimates of savings made. The 2013 results of operator discussions continue to be a qualitative indicator for comparison with calculated estimates of gains made, in sections of this report above, based on designed improvements and RUC evidence.

Figure 7 shows the operator phone survey responses for percentage decrease in travel required. Operators with permits for HM only indicated the gains were mostly in the 1-10% level with smaller number making gains from 11-40%. The most common gain for respondents with permits for both HM and OL was 21-30%, but with around half or respondents gaining 20% or less. This spread of results remains similar to the feedback received in 2011.

Figure 7. Decrease in travel under HPMV permit for same annual freight task (From Operator survey May 2013).



### 5.5 Calculation of economic benefits potentially received

The following section estimates economic benefits potentially received in the year ended 30 April 2011. Calculation of economic benefits, in terms of operator cost savings, in summary is:

***RUC kilometres purchased, multiplied by efficiency gain, multiplied by vehicle operating costs saved per kilometre, multiplied by an assumed proportion of total kilometres for which productivity gains are available.***

#### 5.5.1 Assumptions for calculation of economic benefits

Changes made in August 2012 to RUC categories have improved the ability to estimate HM benefits. HPMV vehicle combinations can now purchase RUC in weight bands designed specifically for HPMV vehicle combinations. There remains some uncertainty to which operators are able to maximise their increased payload benefits, but it is considered likely that permitted available mass is fully utilised in most cases.

For OL permits the extent to which increased deck length and cubic capacity is utilised remains uncertain.

Table 19 shows the following range of assumptions to address the uncertainties in estimating operator cost saving benefits calculated in Tables 20 to 23 further below. These estimates are based on: theoretical design gains, RUC evidence, and discussions with various operators.

- **Calculation of distance travelled by various vehicle configurations** (columns 2 & 3 in Table 19). The RUC data provides information on distance travelled by individual truck and trailer components. In the case of rigid truck and trailers, the RUC distance for the trucks only is used to estimate distance travelled by the combined rig. Logging trailers are always piggy backed when empty and therefore 50% of logging trailer kilometres is used. B-trains consist of a truck and two semi trailers. Distance travelled by B-trains has therefore been estimated using 50% of trailer kilometres purchased. Truck distances cannot be used for B-Trains because these tractor units can also be used to haul non-HPMV trailers.
- **Calculation of potential efficiency / productivity gains (column 4 in Table 19)**. The potential efficiency gain for HM vehicles is based on the percentage gain the permitted weight increase represents above the next best Class One vehicle combination operating at 44 tonnes. A range of estimated productivity gains from 10-15% has been used to estimate operator benefits for over length vehicles (See Table 17).
- **Assumed cost savings per kilometre of travel saved to complete the same freight task (column 5 in Table 19)**. The total cost avoided of vehicle operation is assumed at \$3.00 per kilometre<sup>5</sup>. This avoided cost comprises all vehicle operating costs including depreciation, cost of capital and driver time. The inclusion of labour costs in this assumption is equivalent to the value of travel time in a standard NZTA economic evaluation. Road User Charges are excluded from this estimate of avoided costs on the assumption that net infrastructure costs to service the assumed fixed freight task are approximately neutral. While infrastructure wear may increase slightly with the increased vehicle mass, this is balanced by the reduced trips to service the fixed freight task. The assumed \$3.00 / kilometre avoided cost also allows for increased vehicle operating costs (VOC) on HPMV vehicles. This could amount to a 1-2% increase arising from higher fuel, tyres and maintenance charges at the heavier weights.
- **Benefit range (column 6 of Table 19)**. There is some uncertainty over the level of benefit that can be assessed from RUC purchase data. While permits may be held, the distance travelled may not have resulted in any ability to reduce costs or move more freight for the same cost. Benefits are therefore calculated in an assumed range from 75% to 100% of kilometres travelled actually resulted in benefits.

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<sup>5</sup> Figure 1, *Review of Road Freight Costs in NZ & Comparable Australian States*, Bob Pearson, 2007. Operating costs for a Truck & Trailer excluding taxes (RUC, licencing & ACC) were estimated by Pearson at approximately \$2.50 in 2007. Projecting these costs forward to 2012 at 3% adjustment indice gives an estimate of \$3.00 / km.



**Table 19. Assumptions for calculation of range of benefits.**

| 1.<br>Permit type            | 2.<br>Vehicle configuration | 3.<br>Calculation of distance travelled by vehicle configuration (Truck + trailers)      | 4.<br>Calculation of potential efficiency gain (%)      | 5.<br>Assumed \$/ km saved for same freight task | 6.<br>Benefits calculation assumptions   |   |
|------------------------------|-----------------------------|--|---|--|--|---|
|                              |                             |  |   |  | Low  | High  |
| HM                           | Rigid truck & trailer       | 100% of RUC kms purchased by trucks  | Permitted payload tonnes increase                       | \$3.00 / km                                      | Permitted <u>payload tonnes</u> increase – utilised for <b>75%</b> of RUC distance purchased.            | Permitted <u>payload tonnes</u> increase – utilised for <b>100%</b> of RUC distance purchased.            |
|                              | Articulated vehicles        |  |   |  |  |   |
|                              | B-Trains                    | 50% of RUC kms purchased by trailers   |   |  |  |   |
| OL                           | Rigid truck & trailer       | 100% of RUC kms purchased by trucks  | Increased deck length, variously assumed at 10-15% gain | \$3.00/ km                                       | Assumed deck <u>length / volume</u> increases utilised for <b>75%</b> of RUC distance purchased.         | Assumed deck <u>length / volume</u> increases utilised for <b>100%</b> of RUC distance purchased.         |
|                              | Articulated vehicles        |  |   |  |  |   |
|                              | B-Trains                    | 50% of RUC kms purchased by trailers   |   |  |  |   |
| Both HM & OL                 | Rigid truck & trailer       | 100% of RUC kms purchased by trucks  | Permitted payload tonnes increase                       | \$3.00 / km                                      | 100% of permitted payload tonnes or length increase – utilised for <b>75%</b> of RUC distance purchased. | 100% of permitted payload tonnes or length increase – utilised for <b>100%</b> of RUC distance purchased. |
|                              | Articulated vehicles        |  |   |  |  |   |
|                              | B-Trains                    | 50% of RUC kms purchased by trailers   |   |  |  |   |
| As of right length increases | Articulated trucks          | Average RUC kms for all trailers in HM & OL data applied to an assumed 150 new trailers. | 11.2% increase in deck length (see Table 17)            | \$3.00 / km                                      | Deck length increase utilised for <b>75%</b> of RUC distance purchased.                                  | Deck length increase utilised for <b>100%</b> of RUC distance purchased.                                  |

## 5.5.2 Economic benefits – results

Table 20, Table 21, Table 22, and Table 23 provide an estimate of operator cost savings for HM, OL and Both (OL) and Both (HM) respectively. Each table shows a low and high estimate of operator cost saving based on an assumption that designed productivity gains can be utilised for 75% and 100% of kilometres travelled respectively.

Table 23 totals operational costs savings across all permit types resulting in a range from a low estimate of \$60 million to a high estimate of \$80 million.

The share of benefits for each permit type in Table 20, Table 21, Table 22, and Table 23 are approximately 66% to OL permits. If the OL elements of Both permits are added to OL only permits, the OL share of benefits rises to 75%. The balance of benefits are HM only (12%) and the HM elements of Both permits (9%).

Benefit realisation in terms of operator cost savings at the end of year three is in line with the annual \$60-\$120 million expectations set by the March 2010 Regulatory Impact Statement (RIS) preceding the rule change.

8-axle rigid truck and trailers dominate all permit categories except for the Both category where 9-axle rigid truck and trailers dominate the operational cost saving benefits.

**Table 20. Low to high range of estimated Higher Mass HPMV benefits 1 May 2012 to 30 April 2013.**

| Vehicle Type  | Industry        | Distance    | Average Permitted Tonnes | Average Tonnes Gain | Additional Tare (Tonnes) to achieve gain | Net Payload Gain | Assumed Payload (Tonnes) at 44 Tonne | % Payload Gain | \$/km saved | Kms saved (assuming gains achieved on 75% of truck kms) | \$ potentially gained based on permitted tonnes | Kms saved (assuming gains achieved on 100% of truck kms) | \$ potentially gained based on permitted tonnes |
|---------------|-----------------|-------------|--------------------------|---------------------|--|------------------|--------------------------------------|----------------|-------------|---|---|--|---|
| <b>A224</b>   | Aggregates      | 25,000      | 48.80                    | 4.80                | 0.00                                     | 4.80             | 24.50                                | 19.6%          | \$3.00      | 3,673   | \$11,020  | 4,898  | \$14,694  |
|               | Containers      | 374,555     | 48.18                    | 4.18                | 0.00                                     | 4.18             | 24.50                                | 17.1%          | \$3.00      | 47,928  | \$143,783                                       | 63,904   | \$191,711                                       |
|               | Dairy Products  | 65,000      | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50                                | 16.3%          | \$3.00      | 7,959   | \$23,878  | 10,612   | \$31,837  |
|               | Fuel            | 73,000      | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50                                | 16.3%          | \$3.00      | 8,939   | \$26,816  | 11,918   | \$35,755  |
|               | General Freight | 342,713     | 48.80                    | 4.80                | 0.00                                     | 4.80             | 24.50                                | 19.6%          | \$3.00      | 50,358  | \$151,073                                       | 67,144   | \$201,431                                       |
|               | Livestock       | 9,000       | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50                                | 16.3%          | \$3.00      | 1,102   | \$3,306   | 1,469  | \$4,408   |
|               | <b>B1232</b>    | Bulk Liquid | 20,000                   | 46.00               | 2.00                                     | 0.00             | 2.00                                 | 21.75          | 9.2%        | \$3.00  | 1,379   | \$4,138  | 1,839   |
|               | Dairy Products  | 372,000     | 52.00                    | 8.00                | 0.00                                     | 8.00             | 21.75                                | 36.8%          | \$3.00      | 102,621   | \$307,862                                       | 136,828  | \$410,483                                       |
|               | Fuel            | 50,000      | 50.90                    | 6.90                | 0.00                                     | 6.90             | 21.75                                | 31.7%          | \$3.00      | 11,897  | \$35,690  | 15,862   | \$47,586  |
|               | General Freight | 238,869     | 50.49                    | 6.49                | 0.00                                     | 6.49             | 21.75                                | 29.8%          | \$3.00      | 53,471  | \$160,413                                       | 71,295   | \$213,884                                       |
|               | Milk            | 10,000      | 51.00                    | 7.00                | 0.00                                     | 7.00             | 21.75                                | 32.2%          | \$3.00      | 2,414   | \$7,241   | 3,218  | \$9,655   |
|               | Woodchips       | 148,000     | 52.00                    | 8.00                | 0.00                                     | 8.00             | 21.75                                | 36.8%          | \$3.00      | 40,828  | \$122,483                                       | 54,437   | \$163,310                                       |
| <b>B1233</b>  | Bulk Liquid     | 67,000      | 48.00                    | 4.00                | 1.00                                     | 3.00             | 21.75                                | 13.8%          | \$3.00      | 6,931   | \$20,793  | 9,241  | \$27,724  |
|               | Coal            | 48,000      | 52.30                    | 8.30                | 1.00                                     | 7.30             | 21.75                                | 33.6%          | \$3.00      | 12,083  | \$36,248  | 16,110   | \$48,331  |
|               | Containers      | 5,000       | 55.00                    | 11.00               | 1.00                                     | 10.00            | 21.75                                | 46.0%          | \$3.00      | 1,724   | \$5,172   | 2,299  | \$6,897   |
|               | Milk            | 60,000      | 48.00                    | 4.00                | 1.00                                     | 3.00             | 21.75                                | 13.8%          | \$3.00      | 6,207   | \$18,621  | 8,276  | \$24,828  |
| <b>R12T22</b> | Aggregates      | 161,365     | 48.50                    | 4.50                | 0.00                                     | 4.50             | 28.00                                | 16.1%          | \$3.00      | 19,450  | \$58,351  | 25,934   | \$77,801  |
|               | Coal            | 5,000       | 49.70                    | 5.70                | 0.00                                     | 5.70             | 28.00                                | 20.4%          | \$3.00      | 763   | \$2,290   | 1,018  | \$3,054   |
|               | General Freight | 520,625     | 48.04                    | 4.04                | 0.00                                     | 4.04             | 28.00                                | 14.4%          | \$3.00      | 56,391  | \$169,174                                       | 75,188   | \$225,565                                       |
| <b>R22T22</b> | Aggregates      | 679,000     | 51.84                    | 7.84                | 0.00                                     | 7.84             | 23.75                                | 33.0%          | \$3.00      | 168,106   | \$504,318                                       | 224,141  | \$672,424                                       |
|               | Bulk Liquid     | 518,000     | 48.00                    | 4.00                | 0.00                                     | 4.00             | 23.75                                | 16.8%          | \$3.00      | 65,432  | \$196,295                                       | 87,242   | \$261,726                                       |
|               | Coal            | 282,000     | 50.80                    | 6.80                | 0.00                                     | 6.80             | 23.75                                | 28.6%          | \$3.00      | 60,556  | \$181,667                                       | 80,741   | \$242,223                                       |
|               | Containers      | 433,005     | 49.50                    | 5.50                | 0.00                                     | 5.50             | 23.75                                | 23.2%          | \$3.00      | 75,206  | \$225,618                                       | 100,275  | \$300,825                                       |
|               | Dairy Products  | 2,004,025   | 50.21                    | 6.21                | 0.00                                     | 6.21             | 23.75                                | 26.2%          | \$3.00      | 393,186   | \$1,179,558                                     | 524,248  | \$1,572,744                                     |
|               | Fertiliser      | 75,000      | 50.00                    | 6.00                | 0.00                                     | 6.00             | 23.75                                | 25.3%          | \$3.00      | 14,211  | \$42,632  | 18,947   | \$56,842  |

|               |                 |                   |       |       |                |             |       |       |        |                  |                    |                  |                    |
|---------------|-----------------|-------------------|-------|-------|----------------|-------------|-------|-------|--------|------------------|--------------------|------------------|--------------------|
|               | Fuel            | 180,132           | 51.25 | 7.25  | 0.00           | 7.25        | 23.75 | 30.5% | \$3.00 | 41,241           | \$123,722          | 54,988           | \$164,963          |
|               | General Freight | 2,172,820         | 50.21 | 6.21  | 0.00           | 6.21        | 23.75 | 26.1% | \$3.00 | 426,117          | \$1,278,350        | 568,156          | \$1,704,467        |
|               | Livestock       | 280               | 49.00 | 5.00  | 0.00           | 5.00        | 23.75 | 21.1% | \$3.00 | 44               | \$133              | 59               | \$177              |
|               | Logs            | 733,617           | 51.15 | 7.15  | 0.00           | 7.15        | 23.75 | 30.1% | \$3.00 | 165,643          | \$496,929          | 220,857          | \$662,572          |
|               | Milk            | 261,465           | 51.00 | 7.00  | 0.00           | 7.00        | 23.75 | 29.5% | \$3.00 | 57,798           | \$173,393          | 77,063           | \$231,190          |
|               | Timber          | 18,290            | 52.40 | 8.40  | 0.00           | 8.40        | 23.75 | 35.4% | \$3.00 | 4,852            | \$14,555           | 6,469            | \$19,407           |
|               | Waste           | 852,000           | 48.60 | 4.60  | 0.00           | 4.60        | 23.75 | 19.4% | \$3.00 | 123,764          | \$371,293          | 165,019          | \$495,057          |
|               | Woodchips       | 123,000           | 51.00 | 7.00  | 0.00           | 7.00        | 23.75 | 29.5% | \$3.00 | 27,189           | \$81,568           | 36,253           | \$108,758          |
|               | Not Specified   | 18,000            | 51.70 | 7.70  | 0.00           | 7.70        | 23.75 | 32.4% | \$3.00 | 4,377            | \$13,131           | 5,836            | \$17,507           |
| <b>R22T23</b> | Bulk Liquid     | 207,250           | 53.00 | 9.00  | 1.00           | 8.00        | 23.75 | 33.7% | \$3.00 | 52,358           | \$157,074          | 69,811           | \$209,432          |
|               | Dairy Products  | 80,000            | 53.50 | 9.50  | 1.00           | 8.50        | 23.75 | 35.8% | \$3.00 | 21,474           | \$64,421           | 28,632           | \$85,895           |
|               | Fertiliser      | 66,100            | 53.00 | 9.00  | 1.00           | 8.00        | 23.75 | 33.7% | \$3.00 | 16,699           | \$50,097           | 22,265           | \$66,796           |
|               | General Freight | 287,166           | 55.11 | 11.11 | 1.00           | 10.11       | 23.75 | 42.6% | \$3.00 | 91,707           | \$275,122          | 122,277          | \$366,830          |
| <b>R23T23</b> | Aggregates      | 85,000            | 53.00 | 9.00  | 2.00           | 7.00        | 23.75 | 29.5% | \$3.00 | 18,789           | \$56,368           | 25,053           | \$75,158           |
|               | Coal            | 87,588            | 63.00 | 19.00 | 2.00           | 17.00       | 23.75 | 71.6% | \$3.00 | 47,021           | \$141,063          | 62,695           | \$188,084          |
|               | <b>HM Total</b> | <b>11,758,865</b> |       |       | <b>Average</b> | <b>6.42</b> |       |       |        | <b>2,311,887</b> | <b>\$6,935,660</b> | <b>3,082,515</b> | <b>\$9,247,546</b> |

**Table 21. Low to high range of estimated Over length HPMV benefits 1 May 2012 to 30 April 2013.**

|                     | Industry        | Distance   | Average Permitted Tonnes | Average Tonnes Gain | Additional Tare (Tonnes) to achieve gain | Net Payload Gain | Assumed Payload (Tonnes) at 44 Tonne (Class 1) Limit | % Assumed Efficiency Gain | \$/km saved | Kms saved (assuming gains achieved of 75% of truck kms) | \$ potentially gained based on permitted tonnes | Kms saved (assuming gains achieved of 100% of truck kms) | \$ potentially gained based on permitted tonnes |
|---------------------|-----------------|------------|--------------------------|---------------------|--|------------------|--|---------------------------|-------------|---|---|--|---|
| <b>A124</b>         | General Freight | 117,300    | 44                       | 0                   |  |                  |  | 11%                       | \$3.00      | 9,853   | \$29,560  | 13,138   | \$39,412.80                                     |
| <b>A134</b>         | Not specified   | 357,700    | 44                       | 0                   |  |                  |  | 11%                       | \$3.00      | 30,047  | \$90,140  | 40,062   | \$120,187.20                                    |
|                     | Dairy Products  | 540,000    | 44                       | 0                   |  |                  |  | 11%                       | \$3.00      | 45,360  | \$136,080                                       | 60,480   | \$181,440.00                                    |
|                     | General Freight | 6,331,850  | 44                       | 0                   |  |                  |  | 11%                       | \$3.00      | 531,875   | \$1,595,626                                     | 709,167  | \$2,127,501.60                                  |
| <b>A224</b>         | General Freight | 116,000    | 44                       | 0                   |  |                  |  | 11%                       | \$3.00      | 9,744   | \$29,232  | 12,992   | \$38,976.00                                     |
| <b>B1232</b>        | Cars            | 95,500     | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 9,311   | \$27,934  | 12,415   | \$37,245.00                                     |
|                     | General Bulk    | 1,309,525  | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 127,679   | \$383,036                                       | 170,238  | \$510,714.75                                    |
|                     | General Freight | 16,749,191 | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 1,633,046   | \$4,899,138                                     | 2,177,395  | \$6,532,184.49                                  |
|                     | Logs            | 38,500     | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 3,754   | \$11,261  | 5,005  | \$15,015.00                                     |
| <b>B1233</b>        | Dairy Products  | 380,000    | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 37,050  | \$111,150                                       | 49,400   | \$148,200.00                                    |
|                     | Fuel            | 53,500     | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 5,216   | \$15,649  | 6,955  | \$20,865.00                                     |
|                     | General Freight | 2,361,950  | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 230,290   | \$690,870                                       | 307,054  | \$921,160.50                                    |
|                     | Livestock       | 99,000     | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 9,653   | \$28,958  | 12,870   | \$38,610.00                                     |
|                     | Logs            | 46,500     | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 4,534   | \$13,601  | 6,045  | \$18,135.00                                     |
| <b>B1343</b>        | Woodchips       | 33,000     | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 3,218   | \$9,653   | 4,290  | \$12,870.00                                     |
| <b>B2232</b>        | General Freight | 150,000    | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 14,625  | \$43,875  | 19,500   | \$58,500.00                                     |
| <b>B2233</b>        | General Freight | 337,500    | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 32,906  | \$98,719  | 43,875   | \$131,625.00                                    |
| <b>B2243</b>        | Logs            | 177,000    | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 17,258  | \$51,773  | 23,010   | \$69,030.00                                     |
| <b>B2233</b>        | General Freight | 96,500     | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 9,409   | \$28,226  | 12,545   | \$37,635.00                                     |
| <b>Non proforma</b> | General Freight | 207,000    | 44                       | 0                   |  |                  |  | 13%                       | \$3.00      | 20,183  | \$60,548  | 26,910   | \$80,730.00                                     |



|                                   |                 |                    |           |          |  |  |  |     |               |                   |                     |                   |                     |
|-----------------------------------|-----------------|--------------------|-----------|----------|--|--|--|-----|---------------|-------------------|---------------------|-------------------|---------------------|
|                                   | Cars            | 3,331,850          | 44        | 0        |  |  |  | 15% | \$3.00        | 372,334           | \$1,117,003         | 496,446           | \$1,489,336.95      |
| <b>Truck &amp; Simple Trailer</b> |                 |                    |           |          |  |  |  |     |               |                   |                     |                   |                     |
|                                   | Containers      | 61,000             | 44        | 0        |  |  |  | 15% | \$3.00        | 6,817             | \$20,450            | 9,089             | \$27,267.00         |
|                                   | General Bulk    | 80,000             | 44        | 0        |  |  |  | 15% | \$3.00        | 8,940             | \$26,820            | 11,920            | \$35,760.00         |
|                                   | General Freight | 452,000            | 44        | 0        |  |  |  | 15% | \$3.00        | 50,511            | \$151,533           | 67,348            | \$202,044.00        |
|                                   | Logs            | 1,800,612          | 44        | 0        |  |  |  | 15% | \$3.00        | 201,218           | \$603,655           | 268,291           | \$804,873.56        |
|                                   |                 |                    |           |          |  |  |  |     |               |                   |                     |                   |                     |
|                                   | <b>OL TOTAL</b> | <b>123,411,295</b> | <b>44</b> | <b>0</b> |  |  |  |     | <b>\$3.00</b> | <b>13,219,607</b> | <b>\$39,658,821</b> | <b>17,626,142</b> | <b>\$52,878,427</b> |

**Table 22. Low to high range of estimated Both HM & OL permit benefits (overlength component) 1 May 2012 to 30 April 2013.**

| Vehicle Type                                     | Industry        | Distance  | Average Permitted Tonnes | Average Tonnes Gain | Additional Tare (Tonnes) to achieve gain | Net Payload Gain | Assumed Payload (Tonnes) at 44 Tonne (Class 1) Limit | % Assumed Efficiency Gain | \$/km saved | Kms saved (assuming gains achieved of 75% of truck kms) | \$ potentially gained based on permitted tonnes | Kms saved (assuming gains achieved of 100% of truck kms) | \$ potentially gained based on permitted tonnes |
|--|-----------------|-----------|--------------------------|---------------------|--|------------------|--|---------------------------|-------------|---|---|--|---|
| <b>Both - RUC Distance (Overlength) Licences</b> |                 |           |                          |                     |  |                  |  |                           |             |   |   |  |   |
| A224   | Containers      | 372,000   | 44.00                    |                     |  |                  |  | 11%                       | \$3.00      | 30,690  | \$92,070  | 40,920   | \$122,760                                       |
|  | General Freight | 123,000   | 44.00                    |                     |  |                  |  | 11%                       | \$3.00      | 10,148  | \$30,443  | 13,530   | \$40,590  |
| B1232  | General Freight | 136,000   | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 13,260  | \$39,780  | 17,680   | \$53,040  |
| B1233  | Bulk Liquid     | 270,000   | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 26,325  | \$78,975  | 35,100   | \$105,300                                       |
|  | Containers      | 216,000   | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 21,060  | \$63,180  | 28,080   | \$84,240  |
|  | Food/Beverage   | 83,000    | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 8,093   | \$24,278  | 10,790   | \$32,370  |
|  | Fuel            | 5,000     | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 488   | \$1,463   | 650  | \$1,950   |
|  | General Freight | 1,865,960 | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 181,931   | \$545,793                                       | 242,575  | \$727,724                                       |
| B2223  | Fertiliser      | 4,000     | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 390   | \$1,170   | 520  | \$1,560   |
| B2243  | Logs            | 12,000    | 44.00                    |                     |  |                  |  | 13%                       | \$3.00      | 1,170   | \$3,510   | 1,560  | \$4,680   |
| R12T22   | General Freight | 1,124,000 | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 125,607   | \$376,821                                       | 167,476  | \$502,428                                       |
| R22T22   | Bulk Liquid     | 384,000   | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 42,912  | \$128,736                                       | 57,216   | \$171,648                                       |
|  | Coal            | 85,000    | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 9,499   | \$28,496  | 12,665   | \$37,995  |
|  | Containers      | 27,000    | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 3,017   | \$9,052   | 4,023  | \$12,069  |
|  | Dairy Products  | 304,000   | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 22,800  | \$68,400  | 30,400   | \$91,200  |
|  | Fuel            | 929,000   | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 103,816   | \$311,447                                       | 138,421  | \$415,263                                       |
|  | General Freight | 2,590,000 | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 289,433   | \$868,298                                       | 385,910  | \$1,157,730                                     |
|  | Livestock       | 728,000   | 44.00                    |                     |  |                  |  | 15%                       | \$3.00      | 81,354  | \$244,062                                       | 108,472  | \$325,416                                       |
|  | Logs            | 2,654,000 | 44.00                    |                     |  |                  |  | 10%                       | \$3.00      | 296,585   | \$889,754                                       | 395,446  | \$1,186,338                                     |



|              |                        |                   |              |  |  |  |  |     |               |                  |                  |                  |                  |
|--------------|------------------------|-------------------|--------------|--|--|--|--|-----|---------------|------------------|------------------|------------------|------------------|
|              | Milk                   | 290,000           | 44.00        |  |  |  |  | 15% | \$3.00        | 32,408           | \$97,223         | 43,210           | \$129,630        |
| R22T23       | Aggregates             | 168,000           | 44.00        |  |  |  |  | 15% | \$3.00        | 18,774           | \$56,322         | 25,032           | \$75,096         |
|              | Bulk Liquid            | 1,039,116         | 44.00        |  |  |  |  | 15% | \$3.00        | 116,121          | \$348,364        | 154,828          | \$464,485        |
|              | Coal                   | 21,000            | 44.00        |  |  |  |  | 15% | \$3.00        | 2,347            | \$7,040          | 3,129            | \$9,387          |
|              | Containers             | 23,000            | 44.00        |  |  |  |  | 15% | \$3.00        | 2,570            | \$7,711          | 3,427            | \$10,281         |
|              | Dairy Products         | 502,870           | 44.00        |  |  |  |  | 15% | \$3.00        | 56,196           | \$168,587        | 74,928           | \$224,783        |
|              | Fuel                   | 18,000            | 44.00        |  |  |  |  | 15% | \$3.00        | 2,012            | \$6,035          | 2,682            | \$8,046          |
|              | General Freight        | 2,064,260         | 44.00        |  |  |  |  | 15% | \$3.00        | 230,681          | \$692,043        | 307,575          | \$922,724        |
|              | Livestock              | 247,000           | 44.00        |  |  |  |  | 15% | \$3.00        | 27,602           | \$82,807         | 36,803           | \$110,409        |
|              | Milk                   | 265,000           | 44.00        |  |  |  |  | 15% | \$3.00        | 29,614           | \$88,841         | 39,485           | \$118,455        |
|              | Timber                 | 88,000            | 44.00        |  |  |  |  | 15% | \$3.00        | 9,834            | \$29,502         | 13,112           | \$39,336         |
|              | Woodchips              | 31,000            | 44.00        |  |  |  |  | 15% | \$3.00        | 3,464            | \$10,393         | 4,619            | \$13,857         |
| Unspecified  | Livestock              | 124,000           | 44.00        |  |  |  |  | 15% | \$3.00        | 13,857           | \$41,571         | 18,476           | \$55,428         |
| <b>Total</b> | <b>Both (OL) Total</b> | <b>16,793,206</b> | <b>44.00</b> |  |  |  |  |     | <b>\$3.00</b> | <b>1,814,055</b> | <b>5,442,164</b> | <b>2,418,739</b> | <b>7,256,218</b> |

**Table 23. Low to high range of estimated Both HM & OL permit benefits (higher mass component) 1 May 2012 to 30 April 2013.**

| Vehicle Type                  | Industry        | Distance  | Average Permitted Tonnes | Average Tonnes Gain | Additional Tare (Tonnes) to achieve gain | Net Payload Gain | Assumed Payload (Tonnes) at 44 Tonne (Class 1) Limit | % Assumed Efficiency Gain | \$/km saved | Kms saved (assuming gains achieved of 75% of truck kms) | \$ potentially gained based on permitted tonnes | Kms saved (assuming gains achieved of 100% of truck kms) | \$ potentially gained based on permitted tonnes |
|-------------------------------|-----------------|-----------|--------------------------|---------------------|--|------------------|--|---------------------------|-------------|---|---|--|---|
| <b>Both - RUC Higher Mass</b> |                 |           |                          |                     |  |                  |  |                           |             |   |   |  |   |
| A224                          | Containers      | 15,000    | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50  | 16.3%                     | \$3.00      | 1,837   | \$5,510   | 2,449  | \$7,347   |
|                               | General Freight | 83,000    | 48.00                    | 4.00                | 0.00                                     | 4.00             | 24.50  | 16.3%                     | \$3.00      | 10,163  | \$30,490  | 13,551   | \$40,653  |
| B1232                         | General Freight | 25,000    | 51.00                    | 7.00                | 0.00                                     | 7.00             | 21.75  | 32.2%                     | \$3.00      | 6,034   | \$18,103  | 8,046  | \$24,138  |
| B1233                         | Bulk Liquid     | 143,000   | 48.00                    | 4.00                | 0.00                                     | 4.00             | 21.75  | 18.4%                     | \$3.00      | 19,724  | \$59,172  | 26,299   | \$78,897  |
|                               | Containers      | 34,000    | 57.00                    | 13.00               | 0.00                                     | 13.00            | 21.75  | 59.8%                     | \$3.00      | 15,241  | \$45,724  | 20,322   | \$60,966  |
|                               | Fuel            | 40,000    | 66.80                    | 22.80               | 0.00                                     | 22.80            | 21.75  | 104.8%                    | \$3.00      | 31,448  | \$94,345  | 41,931   | \$125,793                                       |
|                               | General Freight | 312,000   | 52.59                    | 8.59                | 0.00                                     | 8.59             | 21.75  | 39.5%                     | \$3.00      | 92,418  | \$277,255                                       | 123,224  | \$369,673                                       |
|                               | Logs            | 75,000    | 53.00                    | 9.00                | 0.00                                     | 9.00             | 21.75  | 41.4%                     | \$3.00      | 23,276  | \$69,828  | 31,034   | \$93,103  |
| B2223                         | Fertiliser      | 32,000    | 48.00                    | 4.00                | 0.00                                     | 4.00             | 21.75  | 18.4%                     | \$3.00      | 4,414   | \$13,241  | 5,885  | \$17,655  |
| B2243                         | Logs            | 156,000   | 62.00                    | 18.00               | 0.00                                     | 18.00            | 21.75  | 82.8%                     | \$3.00      | 96,828  | \$290,483                                       | 129,103  | \$387,310                                       |
| R12T22                        | General Freight | 215,000   | 46.24                    | 2.24                | 0.00                                     | 2.24             | 28.00  | 8.0%                      | \$3.00      | 12,873  | \$38,619  | 17,164   | \$51,492  |
| R22T22                        | Coal            | 4,000     | 53.00                    | 9.00                | 0.00                                     | 9.00             | 23.75  | 37.9%                     | \$3.00      | 1,137   | \$3,411   | 1,516  | \$4,547   |
|                               | General Freight | 1,649,000 | 51.64                    | 7.64                | 0.00                                     | 7.64             | 23.75  | 32.2%                     | \$3.00      | 397,633   | \$1,192,899                                     | 530,178  | \$1,590,533                                     |
|                               | Livestock       | 125,000   | 48.00                    | 4.00                | 0.00                                     | 4.00             | 23.75  | 16.8%                     | \$3.00      | 15,789  | \$47,368  | 21,053   | \$63,158  |
|                               | Logs            | 1,872,000 | 51.10                    | 7.10                | 0.00                                     | 7.10             | 23.75  | 29.9%                     | \$3.00      | 419,618   | \$1,258,854                                     | 559,490  | \$1,678,471                                     |
|                               | Woodchips       | 280,000   | 52.80                    | 8.80                | 0.00                                     | 8.80             | 23.75  | 37.1%                     | \$3.00      | 77,811  | \$233,432                                       | 103,747  | \$311,242                                       |
| R22T22 SL                     | General Freight | 47,000    | 48.00                    | 4.00                | 0.00                                     | 4.00             | 23.75  | 16.8%                     | \$3.00      | 5,937   | \$17,811  | 7,916  | \$23,747  |
| R22T23                        | Bulk Liquid     | 408,000   | 51.59                    | 7.59                | 0.00                                     | 7.59             | 23.75  | 32.0%                     | \$3.00      | 97,839  | \$293,518                                       | 130,453  | \$391,358                                       |
|                               | Coal            | 10,000    | 55.00                    | 11.00               | 0.00                                     | 11.00            | 23.75  | 46.3%                     | \$3.00      | 3,474   | \$10,421  | 4,632  | \$13,895  |
|                               | Containers      | 79,000    | 52.90                    | 8.90                | 0.00                                     | 8.90             | 23.75  | 37.5%                     | \$3.00      | 22,203  | \$66,609  | 29,604   | \$88,813  |
|                               | Dairy Products  | 712,000   | 53.00                    | 9.00                | 0.00                                     | 9.00             | 23.75  | 37.9%                     | \$3.00      | 202,358   | \$607,074                                       | 269,811  | \$809,432                                       |
|                               | Fuel            | 46,000    | 57.00                    | 13.00               | 0.00                                     | 13.00            | 23.75  | 54.7%                     | \$3.00      | 18,884  | \$56,653  | 25,179   | \$75,537  |

|   |                        |                  |              |       |      |       |       |       |               |                    |                     |                   |                     |
|---|------------------------|------------------|--------------|-------|------|-------|-------|-------|---------------|--------------------|---------------------|-------------------|---------------------|
|   | General Freight        | 2,193,000        | 54.79        | 10.79 | 0.00 | 10.79 | 23.75 | 45.5% | \$3.00        | 747,581            | \$2,242,742         | 996,774           | \$2,990,323         |
|   | Livestock              | 16,000           | 48.00        | 4.00  | 0.00 | 4.00  | 23.75 | 16.8% | \$3.00        | 2,021              | \$6,063             | 2,695             | \$8,084             |
|   | Milk                   | 110,000          | 53.00        | 9.00  | 0.00 | 9.00  | 23.75 | 37.9% | \$3.00        | 31,263             | \$93,789            | 41,684            | \$125,053           |
|   | Timber                 | 188,000          | 57.10        | 13.10 | 0.00 | 13.10 | 23.75 | 55.2% | \$3.00        | 77,776             | \$233,328           | 103,701           | \$311,103           |
|   | Woodchips              | 141,000          | 57.00        | 13.00 | 0.00 | 13.00 | 23.75 | 54.7% | \$3.00        | 57,884             | \$173,653           | 77,179            | \$231,537           |
| R23T22                                  | Woodchips              | 220,000          | 55.50        | 11.50 | 0.00 | 11.50 | 23.75 | 48.4% | \$3.00        | 79,895             | \$239,684           | 106,526           | \$319,579           |
| R23T23                                  | General Freight        | 323,000          | 58.00        | 14.00 | 0.00 | 14.00 | 23.75 | 58.9% | \$3.00        | 142,800            | \$428,400           | 190,400           | \$571,200           |
| T22T23                                  | Containers             | 46,000           | 55.00        | 11.00 | 0.00 | 11.00 | 23.75 | 46.3% | \$3.00        | 15,979             | \$47,937            | 21,305            | \$63,916            |
| <b>Total</b>                            | <b>Both (HM) Total</b> | <b>9,599,000</b> | <b>53.05</b> |       |      |       |       |       | <b>\$3.00</b> | <b>2,732,139</b>   | <b>\$8,196,416</b>  | <b>3,642,851</b>  | <b>\$10,928,554</b> |
| <b>Total Benefit - All Permit types</b> |                        |                  |              |       |      |       |       |       |               | <b>161,562,366</b> |                     |                   |                     |
|   |                        |                  |              |       |      |       |       |       |               | <b>20,077,687</b>  | <b>\$60,233,060</b> | <b>26,770,249</b> | <b>\$80,310,747</b> |

### 5.5.3 Wider economic benefits and GDP impacts

Investigation of the likely positive impact on GDP of reduced transport costs is not within the scope of this report. This relationship between operator cost savings, potential freight rate reductions and GDP is complex and subject to wide ranging estimates in work completed prior to the 2010 rule change.

The Regulatory Impact Statement (RIS) estimated annual operator cost savings of \$100-200 million by year five. Based on a straight-line projection, this implies a target operator cost saving in a range of \$60 - \$120 million by the end of year three. The RIS estimated a very positive benefit cost ratio in the range of 7-14 to 1, based on these operator cost savings and ten year total bridge costs of \$150m and administration costs of \$3.8m<sup>6</sup>

Annual operator cost savings were expected to flow through to some multiple of increased GDP. Assessment of the wider economic benefits (WEB) that account for the dynamic and cascading impacts of these operator cost savings through the economy, resulting in GDP growth, have not been assessed in detail in this report. The RIS however estimated:

- GDP benefits of \$10-25 million by year two.
- GDP benefits of \$250 – 500 million by year 10.
- GDP benefits remaining constant from year 10 – 20.<sup>7</sup>

These GDP improvements outlined in the RIS were based on a range of benefit assessments between 2004 and 2007 including<sup>8</sup> -

- A GDP increase of between \$1.2 billion and \$2.4 billion based on Infometrics' 2004 estimate of the impact of a 10% fall in freight costs and further assuming a 10-20% productivity increase.
- A GDP increase of 0.1 percent or \$180m per annum based on a more conservative approach by NZIER.
- Annual gains of \$250 – 500 million per annum based on the Pearson Report.

Key to the high-end estimates is the assumption that a 19% increase in truck productivity, leading to a 10% fall in freight rates, would increase GDP by 2.2%.<sup>9</sup>

### 5.5.4 Sensitivity analysis

The main uncertainty with regard to benefit realisation is the extent to which operators have actually achieved benefits over the kilometres of RUC purchased. The analysis in

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<sup>6</sup> Regulatory Impact Statement, Paragraph 59

<sup>7</sup> Regulatory Impact Statement, Paragraph 59

<sup>8</sup> Paragraph 29, Appendix A: Regulatory Impact Statement, *ibid.*

<sup>9</sup> Regulatory Impact Statement, paragraph 29.

Table 19 attempts to address this uncertainty with an assumption range of 75- 100% for the percentage of RUC kilometres for which benefits are achieved for OL and HM permits.

The benefits calculations are directly proportional to travel cost savings assumed at \$3.00 / kilometre. Therefore, a 20% increase / decrease in this assumption changes the benefit calculation also by 20%.

### **5.5.5 Other benefits**

We reported in 2011 that other operator and wider customer, community and government benefits could include:

- Improvements in the logistics chain such as improved just in time delivery leading to inventory reductions or more flexible and efficient routing and delivery times. The extent of this benefit remains uncertain.
- Potential safety gains from reduced exposure as travel for a given freight task decreases. This benefit is not high profile nor large in financial terms but is worthwhile. (See Section 6.0)

## **5.6 Costs**

Costs include operator capital investment in HPMV capable equipment, government capital investment in new infrastructure, accelerated wear and tear on infrastructure and administration and operating costs to both operators and government agencies.

There is reasonable certainty over the operating costs benefits, balanced by a less certain, but likely low, risk of accelerated infrastructure wear.

### **5.6.1 Infrastructure costs**

#### **a) New infrastructure investment**

New infrastructure investment costs to achieve these benefits have been very low relative the benefits over time. Section 7.9 Potential barriers to uptake: Route availability, notes that in 2011 expected State Highway and local road bridge costs were \$54 million in total over three years.

#### **b) Accelerated infrastructure wear and tear**

State highway pavement and bridge asset managers remain confident that accelerated deterioration of these assets assuming a given freight task is not a concern. NZTA Asset managers continue to have confidence in the hypothesis that HPMV impacts on bridges and pavements are not likely to be distinguishable from that impact arising from the increased number of trips required to complete the same freight task using standard heavy vehicles. It is expected that any accelerated deterioration is likely to be at a low level that would be disguised by the many other factors determining pavement and structure life. Only long-term observation and modelling are expected to test this hypothesis and any results are not expected for some years. In the event of any impacts, NZTA managers continue to expect

these costs would be manageable within existing state highway pavement maintenance and renewal budgets.

We reported in 2011 on modelling and case study work by Opus that suggested low or neutral maintenance cost increases on **pavements** on most sealed roads under HPMV servicing of a fixed freight task.<sup>10</sup> Unsealed roads, or brittle or soft sealed roads, as may be more often found in local road networks, could however experience increased maintenance costs, or shortened asset lives under an assumed fixed freight task assumption.

The 2011 MER noted the conclusion from Opus that - *“where routes extend to rural unsealed networks, the increased maintenance costs may outweigh the benefits gained on the proposed HPMV routes.”* This issue remains a risk, the probability of which is highlighted by RCAs. We understand that poor pavement quality continues to be the grounds for rejection of permits by some RCAs. This stance on poor quality roads is reasonable, but where pavements are reasonable, there should be no barrier to permitting local road access.

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<sup>10</sup> Paper by Adèle Jones and Ewan Hunter, Opus International Consultants Ltd, 2011, *The Evaluation of the effects of increased heavy vehicle loading on pavement maintenance costs*. Also, Table 5.1.1b Opus April 23 April 2010, Addendum 2 - VDM Rule Amendment Impact on State Highway Pavements), noted that across the State Highway network an increase in loading (equivalent standard axles) of only 2.92% was estimated to result from use of HPMVs to service a fixed freight task and assuming an efficiency gain from the use of HPMVs. Any impact of HPMVs relative to class one vehicles should therefore be small and not likely to be separately identifiable amongst other factors impacting pavement wear.

### 5.6.2 Financial/economic impacts of government administration

The permitting time requirements and costs to all parties for over weight, over-dimension and HPMV permitting were explored in the draft 2012 business case for customer improvements to permitting for heavy vehicles. Table 24 shows that net annual HPMV costs to NZTA were likely to be in the order of \$700,000 at volumes of around 1,700.

Table 24. HPMV and other permitting costs to NZTA.

| Permit type                                    | Annual permit volume | Total annual hours |              |               |                           |                          | OW/OD & HPMV as share of NZTA's permitting costs | Total system time | Total system costs |
|--|----------------------|--------------------|--------------|---------------|---------------------------|--------------------------|--|-------------------|--------------------|
|  |                      | Customer           | RCA's        | NZTA          | Consultants (NZTA funded) | Total NZTA & Consultants |  |                   |                    |
| Over weight                                    | 3,840                | 7,710              | 1,368        | 5,048         | 1,368                     |                          |  |                   |                    |
| dimension                                      | 7,200                | 14,525             | -            | 1,759         | -                         |                          |  |                   |                    |
|  |                      | 22,235             | 1,368        | 6,807         | 1,368                     | 8,175                    | 62%  | 31,778            | \$3,177,800        |
| HPMV Higher Mass                               | 756                  | 1,632              | 1,954        | 3,413         | 972                       |                          |  |                   |                    |
| HPMV Over length                               | 960                  | 2,064              | -            | 537           |                           |                          |  |                   |                    |
|  |                      | 3,696              | 1,954        | 3,950         | 972                       | 4,922                    | 38%  | 10,572            | \$1,057,200        |
| <b>TOTAL</b>                                   | <b>12,756</b>        | <b>25,931</b>      | <b>3,322</b> | <b>10,757</b> | <b>2,340</b>              | <b>13,097</b>            | <b>100%</b>                                      | <b>42,350</b>     |                    |
| Estimate of average hourly cost to all parties |                      |                    |              |               |                           |                          |  | \$ 100.0          | \$4,235,000        |
| NZTA operating costs 2013/14                   |                      |                    |              |               | \$                        | 2,258,093                |  |                   |                    |
| NZTA Revenue                                   |                      |                    |              |               | \$                        | 374,944                  |  |                   |                    |
| NZTA net cost                                  |                      |                    |              |               | \$                        | 1,883,149                |  |                   |                    |
| OW & OD cost estimate                          |                      |                    |              |               | \$                        | 1,175,440                |  |                   |                    |
| HPMV cost estimate                             |                      |                    |              |               | \$                        | 707,709                  |  |                   |                    |

Administration costs continue to run at levels above those estimated in the Regulatory Impact Statement (RIS). The RIS forecast government administration costs in the order of \$950,000 in year one, \$600,000 in year two, \$500,000 in year three and \$250,000 thereafter. Actual costs in year one were in the order of \$1.4 million. The estimate of current annual costs in Table 24 above is \$700,000.

Infrastructure investigation costs of around \$43m<sup>11</sup> for both local roads and state highway was approved in 2010.

### 5.6.3 Operator compliance and capital costs

Application costs have continued to be a major issue. Operators remain dissatisfied with the process for HM permitting. Table 24 shows estimates of 3,696 customer hours for HPMV permitting. These annual costs, which could be in the order of \$400,000 assuming \$100 per hour of time required, are likely to be overshadowed however by the costs of delay and lost opportunity. These costs while considered material have not been quantified in this analysis.

The marginal increase in capital cost of an HPMV truck and or trailer is materially higher than a standard class one vehicle combination. However, these costs can be easily recouped over the life of the vehicle, provided sufficient range of routes is available. It is assumed however that the capital costs of operator equipment upgrade are incurred in the course of normal fleet replacement cycles. The higher costs of HPMV equipment is recognised, but not quantified.

#### **5.6.4 Potential mode-shift costs**

There is a potential mode shift from rail to road arising from the rule change. HM and OL permits are likely to increase the level competition with rail for long distance linehaul freight tasks; however, tasks requiring a local distribution network will remain with road transport. This impact of uncertain quantum is recognised as a risk, but is not further analysed in this report.

#### **5.6.5 Net benefits and costs over time**

Substantial operator cost benefits have been identified in section 5.5.2. Annual administration costs of less than \$1m (Table 24) and infrastructure investment costs totalling well less than \$50m (see section 7.9) to end of year three have been minimal by comparison with the benefits. While costs and benefits are still some time away from reaching a steady state, the net benefits to date are well in line with Benefit Cost Ratio (BCR) range from 7.0 - 14.0 to 1.0 set in the RIS. A benefit cost ratio of around 9.0 to 1.0 is reasonable in 2010 terms<sup>12</sup>.

Current projections of benefit and cost from the 2010 rule change are made difficult by further expected major changes in the nature of HPMV rules. The prospect of the 50MAX initiative could significantly shift the balance of benefits to vehicles operating under these prospective rules.

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<sup>12</sup> Assumes: Infrastructure costs total \$100m by the end of year 5, administration costs of \$1m per year and benefits level off at a conservative \$100m per year by year five, and a 20 year present value at 8% discount rate.



## 5.7 Extent of HPMV penetration of fleet potential

Penetration of the total potential market for HPMV vehicle operation still remains low at around 10-16% of original OL and HM targets respectively. Significant benefits therefore remain untapped.

Table 25 shows that at the time of the 2010 rule change the total NZ heavy fleet (HCV2) was estimated at around 18,000 vehicles. Approximately 12,485 vehicles were estimated to be HM capable of which approximately 5,000 might take up permits if routes were widely available, adjusted down to around 2,300 after allowing for route restrictions. 15,000 vehicles were estimated as OL capable of which 5,000 might take up permits, adjusted down to around 4,400 after allowing for route restrictions.

As at the end of April 2013 there were 822 unique vehicles with OL and Both permits, and 571 unique vehicles with HM and Both permits. Uptake is concentrated in 322 firms for OL and 269 firms for HM and Both.

Table 25 shows take up to date is around 25% of the HM potential estimated in 2010 and 18% of OL potential.

Table 25. Estimates of nationwide take up of HPMV permits.

|                                     | Total vehicles | Potential take-up |                 | Likely take-up given route constraints (2010 estimate) |        | Actual take-up 2013 (Unique plates) | Penetration of likely take-up as estimated in 2010 |
|-------------------------------------|----------------|-------------------|-----------------|--|--------|-------------------------------------|--|
|                                     |                | Number            | % of HCV2 fleet | % of HCV2 fleet  | Number |                                     |  |
| HCV2 fleet                          | 17,699         |                   |                 |  |        |                                     |  |
| Increased high mass capable HPMVs   | 12,485         | 5,035             | 28%             | 13%  | 2,319  | 571 HM & Both                       | 25%  |
| Increased over length capable HPMVs | 14,731         | 4,941             | 28%             | 25%  | 4,446  | 822 (OL & Both)                     | 18%  |

Source: Table A7, Vehicle Dimensions and Mass Rule Amendment 2010, Funding and investment guidelines (May 2010)

The continued strong growth in travel by all heavy trucks in the period to April 2013 suggests favourable underlying demand conditions in the transport industry, that combined with continued increases in route availability, are likely to continue to encourage HPMV uptake.

## **5.8 Summary of data issues and recommendations**

The data manipulation at the centre of the analysis of benefits is a match between approved applications and both RUC and CAS databases. These databases provide the measures of distance travelled by approved vehicles and their crash performance.

Appendix 3 of the 2011 MER report noted a range of required improvements relating to more rigorous database design and standardised data entry.

Appendix 5.2 of this report notes that application data base tool remains error ridden and is failing to provide timely reliable management information. Improvements are needed urgently if NZTA is to meet basic requirements for recording permit data issued under legislation and to provide reliable “H-miles KPIs.

## 6.0 Safety performance

The 2010 rule changes providing for HPMVs contained two permit conditions expected to deliver improved safety outcomes relative to Class One vehicle combinations. HPMVs were required to:

- a) Comply with higher safer static roll threshold (SRT) requirements, which otherwise continue to be set at the lower legal limit of 0.35 for Class One vehicles.
- b) Provide trailer roll stability control (RSC) on all over length trailers. New trailers of any length for higher mass permits, or those with ABS/EBS (Antilock / Electronic Braking Systems) fitted, were also required to have RSC enabled.

The safety performance of HPMVs for the three-year period from May 2010 to April 2013 has been assessed by extracting the crash records for all trucks with HPMV permits. This data was then compared with the crash record of all “heavy” heavy vehicles –defined as trucks with a Gross Vehicle Mass (GVM) greater than 21 tonnes. Comparison with “lighter” heavy vehicles that can have GVMs from 3.5 tonnes is not a useful comparison.

The kilometres travelled for both HPMVs and other “heavy” heavy vehicles were extracted from RUC records. This provides an assessment of the crash results per kilometre travelled. It should be noted that distances travelled have been taken from truck rather than trailer data because the CAS records truck plates. Distances travelled are therefore higher than those recorded in the economic discussion elsewhere in this report.

Table 26 shows that over length HPMV safety performance is better than general “heavy” heavy vehicles. Higher mass HPMV safety performance appears worse than the general “heavy” heavy vehicle fleet.

Crash data shows that over the past three years HPMV over length trucks have been involved in one fatal crash per 78 million kilometres travelled. This compares with a rate of one fatal crash per 59 million kilometres travel for the general “heavy” heavy fleet. Over the same three-year period, higher mass HPMVs have been involved in one fatal crash per 41 million kilometres. This is higher than the general heavy fleet.

It must be stressed that this comparative analysis of HPMVs and the general heavy fleet crash rates must be read with great caution given that 11 fatal crashes over a three year period is a low number and short period over which to draw sound statistical conclusions.

These conclusions need to be also caveated by the fact that it is unknown whether HPMV trucks recorded in the crash data were in HPMV mode at the time of an incident. The CAS data records trucks that may have had incidents before, or after, the period in which an HPMV permit was held. An HPMV permitted truck could also have been part of a Class One combination at the time of a crash.

It is also uncertain whether the CAS record for all heavy vehicle crashes captures the existence of a towed vehicle in all cases. The total fleet comparison in Table 22 is therefore for all trucks, many without a towed vehicle. This could improve the safety profile of the general fleet relative to HPMV trucks, which are always in a combination with a trailer.

Table 26. HPMV and non-HPMV heavy vehicle total crashes over the three-year period from 1 May 2010 – 30 April 2013.

| Crash type   |    | Average annual HPMV permitted vehicle crashes | Heavy vehicle (RUC class 6 or greater) crashes      |                           |
|--|----|---|---|---------------------------|
| <b>a) HPMV Trucks - over length</b>  |    |   |   |                           |
| Total truck kilometres travelled (three year total)  |    | 472 million                                   |   |                           |
| Fatal  | 6  | 1 fatal / 78 million km                       |   |                           |
| Serious  | 21 | 1 serious / 22 million km                     |   |                           |
| Minor  | 63 | 1 minor / 8 million km                        |   |                           |
| <b>b) HPMV Trucks – higher mass &amp; both higher mass &amp; over length</b>                             |    |   |   |                           |
| Total truck kilometres travelled (three year total)  |    | 205 million                                   |   |                           |
| Fatal  | 5  | 1 fatal / 41 million km                       |   |                           |
| Serious  | 10 | 1 serious / 20 million km                     |   |                           |
| Minor  | 14 | 1 minor / 14 million km                       |   |                           |
| <b>c) Total of all HPMV Trucks –(over length + higher mass &amp; both higher mass &amp; over length)</b> |    |   |   |                           |
| Total truck kilometres travelled (three year total)  |    | 678 million                                   | Total truck kilometres travelled (three year total) | 4.8 Billion               |
| Fatal  | 11 | 1 fatal / 61 million km                       | 81  | 1 fatal / 59 million km   |
| Serious  | 31 | 1 serious / 21 million km                     | 181   | 1 serious / 26 million km |
| Minor  | 77 | 1 minor / 9 million km                        | 592   | 1 minor / 8 million km    |

### 6.1 Reduced crash exposure

Safety gains in the order of \$2-3 million per year are also likely from the reduced exposure to crashes achieved by the HPMV rule. This arises from avoiding approximately one equivalent fatal crash every two years. This results from the reduced truck kilometres otherwise needed in the absence of the rule change to complete the same freight task.

Assumptions for this analysis in Table 27 are:

- One fatal and one serious crash per 59 million and 26 million kilometres respectively of general heavy fleet truck travel.
- Kilometres of travel avoided as a result of the HPMV rule are estimated to be 20 - 27 million based on kilometres avoided for an assumed fixed freight task in 2012/13
- \$3.7 million value of each equivalent fatal accident avoided.
- Five serious injury accidents are the equivalent cost of a fatal accident.

**Table 27. Value of HPMV safety benefits from truck travel avoided to complete an assumed fixed freight task.**

|   |                    |                    |
|---|--------------------|--------------------|
| Kilometres per fatal crash in the non -HPMV "heavy" heavy fleet.                    | 59,472,642         |                    |
| Kilometres per severe crash in the non HPMV "heavy" heavy fleet                     | 26,614,829         |                    |
| Kilometres avoided to service an assumed fixed freight task (kms from RUC analysis) | <b>Low</b>         | <b>High</b>        |
|   | 20,817,032         | 27,756,042         |
| Avoided fatal crashes per year  | 0.3500             | 0.4667             |
| Avoided severe crashes / 5  | 0.1564             | 0.2086             |
| Equivalent fatal crashes avoided  | 0.5065             | 0.6753             |
| Value of life saved   | \$3,700,000        | \$3,700,000        |
| <b>Annual safety benefits</b>   | <b>\$1,873,898</b> | <b>\$2,498,530</b> |

## 7.0 Operator experience

A random phone survey of operators with permits indicated acceptable levels of overall satisfaction with NZTA's performance with regard to over length permitting. NZTA's performance on higher mass permitting in comparison shows neutral satisfaction overall. This 2013 result is a slight improvement on operator perceptions of NZTA performance in 2011. In contrast to NZTA performance, operators' views of Council (RCA) performance remains as poor as it was in 2011.

Operator experience of RCA processing could be a key risk for the 50MAX initiative if operators are required to make a large number of direct approaches to Councils for these permits. Operators identified the need for improvements to permitting processes in 2011 and this remains urgent.

This aspect of the monitoring and evaluation considers operator issues with the permitting process, barriers to uptake, safety, compliance and RUC. This section also addresses issues for RCAs and the NZTA. Specific issues discussed are:

- Customer (operator) satisfaction.
- Benefits received and potential benefits.
- Compliance costs.
- Compliance issues.
- Reasons for declined permits.
- Barriers to uptake.
- Infrastructure improvements.
- RUC as a potential issue for uptake.
- Effect on truck and trailer manufacturers.
- Summary of progress made with issues identified in 2011 MER.

### 7.1 METHODOLOGY for surveys and discussions

Phone discussions were conducted with sample of operators and government official and RCAs involved in the permitting, compliance and infrastructure issues.

#### 7.1.1 METHODOLOGY for telephone survey of operators

Phone discussions have been conducted with a random sample of 23 operators. An invitation was also sent to operators and RCAs via NZTA's VDM newsletter. Around three operators in response asked to be included in the sample above.

This methodology for surveying operators used a more active approach to locating operators compared with the approach used in 2011. The random sample was actively followed up to secure an interview time, rather than relying upon voluntary web based responses.

A structured interview question format was used as a starting point, but interviews were wide ranging in issues covered. Most interviews lasted from 20-30 minutes with the shortest and longest being 14 and 70 minutes respectively.

The question format was very similar to that used in 2011 with the addition of three overall satisfaction questions for NZTA and Council performance. These questions were in addition to more specific questions on satisfaction with a) reasonableness of processing time taken, b) reasonableness of decisions made and c) reasonableness of customer service.

A total of 23 respondents participated in the survey. The sample was designed to provide sufficient coverage of operator sizes and industry types to provide reasonable certainty that all important issues would be identified. The sample size was not designed to provide the basis for statistically valid inferences.

The respondents were in operation, management and ownership roles with significant responsibility for either permitting, or fleet management. One respondent was a manufacturer.

### **7.1.2 METHODOLOGY for discussions with government agencies**

Semi- structured one-to-one interviews were conducted with:

- NZTA staff from a range of regions.
  - Permitting staff – HM applications including – Transport Officers, and Permit Issuing Officers (both NZTA own staff and contracted).
  - Permitting staff – over length vehicles (Palmerston North).
  - Pavement staff – including consultants to the NZTA.
  - Structures staff – including consultants to the NZTA.
  - Compliance staff (Access & Use and officers with experience of RUC).
  - Staff (regional & national) facilitating Infrastructure investigations grants.
- Commercial Vehicle Inspection Unit of the NZ Police (CVIU).
- Ministry of Transport.

## **7.2 RESULTS: Telephone survey of operators**

Table 28 summarises the results of the 2013 HPMV operator survey. This table summarises responses on all issues discussed including: performance of the permitting system, suggested improvements to the permitting system and the costs, benefits and future barriers to uptake of the HPMV regime.

This section analyses operator feedback on the performance and suggested improvements to the permitting system (items 1-5 of Table 28). This indicates that operators have acceptable levels of overall satisfaction with NZTA's performance with regard to over length permitting. The NZTA's time taken, decisions made and customer service for OL permitting are also mostly very reasonable. This result is the same as in 2011. This reflects a process that is relatively straight forward compared with higher mass permits. Most OL permits are for pro-forma designs and only require checking compliance with this specification - taking around 20 minutes. No routes checks or liaison with RCAs are required.

NZTA's performance on higher mass permitting in comparison shows neutral satisfaction overall. Time taken is slightly unreasonable while reasonableness with decisions made and customer service are marginally on the positive side. This 2013 result is a slight improvement on operator perceptions of NZTA performance in 2011

In contrast to NZTA performance, operators' views of Council (RCA) performance remains as poor as it was in 2011. Time taken and customer service and overall satisfaction is considered mostly unacceptable. Quality of decisions made is considered mixed or neutral. This suggests that operators largely accept the outcomes of Councils' decision making, but the time taken and customer service along the way needs improvement.



**Table 28. Summary of phone-based survey of industry operators.**

| HPMV OPERATOR SURVEY – MAY-JULY 2013   |   |   |  |
|--|---|---|--|
| Question / issue   |   | Phone survey response (in-depth 30-60 mins)   |  |
| 1.   | <b>NZTA performance on INCREASED LENGTH permits</b>   |   |  |
|  | • Reasonableness of time taken  |   | Mostly very reasonable                     |
|  | • Reasonableness of decisions   |   | Mostly very reasonable                     |
|  | • Reasonableness of customer service  |   | Mostly very reasonable                     |
| <i>Over length permit process acceptable to customers. Some concern that goalposts keep changing. Again as in 2011, central processing in Palmerston North is working well from a customer perspective (Lisa Wamoana commended repeatedly).</i>  |   |   |  |
| <i>Overall satisfaction</i>  |   |   |  |
| 2.   | <b>NZTA performance on HIGHER MASS permits</b>  |   |  |
|  | • Reasonableness of time taken  |   | Somewhat unreasonable (slight improvement) |
|  | • Reasonableness of decisions   |   | Neutral to positive (slight improvement)   |
|  | • Reasonableness of customer service  |   | Neutral to positive (slight improvement)   |
| <i>Generally respondents appreciate the effort &amp; capability of NZTA staff, and progress is being looked forward to, such as 50Max. Some results may be affected by NZTA permitting officers having the relationship with Councils, on operator's behalf; very good relationships in Napier; interest in doing business there.</i>                            |   |   |  |
| <i>Overall satisfaction</i>  |   |   |  |
| 3.   | <b>Council performance for HIGHER MASS permits</b>  |   |  |
|  | • Reasonableness of time taken  |   | Mostly very unreasonable – same as 2011    |
|  | • Reasonableness of decisions   |   | Mixed / neutral                            |
|  | • Reasonableness of customer service  |   | Mostly very negative - worse than 2011     |
| <i>Extensive perception that Councils don't understand commercial business urgency (loss of contracts etc). Observation that they don't see transport activity as an important part of regional prosperity (jobs, goods to market, local infrastructure support). This generated by far the most 'discussion' in interviews. Overall satisfaction estimated.</i> |   |   |  |
| <i>Overall satisfaction</i>  |   |   |  |
| 4.   | <b>Suggested improvements – Councils &amp; NZTA</b>   | <b>Suggested improvements to the regime</b>   |  |
|  | <ul style="list-style-type: none"> <li>• Single permitting agent ('keep Councils out')</li> <li>• Simplify permitting process</li> <li>• Shorten approval times (no improvement from Councils)</li> <li>• More consistency between regions – level playing field</li> <li>• Improve structures / more routes</li> </ul> | <ul style="list-style-type: none"> <li>• RUC / cost of compliance</li> <li>• Education / accountability of Councils</li> <li>• Communications – especially link between HPMV &amp; NZ's/regional prosperity; availability of goods, jobs etc</li> </ul> |  |
| 5.   | <b>Areas working well - personnel</b>   | <b>Areas working well – regime</b>  |  |
|  | <ul style="list-style-type: none"> <li>• Napier</li> <li>• PNth central processing</li> </ul>   | <ul style="list-style-type: none"> <li>• Greater efficiency / productivity</li> <li>• Getting more value from assets (industry from vehicles; network from roads, bridges etc)</li> </ul>   |  |
| 6.   | <b>Actual benefits</b>  | <b>Disbenefits</b>  |  |
|  | Increased capacity, fewer trips, fewer ferry costs, more value in supply chain  | Ever changing policies & rules; wasted equipment/vehicle investment due to poor Council performance   |  |
| 7.   | <b>Potential benefits:</b> (Only with improvements to RUC system); more diverse range of customers; more value to customers.  |   |  |
| 8.   | <b>Actual decrease in travel to complete the same freight task:</b> Positive response in all categories (<10%, 11-20%, 21-30% and >40%) for both actual and expected gains. Some gains >40% 31-40%. Some anticipating 50Max and 23-25m policies.  |   |  |
| 9.   | <b>Main barriers to achieving full potential of HPMV system:</b> Route availability, RUC issues, Council understanding of business needed (all same as 2011) more collaboration amongst stakeholders; less issue around axle weight flexibility than in 2011  |   |  |
| 10.  | <b>Application costs:</b> Very wide ranging responses from 15 mins (online / all historical data to hand for renewals) to over 100 hours for new / complex permit (pleased with NZTA support however). New role in at least one company ('Permitting co-ordinator').  |   |  |
| 11.  | <b>Vehicle modification/capital costs:</b> Wide ranging – from \$150 (H card holder) to \$700k (whole fleet upgrade)  |   |  |
| 12.  | <b>Description of respondents:</b> Respondents from across most industry types/regions; reflective of application types. We are confident that we have surveyed sufficient numbers to include all important issues for operators.   |   |  |
| Key  | = Acceptable  | = Improving   | = Unacceptable                             |

**7.2.1 RESULTS: Operator recommendations**

Table 29 takes the key operator recommendations in 2013 for improvements to the HPMV permitting system as noted in Table 28. Our recommendations in response to these operator issues are noted in the right hand column. Appendix 5.2 lists issues raised by operators back in 2011 and progress made up to 2013 by NZTA with recommendations made.

Analysis of the 2011 and 2013 feedback from operators shows that the key issues were, and remain an improved permitting process and route availability. Significant progress has been made by NZTA on route availability for state highways, but local road access remains an issue. Action on the need for process improvements remains urgent.

**Table 29. Operator recommendations in 2013 for improvements to both OL and HM application processing.**

| Issues identified by operators  | Recommendation / NZTA response to date   |
|---|--|
| <ul style="list-style-type: none"> <li>• Single permitting agent ('keep Councils out')</li> <li>• Simplify permitting process</li> </ul>                                    | <ul style="list-style-type: none"> <li>• Improvements to the permitting process are recognised as urgent by the NZTA.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Shorten approval times (no improvement from Councils)</li> <li>• More consistency between regions – level playing field</li> </ul> | <ul style="list-style-type: none"> <li>• Standard operating procedures are now in place, but regional consistency remains a challenge.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Improve structures / more routes</li> </ul>  | <ul style="list-style-type: none"> <li>• NZTA is well advanced in making key routes ("investment routes") available.</li> <li>• Revised routes maps are imminent.</li> <li>• The key challenge is access to the last mile segments of local road.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Improve RUC / cost of compliance</li> </ul>  | <ul style="list-style-type: none"> <li>• RUC is now an incentive to HPMV uptake.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Education / accountability of Councils</li> </ul>  | <ul style="list-style-type: none"> <li>• A focus of improvements to the permitting process will need to be the local road component.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Communications – especially link between HPMV &amp; NZ's/regional prosperity; availability of goods, jobs etc</li> </ul>           | <ul style="list-style-type: none"> <li>• Improving the effectiveness of NZTA communications with Council is recommended.</li> </ul>  |

### **7.2.2 RESULTS: Elements identified by operators as working well**

When asked to list what was working well with the HPMV system, the discussion narrowed considerably to two key themes summarised in line 5 of Table 28. The first theme is some praise for the efforts of some NZTA regional offices understood to be achieving good results in a difficult environment. The second theme centred not upon the processing system, but the emerging wider benefits of the HPMV system in terms of improved asset efficiency and productivity.

### **7.2.3 RESULTS: Main barriers to uptake identified by operators**

Line 9 of Table 28 identifies the top three main barriers as being route availability, RUC issues and Council understanding. Other issues included a need for more collaboration among stakeholders and axle weight flexibility. These results continue to be very similar to the operator concerns expressed in 2011.

## **7.3 RESULTS: Truck and trailer manufacturers**

Semi structured interviews were conducted with three truck and trailer manufacturers.

Business is reported to have slowly ramped up since 2010, back to levels last seen prior to the global financial crisis in the late 2000s. An additional factor in the slow down in trailer builds in the late 2000s was the uncertainty over the provisions of the 2010 rule change.

Table 18 earlier in the report shows that trailer registrations increased strongly up to 2012, but plateaued in 2012/13.

One manufacturer reported that almost all new builds are now HPMV units and trailers are all greater than 8 metres.

Manufacturers often make permit applications on behalf of operators, and the manufacturers therefore echo many of the operator issues with the permit process. On the other hand the manufacturers also reported that many councils were reasonably cooperative.

## **7.4 RESULTS: Permit processing issues identified in 2011**

Feedback in 2013 from central government staff on HPMV permitting and other issues is contained in *Appendix 4*. The following sections summarise the key issues identified in discussions with NZTA and other central government officials on the performance of both the OL and HM permitting processes.

*Appendix 5* lists the feedback received back in 2011 and progress made on recommendations since that time. In summary the issues identified in 2011, and current status in 2013, are:

- *Focus on investment plans.* Good progress.
- *Communication of route availability and plans needs to be improved.* Maps completed, but slow to get these onto NZTA website.
- *Develop SOPs.* HPMV manual completed. Auditing of actual practice against standard procedures is now required.
- *PIO training needs analysis & training:* Needs analysis completed and some training initiated. Staff training remains a work in progress with training needs identified as part of the process to develop the HPMV manual.
- *Progress permit process improvements.* Process is still underway and delays expose NZTA to significant risks.
- *Improvements to enabling information systems.* Some changes have been made, but practical application of this tool is unreliable such that it can no longer be relied upon for timely management information. Process is stalled alongside wider permit process improvements.
- *Joint permitting with Councils.* While formal agreement for joint NZTA / Council permitting has only occurred in a limited number of cases, in most cases it appears to be that NZTA leads the permit process and functional relationships exist. Willingness in principle for on-behalf processing needs to be actioned.
- *Further engagement of local government.* Remains a critical requirement. The effectiveness of local government relationship building continues to require significant work. There are many in the local government sector that remain unconvinced of the net local benefits of HPMVs. This is an increasingly important requirement if the 50MAX initiative is to be accepted.
- *Axle weight flexibility.* Implemented.
- *Penalties Disproportionate to offence.* MOU signed Implemented and “Weigh Right” initiative underway.
- *Target strategic routes.* Route investigation process successfully completed and second tranche of route investigations now underway.
- *Peer review process.* Regional peer reviewers now in place.
- *Inconsistent vehicle data checks.* Independent certification now in place.
- *Use of ORS in the HPMV process.* Still a work in progress.
- *The impact of the RUC regime on HPMV takeup needs to be monitored.* RUC now provides a positive incentive for HPMV uptake.
- *Compliance Survey.* Completed annually for the MoT by the CVIU covering a random sample of 2000 heavy vehicles of all types nationwide. Now includes HPMVs.

### **7.5 OL permit processing issues 2013**

Permit applications for pro-forma over length designs from all regions in New Zealand are centrally processed at the Palmerston North registry centre. There is a team of one permit processing officer plus a backup person. While some applications are received in the regions in the first instance and forwarded to Palmerston North, 80-90% of applications are sent direct. 60-70% of these are received as smart forms.

Introduction of independent vehicle certification since 2011 has reduced processing requirements. However the amount of paper work received with each application has increased from a single page to around 5 pages. Therefore processing time required remains at around 20 minutes.

The OL permitting process for pro-forma designs continue to work well – to the extent that it is understood NZTA is considering ways to allow these vehicles as of right. Councils spoken to however continue to be concerned about the general access provided to local roads for these vehicles.

The implementation of a draft 23-25m policy has provided clarification and may at least in part satisfy operator concerns that the specification of permitted vehicles is uncertain.

The material issue identified in this area is the input of applications into the Applications database tool is done on a batch basis and can be around one month delayed due to resource constraints. ***For this reason, the applications database tool cannot be relied upon for timely management information regarding work volumes in the system.*** Auditing of PIO actual practice against standard operating procedures is now required.

Less than 10% of over length applications are estimated by NZTA staff to be for non-pro-forma designs. These are forwarded to Technical Support in NZTA head office for processing. This process for non –pro-forma vehicles continues to create issues for operators, but no concerns were raised by government staff.

*Appendix 5.3* notes that all recommendations made in 2011 have been addressed excepting concerns with the database and systems supporting the process. There have been ongoing enhancements, but NZTA recognise that the applications database, implemented as an interim solution, is now obsolete.

## **7.6 RESULTS: HM permit processing issues 2013**

The following section analyses recent processing performance data and reports on discussions with NZTA and other central government officials on the performance of the HM permitting process. Unlike centralised OL processing, HM processing is conducted regionally through either NZTA or contract staff.

### **7.6.1 Analysis of HM permit processing performance data.**

The 2011 MER with respect to customer feedback on the HM permitting process concluded *“A mixed start for HM permitting, which is a more onerous, process and less likely to be successful because of bridge restrictions. Generally respondents appreciate the effort & capability of NZTA staff, but there is room for significant improvement.* The main concern at that stage was the perceived unreasonableness of time taken to process permits. Overall customer service by NZTA staff was neutral to positive however.

The HM permitting process performance appeared to be stable in the 2011 - 2012 period, assisted by reasonably constant levels of demand. Process improvement initiatives included:

- Transfer of HPMV reporting to regions using a templated approach.
- Smart forms for data entry to reduce keying errors.
- HPMV permitting manual developed and placed online.
- Development of KPIs for: application processing times, local road approvals greater than 90 days, number of declined permits and number of overdue tasks.

In January 2013 the status of permitting in the upper north island reached a crisis point with permits taking 75-90 days to process. This performance decline was driven by:

- A spike in demand in Auckland/Waikato/BOP from 1.4 in early 2012 to 4.7 per day by late 2012. Applications continued to climb and have been reported to average 7 per day since April 2013.
- PIO staff changes.
- Limited resources.
- Duplication of effort when permits cross multiple regions.
- Delayed batch input of permits to the Application database meaning that service declines were not visible to management.

The immediate management response was to extend of HPMV permits to two years from 7 January 2013 and to redirect an existing NZTA *Permit Process Design Team* to focus on stabilising processing performance. This project team has been in existence since late 2012 with a goal of designing a permitting system that recognises customer needs. This team undertook the more immediate task of stabilising processing performance. Actions included: manual reporting, correct capture of process start and end dates and creation of further processing standards.

The May 2013 report to the VDM steering group recognised the ***significant risk of lost reputation and not meeting industry expectations if the NZTA cannot demonstrate a clear vision and delivery on all business improvement aspects for permitting heavy vehicles.***<sup>13</sup>

By May 2013 permit lead times had stabilised at 42-56 days and WIP had decreased by 27% since February 2013. The longer-term solutions to permit processing problems include:

- Progression of the work of the Permit Process Design Team already underway.
- Accelerated progression of exceptional permits to head office.
- National Office ownership of permitting and removal of delays in finalising the HPMV permit process design hampering standardised training of PIOs.

The 50Max initiative could provide some relief to permitting bottlenecks if the industry sees 50 tonnes with general access as more attractive than full HPMV loadings up to 62 tonnes but on specific permitted routes only. This cannot be relied upon however in the short term.

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<sup>13</sup> Para 25, Report to VDM Steering Group 13 May 2013.

## 7.6.2 HM permit issues identified by central government staff

Government staff's view of the overall effectiveness of NZTA permit process is considered to be on the positive side of neutral. In contrast, government's staff' view of local government's effectiveness is on the negative side of neutral. A summary of central government staff feedback in 2013 on the HPMV system is contained in Appendix 5.3. The key themes are:

- Stalling of the permitting process improvement programme is disappointing and action is required urgently. NZTA staff report that customer see the process as their greatest fear.
- The standard operating procedures (HPMV manual) has been useful, however this standardised existing procedures. Further steps are required to streamline the process and to provide enabling systems delivering timely management information.
- Good progress is reported in terms of state high availability through the investment route programme.
- The local road last mile of investment and other routes will however continue to be the largest challenge.
- Compliance issues – for which the Weigh right initiative is an intended solution.
- 50MAX is strongly supported.

## 7.7 Discussion of organisational arrangements

Provision of HPMV capable infrastructure and permitting is a complex set of functions that span across almost all NZTA business groups. Appendix 6 provides a simplified diagram of these relationships. There are serious risks arising from the cumulative impacts of the following features of current arrangements

- There is no single manager within NZTA with the necessary authority to manage the HPMV business.
- Governance is with a committee.
- Permitting operations are spread across two business groups with activity at both national and regional offices.
- Regional office functions are variously inhouse or outsourced.
- Supporting technology to provide management oversight of HPMV permitting does not provide reliable or timely data.

Recommendations on NZTA permitting processes:

- Continue to develop and report KPIs for the permitting process and ensure management structures and systems are in place to ensure their reliability.
- The need for fundamental permit process improvements is urgent.
- Audit actual PIO practice against HPMV manual standard operating procedures

### ***7.8 Potential barriers to uptake of OL permits***

There continues to be few, if any, barriers to uptake of pro-forma OL permits. As in 2011, there continues to be uncertainty over the acceptable parameters for non-standard OL applications and also uncertainty over the future policy on pro-forma designs and length. The draft 23-25m length policy is expected to assist to resolve these concerns.



## **7.9 Potential barriers to uptake: Route availability**

Significant progress has been made since 2011 with the investigation of HPMV investment routes and to a lesser extent their public notification.

In May 2010, the NZTA Board approved provision of \$14.5 million in each of the 2010/11 and 2011/12 years for 100% FAR support for route investigations. Each region ran a collaborative process facilitated by NZTA regional officers and including RCAs. This process is now largely complete. The quality of relationships with RCAs appears to have been largely positive – although some RCA officers have indicated the need for continued improvement of communications and RCA engagement on route issues

Reporting measures, while somewhat out of date as at end of April 2013 provide a useful tool for measuring state highway availability. Local road availability continues to be an often-voiced concern of operators. Measures to report availability of local roads would be useful to gauge progress in this area – accepting that this is an area that NZTA can only influence rather than directly control.

It is understood that a second (but expected small) tranche of investment routes will be investigated in the second half of 2013 (VDM steering Group report 13 May 2013).

The 2011 MER noted that for HM permits, the most commonly raised barrier to uptake by operators is network availability, almost always relating to bridge mass restrictions. Local road availability was a particular issue. The NZTA response was to target investigation of key routes defined as those with tonnages exceeding 100,000 tonnes per annum. 38 HPMV routes were identified in November 2011.<sup>14</sup> These routes originally comprised 3,963 kilometres of State Highway and 864 kilometres of local road. Potential bridge restrictions were identified on 80 structures with estimated state highway costs of \$44 million and local road costs of \$10 million.

The NZTA Board approved 4,527 kilometres of HPMV investment routes out of a total state highway network of 10,096 kilometres for the 2012-15 NLTP. The NZTA board approved an upper bound spend of \$32million for State Highways and \$13m for local roads (TOR for LNI workshops 5/12/12). This investment is focused on bridges only, with little or no intention by NZTA to invest in pavement strengthening which has very high costs.

In 2012 a Bridge Improvement Programme (BIP) was established for HPMV enabling investment in both state highway and local authority bridges. This programme aims to confirm the economic and structural feasibility of routes and estimate strengthening costs where required. The programme is broken down into Upper North Island, Lower North Island and South Island components.

NZTA Regional Planning and Investment teams have been asked to lead discussions with local authorities to ensure the last mile of investment is incorporated in regional land transport plans (RLTP).

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<sup>14</sup> Memorandum dated 22 November 2011 to VDM Steering Group from VDM Implementation Project Manager.

Table 30 shows that at the 30 April 2013 end point for this review, the most current route availability data was as at September 2012<sup>15</sup>. At this time, 298 km of the total 4,527 strategic freight network (State Highway + Local Road) had been enabled to full HPMV loadings through the Bridge Improvement Programme. Other data for September 2012 indicated that state highway routes permitted for some unspecified level of HPMV higher mass (not full HPMV higher mass) totalled 4,061 kilometres and 610 kilometres of local roads.

**Table 30. Summary of Bridge Improvement Programme progress data. Latest available data (variable dates) as at June 2013.**

|  | Upper North Island | Lower North Island | South Island | NZ Total           |
|--|--------------------|--------------------|--------------|--------------------|
| <b>a) STATE HIGHWAYS</b>   |                    |                    |              |                    |
| <b>(i) State highway bridges</b>   |                    |                    |              |                    |
| Total State Highway bridges on all routes (investment routes and other routes)   |                    |                    |              | 4,000              |
| Bridge improvement programme – investment routes only.   |                    |                    |              |                    |
| State Highway Bridges identified for <u>potential</u> strengthening:   | 53                 | 59                 | WIP          |                    |
| Bridges confirmed as OK following reassessment   | 27                 | 25                 | WIP          |                    |
| Bridges confirmed as definitely requiring strengthening:   | 26                 | 31                 | WIP          |                    |
| Estimated costs for strengthening SH bridges:  | \$12.4m            |                    |              |                    |
| Investigation costs (external) to date   | \$380k             |                    |              |                    |
| <b>(ii) State Highway route length</b>   |                    |                    |              |                    |
| Total State Highway length   |                    |                    |              | 10,096 km          |
| State Highway <i>investment route</i> length available at <u>full</u> HPMV loadings reported to end April 2013.  |                    |                    |              | 298 km (Sept/12)   |
| State Highway route length (investment routes PLUS other routes) enabled by permitting at <u>some level of</u> HPMV loading reported to end April 2013 |                    |                    |              | 4,061 km (Sept 12) |
| <b>b) LOCAL ROADS</b>  |                    |                    |              |                    |
| <b>(i) Local road bridges</b>  |                    |                    |              |                    |
| Total local road bridges   |                    |                    |              | 9,000              |
| Local road bridges on investment routes  |                    |                    |              | unknown            |
| Local road bridges available at full HPMV loadings   |                    |                    |              | unknown            |
| <b>(ii) Local road route length</b>  |                    |                    |              |                    |
| Total local road length  |                    |                    |              | unknown            |
| Local road investment route length   |                    |                    |              | unknown            |
| Local road <i>investment route</i> length available at <u>full</u> HPMV loadings reported to end April 2013.   |                    |                    |              | unknown            |
| Local road route length (investment routes PLUS other routes) enabled by permitting at <u>some level of</u> HPMV loading reported to end April 2013    |                    |                    |              | 610 km             |
| Total investment route length - State Highway + Local road   |                    |                    |              | 4,527 km           |

<sup>15</sup> HNO KPIs reported in February 2013.

Existing KPIs reporting length of state highway investment routes available at full HPMV loadings should be extended to identify progress with the local road component of investment routes.

### **7.9.1 Route availability: Limited HPMV**

In 2011 guidance maps were enhanced to show the additional routes that could be available at combined vehicle mass of two to three tonnes (varies depending upon first to last axles spacing) less than a full HPMV mass. The thinking was to communicate the realistic route availability with the view that even a small increase in payload could be attractive to some operators. It is unclear whether this information on “limited HPMV routes has been found useful by operators.

### **7.9.2 Route availability: Awareness**

The agency has published two sets of summary maps on its website

- a) Guidance maps. These show network capability for full and limited HPMV permits. The maps show the location of potentially constraining bridges that a) have capacity for between Class One and limited HPMV loads, and b) Those bridges that have capacity for at least limited HPMV loads, but less than full HPMV loads. These guidance maps were last updated on the NZTA website in mid 2012 and are scheduled for re-publication with the results of recent bridge programme improvement results in 2013.
- b) Maps showing HPMV Route investment for the 2012-2015 NLTP. These maps were last updated in November 2011. Current thinking on investment routes has developed significantly since 2011 and these maps therefore need to be updated.

We reported in 2011 that potential barriers to uptake, in addition to route availability, also included: axle weight flexibility, permit conditions and enforcement. The current status of these and any other barriers to uptake are discussed in the sections below.

### **7.10 Potential barriers to uptake: RUC**

The 2011 HPMV MER reported operator concerns about the impact of RUC. It was claimed that increase in RUC charges if an operator moved from 44 tonne general access operation to the higher HPMV loads reduced the attractiveness of an HPMV permit. RUC changes in August 2012 have shifted RUC from a marginally negative, to a positive factor in decisions to take up an HPMV permit.

The structure of RUC charges changed significantly in August 2012 and provided a further financial incentive for HPMV uptake. The August 2012 adjustments introduced RUC in 5 tonne bands with RUC calculated in the middle of the band. This meant that moving from 44 tonne Class One operation to higher HPMV weights can result in substantially less RUC per payload tonne provided vehicle operating weights are at the top of the RUC band range and axle numbers are optimised (at least 9 axles compared with 8 axles at 44 tonnes).

Table 31 shows how in May 2011, RUC on an 8-axle rigid truck and trailer (22 tonnes on each unit) would increase 45% from \$0.49 per kilometre to \$0.70 per kilometre operated at 50 tonnes (3 additional tonnes on each of truck and trailer). Payload productivity in comparison would increase by 25 % resulting in RUC per payload tonne increasing by 16%. In 2011 we concluded that while this increase in RUC did not help to incentivise HPMV uptake, it was probably not an insurmountable barrier.

Table 31 also shows a RUC scenario under the August 2012 RUC regime. By moving to 48 tonne operation and increasing from eight to nine axles, RUC per payload tonne could decrease by 17%. This is a material cost saving and was at least one of the probable causes of an increase in HPMV applications starting in late 2012.

**Table 31. RUC scenarios at 44 tonnes and higher HPMV weights 2011 and 2012.**

| Colour highlighted percentages note the change in RUC / payload tonne / 1000 km relative to a 44 tonne alternative |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
|--|-----------------|------------------|--------------|----------|--------------|------------------------------|--------------|--------------------|--------------|------------------------------|--------------|--------------|-----------------|------------------------------|--------------|----------|---------------|------------------------------|
| a) May 2011  |                 | 44 Tonne         |              |          |              |                              |              | 50 Tonne           |              |                              |              |              |                 |                              |              |          |               |                              |
|  | Tare weight (T) | Gross weight (T) | Pay load (T) | RUC Type | RUC/ 1000 km | RUC/ payload tonne / 1000 km | Pay load (T) | RUC Type           | RUC/ 1000 km | RUC/ payload tonne / 1000 km | Pay load (T) | RUC Type     | RUC/ 1000 km    | RUC/ payload tonne / 1000 km | Pay load (T) | RUC Type | RUC/ 1000 km  | RUC/ payload tonne / 1000 km |
| <b>(i) 7 axle rigid truck &amp; trailer</b>  |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| 3 axle truck   | 11              |                  |              | 6        | \$396        |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| 4 axle trailer   | 8               |                  |              | 43       | \$241        |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| <b>Total</b>   | <b>19</b>       | <b>44</b>        | <b>25</b>    |          | <b>\$637</b> | <b>\$ 25.47</b>              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| <b>(ii) 8 axle rigid truck &amp; trailer</b>   |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| 4 axle truck   | 12              |                  |              | 14       | \$297        |                              |              |                    |              | 14                           |              | \$432        |                 |                              |              |          |               |                              |
| 4 axle trailer   | 8               |                  |              | 43       | \$188        |                              |              |                    |              | 43                           |              | \$272        |                 |                              |              |          |               |                              |
| <b>Total</b>   | <b>20</b>       | <b>44</b>        | <b>24</b>    |          | <b>\$485</b> | <b>\$ 20.22</b>              |              |                    |              | <b>30</b>                    |              | <b>\$704</b> | <b>\$ 23.48</b> | <b>16%</b>                   |              |          |               |                              |
| <b>(iii) 9 axle rigid truck &amp; trailer</b>  |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| 4 axle truck   | 12              |                  |              |          |              |                              |              |                    |              |                              |              | \$337        |                 |                              |              |          |               |                              |
| 5 axle trailer   | 9               |                  |              |          |              |                              |              |                    |              |                              |              | \$211        |                 |                              |              |          |               |                              |
| <b>Total</b>   | <b>21</b>       |                  |              |          |              |                              |              |                    |              | <b>29</b>                    |              | <b>\$548</b> | <b>\$ 18.88</b> | <b>-7%</b>                   |              |          |               |                              |
| <b>b) August 2012</b>  |                 | <b>44 Tonne</b>  |              |          |              |                              |              | <b>44-48 Tonne</b> |              |                              |              |              |                 | <b>48-53 Tonne</b>           |              |          |               |                              |
| <b>(i) 7 axle rigid truck &amp; trailer</b>  |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| 3 axle truck   | 11              |                  |              | 6        | \$353        |                              |              |                    |              | H71                          | \$571        |              |                 |                              |              |          |               |                              |
| 4 axle trailer   | 8               |                  |              | 43       | \$194        |                              |              |                    |              | 43                           | \$194        |              |                 |                              |              |          |               |                              |
| <b>Total</b>   | <b>19</b>       | <b>44</b>        | <b>25</b>    |          | <b>\$547</b> | <b>\$ 21.88</b>              | <b>29</b>    |                    | <b>\$765</b> | <b>\$ 26.38</b>              |              |              |                 | <b>21%</b>                   |              |          |               |                              |
| <b>(ii) 8 axle rigid truck &amp; trailer</b>   |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| 4 axle truck   | 12              |                  |              | 408      | \$295        |                              |              |                    |              | H81                          | \$394        |              |                 |                              |              |          |               |                              |
| 4 axle trailer   | 8               |                  |              | 43       | \$194        |                              |              |                    |              | 43                           | \$194        |              |                 |                              |              |          |               |                              |
| <b>Total</b>   | <b>20</b>       | <b>44</b>        | <b>24</b>    |          | <b>\$489</b> | <b>\$ 20.38</b>              | <b>28</b>    |                    | <b>\$588</b> | <b>\$ 21.00</b>              |              |              |                 | <b>3%</b>                    | <b>33</b>    |          | <b>\$ 764</b> | <b>\$ 23.15</b>              |
| <b>(iii) 9 axle rigid truck &amp; trailer</b>  |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               |                              |
| 4 axle truck   | 12              |                  |              |          |              |                              |              |                    |              | H94                          | \$308        |              |                 |                              |              |          |               |                              |
| 5 axle trailer   | 9               |                  |              |          |              |                              |              |                    |              | 951                          | \$146        |              |                 |                              |              |          |               |                              |
| <b>Total</b>   | <b>21</b>       |                  |              |          |              |                              | <b>27</b>    |                    | <b>\$454</b> | <b>\$ 16.81</b>              |              |              |                 | <b>-17%</b>                  | <b>32</b>    |          | <b>\$ 566</b> | <b>\$ 17.69</b>              |
|  |                 |                  |              |          |              |                              |              |                    |              |                              |              |              |                 |                              |              |          |               | <b>-13%</b>                  |

Typical loading more on trailer (advice from Jonathan Peterson) Say 20T Truck / 24 T trailer.

Source: data from Jonathan Petterson 5/8/13

**7.11 Potential barriers to uptake: Enforcement**

The 2011 MER noted significant issues raised by operators with respect to the penalty being out of proportion to offences for exceeding HPMV permit conditions.

Since 2011 axle weight flexibility provisions have been implemented and a MOU clarifying enforcement policy has been signed between CVIU, MOT and industry.

The 2013 survey of operators did not appear to indicate the same strength of concern over enforcement and compliance as a barrier to uptake.

**7.12 Potential barriers to uptake: Compliance issues**

The Commercial Vehicles Investigation Unit (CVIU) is the primary means of enforcing HPMV permit conditions. CVIU enforcement is almost totally on state highways. The HPMV manual provides for auditing of operator compliance, but we are unaware that any audits have been completed.

Since 2011 permit conditions have been simplified to exclude any specifications covered by other legislation. This avoids breaching of permits and large fines for what might otherwise have been a relatively minor offence for a Class One vehicle.

The Memorandum of Understanding on enforcement policy signed in 2012 between CVIU, MOT and NZTA has provided clarity and certainty for operators. This approach could however be criticised in the courts and in the long term fundamental law change is probably required.

HPMV signage is no longer required for pro-forma over length vehicles with general access. Some operators are understood to be continuing to display "H" signage which does not help the CVIU in determining which vehicles were true HPMV's.

A requirement for four or five star ORS for HPMV permits is supported by many officials for incentivising wise choices - e.g. no permit where RUC is owing.

The Heavy Motor Vehicle Compliance Measure operation is an annual random survey by the CVIU for the MOT of heavy vehicle compliance. The survey has included HPMVs since 2012. Compliance data in Table 32 indicates that HPMVs stopped in 2012 were significantly less compliant than other heavy vehicles. HPMVs stopped in 2013 were approximately as compliant as the general heavy vehicle sector.

**Table 32 Results of Heavy Motor Vehicle Compliance Measure operation 2012 and 2013.**

|  | 2012  | 2013  |
|--|---|---|
| Percent of all heavy vehicle combinations stopped where at least one offence was detected. | 59%   | 58%   |
| Percent of HPMV combinations stopped where at least one offence was detected HPMVs.        | 83%<br>10/12                                  | 53%<br>22/41 stopped                            |
| HPMV Offence types   | 3 logbook, 6 COF, 6 RUC,<br>3 limits, 2 other | 4 logbook, 7 COF, 3 RUC,<br>10 limits. 11 other |

### **7.13 Impact on RUC receipts to government**

In 2011 we concluded that for the same freight task, overall RUC receipts would increase marginally for HM vehicles and decrease marginally for OL vehicles.

Table 31 shows that following changes to the RUC regime in August 2012, the RUC receipts per payload tonne decrease by as much as 17% at 48 tonnes GVM and 13% at 53 tonnes GVM.

RUC receipts on the freight task serviced by over length vehicles could therefore decline as a result of the payload efficiencies. Discussions with MOT officers overseeing the RUC regime do not indicate concerns with this scenario. We note however that over time the HPMV regime could contribute to erosion of the revenue base.

### **7.14 Media scan**

A scan of transport industry and general media in the period 1 May 2011 to 30 April 2013 was undertaken. Transport industry media coverage of HPMV has tended to be positive with some negative discussion of route restrictions and speed of permit processing. General media coverage has also contained a mix of positive (economic gains) and negative issues. An important point however is that the negative discussion of issues such as road wear and safety concerns has addressed heavy vehicles in general and has not singled out HPMVs.

## 8.0 Local government issues

### 8.1 *Methodology for investigation of RCA issues*

A structured telephone survey was completed with an expert selected sample of Councils using criteria comprising: nationwide coverage, Council size and function (large metropolitan and provincial cities as well as smaller rural authorities), coverage of the nationally significant economic area of the Auckland/Waikato/Bay of Plenty regions and Councils known to have expressed particular concerns with regard to HPMVs.

The sample of 12 entities comprised: Local Government New Zealand, Auckland Transport, and Marlborough Roads, and the following territorial authorities: Hamilton, Matamata-Piako, Waipa, Rotorua, Napier, South Wairarapa, Tasman, Southland and Invercargill.

Local Government New Zealand (LGNZ) was also consulted early in the project and they provided feedback on a draft of the report.

Information on RCA issues and performance was also sourced from the discussions with operators and central government officials.

### 8.2 *Key themes arising from telephone survey of RCAs*

The key themes for RCAs in 2013 are ongoing concerns over issues raised in the first MER in 2011 when it was recommended that -

- The NZTA increase its efforts in developing the evidence base on the actual impact of HPMVs on infrastructure and communicate this to RCAs.
- The NZTA clarify the availability of HPMV route development funding and increase communications on this issue.

The empirical evidence base for impact of HPMVs compared with the counter factual situation of the same freight task serviced by class one vehicles is still not expected for some years.

RCAs spoken to have considerable uncertainty over infrastructure impacts on local roads of poorer quality compared with state highways. This, combined with concerns over availability of NZTA funds if negative impacts eventuate, is resulting in a cautious approach to route availability being taken by RCAs

In 2013 RCAs in general see effectiveness of permitting processes for both the state highway and local roads as being slightly better than neutral on a five-point scale from very poor to very good. This is the reverse of the operator view.

Opinion appeared to be split strongly in either support or opposition to the proposed further general access for 50-MAX vehicles. NZTA officers however report increasing support for this initiative.



Further RCA relationship building, data gathering and monitoring of impacts by NZTA are recommended.

### **8.3 RCAs' view of what is working**

The range of views on what is working from RCA staff spoken to include -

- Collaborative approach between NZTA, RCAs and industry – although there are some gaps.
- NZTA staff and consultants appear in most cases to have positive relationships with RCAs.
- RCA Officers are often supportive of the HPMV concept, but Councillors are concerned about the infrastructure and cost risks.
- Substantial work has been completed on infrastructure investigations.
- Roads are slowly opening up.
- Infrastructure improvement programmes are in place, but funding remains constrained.
- NZTA permitting on behalf of Councils working well.
- Councils appear in most cases to be open in principle to entering data into OPermit.
- Benefits to operators are accepted, but benefits to councils are questioned.

### **8.4 RCAs' view of what is not working**

The range of views on what is not working from RCA staff spoken to include -

- There continues to be considerable uncertainty over infrastructure impacts on local roads of poorer quality compared with state highways.
- There are serious concerns over the availability of, and funding assistance ratio for, NZTA funds if negative impacts eventuate.
- A very cautious approach is therefore being taken with last mile connections only being considered. There are reports that routes where there are state highway alternatives to local roads are routinely rejected.
- RCAs want data and monitoring of infrastructure impacts.
- Over length HPMV activity that Councils don't know about are thought to create risks of infrastructure damage and safety issues for other road users.
- Many RCAs say they need to regain control of over length HPMV permits.
- Many RCAs are not convinced 50MAX will have neutral infrastructure impacts and half of respondents are strongly opposed.
- While most operators are considered to be of reasonable quality, assurance on compliance is considered to be poor. CVIU are stretched and H plates are considered no use for enforcement.
- While permitting processes are working well overall from an RCA perspective they still need streamlining. Centralisation of permitting is supported by some, but retention of local knowledge is needed.
- Some RCAs report they were not sufficiently involved in design of permitting process and on the axle weight & loading group.
- Incomplete information is collected for RCA purposes. (eg: precise location of origin or destination).
- No relationship with CVIU.
- Application processing fees are insufficient.

### ***8.5 Views on RCA performance from other parties***

Operator perceptions in 2013 of RCA performance remain as poor, if not worse than, the unacceptable views received in 2011.

In 2011 we reported that operators and officials saw most of the HPMV challenges centering upon RCAs and their part in route availability. Knowledge of the funding of route development was unclear to RCAs and their knowledge of their infrastructure condition and capability was thought to be limited. Many respondents thought NZTA needed to develop greater traction through the Regional Directors.

Table 28 reports an overall operator perception of RCA performance as “unacceptable. Time taken for permitting was considered unacceptable, the reasonableness of decisions was mixed to neutral and the reasonableness of customer service was most very negative – which was a worse result than in 2011. By far the most ‘discussion’ in interviews with operators was the perception that Councils don’t understand commercial business urgency (loss of contracts etc). It was observed that RCAs don’t see transport activity as an important part of regional prosperity in terms of jobs, goods to market and local infrastructure support.

### ***8.6 LGNZ views***

LGNZ have indicated that in the main they support the findings of this report. Their greatest concern is that sufficient funds may not be forthcoming from NZTA in the event of extensive unanticipated infrastructure damage. While NZTA believe the likelihood of this risk eventuating is low, LGNZ would like to see an increased financial assistance rate apply to any extensive damage, in a similar manner to flood damage funding. LGNZ would also like to see a review of the thresholds for investment route funding.

## **9.0 Conclusion**

HPMV benefits in terms of operator cost savings flowing through to GDP growth are in line with expectations at the time of the rule change in 2010.

The NZTA has made good progress with addressing state highway infrastructure constraints.

Systems for the effective management of HPMV permitting and data are in very poor condition. This poses significant risks to the NZTA and needs to be addressed urgently.

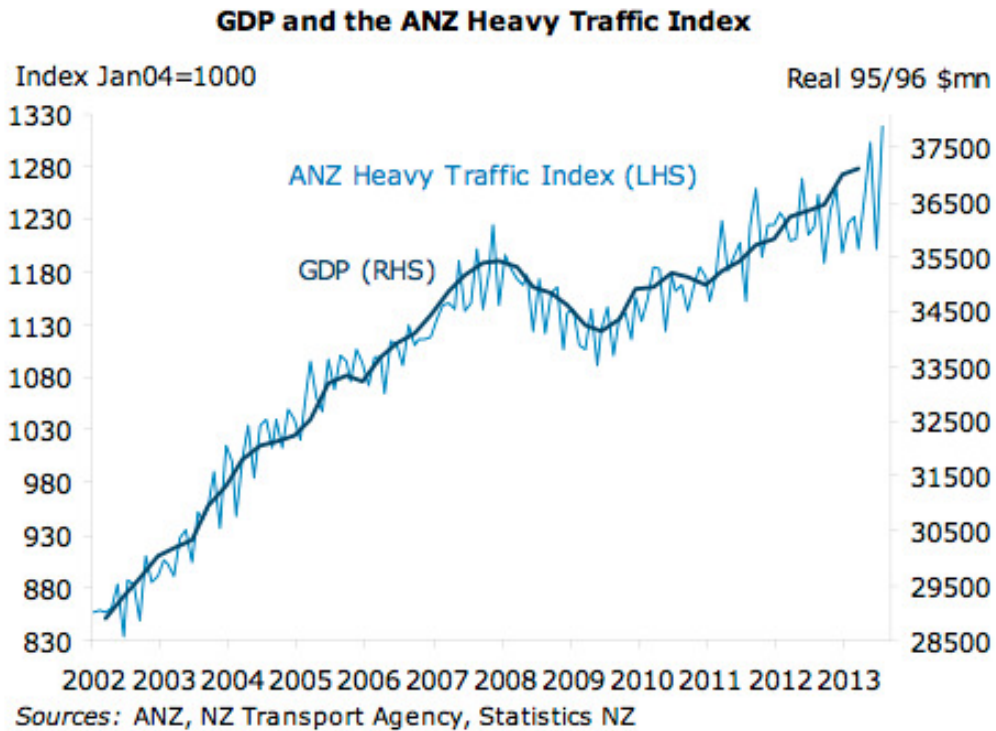
The major challenge is for the NZTA to secure wide spread Council support for improved provision of local road access for HPMVs.

## **Appendices**

## **Appendix 1: Terms of Reference**

## Appendix 2. The economic context for HPMV uptake

The wider economic context for uptake of HPMVs over the period May 2010 to April 2013 is one of resurgence of GDP and heavy transport activity after the global economic crisis of the late 2000s. ANZ research in Table x shows this close relationship between GDP and heavy vehicle traffic counts.



This ANZ research covers all heavy vehicles greater than 3.5 tonnes. This ME&R is focused upon the nature of transport activity in the higher mass end of the heavy vehicle spectrum. This covers vehicles at, or above, 44 tonnes gross vehicle mass (GVM). Vehicles with these levels of Gross Vehicle Mass typically have seven or more axles.

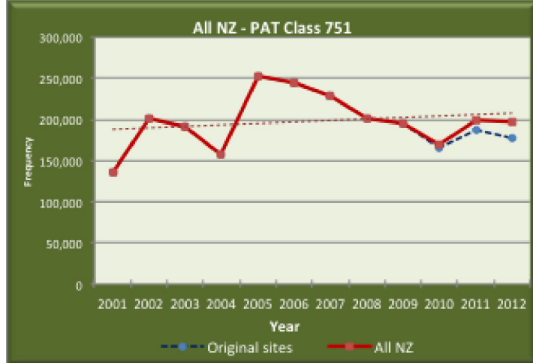
This indicator is for sites that appear to be correlated with GDP trends. It may not necessarily be the case that these trends align with overall “heavy” heavy truck travel.

### **Appendix 3. Weigh in motion (WIM) data 2001 - 2012**

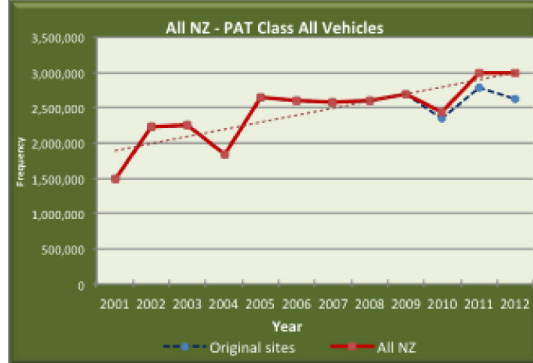
- a) Heavy vehicle counts – all WIM sites.
- b) Average estimate gross mass per vehicle – all WIM sites.
- c) Average estimated gross mass per overweight vehicle – all WIM sites.

**Appendix 3.1 Heavy vehicle counts – all WIM sites**

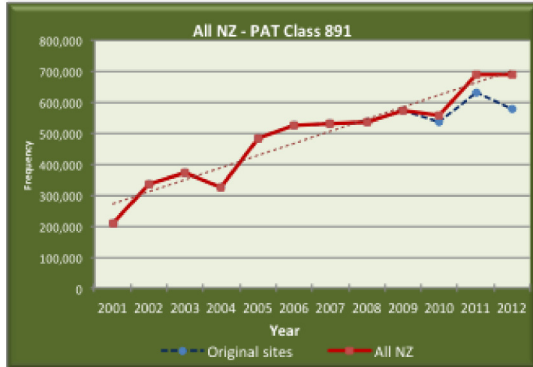
7 axle Truck & Trailer



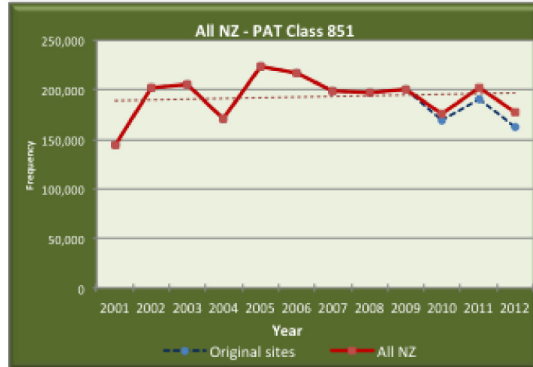
All heavy vehicles



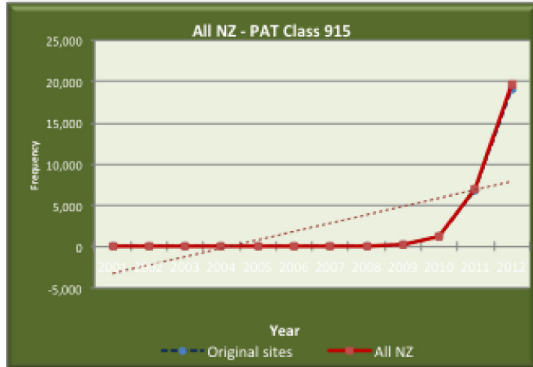
8 axle Truck & Trailer



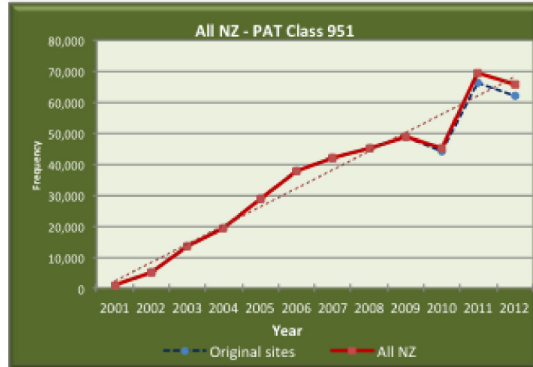
8 axle B-Train



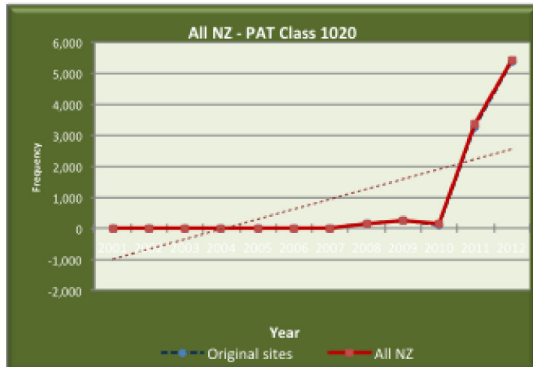
9 axle Truck & Trailer



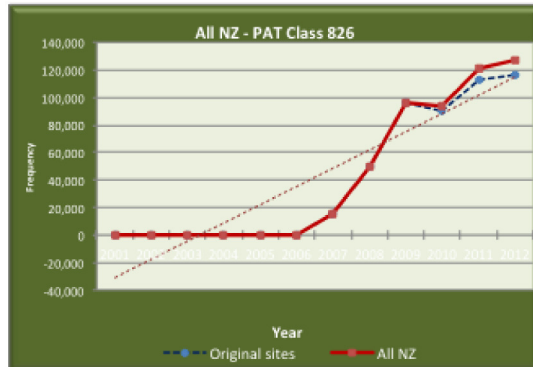
9 axle B-Train



10 axle Truck & Trailer

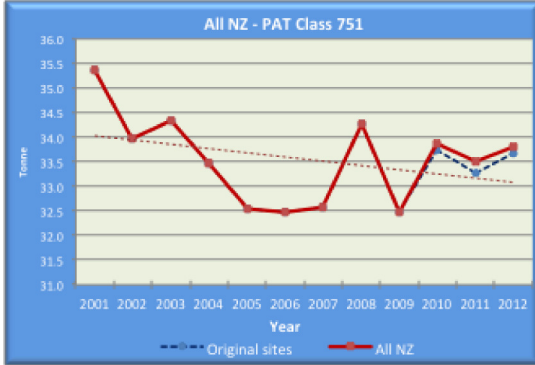


8 axle Articulated Truck & Trailer

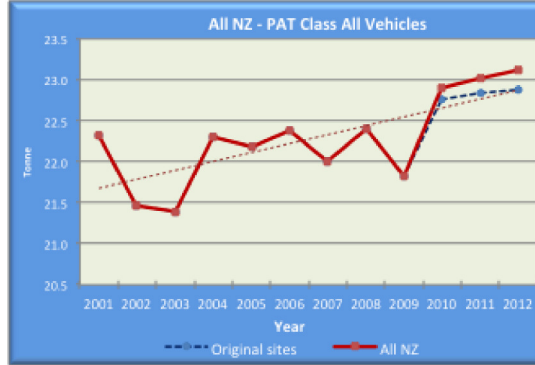


**Appendix 3.2. Average Gross Vehicle Mass per vehicle – all sites**

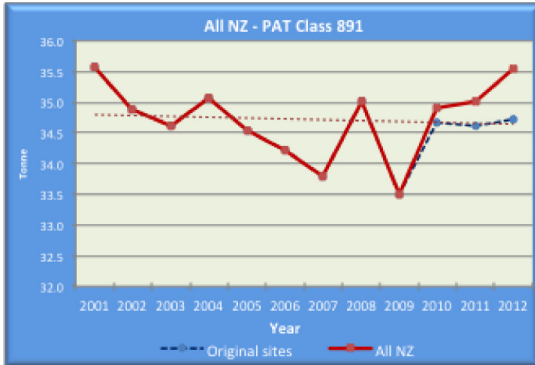
7 axle Truck & Trailer



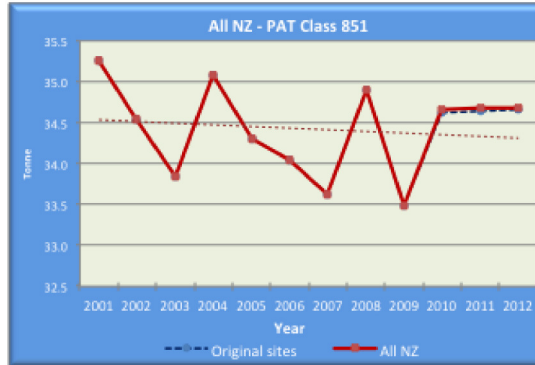
All heavy vehicles



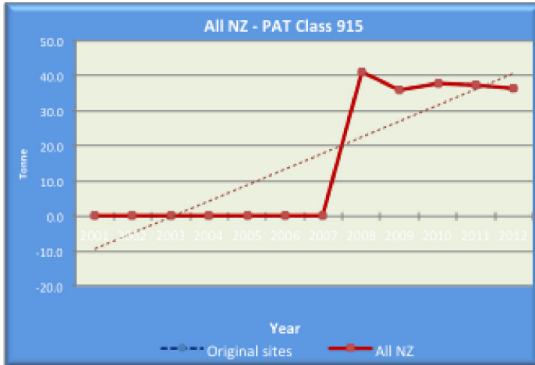
8 axle Truck & Trailer



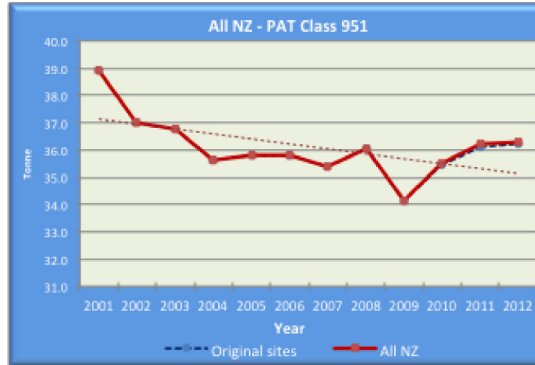
8 axle B-Train



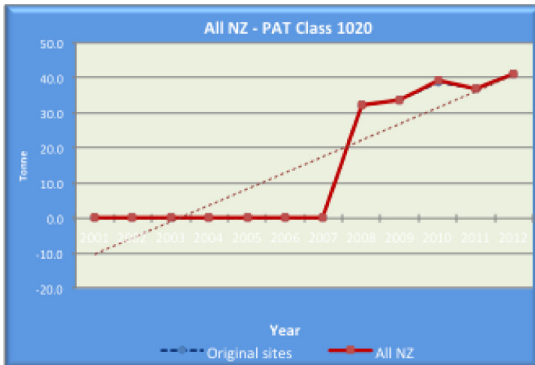
9 axle Truck & Trailer



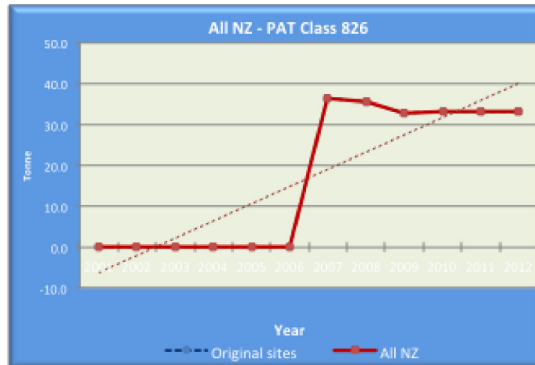
9 axle B-Train



10 axle Truck & Trailer



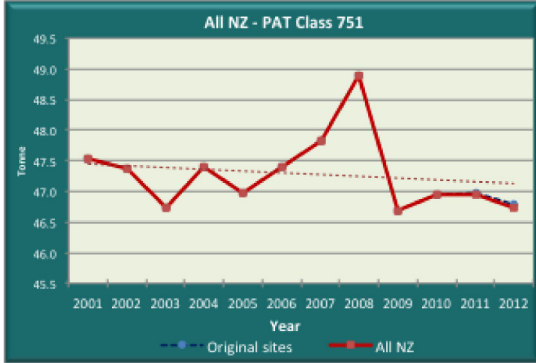
8 axle Articulated Truck & Trailer



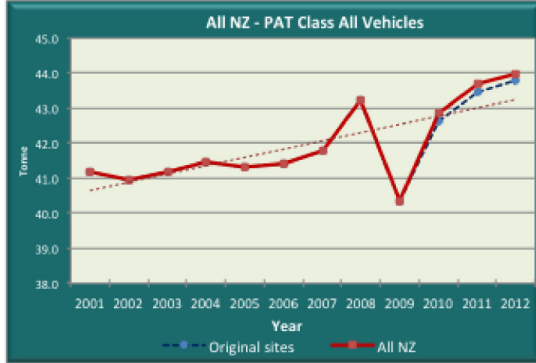


**Appendix 3.3 Average Gross Mass per Overweight Vehicle – all sites**

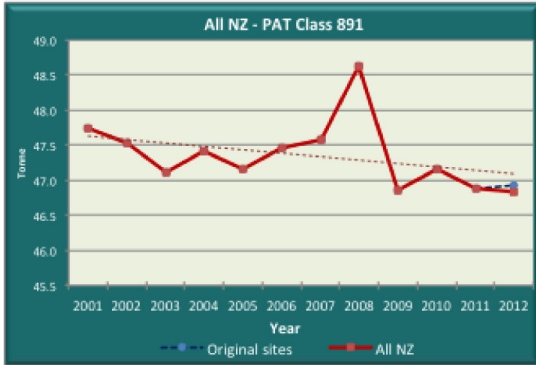
7 axle Truck & Trailer



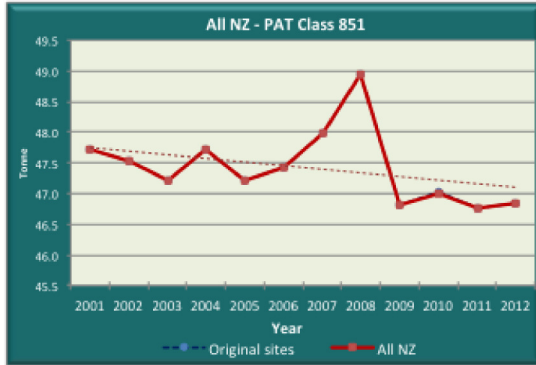
All heavy vehicles



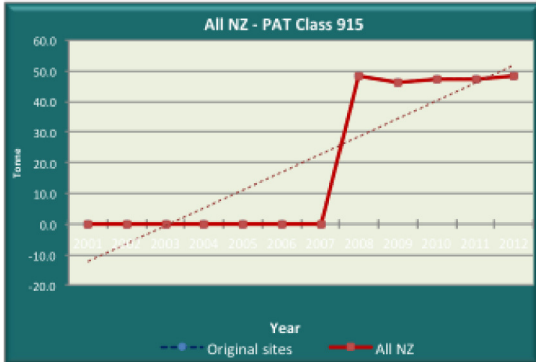
8 axle Truck & Trailer



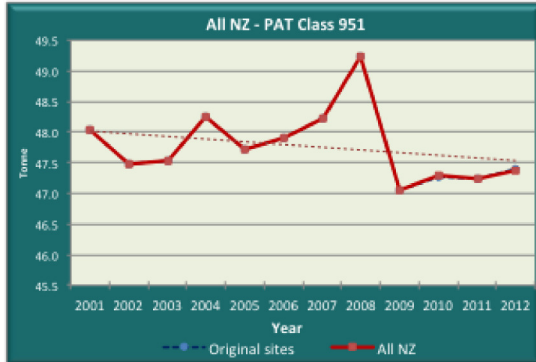
8 axle B-Train



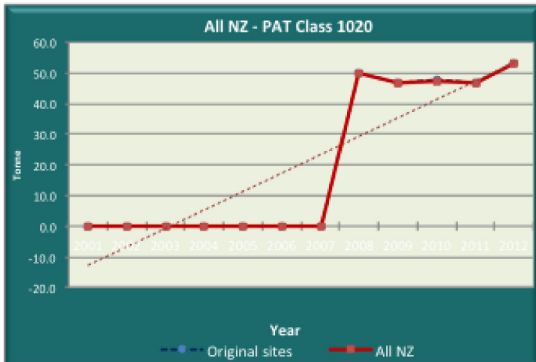
9 axle Truck & Trailer



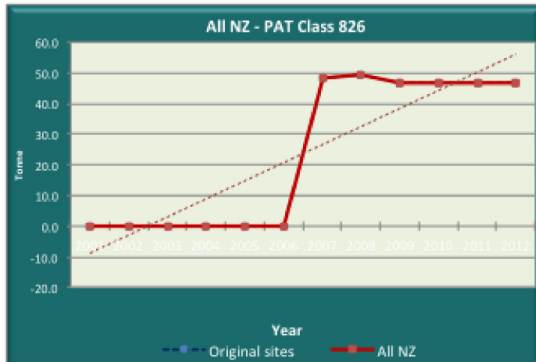
9 axle B-Train



10 axle Truck & Trailer



8 axle Articulated Truck & Trailer



## **Appendix 4. Summary of comments from Government staff**

### **A.6.1 What works well - State Highway component of permitting process**

- Some regions report successful regular stakeholder meetings.
- OL pro-forma working well and NZTA working to provide pro-forma OL as of right.
- OL not causing many enforcement problems.
- MOU on approach to enforcement is now active.
- Good progress with Standard Operating Procedures (HPMV manual).
- OL - Recommendations from 2011 review largely implemented, but enabling systems and availability of timely management information remain absent.
- Axle weight flexibility has been a good solution.
- Most bridges are now on the BDS database.
- The HPMV investment route programme successful.
- 50 MAX proposal viewed positively.

### **A.6.2 What works well - Local Road component of permitting process**

- HNO doing good education job with Council engineers
- Good sign up to NZTA oversight of permitting for Councils.
- Many Councils are developing a better understanding of their bridge stock

### **A.6.3 What could be improved with the State Highway component HPMV permitting?**

#### **Permitting Process**

- Disappointment with stalling of permitting process improvement. Need continuous improvement to join up SH and local road permitting, remove bureaucracy and speed up the process.
- Process is biggest customer fear. Operators are continuing to tell NZTA staff that barriers are unacceptable.
- Uptake for HM is low due to insufficient routes especially for rural and logging sectors.
- Challenge of SH / local road integration.
- Still a long process with a lot of manual handling including time-consuming data entry.
- Mismatch between NZTA and industry assessment of over length risks.
- Need to encourage 23+ m uptake with 23+m policy, which is currently ad hoc.
- Need to streamline referral of all permits to Regional Bridge Consultants.
- Ongoing staff training issues eg: inexperienced persons handling the application process.
- Having to reapply annually for some permits was in the industry's eyes unnecessary.
- Uncertain whether the industry fully understood "User Defined" and "Axle weight flexibility" to gain much benefit from it all.

#### **Vehicle, operator and driver checks**

- Vehicle checks costs to operators could be avoided if NZTA database was accurate.
- Attribute check sheets are still wrong or have missing data in some cases.
- Still no operator / driver track record checks.

**Policy settings**

- Perceptions of moving goal posts mean customers don't know what to invest in- eg: length uncertainty.

**NZTA Communications**

- VDM newsletter is irregular and uncertain whether it is reaching right people.
- Website not good – also use industry media.
- Route improvements could be better communicated.

**Management structure**

- The A&U PIO (Mass & Dimension) should sit in the regional team alongside HNO's PIO.
- A centralised team is needed.

**A.6.4 What could be improved with the Local Road component HPMV permitting?**

- Local routes still too slow in being opened up.
- Every Council is different. Some reports of Councils not interested and still coming on board, balanced by reports of some Councils pre-approving routes and route availability being reasonable.
- Customers still need a one-stop-shop, although some Councils have signed MOUs and many have informally signed up to on-behalf processing by NZTA.
- Concern that large players are getting permits but smaller players may be missing out.
- Some Councils do not have the technical staff available to process permit applications with certainty.
- Pavement issues are top of mind for Councils. Old pavements are the problem. Some Councils are pushing back – particularly those with through routes.

**A.6.5 Government staff view on the effectiveness of the state highways component of the permitting processes [Very poor / poor / neutral / good / very good]**

- Government staff perceptions of SH permitting performance tend toward the positive side.

**A.6.6 Government staff view on the effectiveness of the local road component of the permitting processes [Very poor / poor / neutral / good / very good]**

- Government staff perceptions of local permitting performance tend toward the negative side.

**A.6.7 Comment on the infrastructure investigations & investment process.**

- Opinions on this process vary. A minority view is that the process has been slow and reactionary with too much reassessment.
- On the other hand the majority of opinion suggests the HPMV bridge-strengthening programme is largely on schedule and is considered a success.
- Key route availability work is continuing– refer to Richard Paling 2013 work.
- HPMV investigations have provided a reason to better understand bridge infrastructure in terms of capacity and useful lives. Many investigations have taken place over the years on seismic performance, but no review of capacity. Many bridges were last analysed in 1960s with very conservative capacity assessments.

- Investigation process nationwide almost complete at minimal cost.
- Number of bridges requiring strengthening halved from screened number.
- Funding requests now proceeding through P&I.
- Best practice is now defined in the Bridge Manual.
- The benefits are reduced restrictions. Bridges are consciously being pushed harder. Payback is massive however - even if bridges need replacing 10 years earlier.
- This “sweating the asset” approach has required mitigation measures – typically more monitoring.
- NZTA lessons could be learned by Councils.

#### **A.6.8 Comment on route availability**

- Opinions vary on the progress with route availability. On the one hand lack of routes, particularly on local roads is seen as a key barrier to HM take-up
- The Investment route programme on the other hand is widely considered to have been successful.
- Maps on website but timeliness of this information could be improved.
- Local route availability will increasingly become the key constraint.

#### **A.6.9 Comment on economic benefits to date.**

- Operators are reporting good gains. Such as PanPac & Solid energy.
- But some operators are thought to be holding back – requiring more certainty on route availability.
- Medium to large companies best placed.
- Benefits are mainly from OL to date but HM is where the maximum value lies.
- Some anecdotes of under capacity.
- Limited HPMV allowed optimisation of infrastructure. Benefits thought to be huge
- Not much forestry yet.
- Milk, bulk and aggregates picking up.
- Gains are significant for operators on regular routes.
- Great potential from the 50MAX proposal.
- There is a possibility that the late 2012 spike in HPMV applications was caused by operators seeking to use an HPMV permit as a means to purchase RUC above the 44 tonne Class One limit.

#### **A.6.10 Comment on expects future benefits.**

- The freight transport benefits available on opened investment routes appear compelling. The benefits will improve and be ongoing.

#### **A.6.11 Comment on the key constraints to achieving benefits from the rule.**

- Work on Council perceptions.
- Ongoing restraints especially in forestry expected.
- Improve / shorten the permit application process.
- Quality information on routes and forecast future route availability.
- A one-stop-shop is needed with local authorities.
- Enforcement fears. Not sure how well MOU is being communicated to industry.
- Need work on penalties & offences to ensure punishment fits the crime.
- Need more area type permits.
- Address operator skill gaps.

- Should make it easier for new comers to get through.
- Offer interregional routes.
- 50MAX HPMV's will be well received, as it is something that will benefit the industry more than any of the other alternatives.
- The permit fee was too low to make it viable and seem to cheapen the whole process.

#### **A.6.12 Comment on infrastructure costs & issues (eg: investment costs, bridge or pavement deterioration)**

- Investment route investigations started off with regional discussions with stakeholders.
- Process now largely completed with strengthening costs now fed into NLTP.
- Need assessment framework to give consistency to regional teams (Refer asmt guide).
- No funding barriers to exist.
- NZTA is receptive to any evidence on accelerated pavement deterioration.
- End to end packages preferred by NZTA.
- 2nd tranche of investment routes under investigation.
- Not a lot of local road gaps.
- Auckland Transport on board.
- Need mechanism to get additional \$ to Councils.
- The issues that were presenting a hurdle were not conveyed to the industry that well.
- NZTA are committed to getting investment routes open as the potential financial returns for the economy have been established.
- Axle loadings have not increased.
- RUC based on pavement wear increasing to the fourth power of increased axle loading. SHs have a power relationship of 1.5 to 1.7, therefore no issues to SH pavements.
- What happens on the surface is an issue – scuffing and polishing. Current hypothesis is that this wont be worse than class one after allowing for trip decrease.
- Performance Testing Group now set up – and HPMV could be part of their brief.
- No signs of scuffing yet.
- UK there is a proven relationship between # of heavies and polishing.
- NZTA are currently looking at research on this. ARRB project started one year ago. No results expected for 5 years.
- High-speed data collection done every year (“ SCRIM” Truck bought over from UK to run every SH). This looks at geometry (eg: rutting and macro and micro texture). This has some potential ability to test HPMV surface impacts.
- Pavement structural impacts: Currently use Falling Weight Deflection (FWD) method.
- Traffic speed deflection (TSD) tool now purchased with data expected from this year onwards with some conclusions possible in three years.
- Actually expecting some pavement gains – from reduced axle loadings and reduced trips for given freight task.
- Local Roads in contrast can have  $10^7$  pavement wear relationship. But – axle weights are still reduced on an HPMV relative to a class one vehicle.
- It is expected the TSD tool will cover all HPMV routes including the local road component.

- CAPTIF facility (ChCh loaded wheel rig). Has done some work.
- Conclusion: HPMV a good idea. We have made a conservative start. Could do more – increase axle weights.
- Bridges
  - Many bridges last analysed in 1960s with very conservative assessments of capacity. The HPMV initiative has prompted very useful data on capacity and useful lives.
  - Best practice is now defined in the Bridge Manual. The benefits are reduced restrictions, but conscious that bridges are being pushed harder.
  - The investigation costs have been low and the payback is therefore massive, even if bridges need replacing 10 years earlier. The new approach has required mitigation measures, which are typically more monitoring.
  - Investigation process nationwide almost complete.
  - Funding requests through P&I.
  - No bridges requiring strengthening halved from screened number.
  - TAs could learn NZTA lessons.
  - General comment: HPMV has provided massive opportunity to get better understanding of infrastructure.

#### **A.6.13 Comment on administration costs and issues**

- There are significant unrecorded costs.
- Some processes very complex.
- Permit application costs did not cover anywhere near the amount of time and involvement in processing the permits.
- A lot of work is going into making HPMV routes available through investigation, assessment and strengthening design – this is pushing the available resources of Regional Bridge Consultants, but they are working together throughout the regions to maximise efficiency and achieve deadlines.
- Huge range of time requirements – mean = 3 hours. More processes added over time, but some improvements also mean average time has remained steady at 3 hrs.

#### **A.6.14 COMMENT ON ANY SAFETY ISSUES**

- HPMVs have better safety systems and typically use newer equipment.
- Probably no greater safety issues, but no data to judge from.
- HPMVs tend to be bigger operators.
- Need operator checks – need ORS to work.
- Not aware of any H caused crashes.
- Consider specific training.
- Need H status on CAS form.
- Safety checks must be done.
- Too many vehicles were assessed by inexperienced staff that had little knowledge of vehicle related issues.

#### **A.6.15 COMMENT ON ANY COMPLIANCE ISSUES**

- Overall truck crash rate and risk continuing to drop.
- Consider requirement for 4 or 5 star ORS for HPMV permits. But ORS still has issues with under or over weighting chances of detection.

- However, need specific HPMV reporting. Any HPMV breaches should require notification of NZTA. ORS wouldn't be a sufficient tool.
- Incentivise smart choices - e.g. No permit where RUC owing.
- No significant compliance related issues.
- There was inconsistency in determining the "Permit Conditions".
- Some permit conditions removed if covered by other legislation.
- Some CVIU think removal of other conditions from permits was going too far. Others think about right.
- MOU is a Band-Aid, which could be criticised in the courts. Needs fundamental law change probably tied into wider review of Penalties & Offences Regulations.
- Roll stability control – if listed on permit. Too difficult to check operation of RSC on roadside.
- Little enforcement on local roads due to lack of pull-off areas.
- Waikato expressway doesn't have any mass processing facility.
- HPMV signage for vehicles that are not "Route Specific" (ie pro-forma with general access) was changed but some still continue to display ""H" signage which does not help the CVIU in determining which vehicles were true HPMV's. In other words it diluted the effect of HPMV's

#### **A.6.16 GENERAL COMMENTS.**

- HPMV a good idea.
- Ability to implement in the timeframe questioned, but no delay approach has made something happen.
- After rule change the issues fell down the list of MOT priorities.
- Barriers to uptake are well know – TAs.
- Considerable safety and enforcement misgivings allayed.
- Big issues - Route descriptions and TA liaison.
- Better monitoring.
- Written implementation programme missing
- No MOT rep on governance group and communications between NZTA and MOT could have been improved.
- Some VDAM changes could have been picked up earlier.
- NZTA comms with industry ok.
- Key outstanding HPMV issues in 2013
  - Last mile of investment routes. (Local roads).
  - Compliance issues for which the "Weigh Right" initiative is an intended solution.
  - OPermit analysis includes an overweight tolerance of 1.5 tonnes. Could consider giving this additional weight to operators that have a good track record (ORS) and systems such as on-board weighing and independent GIS monitoring.
  - 50 MAX.
  - Permitting process improvements.
  - 23-25m above pro-forma designs.

## **Appendix 5: Issues raised in 2011 and state of progress in 2013**

The left-hand column of the tables in this appendix extract the issues noted and recommendation made in the 2011 report on the Monitoring Evaluation and Review of the HPMV rule. The right-hand columns note the state of progress in 2013 with the issues raised in 2011.



*Appendix 5.1. Extract of issues from the 2011 summary report*

| 2011 Recommendations   | State of progress 2013   |
|--|--|
| <p><b>Economic benefits:</b><br/>Focus on investment plans in response to route investigation work recently completed.</p>   | <ul style="list-style-type: none"> <li>• Over the 2009/12 period NZTA provided grants for investigations, which are now largely complete<sup>16</sup>.</li> <li>• HPMV route guidance maps have been produced<sup>17</sup> and a bridge upgrade programme for Upper North Island published<sup>18</sup>.</li> <li>• Most regions demonstrate HPMV activity in the State Highway plan for the 2013/14 and 14/15 years<sup>19</sup>.</li> </ul>  |
| <p><b>Operator experience:</b><br/>The NZTA should develop SOPs for permitting.</p>  | <ul style="list-style-type: none"> <li>• Standard operating procedures developed and published on website as “HPMV Manual”<sup>20</sup></li> <li>• Actual PIO practice still appears however to be inconsistent across regions.</li> </ul>   |
| <p>Ongoing common process streamlining is already under way. Consider building further case management of applications through the multiple permitting steps (vehicle, route, operator and RCA).</p> | <ul style="list-style-type: none"> <li>• Business case for permitting process improvements made in 2012.</li> <li>• Internal project team was charged in late 2012 with delivery of improvements.</li> <li>• Continuing absence of substantial improvements is creating significant reputation risks for NZTA.</li> <li>• The functionality of the HPMV management tool implemented as an initial solution has now been well surpassed and it is failing to deliver reliable and timely management information.</li> </ul> |
| <p>Non pro-forma over length applications: Consider process improvement and case management</p>  | <ul style="list-style-type: none"> <li>• Vehicles longer than 23 metres continue to be a challenge. Draft process and trials are in place for 23-25m vehicles.<sup>21</sup> It is expected this draft policy will eventually be incorporated into the HPMV Permitting manual.</li> </ul>   |
| <p><b>Local Government issues:</b><br/>Consider further NZTA engagement of RCAs on cost issues, capital funding availability and permit process improvement.</p>                                     | <ul style="list-style-type: none"> <li>• State of local government support for HPMV access continues to be variable and poses a risk to achievement of full benefits.</li> <li>• To build RCA relationships, NZTA has created regional champions for investment routes and the proposed 50 MAX initiative.</li> </ul>  |

<sup>16</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/funding.html>

<sup>17</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/network-maps.html> Maps on website were last updated in June 2012, but updated maps are understood to be imminent in mid 2013.

<sup>18</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/bridge-strengthening-programme.html>. Map and indicative costs for Bridge strengthening programme were published in June 2013 for Upper North Island. Other two regions (Lower NI and South Island) are understood to be imminent.

<sup>19</sup> <http://www.nzta.govt.nz/resources/state-highway-plan/docs/state-highway-plan-2013-2014-complete.pdf>. The State Highway plan recognises NZTA Statement of intent, which includes “Making HPMV happen for NZ”. HPMV projects appear extensively throughout the plan for most NZTA regions except for Taranaki, Nelson, Tasman and West Coast.

<sup>20</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/draft-manual.html>

<sup>21</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/docs/hpmv-23-25m-overlength-policy.pdf> This document describes the draft NZTA policy May 2013 for permitting high productivity motor vehicles (HPMVs) that are over 23m but no more than 25m in length. Such permits will be route specific. Transport operators must provide evidence of the suitability of the route and of compliance with specific vehicle, operator and driver safety standards.

*Appendix 5.2. Operator recommendations*

**Recommendations for improvements to both OL and HM application processing (Section 7.2.3 / Table 24 of 2011 Technical Report)**

| <b>Issues identified by operators in 2011</b>   | <b>State of progress 2013</b>   |
|---|---|
| <ul style="list-style-type: none"> <li>• Staff development.</li> <li>• Case managers.</li> <li>• More staff training.</li> <li>• Develop a solution rather than problem focus.</li> </ul> <p><b>2011 Recommendation:</b> PIOs are understood to already have this responsibility, but consider formalising the communication elements as part of Standard Operating Procedures.</p> | <ul style="list-style-type: none"> <li>• Training needs analysis completed as part of the HPMV manual development process.</li> <li>• PIO training is ongoing.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Improve both NZTA and industry knowledge of Infrastructure availability.</li> </ul>  | <ul style="list-style-type: none"> <li>• Route availability map continue to be updated.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• More strategic targeting of high value / high return sectors.</li> </ul> <p><b>2011 Recommendation:</b> Current permitting system is not targeted. It is expected that infrastructure improvement investigations are taking a strategic approach seeking highest return on investment.</p>   | <ul style="list-style-type: none"> <li>• Route investigations process, which is now largely completed, took a strategic view.</li> <li>• Permit processing is not filtered for economic importance and it is likely to be difficult to do so.</li> <li>• A second tranche of investment routes understood to be under investigation in 2013.</li> </ul> |
| <p><b>Permit structure.</b></p> <ul style="list-style-type: none"> <li>• Simpler permit needed for multiple routes. Currently need a permit / route.</li> </ul>   | <ul style="list-style-type: none"> <li>• The 50 MAX initiative is likely to provide significant benefits from general access.</li> <li>• Intended that the investment routes will be able to provide route-wide permits.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• O-Permit style permits designed for one-off trips are too prescriptive for ongoing HPMV operation.</li> </ul>  | <ul style="list-style-type: none"> <li>• Some enhancements have been made to OPermit systems, but fundamental improvements rely on progress with the Permitting Improvement project.</li> </ul>   |
| <p>Suggest ‘H’ sign be displayed only when vehicle is running with heavier mass.</p>  | <ul style="list-style-type: none"> <li>• “H” signage not needed on over length vehicles since December 2012.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Some permit conditions are considered by operators to be Eg: speed &amp; tyre &amp; wheel rule requirements.</li> </ul> <p><b>2011 Recommendation:</b> Consider nature of permit conditions in standard operating procedures.</p>  | <ul style="list-style-type: none"> <li>• Permit conditions have been simplified and restricted to HPMV specific conditions only.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Penalties arising from permit condition infringement are considered onerous or the penalty disproportionate to the offence.</li> </ul>   | <ul style="list-style-type: none"> <li>• As an interim step, a Memorandum of Understanding between CVIU and NZTA was signed in late 2012 to confirm permit conditions, concessionary axle weight and gross vehicle mass</li> </ul>  |

|   |   |
|---|---|
|   | <p>tolerances for HPMVs.</p> <ul style="list-style-type: none"> <li>As a more permanent solution, a rule change on these matters is currently out for consultation.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Standard 8 wheel pro-forma design for logging trucks needs improving.</li> </ul>   | <ul style="list-style-type: none"> <li>A new log truck pro-forma design is in place<sup>22</sup> and discussions are ongoing with industry in 2013 on further designs.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Enforcement issues: Potential difference between roadside measurements by CVIU and VTNZ measurements.</li> </ul>   |   |
| <ul style="list-style-type: none"> <li>Cancellation of old 22 metre logging truck length dispensation as a result of the new rule means 22 metre pro-forma designs must now be built, requiring trailer extension.</li> </ul>   | <ul style="list-style-type: none"> <li>NZTA advises<sup>23</sup> that new pro-forma designs don't need extensions as initially envisaged due to rear overhang design against trailer wheelbase being satisfactory.</li> </ul> |
| <ul style="list-style-type: none"> <li>Axle weight flexibility similar to the normal O-Permit regime is suggested. Enforcement tolerance is 5% of gross weight under old rule. New rule = maximum over permitted weight of 300kg / axles or 500kg / axle group. Very difficult for operators to achieve this level of loading accuracy. Current breaches could result in fine calculated from 44 tonnes potentially amounting to fines of \$8,500.</li> </ul> | <ul style="list-style-type: none"> <li>Axle weight flexibility introduced in late 2011<sup>24</sup>.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Simplification of bridge assessment procedures using vehicle axle index (VAI) and vehicle gross index (VGI) measures.</li> </ul>   | <ul style="list-style-type: none"> <li>Bridge manual updated.</li> </ul>  |

<sup>22</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/pro-forma.html>

<sup>23</sup> Communication from Don Hutchinson, NZTA Principal Engineer

<sup>24</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/axle-weight.html>

*Appendix 5.3. Issues raised by central government staff*

**OL permits. (Section 7.3.2 / Table 26 of the 2011 Technical Report)**

| <b>Issue identified in 2011</b>   | <b>State of progress 2013</b>   |
|---|---|
| <b>NZTA permit process</b>  |   |
| <ul style="list-style-type: none"> <li>The pro-forma design templates appear to have been very successful.</li> </ul>   | <ul style="list-style-type: none"> <li>Pro-forma designs continue to be successful.</li> </ul>  |
| <ul style="list-style-type: none"> <li>No auditing of the vehicle information provided by applicant.</li> </ul>   | <ul style="list-style-type: none"> <li>Independent verification now required from approved <i>Heavy Vehicle Specialist Certifiers</i>.<sup>25</sup></li> </ul>  |
| <ul style="list-style-type: none"> <li>Concern that operator suitability checks may not be consistently and adequately completed. Operator suitability checks are in a nascent stage only.</li> </ul> | <ul style="list-style-type: none"> <li>This is an ongoing work in progress as part of the wider Operator Rating Scheme currently being implemented by the NZTA.</li> <li>PIOs in some regions are understood to at least consider operator ratings in determining permit conditions.</li> </ul> |
| <ul style="list-style-type: none"> <li>Transport Services Licence is on the application but not noted on the permit.</li> </ul>   | <ul style="list-style-type: none"> <li>Now noted on the permit.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Software issues – applications database</li> <li>Difficult to add comments.</li> <li>Cannot copy and paste multiple applications.</li> </ul>                   | <ul style="list-style-type: none"> <li>There have been ongoing enhancements, but NZTA recognise that the applications database, implemented as an interim solution, is now obsolete.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Improvements needed to the timeliness and customer service perceptions of applicants relating to non-standard applications.</li> </ul>                         | <ul style="list-style-type: none"> <li>HPMV permitting manual has attempted to address.</li> <li>The 23-25-metre policy (ibid) is also intended to provide further clarity.</li> </ul>  |

**Local road only HM applications (Section 7.4.2 of 2011 Technical report)**

| <b>Issue identified in 2011</b>  | <b>State of progress 2013</b>  |
|--|--|
| <p><b>2011 Recommendation:</b> That the NZTA consider annual reporting from regions of permits for travel on local roads only.</p> | <p>The number of these permits is likely to be so small as to make the cost of data collection uneconomic.</p> |

HM permits. (Table 28 of 2011 Technical Report)

| <b>Issue identified in 2011</b>   | <b>State of progress 2013</b>   |
|---|---|
| <b>NZTA permit process</b>  |   |
| <ul style="list-style-type: none"> <li>Head office peer review of HM permits was slow to start with (1 month) now within a week.</li> </ul> | <ul style="list-style-type: none"> <li>Regionally based permit champions (peer reviewers) are now in place.</li> <li>Applications database tool provides performance measures on processing times, but practical application of this tool is unreliable such that it can no longer be relied upon for timely management information.</li> </ul> |

<sup>25</sup> <http://www.nzta.govt.nz/vehicle/your/hpmv/apply.html>

| Issue identified in 2011   | State of progress 2013   |
|--|--|
| <ul style="list-style-type: none"> <li>• Process is complex with multiple work streams and layers of approval spread between NZTA regions and head office.</li> </ul> <p><b>2011 Recommendation:</b> Consider case for further work on streamlining of process. It is understood that investigations of centralised processing for a number of NZTA functions is already underway.</p>   | <ul style="list-style-type: none"> <li>• Process improvement initiatives continue to be at an early stage only in 2013. Results are needed urgently.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Concern that vehicle checks may not be consistently and adequately completed. Checks are not completed at regional level in some areas, and adequacy of head office check is not known. Concerns that if checks are being made by PIOs, their vehicle knowledge may be insufficient.</li> </ul> <p><b>2011 Recommendations</b></p> <ul style="list-style-type: none"> <li>• Consider case for nationwide SOPs to guide regions.</li> <li>• Consider communications to ensure regions understand the extent &amp; adequacy of head office checks.</li> <li>• Consider increased TO involvement.</li> </ul> | <ul style="list-style-type: none"> <li>• HPMV Manual has been developed (ibid).</li> <li>• Independent vehicle certification (ibid) is now part of the process and therefore case for increased Transport Officer involvement is not reduced.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Concern over potential limitations of Operator Rating System (ORS) as tool for operator suitability checks. Examples raised included: potential operator manipulation by maintaining clean and dirty licences used across the same truck fleet. Actual chances of being caught are low. May unfairly penalise low kilometre operators.</li> </ul> <p><b>2011 Recommendation:</b> Consider further investigation of the suitability of the ORS system for HPMV permitting.</p>   | <ul style="list-style-type: none"> <li>• Operator suitability using ORS continues to be a work in progress.</li> <li>• It is expected that ORS will at some future stage be an HPMV permit consideration.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Concern that permit conditions may be unreasonably inconsistent across regions.</li> </ul> <p><b>2011 Recommendation:</b> Consider development of NZTA-wide SOPs.</p>   | <ul style="list-style-type: none"> <li>• SOPs developed but consistency of PIO approach across regions is uncertain.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Concern that joint permitting between the NZTA and RCAs for combined state highway and local road permits is consistent across regions. Some issue combined, and others separate, permits.</li> </ul> <p><b>2011 Recommendation:</b> Consider development of NZTA-wide SOPs.</p>  | <ul style="list-style-type: none"> <li>• Joint permitting remains a work in progress.</li> <li>• It is understood that in most situations NZTA IPOs take the lead role in the permit process and engage the RCAs when necessary in the process.</li> <li>• Three RCAs have signed an MOU providing for the NZTA to formally issue permits on their behalf.<sup>26</sup></li> </ul> |

<sup>26</sup> Three RCAs having signed an MOU for permitting on behalf by the NZTA are: Gisborne DC (Selected roads only), Hurunui DC (Selected roads only) Christchurch CC (Selected roads only). Source: Advice from Nick Dawe.

| Issue identified in 2011   | State of progress 2013   |
|--|--|
| <ul style="list-style-type: none"> <li>Concern that PIO competency is maintained in a changing environment.</li> </ul> <p><b>2011 Recommendations:</b></p> <ul style="list-style-type: none"> <li>Refresher training for PIOs.</li> <li>Regular PIO teleconferences.</li> <li>'Go to' list for NZTA staff relevant to known issues.</li> </ul> | <ul style="list-style-type: none"> <li>Training needs analysis was part of the process for development of the HPMV Manual.</li> <li>Training modules have been run in 2013.</li> <li>PIO teleconferences are ongoing.</li> <li>The HPMV manual identifies specialist staff resources.</li> </ul> |
| <ul style="list-style-type: none"> <li>Need for more regular, widely available communications to PIOs on rule updates and interpretations.</li> <li>Consider 'Go to' list for NZTA staff technical resources.</li> </ul>   | <ul style="list-style-type: none"> <li>PIO teleconferences are ongoing.</li> <li>The HPMV manual identifies specialist staff resources.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Concerns that pro-forma vehicle designs are tracking worse in practice than theoretically expected.</li> </ul> <p><b>2011 Recommendation:</b> Investigate concerns and increase communications if there is no substance to the issue.</p>   | <ul style="list-style-type: none"> <li>The NZTA continue to stand behind the independent analysis of vehicle tracking.<sup>27</sup></li> </ul>   |
| <ul style="list-style-type: none"> <li>Concern over the adequacy of NZTA assurance of HPMV compliance.</li> </ul> <p><b>2011 Recommendation:</b> Consider inclusion of operator suitability checks as part of permit approval SOPs.</p>  | <ul style="list-style-type: none"> <li>Operator suitability using ORS continues to be a work in progress.</li> <li>It is expected that ORS will at some future stage be an HPMV permit consideration.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Consider adequacy of auditing and enforcement processes by NZTA and CVIU.</li> </ul>  | <ul style="list-style-type: none"> <li>Enforcement capacity is recognised as an ongoing challenge that the Weigh Right initiative (on board measurement and network monitoring) aims to address.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Consider the need for clear permit revocation processes in SOPs.</li> </ul>   | <ul style="list-style-type: none"> <li>Work in progress.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Improve CVIU reporting on HPMVs.</li> </ul>   | <ul style="list-style-type: none"> <li>HMPV is not an information field in the Roadside Inspection Database (RID).</li> </ul>  |
| <ul style="list-style-type: none"> <li>Include HPMVs in the coverage of the annual MoT compliance survey carried out by CVIU.</li> </ul>   | <ul style="list-style-type: none"> <li>Work in progress.</li> </ul>  |
| <b>Local government issues</b>   |  |
| <ul style="list-style-type: none"> <li>Formal procedures on where to send permit applications in TAs are not clear. Concern that permits to TAs are backing up.</li> </ul> <p><b>2011 Recommendation:</b> Consider SOPs and increased communications with TAs on process linkages between Agency and TAs.</p>                                  | <ul style="list-style-type: none"> <li>PIOs engage the RCAs on behalf of operators in almost all cases.</li> <li>Discussions with a sample of RCAs and PIOs indicate that these administrative relationships are reasonably functional in 2013.</li> </ul>                                       |

<sup>27</sup> <http://www.nzta.govt.nz/resources/hpmv-permit-background/docs/pro-forma-vehicles-report.pdf>

| Issue identified in 2011  | State of progress 2013   |
|---|--|
| <ul style="list-style-type: none"> <li>Concerns over the resourcing and capability of local government permit processing.</li> </ul> <p><b>2011 Recommendation:</b> Consider further engagement with local government to encourage increased commitment to the HPMV implementation.</p>                             | <ul style="list-style-type: none"> <li>Some RCAs have asked for training by NZTA.</li> <li>Some regions operate HPMV officer groups that appear to effectively share information and concerns.</li> </ul>  |
| <ul style="list-style-type: none"> <li>Most TAs not using O-Permit</li> </ul>   | <p>Three RCAs have formally signed up to NZTA permitting on behalf. There is a cost of bridge analysis to allow data entry into OPermit that will be an ongoing restraint to common use of the OPermit system.</p>   |
| <b>Information system issues</b>  |  |
| <ul style="list-style-type: none"> <li>Disparate databases, lacking common record identifiers.</li> </ul> <p><b>2011 Recommendation:</b> Consider unique identifiers of each permit application across various databases.</p>   | <ul style="list-style-type: none"> <li>Data accuracy continues to be a major issue in 2013 and needs to be addressed urgently</li> </ul>   |
| <ul style="list-style-type: none"> <li>Double entry of data required for both applications database and O-permit.</li> </ul> <p><b>2011 Recommendation:</b> Consider cost and benefits of improving linkages between systems. At least consider improvements to copy and paste functionality between databases.</p> | <ul style="list-style-type: none"> <li>Smart application forms have made some improvements to data entry.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Difficulties of using the O-permit tool for HPMV purposes. Eg: O-Permit comes up with restrictions that are not allowed for HPMVs.</li> </ul> <p><b>2011 Recommendation:</b> Consider changes to O-Permit or provide SOP guidance on management of O-Permit results.</p>     | <ul style="list-style-type: none"> <li>OPermit interfaces need consideration in tandem with wider HPMV process improvements</li> </ul>   |
| <ul style="list-style-type: none"> <li>Holes in O-permit coverage</li> </ul>  |  |
| <ul style="list-style-type: none"> <li>No consultant access to Landata for checking brake codes.</li> <li>Consider limited Landata access.</li> </ul>   |  |
| <b>Infrastructure issues</b>  |  |
| <ul style="list-style-type: none"> <li>Route availability is not clear.</li> </ul>  | <ul style="list-style-type: none"> <li>Routes maps published.</li> </ul>   |
| <ul style="list-style-type: none"> <li>Concern that the message of low levels of infrastructure damage from HPMVs is not getting through.</li> </ul> <p><b>2011 Recommendation:</b> Increase evidence base and improve comms to TAs on infrastructure impacts.</p>  | <ul style="list-style-type: none"> <li>Discussions with a sample of RCAs indicate that many remain unconvinced of the argument of neutral pavement impacts for Class One vs HPMV vehicles servicing a fixed freight task on poor quality local roads.</li> </ul> |

| Issue identified in 2011   | State of progress 2013  |
|--|---|
| <ul style="list-style-type: none"> <li>• Strategic concerns: NZTA intent on key issues, such as infrastructure funding, is not clear to all stakeholders.</li> </ul> <p><b>2011 Recommendation:</b> Increase communications to RCAs on process and availability of development funding</p>   | <p>Regional champions have been established for investment routes and 50MAX implementation. This communication challenge remains one of the biggest risks to maximising HPMV benefits.</p>                    |
| <b>Other</b>   |   |
| <ul style="list-style-type: none"> <li>• Concern that current RUC charges and uncertainty over new regime could be a barrier, eg Dairy supply unless RUC is resolved.</li> </ul>   | <p>The RUC regime changed significantly in August 2012 to specifically provide for HPMV vehicles and is now an incentive to uptake.</p>   |
| <ul style="list-style-type: none"> <li>• Public perception &amp; communication issues:               <ul style="list-style-type: none"> <li>○ Public don't know difference between HPMV and standard heavy vehicles.</li> <li>○ H plate being displayed even when not under load.</li> </ul> </li> </ul> <p><b>2011 Recommendation:</b> Consider increasing NZTA communications.</p> | <ul style="list-style-type: none"> <li>• Need for H plates on OL vehicles now removed.</li> <li>• Review of general media discussion over last two years indicates that HPMVs are not a big issue.</li> </ul> |



*Appendix 5.4. Summary of compliance issues and recommendations*

**(Section 7.8.1 / Table 30 of 2011 Technical Report)**

| <b>Issue</b>   | <b>State of progress with recommendations in 2013</b>   |
|--|---|
| <ul style="list-style-type: none"> <li>• Provide evidence that all NZTA permitting processes are delivering minimum acceptable safety standards. For example, it is not clear to some people whether braking systems have been adequately checked as part of the permitting process.</li> <li>• Recommendation: Consider development of standard operating procedures with a quality management system.</li> </ul> | <ul style="list-style-type: none"> <li>• SOPs developed in the HPMV Manual.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• The CVIU are only able currently to be interested in the vehicle –not the driver suitability in terms of HPMV compliance. Recommendation: Consider a shift from issuing permits to vehicles, to TSL holders using the Operating Rating System score, as an HPMV permit requirement.</li> </ul>  | <p>ORS remains a work in progress.</p>  |
| <ul style="list-style-type: none"> <li>• There are a number of potential CVIU, MoT and NZTA information sources that may provide HPMV monitoring data over the next few years.</li> <li>• Recommendation: Consider inclusion of HPMV status in the Commercial Vehicle Inspection Report (CVIR) and associated Crash Analysis System, Bus Crash Report and Roadside Inspection Databases.</li> </ul>                | <ul style="list-style-type: none"> <li>• Separate HPMV data remains unavailable in the roadside incident database.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Separate measurement of static roll threshold (SRT) for log trucks is a concern.</li> </ul>   | <ul style="list-style-type: none"> <li>• Don Hutchinson advises that Police now seem used to the process of measuring log truckload height at each bolster and the average taken to calculate SRT.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Chain of responsibility type controls are very difficult to legally enforce.</li> </ul>   | <ul style="list-style-type: none"> <li>• ORS is the long-term solution.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Safety and operator suitability concerns are being managed by special conditions on permits in some regions.</li> </ul>   | <ul style="list-style-type: none"> <li>• It is understood that this continue to be the case, although it is unclear how consistent this approach is.</li> <li>• ORS is the long-term solution.</li> </ul>     |
| <ul style="list-style-type: none"> <li>• Safety concerns if retro fitted vehicle become common.</li> </ul>   | <ul style="list-style-type: none"> <li>• Don Hutchinson advises that uptake is generally via new trailers and expects this issue to reduce.</li> </ul>  |

*Appendix 5.5. Summary of local government and data manipulation issues*

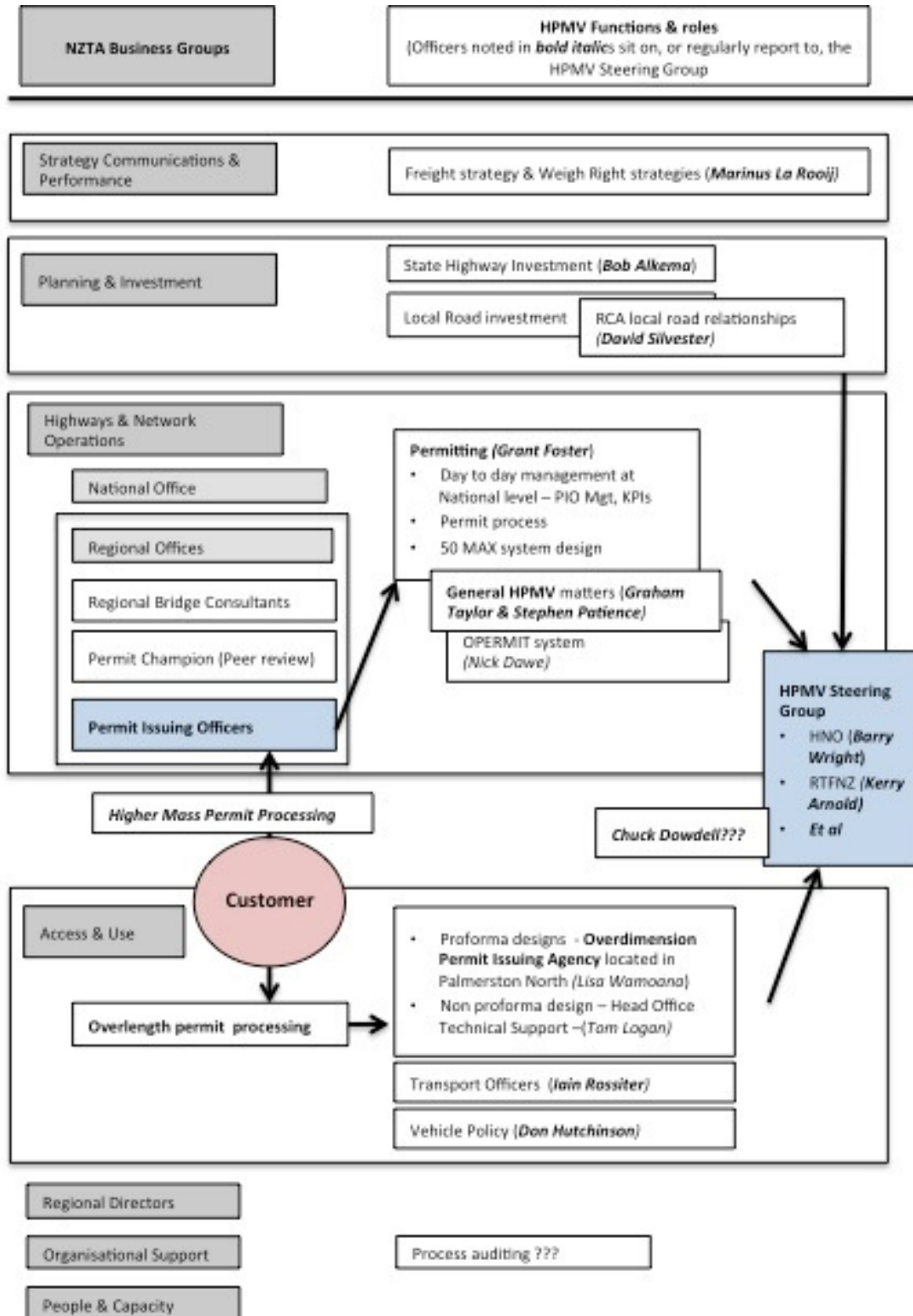
**Local government (Section 8.5 of 2011 report)**

| Issue   | State of progress with recommendations in 2013   |
|---|--|
| It is recommended that the NZTA increase communications on this issue, particularly now that route investigations are complete and areas of need more clearly identified. | The need for effective RCA communications remains high in 2013 – particularly in light of the general local road access required for implementation of the 50MAX proposal. |

**Data manipulation issues (Appendix 3 of 2011 Technical Report)**

| Issue  | State of progress with recommendations in 2013  |
|--|---|
| <p>The data manipulation at the centre of the analysis of benefits is a match between approved applications and both RUC and CAS databases. These databases provide the measures of distance travelled by approved vehicles and their crash performance. Because the applications database tool was developed at the same time as the rule was being implemented, wide spread data entry errors needed to be corrected before analysis could take place. Appendix 3 provides a summary of the issues that need to be resolved to enable easier monitoring in future. <b><i>In summary these improvements relate to more rigorous database design with standardised data entry formats that allow easier data analysis.</i></b></p> | <p>The applications database tool remains error ridden and is failing to provide timely, reliable management information. It is widely accepted amongst NZTA staff that it needs to be upgraded or replaced as part of urgently needed permit process improvements.</p> |

## Appendix 6. NZTA Organisation structure for HPMV management



## **Appendix 7. National fleet estimates**

Sourced from Appendix A, Vehicle Dimensions and Mass Rule Amendment 2010 – Funding and Investment Guidelines May 2010

| HPMV's | Vehicle description  | Total         | Potential for as of right gains | Potential for HM gains | Potential for OL gains | Estimated cubed out % | # Cubed out | #Massed out | Take up - weight increases                        |  |  |   |                          | Take up - length increases                       |  |  |   |                          |
|--------|--|---------------|---------------------------------|------------------------|------------------------|-----------------------|-------------|-------------|---|--|--|---|--------------------------|--|--|--|---|--------------------------|
|        |  |               |                                 |                        |                        |                       |             |             | Estimated potential take up % of massed out fleet | Estimated potential nationwide take up numbers | Estimated potential take up % - core routes only | potential take up number - core routes only | % of trucks of that type | Estimated potential take up % of cubed out fleet | Estimated potential nationwide take up numbers | Estimated potential take up % - core routes only | potential take up number - core routes                | % of trucks of that type |
|        | R12T22, R22T12, R22T22 Rural   | 3,840         |                                 | 3,840                  | 3,840                  | 10%                   | 384         | 3,456       | 80%   | 2,765  | 10%  | 276   |                          | 85%  | 326  | 90%  | 294   |                          |
|        | R12T22, R22T12, R22T22 Non rural   | 5,235         |                                 | 5,235                  | 5,235                  | 80%                   | 4,188       | 1,047       | 80%   | 838  | 90%  | 754   |                          | 85%  | 3,560  | 90%  | 3,204   |                          |
|        | <b>Total Truck &amp; trailer</b>   | <b>9,075</b>  |                                 | <b>9,075</b>           | <b>9,075</b>           |                       |             |             |   |  |  | <b>1,030</b>                                | <b>11%</b>               |  |  |  | <b>3,498</b>  | <b>39%</b>               |
|        | R12T12   | 2,796         |                                 |                        | 2,796                  | 30%                   | 839         |             |   |  |  |   |                          | 40%  | 336  | 90%  | 302   | 11%                      |
|        | A224   | 450           |                                 | 450                    |                        | 30%                   | 135         | 315         | 60%   | 189  | 90%  | 170   | 38%                      |  |  |  |   |                          |
|        | A223   | 100           |                                 | 100                    |                        | 30%                   | 30          | 70          | 60%   | 42   | 90%  | 38  | 38%                      |  |  |  |   |                          |
|        | B1222  | 100           |                                 | 100                    | 100                    | 30%                   | 30          | 70          | 60%   | 42   | 90%  | 38  | 38%                      | 50%  | 15   | 90%  | 14  | 14%                      |
|        | B1232  | 1,850         |                                 | 1,850                  | 1,850                  | 30%                   | 555         | 1,295       | 60%   | 777  | 90%  | 699   | 38%                      | 85%  | 472  | 90%  | 425   | 23%                      |
|        | B1233  | 900           |                                 | 900                    | 900                    | 30%                   | 270         | 630         | 60%   | 378  | 90%  | 340   | 38%                      | 85%  | 230  | 90%  | 207   | 23%                      |
|        | B2233  | 10            |                                 | 10                     | 10                     | 30%                   | 3           | 7           | 60%   | 4  | 90%  | 4   | 38%                      | 85%  | 3  | 90%  | 2   | 23%                      |
|        | <b>Total Truck &amp; semi trailer &amp; Btrain</b>                       | <b>6,206</b>  |                                 | <b>3,410</b>           | <b>5,656</b>           |                       |             |             |   | <b>5,035</b>                                   |  | <b>2,319</b>                                |                          |  | <b>4,941</b>                                   |  | <b>4,446</b>  |                          |
|        | <b>Total HPMV capable</b>  | <b>15,281</b> |                                 | <b>12,485</b>          | <b>14,731</b>          |                       |             |             |   |  |  |   |                          |  |  |  |   |                          |
|        | <b>AoRs</b>  |               |                                 |                        |                        |                       |             |             |   |  |  |   |                          | <b>Take up - length increases</b>                |  |  |   |                          |
|        |  |               |                                 |                        |                        |                       |             |             |   |  |  |   |                          | Estimated potential take up % of total fleet     | Estimated potential nationwide take up numbers | Estimated potential take up % - core routes only | Estimated potential take up number - core routes only | % of trucks of that type |
|        | A122   | 500           | 500                             |                        |                        |                       |             |             |   |  |  |   |                          | 10%  | 50   | 100%   | 50  | 10%                      |
|        | A123   | 1,838         | 1,838                           |                        |                        |                       |             |             |   |  |  |   |                          | 30%  | 551  | 100%   | 551   | 30%                      |
|        | A124   | 80            | 80                              |                        |                        |                       |             |             |   |  |  |   |                          | 90%  | 72   | 100%   | 72  | 90%                      |
|        | A223   |               | 100                             |                        |                        |                       |             |             |   |  |  |   |                          | 30%  | 30   | 100%   | 30  | 30%                      |
|        | A224   |               | 450                             |                        |                        |                       |             |             |   |  |  |   |                          | 30%  | 135  | 100%   | 135   | 30%                      |
|        | <b>Total AoR</b>   |               | <b>2,968</b>                    |                        |                        |                       |             |             |   |  |  |   |                          |  | <b>838</b>                                     |  | <b>838</b>  |                          |
|        | <b>Total HCV2</b>  | <b>17,699</b> |                                 |                        |                        |                       |             |             |   |  |  |   |                          |  |  |  |   |                          |
|        | <b>Weight increase take up as a percentage of the HCV2 fleet</b>         |               |                                 |                        |                        |                       |             |             | <b>13%</b>  |  |  |   |                          |  |  |  |   |                          |
|        | <b>Length increase take up by HPVs as a percentage of the HCV2 fleet</b> |               |                                 |                        |                        |                       |             |             | <b>25%</b>  |  |  |   |                          |  |  |  |   |                          |
|        | <b>Length increase take up by AoRs as a percentage of the HCV2 fleet</b> |               |                                 |                        |                        |                       |             |             | <b>5%</b>   |  |  |   |                          |  |  |  |   |                          |