



## Weigh Right Site Selection

---

### Authorised signatory

Approved by	Chris Young	
	Project Sponsor	3 August 2017
Approved by	Leigh Mitchell	
	Project Sponsor	3 August 2017

Authorised signature indicates that:

- the appropriate personnel have read, understood and agreed to the details of the site selection

### Recommendation

REFERENCE	RECOMMENDATION	DECISION
A	<b>Approve</b> the revalidation of the location of the 12 National Weight Enforcement Sites	YES/NO

## 1. Purpose of this document

To seek approval of the revalidation of the 12 National Weight Enforcement Site locations for the Weigh Right Programme that were approved in the Programme Business Case (PBC), and to note the methodology for the regional sites that provide additional coverage.

## 2. Background

2.1. The NZ Transport Agency's Weigh Right Programme aims to address the impacts of heavy vehicle overloading. It will level the playing field for the transport industry, improve road safety, and ensure that vehicle operators pay their share of road maintenance. The Programme will deliver Weight Enforcement Sites across New Zealand that use roadside technology and software to direct potentially overweight vehicles to a Weigh Station.

### Programme Business Case

2.2. The Weigh Right PBC recommended strategic coverage of the state highway network, as defined by the One Network Road Classification (ONRC), with a staged implementation of the combined Programme E, as follows:

- Initial enhancement of roadside weighbridges on the ONRC National state highway network with Weigh in Motion (WIM) and vehicle recognition, plus some new facilities to provide wider coverage (Programme C).
- Monitoring the effectiveness of these facilities to determine the extent and capability of further roadside facilities on the remaining network, and implementing these facilities (Programme D).

2.3. In November 2014 the Highways & Network Operations (HNO) Value Assurance Committee (VAC) passed the following resolution:

"VAC;

***Approves*** the Weigh Right Programme Business Case.

VAC approved the Weigh Right Programme Business Case subject to getting agreement with Graeme Bellis (Planning and Investment [P&I]) on the economics, and noting that the implementation of facilities around the Auckland Harbour Bridge needs a bit more work."

2.4. In July 2016 the PBC (with updated economics agreed with Graeme Bellis), along with an update on the Weigh Right trial, was presented to the combined HNO VAC and National Land Transport Programme (NLTP) Advisory Group which resolved:

"That the New Zealand Transport Agency VAC and the NLTP Advisory Group

## Weigh Right Site Selection

- a. Receives the update on the Weigh Right trial
- b. Recommends the Group Manager P&I **Supports** the 'Weigh Right' Programme Business Case, subject to the provision of a P&I one-page project assessment, noting the assessment profile as HHH."

2.5. That assessment was subsequently completed by P&I.

### Site selection

2.6. This site selection document is to reconfirm the location of the 12 National Weigh Right sites, described as Programme C in the PBC, namely

- 5 existing sites – Stanley Street, Paengaroa, Ohakea, Glasnevin and Plimmerton (now a new site at MacKay's crossing – Transmission Gully)
- 7 new sites – SH1/15 intersection (Port Marsden), SH1/18 Intersection (Auckland Northern Corridor), Bombay, Sulphur Point (Tauranga container wharf), Napier Port, Taupo and Rakaia

that cover 46% of the freight kilometres travelled, and to describe the methodology employed to assess the potential location of some 25 further sites on the regional network, described as Programme D in the PBC that cover a further 30% of freight kilometres travelled. Final approval of these potential regional sites will be subject to further review including lessons learnt and benefits realisation from the national sites.

### Existing Weigh Sites

2.7. Current detection of non-compliant vehicles is limited to about 0.02% of journeys. This is due to the current detection facilities not allowing screening of trucks to select vehicles of interest and the time it takes to assess a single vehicle.

### Existing WIM Sites

2.8. The network coverage of existing WIM sites in relation to major truck flows across New Zealand is limited, but there are sufficient sites to detect some 29% of heavy vehicle kilometres. These sites indicate that illegal overloading accounts for around 10% of all heavy vehicle trips (~20% of loaded trips). These WIM sites show ongoing growth of heavy vehicles at all sites (except Te Puke, which was bypassed by Tauranga Eastern Link in 2014), even with the increased efficiency generated by High Productivity Motor Vehicles (HPMV) vehicles (see Table 1 below)

## Weigh Right Site Selection

Table 1: Extract from the 2014 WIM Report (latest available) showing increasing daily Heavy Commercial Vehicle volumes

Year	Vehicle Type	WIM Site					
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara
2010	Rigid	1,634	208	–	762	386	350
	T&T	1,088	213	–	588	518	337
	Artic	853	75	–	277	215	162
	A&B Train	307	44	–	102	162	130
2010 Total		3,882	540	–	1,729	1,282	980
2011	Rigid	1,724	227	–	758	390	361
	T&T	1,173	231	–	636	552	376
	Artic	818	68	–	253	208	135
	A&B Train	331	47	–	96	176	136
2011 Total		4,046	573	–	1,744	1,327	1,007
2012	Rigid	1,691	229	249	737	420	334
	T&T	1,237	249	173	579	573	387
	Artic	826	73	8	244	223	132
	A&B Train	319	51	2	86	168	123
2012 Total		4,072	603	432	1,645	1,384	976
2013	Rigid	1,744	232	267	858	426	369
	T&T	1,327	247	194	679	617	438
	Artic	829	68	8	248	234	144
	A&B Train	312	48	2	79	166	124
2013 Total		4,212	596	470	1,864	1,443	1,074
2014	Rigid	1,871	235	278	533	441	314
	T&T	1,455	274	204	420	656	484
	Artic	861	67	8	134	236	151
	A&B Train	305	46	1	45	161	131
2014 Total		4,492	623	492	1,132	1,495	1,080

### 3. National Site Selection Criteria

- 3.1. The following criteria were used to determine site selection in the PBC which was completed in 2013.
- 3.2. This analysis has been revisited, and in conjunction with regional visits in late 2016 has confirmed that the sites approved in the PBC are still relevant.

#### Heavy Vehicles

##### 3.3. Heavy Vehicle Volumes

Heavy vehicle volumes have continued to increase since the PBC was completed. The routes identified in the PBC with a volume above the ONRC high volume threshold of 1200 heavy vehicles per day have not changed, and no new routes have been identified (refer maps in Appendices). The highest volume sites are close to major centres, sea ports or significant highway junctions. The maps from the PBC showing the corridors with over 1200 heavy vehicles per day are attached in Appendix 1. Appendix 2 has been updated with 2016 information for routes exceeding 1200 heavy vehicles per day.

## Weigh Right Site Selection

Not surprisingly, these are on the approaches to main centres and major ports and have not changed over the last four years.

### 3.4. Heavy Vehicle Risk Profile

The WIM data in Table 2 (the latest available report) shows that overloading continues to be widespread across New Zealand. The heavy vehicle risk profile matches the flow profile as the percentage overloading is similar at each of the sites (a range of 9–16%).

Directional analysis of the Te Puke site showed that 60% of overweight vehicles were heading towards Tauranga and 40% away from Tauranga.

Table 2: Rate of overloading at WIM sites in 2014

Vehicle Type	WIM Site						Total
	Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
<b>Number of Heavy vehicles</b>							
A&B Train	105,119	16,697	472	14,679	58,572	40,052	235,591
Artic	297,094	24,486	2,729	43,390	85,712	46,053	499,464
Rigid	645,490	85,715	97,168	172,559	160,182	96,183	1,257,297
T&T	502,087	99,801	71,168	135,985	238,101	148,185	1,195,327
<b>Total</b>	<b>1,549,790</b>	<b>226,699</b>	<b>171,537</b>	<b>366,613</b>	<b>542,567</b>	<b>330,473</b>	<b>3,187,679</b>
<b>Number of Overweight vehicles</b>							
A&B Train	13,528	1,985	42	3,555	9,073	3,304	31,487
Artic	15,243	1,049	109	5,894	6,168	918	29,381
Rigid	29,149	976	704	4,812	3,886	1,613	41,140
T&T	86,011	34,403	15,125	41,879	53,617	21,870	252,905
<b>Total</b>	<b>143,931</b>	<b>38,413</b>	<b>15,980</b>	<b>56,140</b>	<b>72,744</b>	<b>27,705</b>	<b>354,913</b>
<b>Percentage of overweight vehicles (%)</b>							
A&B Train	12.9	11.9	8.9	24.2	15.5	8.2	13.4
Artic	5.1	4.3	4.0	13.6	7.2	2.8	6.0
Rigid	4.5	1.1	0.7	2.8	2.4	1.7	3.3
T&T	17.1	34.5	21.3	30.8	22.5	71.6	23.5
<b>Total</b>	<b>9.3</b>	<b>16.9</b>	<b>9.3</b>	<b>15.3</b>	<b>13.4</b>	<b>13.9</b>	<b>11.6</b>

Note: Overweight vehicles are those exceeding VDAM general access limits

## Additional Criteria

### 3.5. Sites Difficult to Avoid

A number of techniques are employed by errant operators to avoid being selected for weighing. These include waiting for a vehicle to be pulled into the weigh station which stops other vehicles being pulled in, diverting from the route where the weigh facility is operating, and off-loading at a local commercial site. Locating screened weigh facilities where weigh station avoidance risk is reduced is a key criterion. This includes locations such as gorges, large river crossings and mountain passes, which removes the ability for this gaming to continue.

### 3.6. Site Design Requirements

Whilst pro-forma layout designs have been developed, the form of access and egress will partly dictate the shape of the site and the final layout design. Weigh sites cannot be placed on soft or filled ground. The tolerance on weigh bridge approaches for weigh-in-motion weighing is  $\pm 2\text{mm}$  and for weigh pits is  $\pm 4\text{mm}$ . Filled ground regularly settles 5–10% of the fill height.

### 3.7. Communication Coverage

Ideally the selected sites should have Asymmetric Digital Subscriber Line (ADSL) or fibre for data transfer capability. For secondary or back-up transmission, 3G or 4G wireless capability is desirable.

### 3.8. Location of Police Commercial Vehicle Safety Teams (CVST)

Police CVST personnel are spread throughout New Zealand with a higher concentration around major centres where there are significant heavy vehicle movements – Auckland, Hamilton/Te Awamutu, Tauranga, Rotorua, Napier, Ohakea (Palmerston North/Wanganui), Wellington, Rangiora and Dunedin. Additional personnel are located in more remote areas, e.g. two in Whangarei, New Plymouth and Gisborne, one in Taupo, Turangi, Blenheim, Nelson, etc.

### 3.9. Asset Risk

The national weigh stations will include security fences and the buildings will have security alarms. The buildings on smaller sites are designed to prevent unauthorised entry, including roller doors to protect windows, and aluminium building sheathing. The largest risk is to the Automatic Number Plate Recognition (ANPR) cameras, the Variable Messaging Signs (VMS) and the roadside equipment, all of which are isolated from the weigh station. The cameras are located three metres above ground level, offering some protection. With the ANPR cameras operating 24/7, it would be difficult for vandalism to occur without detection of the offender.

## 4. Consultation

4.1. The 12 national sites (which were developed by Access & Use (A&U) and HNO in consultation with P&I, and the CVST national office) are listed in the draft PBC which was sent to all regions for comment. The comments confirmed the appropriateness of these sites, which cover 46% of New Zealand's freight kilometres travelled.

4.2. Additional meetings were held in all regions in late 2016 to review the national sites and to ensure they are still relevant. These meetings involved HNO, A&U and P&I staff and confirmed that there was no change to the location of these facilities. The exact site locations will be confirmed when all site design requirements have been assessed, e.g. geotechnical, land, and safe access and egress.

## 5. Regional Site Selection

5.1. Preliminary regional site selection (Programme D) has been undertaken in consultation with regional offices using similar criteria to national sites, but with a minimum threshold of 400 heavy vehicle movements per day. These 25 or so sites would add coverage of a further 30% of freight kilometres and combined with the 46% coverage afforded by the national sites, would provide a significant deterrent to overloading.

5.2. As per the PBC, the programme team will monitor the effectiveness of the national sites to determine the extent and capability of further roadside facilities on the remaining network and implementing these facilities.

## 6. Recommended National Site Locations

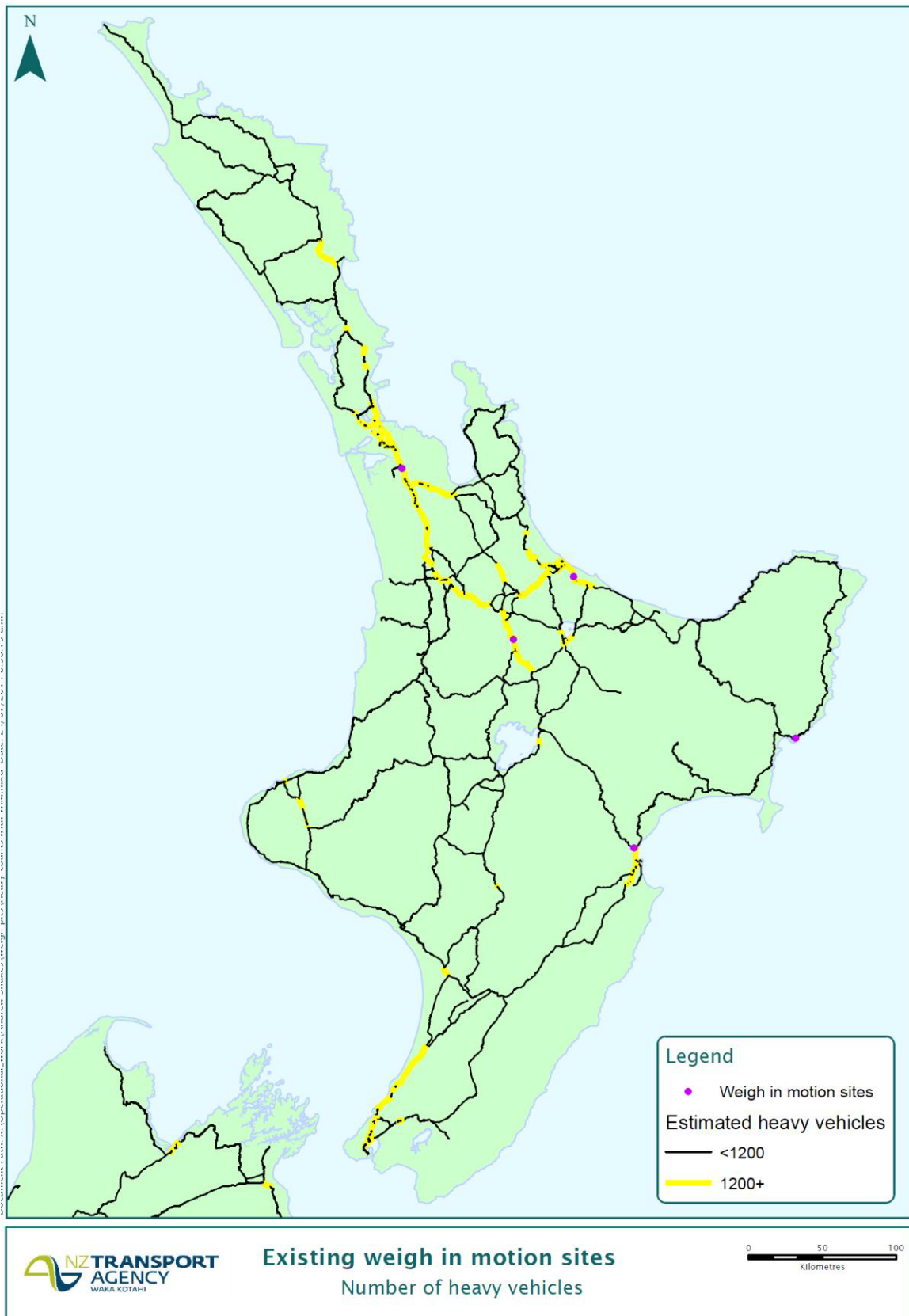
- 6.1. There are four existing weigh stations that have been identified in the list of national sites – Stanley Street, Paengaroa, Ohakea and Glasnevin. Note that Plimmerton is excluded as an existing site – it will now be replaced by a new facility at MacKay's Crossing (Transmission Gully).
- 6.2. The four new weigh stations at SH1/15, SH1/18, Bombay and MacKay's Crossing will be developed in conjunction with corridor improvement projects, namely Whangarei to Marsden, Northern Corridor Improvements, Papakura to Bombay and Transmission Gully Motorway respectively, to ensure optimal location.
- 6.3. The remaining four sites, namely Sulphur Point, Taupo, Port Napier and Rakaia, are not affected by any other proposed works and can be implemented once we have a viable model for national roll-out.
- 6.4. Appendix 2 includes the recommended national site locations.
- 6.5. Funding for construction of the Weight Enforcement Sites was included in the 2015/18 NLTP contingency programme but no request for uplifting those funds will be made until the Programme Implementation Plan (PIP) has been approved.

## 7. Next Steps

- 7.1. Development of 12 National Sites  
The 12 national sites approved in this document will be developed into an approach and schedule in the PIP.
- 7.2. Completion of Regional Site Selection  
As per the PBC, the effectiveness of the national sites will be monitored to determine the extent and capability of further roadside facilities on the remaining network.

# Weigh Right Site Selection

Appendix 1: 2013 Programme Business Case lengths of highway exceeding 1200 heavy vehicles per day



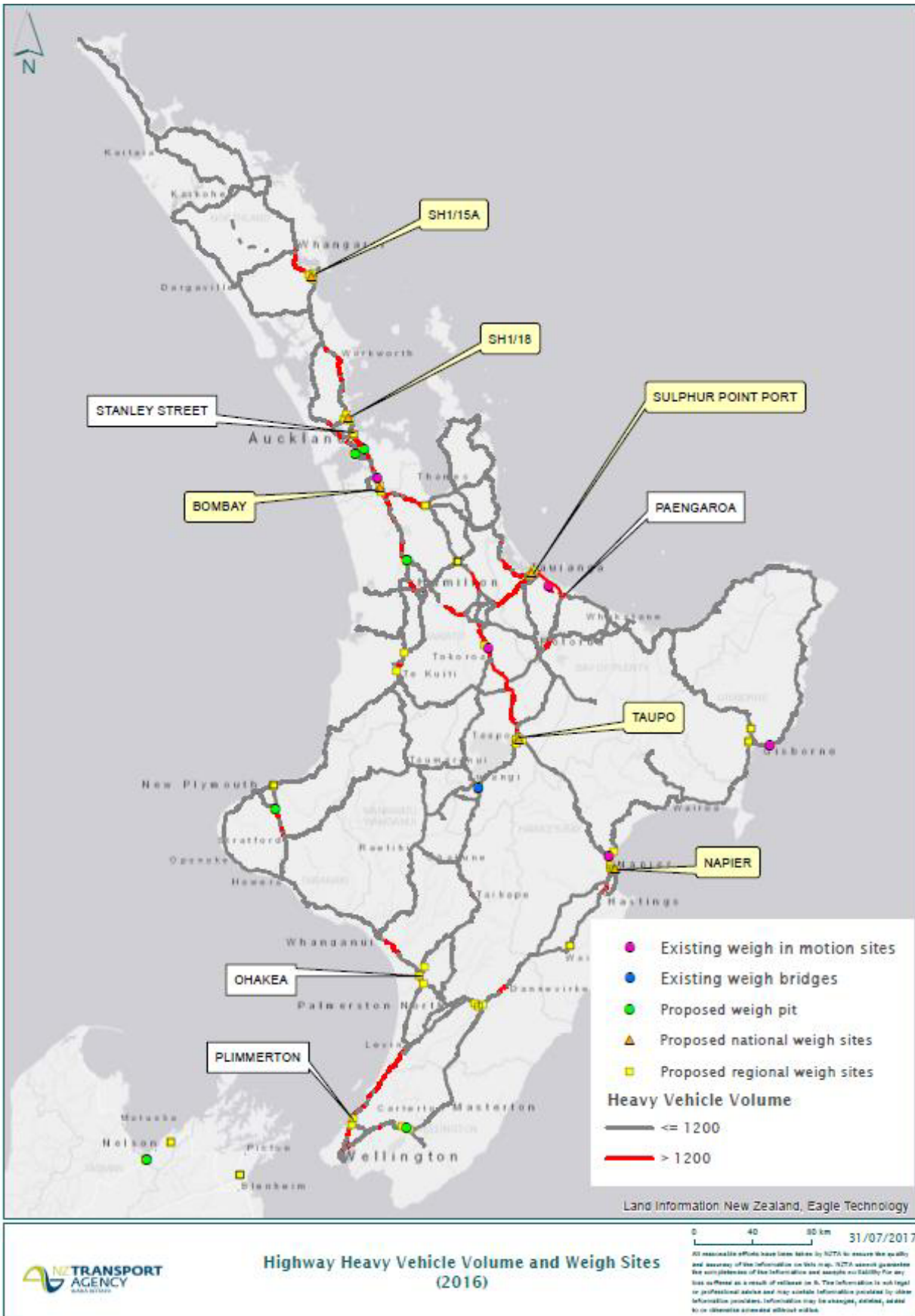


# Weigh Right Site Selection



# Weigh Right Site Selection

Appendix 2: 2016 lengths with greater than 1200 heavy vehicle trips per day show a similar picture to 2013



# Weigh Right Site Selection



### Highway Heavy Vehicle Volume and Weigh Sites (2016)

0 40 80 km 31/07/2017

All reasonable efforts have been taken by NZTA to ensure the quality and accuracy of the information on this map. NZTA cannot guarantee the completeness of the information and accepts no liability for any loss suffered as a result of reliance on it. The information is not legal or professional advice and may contain information provided by other information providers. Information may be changed, updated, added to or otherwise amended without notice.