Report No:	RESC11-08-04
File No:	RD1140
Date:	18 July 2011
Information only – No decision required	

REPORT SUMMARY

Report to: Engineering Services
Meeting Date: 4 August 2011
Report Author Steve Elkington
Subject: **Motupipi – Effectiveness of Active School Warning Signs**

EXECUTIVE SUMMARY

In July 2010, two active school warning signs were installed on Abel Tasman Drive at the approaches to Motupipi School.

Abel Tasman Drive carries approximately 2500 vehicles per day. The speed limit through Motupipi is 70kph. Motupipi School has a roll of approximately 118 pupils with most of them arriving by bus.

Tasman District has approximately 32 schools.

The signs are activated by the school between 8.30am – 9am and 3.00pm – 3.30pm Monday to Friday or at times during the school day when children are leaving or returning from an outing. The message flashed is “SCHOOL ZONE”.

Speed surveys prior to installation of the Active Warning Signage and post installation have been undertaken. Whilst the graphs appended to the body of this report show that vehicle speeds have come down the last speed survey undertaken in March this year showed speeds were again creeping up to pre-installation levels.

RECOMMENDATION/S

That Council receives this report

DRAFT RESOLUTION

THAT the Engineering Services Committee receives the report Motupipi – Effectiveness of Active School Warning Signs, RESC11-08-04.

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1. Purpose

1.1 The purpose of this report is to inform the Engineering Services Committee regarding the performance to date of the Active School Warning Signs installed on Abel Tasman Drive at Motupipi.

2. Background

2.1 The problem with traditional permanent warning signs is that drivers become familiar with them and ignore them or fail to see or acknowledge them as time passes. Active warning signs with flashing electronics heighten visibility and hence increase the chances of the message being heeded.

2.2 On 15 July 2010 two Active School Signs were installed outside Motupipi School on Abel Tasman Drive, Motupipi.

2.3 Abel Tasman Drive carries approximately 2500 vehicles a day. The speed limit through Motupipi is 70 km/h. Motupipi School has a roll of approximately 118 with most of the pupils arriving by bus. Abel Tasman Drive is a tourist route and at certain times of the year a lot of drivers are unfamiliar with the road.

2.3 The Motupipi school site met the selection criteria set out in NZTAs Traffic Note 56 for Active School Warning Signs – Guidelines. The site was chosen because it was on a main arterial route and had at least 25 children walking or cycling or exiting vehicles at the roadside.

2.4 The active school warning signs were funded from Council's Subsidised Minor Improvements budget.

3. Present Situation & Survey Results

3.1 The signs are switched on by the school between 8.30am–9.00am and 3.00pm–3.30pm Monday to Friday.

3.2 When the two Active School Signs were installed they were set up to flash only at drivers travelling greater then 70 km/h.

3.3 On 10 September 2010 after receiving speed survey data detailing the effectiveness of the signs, it was decided to change the signs to constantly flashing, and then undertake two further speed surveys.

3.4 Photo of Active Sign

Abel Tasman Drive – Looking North

3.5 Speed Survey Results

3.6 Speed surveys have been carried out to capture vehicle speeds outside Motupipi School. The results were then used to measure whether or not the Active School Signs had reduced vehicle speeds outside the School.

3.6 Each survey was carried out over a seven day period. Surveys were carried out on the following dates:

Before Installation
Saturday 15 May 2010 to Friday 21 May 2010
Sunday 27 June 2010 to Saturday 3 July 2010

After Installation with signs only flashing at vehicles travelling >70kph
Sunday 18 July 2010 to Saturday 24 July 2010

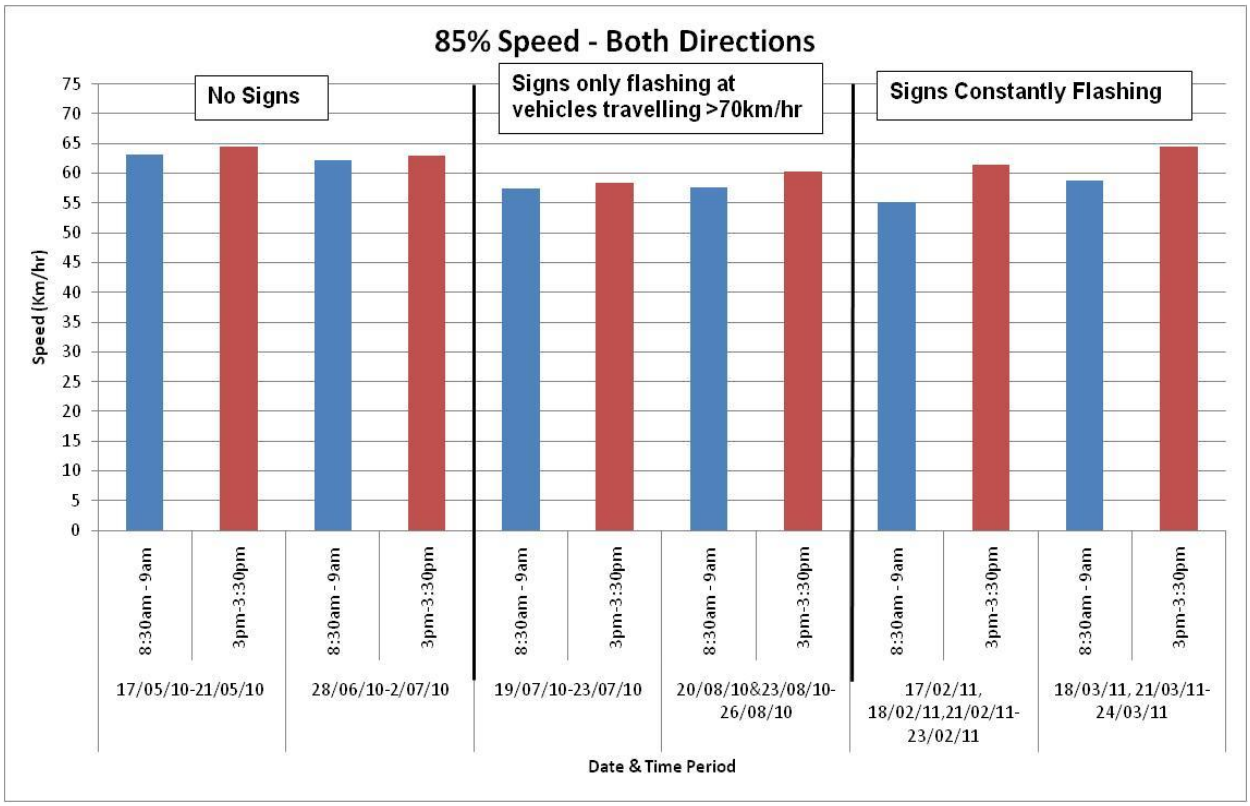
Friday 20 August 2010 to Thursday 26 August 2010

After Installation with signs constantly flashing for 30min period
Thursday 17 February 2011 to Wednesday 23 February 2011
Friday 18 March 2011 to Thursday 24 March 2011

3.7 It should be noted that the speed data used to produce the graphs is Monday to Friday data only. Saturday and Sunday data has been excluded as the signs are not operational during the weekends.

3.8 Graph 1 below shows the 85th percentile speeds for vehicles travelling in both directions. Two further graphs showing the Increasing lane (to Pohara) only and the Decreasing lane (from Pohara) only are appended to this report.

3.9 Where it states in the following graphs 1 & 2 "No Signs" this is referring to there being only Permanent Warning Signs present, these were removed once the new active signs were installed.

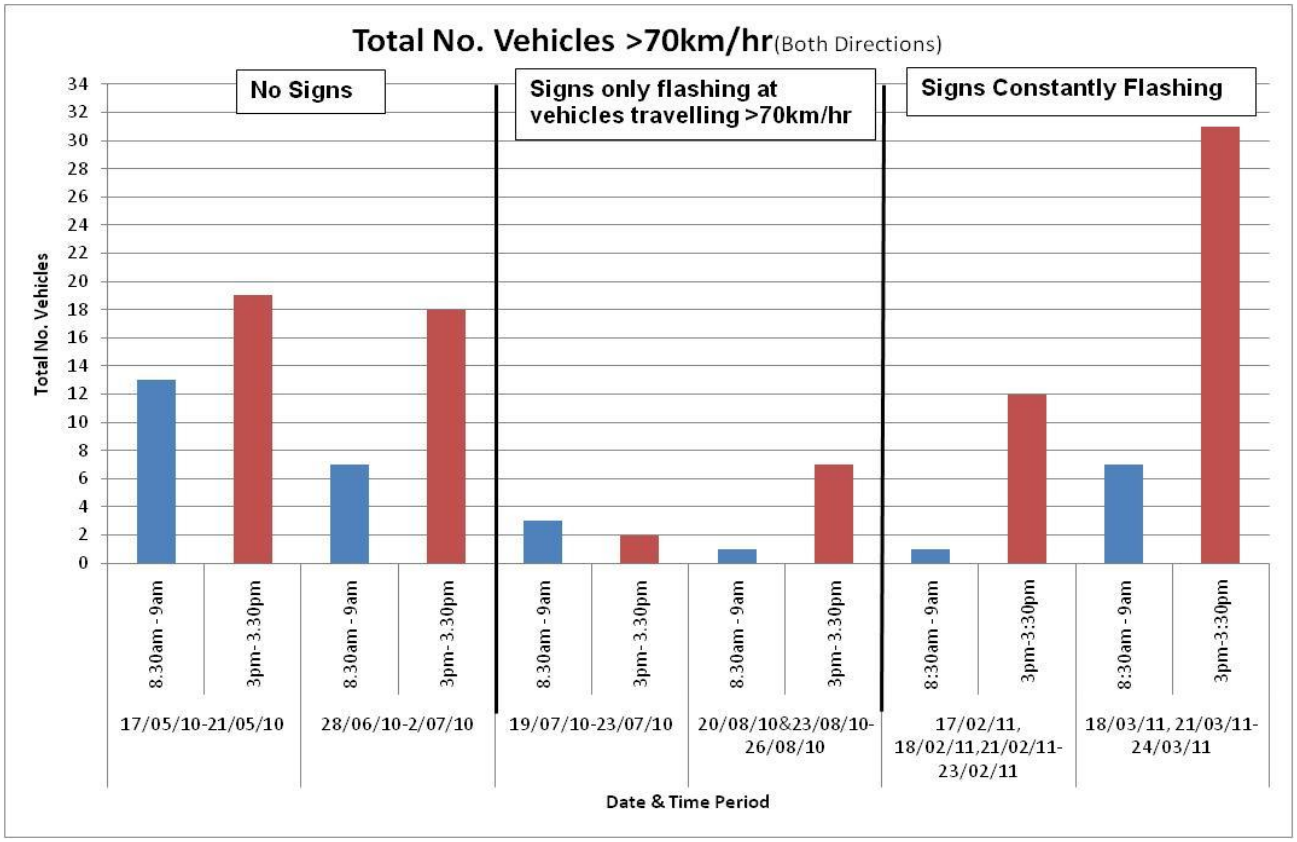


Graph 1: 85th percentile speeds, both directions

3.10 In Graph 1 above the data identifies an overall increase in the 85th percentile speed when altering the operation from flashing at >70km/h to flashing constantly. There is a reduction of 0.3km/h for the 30 minute morning time period and an increase of 3.7km/h for the 30 minute afternoon time period.

3.11 It is possible that the increase in speeds is due to drivers becoming familiar with the signs. It is therefore considered inconclusive in identifying the most effective setting. Notwithstanding the increase in speeds, vehicles are travelling at a lower speed since the installation of the signs, for both types of settings. For the morning period vehicle speeds reduced 4.5km/h with signs flashing at >70km/h and 4.8km/h with the signs constantly flashing. In the Afternoon period speeds reduced 4.4km/h with signs flashing at >70km.h and 0.7km/h with the signs constantly flashing.

3.12 The graph below shows the total number of vehicles travelling greater than 70km/h in both directions:



Graph 2: Number of vehicles travelling over 70km/h

3.13 Graph 2 above shows an increase in the number of vehicles travelling faster than 70km/hr during the 30 minute period with the signs constantly flashing. On average there are two additional vehicles for the 30 minute morning period speeding and 17 additional vehicles speeding during the 30 minute afternoon periods after the sign settings were changed to constantly flashing. This suggests that the signs are more effective in reducing the number of cars travelling over the speed limit if the signs are actively targeting those speeding drivers only.

3.14 The total number of vehicles speeding during the afternoon period has increased from 37 to 43 when comparing the constantly flashing sign to the presence of Permanent Warning (PW) Signs. For the afternoon period the active signs are less effective than standard PW-32 signs.

3.15 The latest surveys identify that on average a total of 554 vehicles pass during the 30 minute morning period and 602 vehicles during the 30 minute afternoon period.

4. Cost of Active School Warning Signs versus Permanent Warning Signs

4.1 The two Active School Warning Signs installed at Motupipi cost approximately $35,000 installed, including hard wire to power. However, where there is not a suitable power supply then solar is an alternative option which whilst may have a lower initial cost and quoted back in 2009 as approximately $30,000, the cost of replacing the solar panel and particularly the controller can quickly make this option very expensive.

4.2 The cost of a typical permanent sign installed on a wooden/metal post using alloy panel with black symbol on yellow fluorescent backing would cost approximately $300-$400 including pole and installation.

4.3 The funding of either signage type is from Councils subsidised roading programme.

5. Further Discussion

5.1 For school warning signs there are only two options available - either a permanent warning sign which is visible at all times or an active school warning sign which is only in use at those times half hour before and at the end of school or in between when necessary.

5.2 Reducing the risk to children of being seriously injured particularly in a rural environment where the road operating speeds are higher includes ensuring that all pick-ups and drop-offs occur in an off road carpark. Whilst carparks can be dangerous, the speeds are much slower and more likely to be survivable.

5.3 Schools and the Ministry of Education have a responsibility to ensure the safety of children at school which includes the front gate. Parents and Council also have responsibilities.

5.4 In an urban situation with footpaths, school crossings, pedestrian improvements and consequently lower speeds it is easier to implement physical safety improvements.

6. Pros and Cons of Active & Passive Signs

6.1 Active School Warning Signs

Pros:

- By having targeted operation times, active school warning signs are more likely to be observed and respected.
- Signs can be used at other times of the school day when children are going off campus.

Cons:

- An expensive option and life time costs need to be considered.
- Can be expensive getting a source of power to signs in a rural environment and solar can turn out to be expensive as well.
- Significant cost to implement across the district with 32 schools.

6.2 School Permanent Warning Signs

Pros:

- These signs are present at all times and when school is closed.
- The signs are relatively cheap.
- Signs can also be gated and made more effective by painting the roadway message “SCHOOL” in red.

Cons:

- Signs tend to be ignored as research has found that only 15% or approximately 1-in-7 signs are recognised and acted upon.

7. Significance

7.1 Once the effectiveness of active school warning signs has been clearly determined then Council will be in a better position to decide whether it wishes to continue to install them at other school sites or look at other options.

8. Recommendation/s

8.1 That the report is received.

9. Timeline/Next Steps

9.1 Staff will continue with speed surveys over the next 12 months to ascertain the long term effectiveness of these devices.

10. Draft Resolution

10.1 That the Engineering Services Committee receives the report RESC11-08-04, Motupipi – Effectiveness of Active School Warning Signs.