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TRANSPORT RESEARCH

Rural school road safety

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Final Report

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SUMMARY

Background

Rural school road safety is of high concern to many communities as there is a conflict between high speed through traffic and the drop-off and pick-up activities associated with school commuting. Because the state highway network accounts for a significant amount of rural traffic and there are approximately 125 schools situated immediately adjacent to state highways (within high speed areas), the New Zealand Transport Agency (NZTA) has an interest in rural school road safety. There are many more rural schools on the local road network controlled by other road controlling authorities. The NZTA also provides traffic safety information and guidance to these other road controlling authorities.

For rural schools, there appears to be two main areas of concern:

1. The road environment within the immediate vicinity of the school and the related pick-up and drop-off areas
2. Children getting to and from school buses

A separate programme of work is currently in progress to address school bus safety. The objective of the current project is to gain a better understanding of the road safety issues faced by rural schools and, taking a fresh approach, recommend initiatives to address road safety at rural schools, particularly in terms of managing traffic speeds.

In Australia, many states have guidance for road safety around schools, albeit with a bias towards urban schools. Variable speed limits tend to be a focus, recognising human tolerances to impact forces. Queensland guidelines in particular, show that school road safety is a joint responsibility between road controlling authorities, school communities and other stakeholders. The formation of a school road safety committee is a core part of the Queensland school road safety process.

Study Approach

In order to gain a better understanding of the road safety issues faced by schools and suggest subsequent initiatives, six workshops with rural schools situated on rural state highways were carried out. The six schools were:

- Opiki School (South of Palmerston North)
- Kai Iwi School (West of Wanganui)
- Dairy Flat School (North of Auckland)
- Whenuakite School (South of Whitianga)
- Te Uku School (West of Hamilton)
- Paki Paki School (South of Hastings)

At each meeting the end of school ‘pick-up’ time was firstly viewed and then the group convened in the school’s library or other suitable location for a discussion. The discussion began with a brief presentation about road safety, which included information about the government’s approach to road safety, school related crash statistics, how motorists drive and behave, speed and why it is important and the competing demands of different road safety approaches. The purpose of this presentation was to provide school personnel with knowledge that the other members of the group already possessed (in a similar way that the viewing of school gate activity provided the visitors with knowledge that school personnel already possessed). This proved to be an effective process for engaging with the schools.

A less formal visit to Ardmore school (South Auckland) also took place to investigate the perceived effectiveness of variable 40 km/hr school zone signs (within a permanently posted 80 km/hr speed limit for a distance either side of the school).

Key issues from workshops

A number of key findings emerged from the workshops:

At all of the schools the main road user activity was private vehicles and school buses turning into and out of the school grounds within a high speed traffic environment. In some cases, there was a pedestrian presence on the highway, either crossing the road or accessing vehicles parked on the road shoulder.

For road safety within the immediate vicinity of rural schools, there appear to be two broad areas of concern:

a) The highway environment near the school

b) The design of drop-off/pick up areas within the school property, their interface with the highway and school procedures and systems

For the highway environment near the schools, the following key issues emerged:

- The conspicuity of schools from the motorists' perspective
- Traffic speed past schools, where significant turning and stopping occurs
- Overtaking near schools

For school property and procedures, the following key issues emerged:

- The organisation of parking (staff and parents) and pick-up and drop-off areas. In some cases, adjacent parking areas (such as an adjoining community hall) would help to provide off-road parking, but is currently under-utilised (Kai Iwi)
- Students having to walk behind vehicles to access the school (Opiki)
- Excessive demand for parking, despite a large and well designed area (Dairy Flat)
- Poor visibility for buses and other vehicles leaving school grounds (Whenuakite)
- Parking/pick up area in poor condition, not clearly marked and no physical barrier from the highway, causing heavy vehicles to use this area – causing seal break etc (Te Uku)
- Potentially risky interface between the highway and school entry/exit, due to a high speed curve with poor visibility (Paki Paki).

Recommendations:

1. A joint responsibility model should be adopted for any initiatives, reflecting that most rural schools will have both highway and school property/procedural issues that need resolving. Previously Land Transport Safety Authority Safety Engineers (now part of the NZTA) would have fulfilled an advisory role in addressing the road safety concerns, however with the disbandment of that agency it is no longer clear who will take this role. It may be that the road controlling authority is best placed to offer advice and guidance for road safety issues at rural schools. NZ Police already have an important education and enforcement role in ensuring a safe road environment near schools.
2. When addressing highway issues near rural schools, a Safe Speed approach should be taken, matching the desired traffic speed with the risks that are present at each school. The two main risk categories are likely to be:

- Turning movements into and out of the school property where side impacts are the main risk. In these instances side impacts of no more than 50 km/hr would create a safe system and therefore traffic speeds of 60-70 km/hr are needed (allowing for braking).
- Pedestrian movement across or alongside the state highway. In this situation speeds of no more than 40 km/hr would result in survivable impact speeds in most cases
- Presently, there are options for permanent 100, 80 and variable 40 km/h speed limits for outside rural schools. This is lacking the ability to effectively manage speeds for turning vehicles and the side impact risks when there is little or no pedestrian activity in more remote rural locations.

3. Therefore it is recommended that the NZTA conduct a trial of 60 km/h and 70 km/hr electronic variable signs at several schools situated in high speed environments. An evaluation may include data from studies that have already been carried out plus new trials for sign and other options that have not yet been evaluated. This process will help to determine the approach that will lead to the best overall road safety outcomes near rural schools.
4. It is important that highway speed issues are not considered alone, but rather the whole rural school system, including the design of school property and school procedures are considered together.
5. Guidelines should be developed to provide a consistent approach to addressing school road safety. This would help to provide a more considered and systematic approach to road safety issues. Ideally, the guidelines would be comprehensive and include both urban and rural schools; however, a more targeted approach might be to focus solely on rural schools. The guidelines should include:
    - Background, including discussion of typical rural school traffic behaviour, definition of the rural school road safety problem and its significance
    - Introduction to a rural road safety system, indicating the different stakeholders and their responsibilities
    - Outline of the preferred treatment philosophy and decision process
    - Specific treatment suggestions for the highway
    - Specific school design guidance and advice for rules/procedures
    - Understanding and managing school bus issues including pick-up/drop-off procedures and bus signage
    - A process for communication and action between stakeholders, including specific guidance on effective engagement techniques that lead to a more collaborative approach to addressing issues

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INTRODUCTION AND BACKGROUND

Rural school road safety is of significant concern for many communities. A recent New Zealand Transport Agency (NZTA) report on school travel systems in New Zealand (Mackie 2010) suggested that rural school road safety is a specific area, among others, that remains problematic. At rural schools there is a conflict between high speed through traffic and the drop-off and pick up activities associated with school commuting. Because the state highway (SH) network accounts for a significant amount of rural traffic and there are approximately 125 schools situated immediately adjacent to the SH network (within high speed areas), the NZ Transport Agency, who manages NZ's state highway network, has an interest in rural school road safety. There are many more rural schools on the local road network controlled by other road controlling authorities. The NZTA also provides traffic safety information and guidance to these other road controlling authorities.

At rural schools, there appears to be two main areas of concern:

1. The road environment within the immediate vicinity of the school, and the related pick-up and drop-off areas
2. Children getting to and from school buses

Various CAS analyses have been carried out to estimate the scale of the crash/injury problem related to rural school environments (Table 1) and for injuries related to urban school environments and pedestrians getting to or from a school bus (Table 2). Table 1 shows that if school students and commuting time only are considered then there have been approximately two high severity injuries per year near rural schools. If this is expanded to include all ages, during school hours, then there have been approximately 10 high severity injuries per year. This wider query may be useful if the general safety of the general public around school road environments is considered.

Table 1. CAS analyses for rural school zone injuries

	Mackie, June 2011	Crowther, Feb 2011	Dixon, 2010
Injuries	Years: 2000-2009 Roads: All open roads Time: 07:30-09:30, 14:30-16:30 (weekdays) Age: 5-17 Location: Within 250m of school	Years: 2005-2009 Roads: SH (80+) Time: Not specified Age: Not specified Location: Within 250m of school	Years: 2005-2009 Roads: All 80+ Time: 7:30-9:00, 15:00-16:30 (weekdays) Age: 5-17 years Location: Within 250m of school
Fatal	3	8	1
Serious	15	43	9
Minor	101	168	60
High severity injuries/year	1.8	10.2	2.0

By comparison, there are approximately 28 high severity injuries per year associated with urban schools (Table 2). Based on injury numbers alone ('collective risk'), urban high severity injuries are approximately 14 times more prevalent than rural equivalent injuries. However, if 'personal risk' (crashes per unit of travel) is estimated based on the fact that 86% of New Zealanders live in urban

areas[1] then urban high severity injuries near schools are approximately twice as likely, per school student. A further consideration is that school travel only occurs over 3-4 hours each day. This reduces the exposure of students to the possibility of traffic related injury, making the personal risk associated with school travel much higher than the collective risk.

School bus injuries appear to be slightly more prevalent than rural school zone injuries although some of these are likely to have occurred in urban areas.

Table 2. CAS Analyses for Urban school zone injuries and school bus use

	Dixon, 2010	Baas et al, 2010
	Years: 2005-2009 Roads: Urban (70 or less) Time: 7:30-9:00, 15:00-14:30 (weekdays) Age: 5-17 years Location: Within 250m of school	Years: 1987-2007 Roads: All Roads Time: 06:00-09:00, 14:00-17:00 Age: 0-17 Location: Pedestrians to or from school bus
Fatal	4	22
Serious	137	45
Minor	873	91
High Severity injuries/year	28.2	3.2

Regardless of the various ways of analysing the road injury statistics, there is not a large number of road related high severity injuries associated with rural school travel (compared with other types of road crashes). It is therefore interesting that rural school road safety is repeatedly raised as a significant issue of concern by rural communities.

An explanation for this may be that the value placed on children's lives by communities are so high that virtually no school transport related deaths or serious injuries are acceptable (as opposed to a more widespread societal acceptance of a road toll of approximately 300 people per year). It may be that 'not all deaths are equal' and if a value of statistical life (VOSL) process was used to value one school related fatality, it would be much higher than currently attributed to a road fatality in New Zealand. The death of a child might be one of the most devastating events that could happen to any parent, and when a child travelling to or from school is killed, an entire school community is likely to be severely affected. Such an event is also likely to make national headlines and therefore affect large numbers of people at an emotional level.

Road safety initiatives in New Zealand generally follow a risk based approach, where data from previous years' crashes are used to prioritise road safety activities in an attempt to reduce road trauma over coming years. Even with the recently adopted 'Safe System' approach, risk of injury and prioritising road safety activities based on risk, will still be an underlying principle.

Consequently, there is a tension between the repeated concerns raised by rural communities and the evidence based approach to road safety used by transport authorities. A logical response by

[1] 2010 New Zealand Yearbook, Statistics New Zealand.

transport authorities may be to reject any significant effort towards rural school road safety initiatives based on the relatively low risk presented by historic crash data.

In January 2000, 40 km/h variable school zones started operating in Christchurch City under a trial, and in July 2002 they were approved for use in New Zealand. Generally, 40 km/h variable school speed zones were only warranted for larger schools in urban areas, and treatments for other schools were needed. In June 2004, active school warning signs were first trialled in Timaru District and Invercargill City. The initial trial was inconclusive and in 2006 it was extended to Dunedin City. The active school warning signs were found to increase driver's awareness to school activity and were approved for use on New Zealand roads in July 2008. Currently there is a trial of permanently displayed School 40 km/h advisory speed signs underway in Selwyn District (see next section for more detail).

However under a safe system approach, the NZTA recognises the human vulnerability associated with school pedestrians and turning traffic associated with schools, and is prepared to take a more open minded approach to managing these speed controls. This is consistent with government's Safer Journeys Road Safety Strategy, in which a key focus is safe speeds based on human tolerances to forces.

The objective of this project is to gain a better understanding of the road safety issues faced by rural schools and, taking a safe system approach, recommend initiatives to address road safety at rural schools.

RELEVANT EXISTING LITERATURE AND INFORMATION

New Zealand information

Three recent New Zealand reports that support this project are:

- Baas et al. (2010) - *School bus safety*, and Mackie and Baas (currently being reviewed by Road Safety Trust) – *Evaluation of illuminated 20 km/hr school bus signs.* These reports address the important issue of school bus safety, which is arguably the biggest issue for rural schools, and serve to highlight the point that the journey to and from school is at least as important from a safety perspective as the pick-up and drop-off activities at rural schools. There are a number of documents, particularly from Australia, that suggest engineering and procedural measures to improve school bus safety. Baas et al. (2010), showed that the benefit cost ratio for school bus initiatives such as illuminated variable speed signs on school buses, are likely to be more favourable than many road improvement projects.
- Mackie (2010) – *Improving school travel systems*. Among other findings, this report highlights that rural schools have not received as much attention as urban schools; but also that the safety issues at rural schools are likely to be different to those of urban schools and that current rural school guidance is mostly limited to school bus safety.

Traffic Note 37: 40 km/hr variable speed limits in school zones – guidelines.

The recently published Traffic Note 37 gives guidance for the use of 40 km/hr variable speed limits in school zones (Figure 1). It includes a section on rural schools and the conditions that might be appropriate for the application of variable 40 km/hr speed limits at rural schools. Traffic notes 56 (active warning signs in school zones) and 61 (safe system rural speed management) should also be consulted.

Figure 1. School zone sign options from Traffic Notes 37 (left) and 56 (right).

Ministry of Education's *Property management handbook*

The Ministry of Education's *Property management handbook* (2007) includes a section on traffic management (section 6.22) that includes basic information about implementing a school travel plan, designing school accesses and considering parking (Figure 2). The associated principles are as follows:

- Car traffic flows in a clearly marked one-way direction.
- Pedestrian access points are located separately from car access points.
- The bus bay is separate from car and pedestrian access points.
- An off-street drop-off/pick-up zone is provided.
- Staff are stationed at key points to manage traffic flow.
- Car access is separate from car parking.

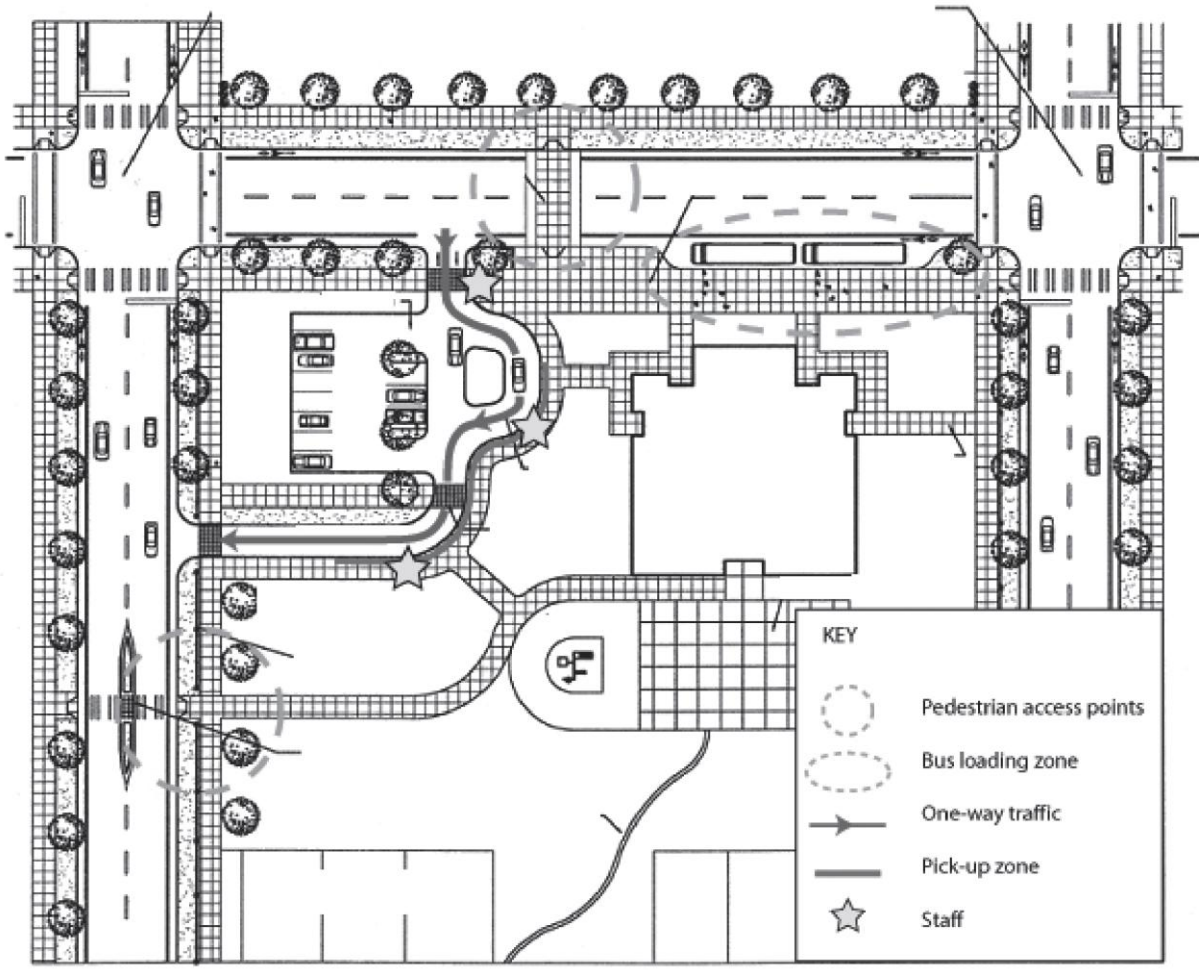


Figure 2. Diagram of idea school transport layout from the Ministry Education's Property Management Handbook.

No specific guidance on managing traffic at rural schools is given although many of the principles would apply to them also. Apart from the information provided, this handbook demonstrates that for rural schools, many of the issues are likely to be matters for the school to resolve, such as parking and rules around picking and dropping off children. Although it seems logical that responsibility for rural school road safety should be shared between schools and the road controlling authority, which in the case of state highways is the NZTA. Previously Land Transport Safety Authority Safety Engineers (now part of the NZTA) would have fulfilled an advisory role in

addressing the road safety concerns, particularly on the local road network. However with the disbandment of that agency, this leadership role is now less clear, although guidance from the NZTA may assist schools in planning for traffic related issues.

School Travel Plans

School travel planning processes are now well established in New Zealand, although their adoption has mostly been restricted to main urban centres. It would be logical that, where possible, rural road safety issues are addressed through school travel planning processes. However, some specific training may be needed so that the issues and solutions identified are relevant to rural schools, and some rural areas do not have the availability of a School Travel Planner, and therefore additional resourcing could be needed.

Selwyn District Council

Following an initial application to trial 50 km/hr rural school zone static signs (with effect for certain times of the day), a trial of permanently displayed School 40 km/h advisory speed signs is underway in Selwyn District (Figure 3). The new signs are to be located at nine rural schools : Broadfields, Burnham, Greendale, Greenpark, Hororata, Ladbrooks, Weedons, Windwhistle and Glentunnel – all with a current speed limit above 60kph. The trial will be in place until December 2012 and will include pre/post surveys of public perception, speed and behaviour.

Figure 3. School zone signs currently being trialled in Selwyn District

Rodney District Council school threshold treatments

Before Auckland Transport was formed, Rodney District Council (RDC) developed and consistently used a distinctive school zone threshold treatment that included the standard static sign, flashing amber lights, side islands and a bauxite road surface with “School” marked on it. Although a suitable threshold treatment would need to be consistently used around the country (perhaps building on the standard threshold that is used for other applications) the RDC school thresholds provide a good example from which ideas might extend.

Figure 4. Rodney District Council (now part of Auckland Transport) school thresholds

Hastings School Zone Traffic Management Policy

The purpose of this policy document is to provide guidance to traffic engineers and asset managers to facilitate the implementation of "school zones" and create a safe environment for children. Included in this Hastings District Council document is a suggested school zone treatment (Figure 5) including threshold marking, signs and 'dragons teeth' roadmarking (building on the NSW initiative), which has been trialled at a school in Clive (between Hastings and Napier). An overall speed reduction of 10 km/r (14 km/hr during am peak) was observed following the implementation of the school zone treatment. The speed limit is 50 km/hr on the urban side of the zone, 100 km/hr on the rural side and 50 km/hr within the zone. In general, the actual speed within the zone during school commuting hours is approximately 40 km/hr.

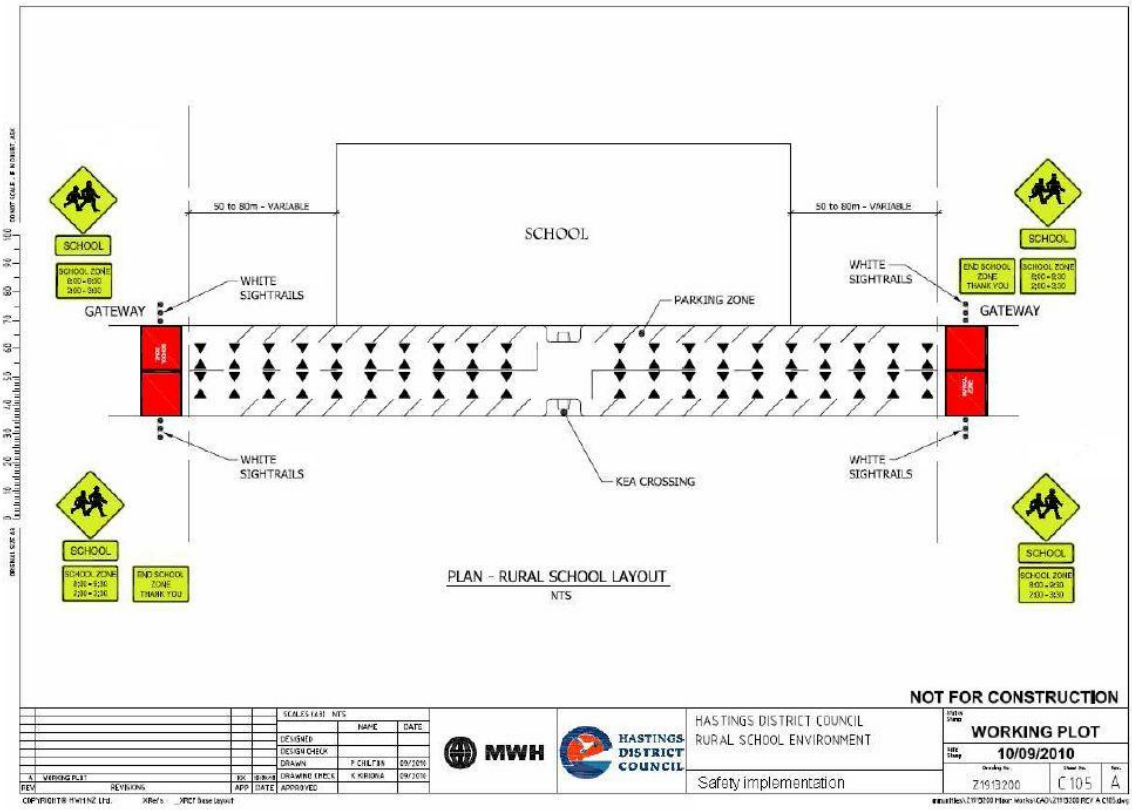


Figure 5. Layout for dragon's teeth roadmarking treatment adopted by Hastings District Council.

A potential benefit of this approach is that the road appearance changes within the school zone, reinforcing a 'special' road environment to motorists. This style of treatment will be trialled for a rural school in Hastings District in the near future. However, at the time of writing this report, Hastings District Council has not submitted their application to the NZTA for trialling the non-conforming traffic control devices.

Overseas information

A number of Australian States, the US and the UK have produced guidelines for the design of facilities around schools or information documents about school road safety.

Guidelines for road safety around schools (Western Australian Local Government Association 2007)

These guidelines were produced by the Western Australian Local Government Association (WALGA) for the purpose of enhancing the safety of children travelling to, from and around schools. Although the document is mostly focussed at urban schools, it is important to note that the document represents a degree of leadership by WALGA in providing guidance for engineering and other initiatives for school road safety.

School environment safety guidelines (Queensland Government 2005)

These Guidelines were published as part of a comprehensive collection of programmes, schemes, and initiatives (called SafeST) designed to improve the travel safety of schoolchildren in Queensland, Australia. The Guidelines give a systematic approach to the assessment and improvement of road safety near schools. They are intended to provide a single point of reference for any organisation or authority involved with, or seeking information about, road safety near schools, including road and

transport authorities, school communities, parent associations, educational authorities, and the police. In many ways the SafeST process is similar to the school travel plan process in New Zealand. A crucial difference is that one of the initial steps of the SafeST process is for the school community to form a SafeST committee that works through the issues with the relevant authorities, which possibly gives the school community a good deal of ownership of the process and improvements. The guidelines also outline the roles of various stakeholders, which is important if school road safety issues are to be a shared responsibility between transport authorities, schools and surrounding communities.

Again, much of the guidance is relevant to urban schools. However, school zone speed limits are suggested for various speed environments (Figure 6) and the correct signs for different environments are given.

Posted Speed Limit[4] (km/h)	Site conditions	School Zone Speed Limit (km/h)
50 and 60	All	40
70	All	40 (see Notes 1 & 2)
80	All	60 (see Notes 1 & 2)
90 and 100	Where the road authority perceives there is sufficient risk associated with student pedestrian activity on or near the road.	60 (see Notes 2 & 3)
90 and 100	Where the road authority perceives there is insufficient risk associated with pedestrian activity on or near the road, but a lower speed limit is considered necessary due to the presence of school buses or other school associated vehicular activity.	80 (see Notes 2 & 3)
110	All	80 (see Notes 2 & 3)

Notes:

1. In a 70km/h or 80km/h speed zone, the SCHOOL ZONE SPEED LIMIT signs (R4-Q01) shall be at least size B.
2. In speed zones of 70km/h and above, the minimum length of a school zone should be 300m.
3. In 90 to 110km/h speed zones, the following requirements shall apply:
   - a SCHOOL ZONE AHEAD sign (R4-Q03) shall be installed at least 300m in advance of the school zone on each approach; and
   - the SCHOOL ZONE SPEED LIMIT signs (R4-Q01) shall be size C. In some situations it may be necessary to install these signs (R4-Q01 and R4-Q03) on both sides of the road.
4. This is the posted speed limit that applies outside the school zone hours of operation.

Figure 6. School zone speed limits for various posted speed limits from Queensland guidelines.

Auditor-General's report / Performance Audit, Improving Road Safety: School Zones, Roads and Traffic Authority of NSW

The NSW Roads and Traffic Authority (RTA), in conjunction with the NSW Police Force and the Department of Education and Training, have introduced a number of initiatives to improve the safety of children around schools over past decades. Reduced speed limits around some schools were introduced in 1992 and in 2001 the government announced it would implement 40km/hr speed limits on all roads with direct access to schools and these were completed by 2003. The objective of the audit was to assess whether school zone initiatives have made a difference to safety around schools. The audit found that pedestrian casualties have decreased over the period of improved school zone measures. Although the number of school student pedestrian casualties are proportionately low, the RTA response to the Audit points out that the engineering improvements

have reduced pedestrian injuries for all age groups, making the effectiveness of such measures greater than if school students alone are considered.

Dragon's teeth at school zones (RTA 2009)

Related to the NSW initiative above, 'Dragon's Teeth' roadmarkings are being marked within all 40 km/hr school zones in NSW in order to reinforce appropriate driver behaviour. Although this treatment may be largely applicable to urban and urban-fringe road environments (as per the Hastings example), this treatment may be appropriate for rural school environments where there is a significant pedestrian risk. New Zealand Road Controlling Authorities wanting to use dragons teeth markings would need permission from their regional NZTA Office.

Figure 7. Painted school thresholds and dragon's teeth markings used at all 40 km/hr school zones in NSW

Victoria (VicRoads) School speed zones

In Victoria, the following speeds apply to higher speed roads:

Outside schools on 80, 90 and 100 km/h roads, a time-based 60 km/h speed limit applies from 8.00 am to 9.30 am, and from 2.30 pm to 4.00 pm on school days (Figure 8). The regular 80, 90, or 100 km/h limit applies outside these times. Electronic variable speed limit signs apply to roads with a speed limit of 70 km/h; higher speed roads which carry more than 500 vehicles each day; and roads with a speed limit of 60 km/h with high traffic volumes. On roads with a speed limit of up to 70 km/hr, variable 40km/hr speed limits apply.

Figure 8. Variable speed limit signs used in 80, 90 or 100km/hr areas near schools in Victoria

Key points from background literature

- Many Australian states have guidance documents for school road safety
- There is significantly more guidance for road safety at urban schools than for rural schools
- Rural road safety guidance tends to be focused on school bus safety, which is possibly the most significant rural school road safety issue.
- Variable speed limits tend to be the focus for most school road safety measures, recognizing human tolerances for impact forces.
- There is some information, especially from Queensland, that recognizes that school road safety has joint responsibilities, with transport authorities, police, schools and communities all needing to actively participate.

STUDY APPROACH

In order to gain a better understanding of the road safety issues faced by schools and suggest subsequent initiatives, six workshops with rural schools situated on rural state highways were arranged and carried out. The NZTA project manager asked regional road safety engineers to nominate schools where road safety issues have been identified.

The six schools were:

- Opiki School (South of Palmerston North)
- Kai Iwi School (West of Wanganui)
- Dairy Flat School (North of Auckland)
- Whenuakite School (South of Whitianga)
- Te Uku School (West of Hamilton)
- Paki Paki School (South of Hastings)

Please see Appendix A for more detailed information about each school.

Each meeting was attended by school representatives (including school principal), NZTA National and regional personnel, NZ Police and a consultant to NZTA (the author of this report). In some cases local council road safety staff and NZTA network safety consultants also attended.

At each meeting the end of school 'pick-up' time was viewed (except for Opiki School when the beginning of school 'drop-off' time was viewed), to gain an understanding of typical road-user behaviour at each school. For this activity, police patrol cars were parked away from view and high visibility clothing was not worn (which meant that attendees remained on school property), to prevent undue attention and possibly modify parent and student behaviour.

Following the viewing of school gate activity, the group convened in the school's library or other suitable location for a discussion. This was preceded by a brief presentation about road safety, which included information about the government's approach to road safety, school related crash statistics, how motorists drive and behave, speed and why it is an important factor and the competing demands of different road safety approaches. The purpose of this presentation was to provide school personnel with knowledge that the other members of the group already possessed (in a similar way that viewing of the school gate activity provided the visitors with knowledge that school personnel already possessed). By following these steps, the following discussion of road safety issues affecting the school involved a collaborative sharing of concerns and ideas rather than a 'them and us' argument from different perspectives and positions. Further, the school personnel were always given the first opportunity to express their concerns and suggest ideas. Detailed notes were taken at each workshop for later analysis.

This approach was universally successful and each meeting was productive. It seemed that a high degree of trust was developed at each meeting and so further communication with each school, outlining what (if anything) will be done for their school as well as updating them on the wider national project will be important.

A less informal visit to Ardmore school (South Auckland) took place to investigate the perceived effectiveness of variable 40 km/hr school zone signs (within a permanently posted 80 km/hr speed limit for a distance either side of the school). The author and NZTA project manager drove past the school a number of times during pick-up time at 3pm and then spent some time discussing the merits of the system with the school principal and other school staff.

Figure 9. 40 km/hr school zone signs (left) and 3pm pick-up environment at Ardmore School.

Following the school visits, the issues from each school were combined to identify themes or 'key issues' that were recurring across the schools. Individual school requirements (both immediate/low cost and more significant) were also noted for each school.

A draft rural school road safety philosophy and suggested approach for addressing road safety concerns at rural schools was started by the project team and further developed at a reference group meeting in Wellington. The recommendations provided in this report largely reflect the ideas developed through this process.

KEY ISSUES FROM WORKSHOPS

The key issues arising from each school workshop, along with obvious/lower cost treatment ideas are presented in Appendix A**Error! Reference source not found.**. Photos, and further detail about specific issues for each school are given in Appendix B.

Road use around rural schools

It became clear from the workshops that for many schools, walking or cycling to school is simply not an option as high speed rural roads are not designed for such use and most rural schools do not have a network of pathways and crossings providing a safe route to school. Some exceptions may be where rural schools are situated within small communities where a footpath may be present along-side a lower speed road environment. Therefore, almost all travel to and from the rural schools that were visited was by private vehicle or bus. This means that vehicle vs. vehicle crashes are likely to be the greatest danger. At some schools, where parents park on the road shoulder, pedestrians are within close proximity to high speed traffic, including children who often act unpredictably. At Whenuakite School students periodically cross the state highway to access properties situated opposite the school.

Broad areas of concern

From the previous literature and workshops, rural road safety issues can be categorised into three broad areas:

- The highway environment near the school
- The design of drop-off/pick up areas within the school, their interface with the highway and school procedures and systems
- School bus safety

School bus safety has been specifically addressed by Baas (2010) and Mackie and Baas (In press) and so this report will focus specifically at the first two areas. However, it is important that these areas of concern are eventually considered together so that a whole system approach is taken for rural schools.

The highway environment near the school

Conspicuity of schools

A key observation from the school workshops was that the presence of schools was usually not apparent from the motorists' perspective (Figure 10, top photos) and therefore did not have much impact on the peripheral highway environment. This was reinforced by no change to the road layout on approaches in most cases apart from the standard school signs positioned on the school approaches and in two cases an 80 km/hr speed limit change. This lack of cues to motorists meant that at most schools traffic passed the school at or near the open road speed that predominates for that section of state highway, as would be expected. During school pick up times the presence of some parked cars on the roadway for some schools (with people getting in and out of them) provided some context change (Figure 10, bottom photos), but in most cases vehicles were parked off the roadway and were not visible to approaching motorists until they were next to the school. The variation in contextual cues that exists for each school is important and highlights the need for each school to be studied prior to any recommendations for intervention.

A dilemma is created when considering the road environment context. The presence of vehicles and people on the roadside helps to provide a context to motorists, which helps them to recognise school activity and slow down accordingly. Conversely, the presence of people near high speed

traffic lanes is a potentially risky situation that departs from a 'safe system' approach. The correct safety approach needs to be established before any suggestions for road safety improvements around schools are given.

Figure 10. At most rural schools, the highway environment provides very few cues of the presence of a school and a need to slow down or be more alert (Opiki, left and Kai Iwi, right, above). At Dairy Flat school (bottom left) vehicles parked on the road shoulder and at Ardmore school (bottom right) a significant school pick-up presence does provide cues to motorists, but may also be risky in a high speed traffic environment.

Traffic speed past schools

Another key theme that emerged from the school workshops was that the speed of traffic past schools was generally perceived by school representatives as being too high. It was felt that speeds of 90-100km/hr were too high when school traffic was pulling into or out of the school grounds onto the state highway, or stopped on the road shoulder near the school (with students and parents getting into and out of vehicles).

At Ardmore School, where variable 40km/hr speed signs have been installed, a potential issue is the transition from the predominant higher speed limit of 80 km/hr to 40km/hr and perhaps more importantly the transition back to 80km/hr. Parents and students who believe a 40 km/hr environment is still in effect, may be at risk if vehicles travel through at much higher speeds just after the 40km/hr signs are turned off. The magnitude of this risk requires further investigation.

Overtaking near school

A commonly reported issue was overtaking by vehicles travelling through school areas, of vehicles that were slowing to stop at the school. Many parents in particular felt that such manoeuvres seemed particularly risky, yet common, during school commuting times.

Right turn into school

Another commonly reported issue was the risk of right turning vehicles into the school, waiting on the road for the opposing traffic to clear, and being struck from behind. Dairy Flat was the only school with a painted right turn bay, and at several schools the state highway has a narrow road reserve that will not allow enough space for a following vehicle to safely go around the vehicle waiting to turn right.

The design of drop-off/pick up areas within the school, their interface with the highway and school procedures and systems

At every school it became clear that, as well as issues directly related to the highway, there were issues related to the school property pick up and drop off areas, their interface with the highway and also school procedures (or their adoption). A good example was Kai Iwi School, where there were not many carparks in front of the school, for parents picking up their children (Figure 11), and many of the carparks were used by teachers. A suitable parking/pick up area at the community hall next door, connected to the school by a well designed footpath (or door in fence) was also under-utilised. The lack of parking at the front of the school caused some parents to park on the highway (shoulder) adjacent to high speed traffic. Although the parking/pick up area at the front of the school is not large, better use of adjacent land and more rigorous enforcement of school transport policies would help significantly in this example.

Other issues related to parking/pick up areas included:

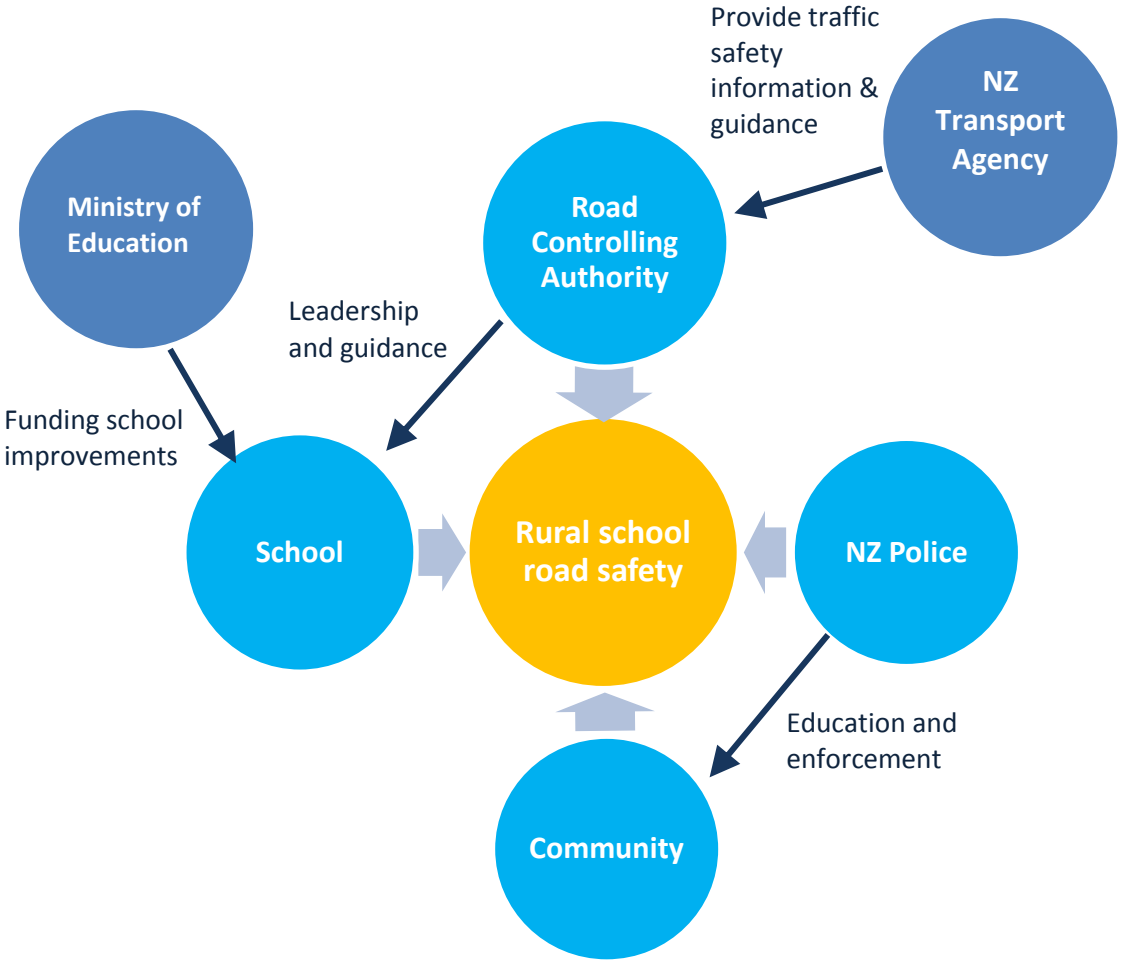
- Students having to walk behind vehicles to access school (Opiki)
- Excessive demand for parking, despite a large and well designed area (Dairy Flat)
- Poor visibility for buses and other vehicles leaving school grounds (Whenuakite)
- Parking/pick up area in poor condition, not clearly marked and no physical barrier from highway, causing heavy vehicles to use this area – causing seal break etc (Te Uku)
- Potentially risky interface between highway and school entry/exit, due to high speed curve with poor visibility (Paki Paki)

Figure 11. At Kai Iwi school, a small carpark, largely filled with teachers cars and an under-utilised community hall carpark next door, leads to some parents dropping off and picking up students from the side of the road

RECOMMENDATIONS

A philosophy to guide rural school road safety interventions

It is clear from this study that responsibility for rural school road safety needs to be a joint responsibility between road controlling authorities, schools and school communities. The study found that many of the issues were related to school property and procedures, as well as the highway environment. Any further guidance on rural school road safety needs to reinforce this underpinning philosophy if a *safe rural school system* is to prevail. With this in mind, it may be that road controlling authorities are best placed to offer leadership and guidance for schools, for things such as the design of parking/drop-off areas and school road safety policies. This may allow a more planned and considered approach to rural road safety, rather than reactionary measures to inappropriate traffic behaviour outside of schools. NZ Police already have a role in road safety education and enforcement for schools.



An approach for addressing highway issues near schools

Clearly a key concern for school communities is the speed and behaviour of traffic near schools during drop-off and pick-up times. Furthermore, a Safe System approach might suggest that speeds near schools should be lower than 100 km/hr due to the vehicle and sometimes pedestrian activity that often exists within the road environment. For these reasons, any highway interventions should focus on managing speed around schools and improving driver awareness of school activity.

There may be a rationale for a minimum baseline level of intervention for all rural schools of 80 km/hr that currently reside next to 100 km/hr road environments. In many cases this could

effectively be achieved with signage, but where development is less obvious (For example on approaches to Opiki School, Figure 10), some level of road environment change may also be needed such as threshold treatments, side or median planting, or 'dragons teeth' roadmarkings.

A complementary and parallel project that is currently being carried out by NZTA is the development and trial of rural intersection active warning systems (RIAWS) in order to provide safety solutions for high risk rural intersections. At the heart of this project is a recognition that side impact crashes are of primary concern at intersections and that impact speeds of no more than 50 km/hr are needed to prevent serious harm in such circumstances. This means that traffic speeds on intersection approaches must be no more than 70-80 km/hr (as braking is likely to occur in many circumstances) and accordingly, active warning signs of 60-70 km/hr would be required in order to achieve this (Figure 12). Please refer to the project report (Mackie 2011), for more information regarding this.

Side impacts between vehicles have also been identified as the major risk at rural schools. Therefore, there is logic in using the rationale developed by the RIAWS project to manage speed at rural schools when there is a significant side impact crash risk.

Figure 12. Example Rural Intersection Active Warning System (RIAWS) sign, so far used for focus group purposes, which in principle may be applicable to rural schools at intersections, to mitigate the risk of serious harm side impact collisions.

Taking this concept further, it may be that in some instances, when schools are situated near intersections (such as Opiki or Te Uku schools), active intersection speed reduction signs or school speed reduction signs could be used to manage speed at intersections and schools. Figure 13 shows possible sign configurations for such circumstances. These signs build on the designs that have been developed for the 40 km/hr school zones (Figure 14). However, pursuant to the current gazette notice (*New Zealand Gazette*, 21/4/2011, No. 55, p. 1284) a variable school speed limit must be 40 km/h, an no other school zone variable speed limits are allowed. Therefore to use a 60 or 70 km/h variable speed limit, the NZTA would need to conduct a Traffic Control Devices Trial.

Figure 13. Possible active mandatory speed reduction signs to reduce the risk of side impact serious harm, for school (left) and intersection (right) contexts. For school environments, a 70 km/hr sign would be used within a permanently signposted 100 km/hr environments, whereas the 60 km/hr version would be used within permanently signposted 80 km/hr environments.

At some schools a degree of pedestrian activity near the roadway may be unavoidable as parents have no other choice but to park on the road shoulder. In such a situation, a significant pedestrian risk may exist and, in the same approach to urban schools, a variable 40 km/hr speed limit may be necessary, within a permanent 80 km/hr environment. Please refer to Traffic Note 37 40 *km/hr variable speed limits in school zones – guidelines* for more guidance on this approach.

Figure 14. A 40 km/hr school zone option (from Traffic Note 37) that may be appropriate for some rural schools with significant pedestrian risk, if the surrounding speed limit is already lower (e.g. 80 km/hr) and environmental cues reinforce school activity.

The decision to install variable 40 km/hr speed limits at rural schools needs to be treated carefully. There may be safety issues related to the transition between the underlying high speed environment and activation/deactivation of the variable 40 km/hr speed limit signs. They also need to be very consistently used to minimize any mis-understanding of the posted speed environment at any particular time. In the future, it may be preferable for such signs to be controlled by a centralized traffic control centre.

As part of the decision making process for 40 km/hr variable speed limits, a decision needs to made whether to provide for pedestrian activity on or near a high speed road by installing variable 40 km/hr speed signs, or whether it is preferable to remove pedestrian activity from the road

environment through increased bus use and/or alternative parking arrangements. Individual school circumstances are likely to significantly affect this decision making process, but a process that seeks to address parent parking behaviour is recommended as part of the process.

If the Ardmore example is used, 40 km/hr variable speed signs have been installed within a permanent 80 km/hr zone in reaction to significant pedestrian activity on and near the road during school pick up and drop off times (as described earlier). While 40 km/hr (or lower) speeds are appropriate when pedestrians are present, another approach might be to remove vehicle parking from the main road in the first instance. At Ardmore, this might have been achieved by providing additional parking, and a pedestrian link to it, at the community hall nearby, accessed from a side-road (Figure 15). Perhaps the road alignment could be adjusted to remove the wide shoulder that is currently used for parking on the opposite side of the road to the school and re-allocate the space to parking on the same side as the school.

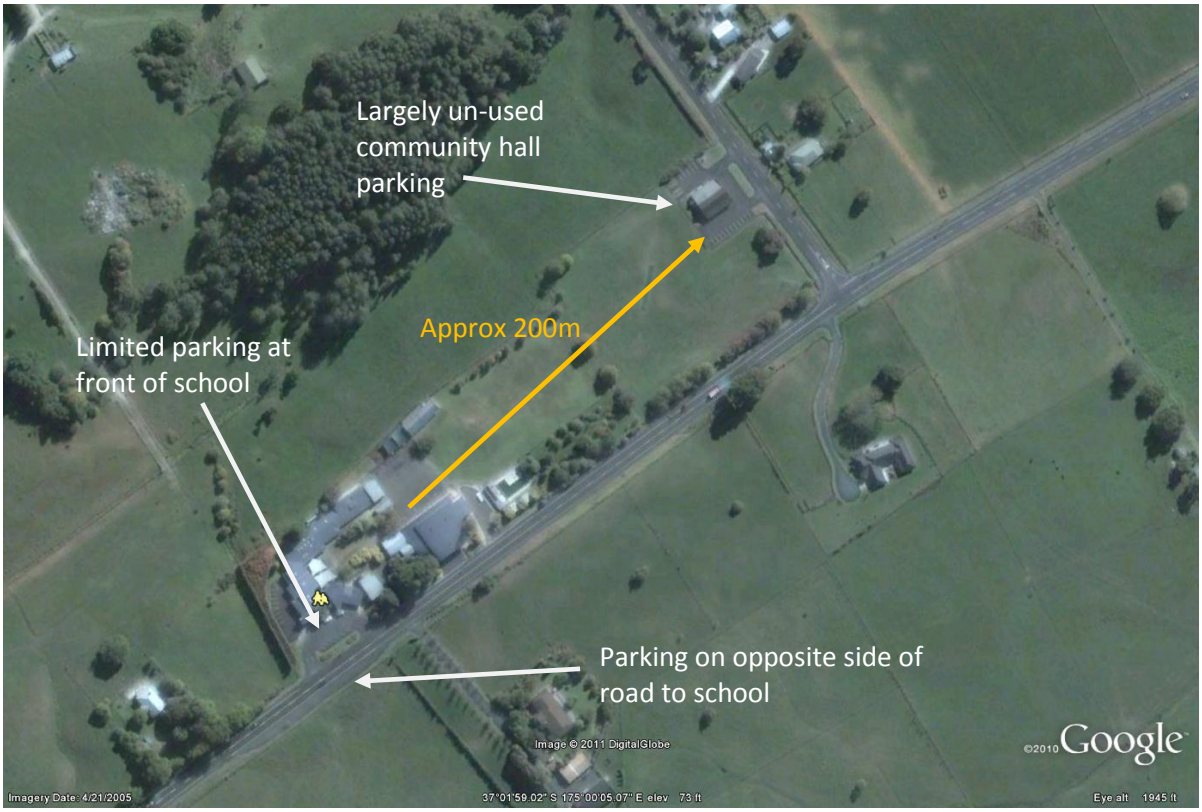


Figure 15. Aerial view of Ardmore School in South Auckland, showing current and possible parking options.

At Kai Iwi School a similar approach might apply. While side impact risk may be mitigated with various speed reduction options or highway improvements (such as a flush median), pedestrian risk might be mitigated by making better use of community hall parking facilities next door (Figure 16).

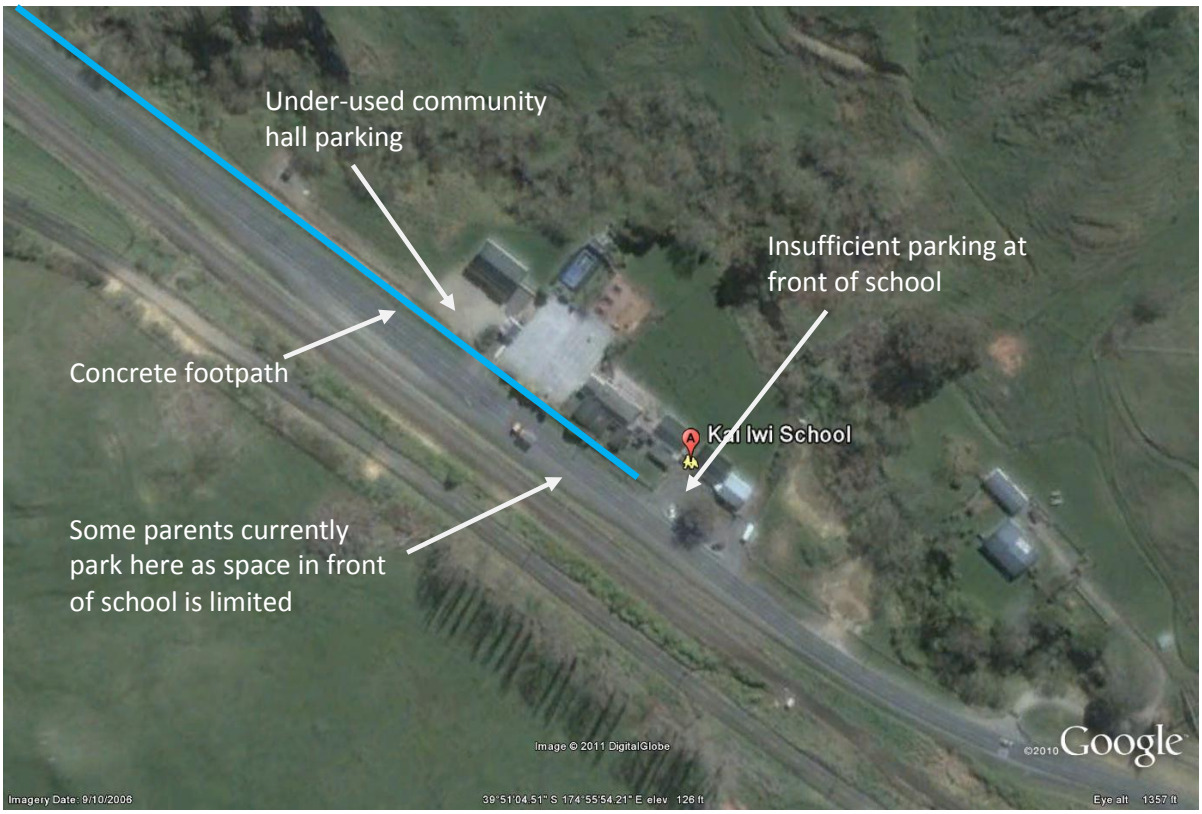


Figure 16. Current and possible parking arrangements at Kai-Iwi School

Four main sign configurations that may be appropriate for rural schools are proposed for trials and are summarised in Figure 17.

1. Existing signage configuration
2. Active school zone warning sign (with or without associated 80 km/hr speed limit), reflecting a need to make motorists more aware of rural schools
3. 60 km/hr or 70 km/hr variable speed limit, possibly with surrounding 80 km/hr posted speed limit: Reflecting a side impact crash risk. This sign may or may not operate in conjunction with a Rural Intersection Active Warning System.
4. 40 km/hr variable speed limit with surrounding 80 km/hr posted speed limit: Reflecting pedestrian crash risk

With these proposed sign options, there is potentially a trade-off between different road safety perspectives. This approach attempts to match the desired motorist speed to the conditions that are to be expected near the school. Because the study found a range of possible conditions, a number of sign options are proposed. This approach is consistent with the Safer Journey's strategy. However, an alternative perspective is that too many sign options may confuse drivers or dilute the recognisability, and therefore overall effectiveness, of school signs in general. Any consideration of appropriate speeds at rural schools should take a wider view by also considering the 20 km/hr school bus signs that have recently been investigated.

It is suggested that all of the sign options in Figure 17 are included in a nationwide trial of rural school signs. A well-designed trial will help to determine whether fewer or greater number of speed limit options is likely to provide better overall road safety outcomes. Because only 40 km/hr speed reductions are currently permitted, a Traffic Control Devices (TCD) trial would be needed to evaluate the 60 or 70 km/hr speed options presented in Figure 17.

Possible sign options for different road environments

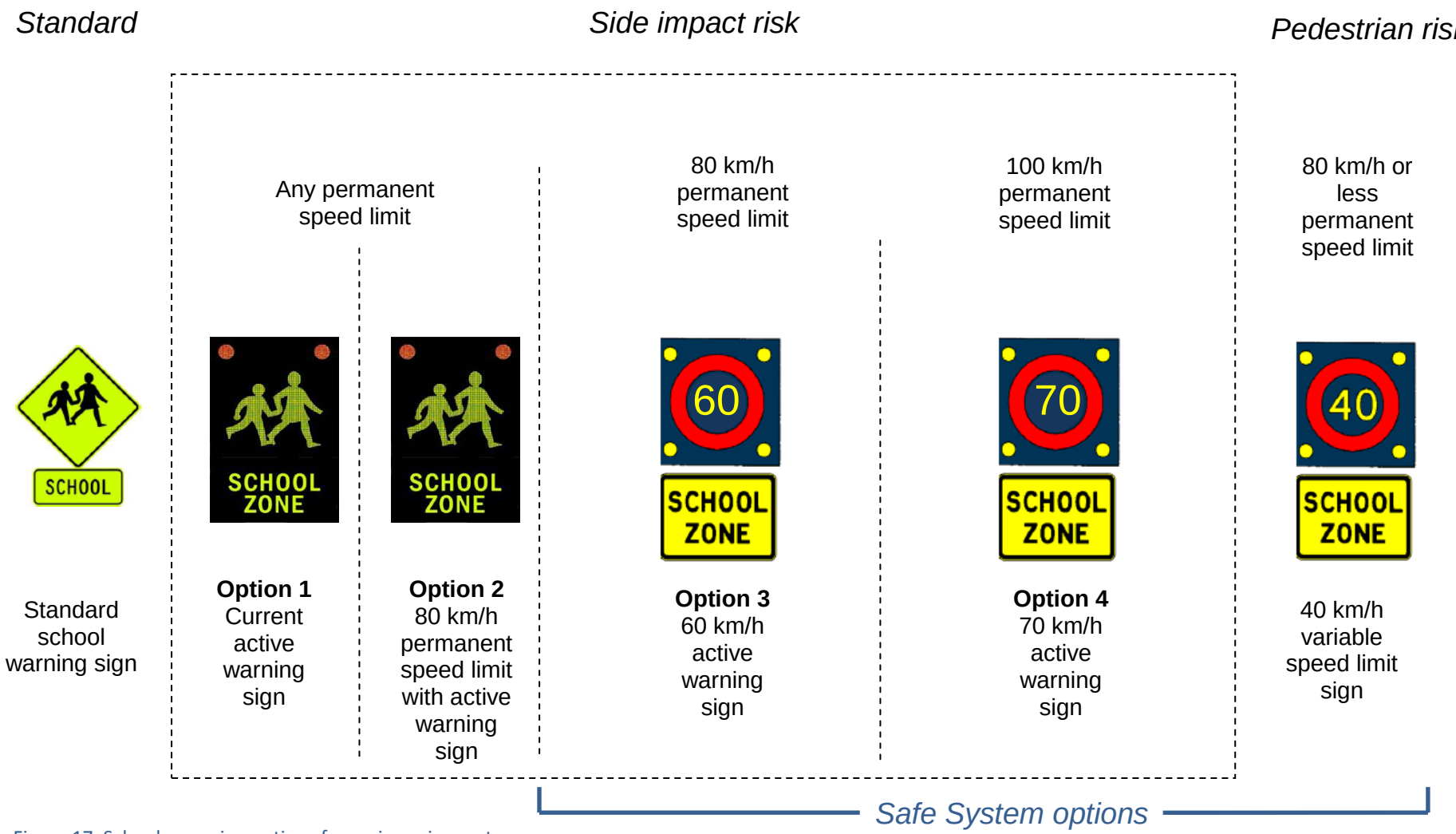


Figure 17. School zone sign options for various circumstances

Suggested trials

In order to trial the concept of lower speeds past rural schools, trials for the case study schools are suggested. It is recommended that the "Safe System options" presented in Figure 17 be trialled at the case study schools, depending on the needs that have been identified through this report. For example, where there is a clear pedestrian risk, an active 40 km/hr sign should be trialled and when the predominant risk is of side impact, then 60 km/hr signs within permanent 80 km/hr speed environments or 70 km/hr within 100 km/hr speed environments should be trialled. The actual trials that eventuate at each school will depend on identified priority and funding for the trials.

Guidelines for rural school road safety

A consistent and national approach to addressing rural school road safety is needed, allowing sufficient flexibility for solutions to be tailored to the needs of individual schools. Other countries have guidance information for school travel and safety, although in almost all cases rural road safety is not comprehensively covered. This would provide a more constructive process to be followed than the reactionary and sometimes confrontational situations that sometimes eventuate. Ideally, the guidelines would be comprehensive and include both urban and rural schools; however, a more targeted approach might be to focus solely on rural schools.

Guidelines should include the following topics:

- Background, including discussion of typical rural school traffic behaviour, definition of the rural school road safety problem and its significance
- Introduction to a rural road safety system, indicating the different stakeholders and their responsibilities
- Outline of the preferred treatment philosophy and decision process
- Specific engineering treatment suggestions for the road outside the school
- Specific school design guidance and advice for rules/procedures
- Understanding and managing school bus issues including pick-up/drop-off procedures and bus signage
- A suggested method for road controlling authorities to prioritise specific rural school zone treatments (e.g variable speed signs)
- A process for communication and action between stakeholders, including specific guidance on effective engagement techniques that lead to a more collaborative approach to addressing issues

It is important that local authority representatives contribute to the guidelines as rural schools exist both on state highways and local roads. Because the guidelines would include information about the design of school property, the Ministry of Education should also be involved.

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Appendix A. Key issues and initial treatment ideas for each case study school

School Name	Key issues	Treatment ideas
All Schools	Two key areas of concern: 1) highway 2) around school Turning traffic into and out of school grounds in high speed traffic environment (Often with multiple occupants/young passengers)	See Below
Opiki School	**Highway:** Road environmental cues do not match 80 km/hr sign. School not visible on approaches. Evidence that current speed still too fast for intersection **Around school:** Parking layout, student access to school from vehicle	**NZTA**: Speed limit threshold treatments on the highway, plus road environment reinforcement (such as planting on roadside or pavement markings) **For School/Local authority:** Parking layout at school, student connectivity from vehicles to school grounds.
Kai Iwi School	**Highway:** High through vehicle speeds and overtaking, school not visible on approaches **Around school:** Disorganised drop-off/pick up. Limited space in pick-up area but community hall parking adjacent linked by footpath	**NZTA:** Install double yellow lines, investigate 80 km/hr speed limit near school, no stopping lines for school **For School:** Enforce rules and procedures around parking and pick up/drop off plus enforcement. Use surrounding land better for pick-up and drop-off activities (including possible re-location of staff parking)
Dairy Flat School	**Highway:** Speed perceived as high, school not visible on approaches, pedestrians accessing vehicles parked on road shoulder **Around school:** Overflow of parking area, despite a well-designed and sizable parking/drop off area.	**NZTA:** Install no stopping lines at school carpark exit, investigate threshold treatments at other Rodney District schools **For School:** Increase school bus use

Whenuakite School	**Highway:** Speed perceived as high, school not visible on approaches, turning in/out seems dangerous to parents/staff, poor visibility for school bus leaving school. Pedestrians crossing highway. **Around school:** Layout OK. Sometimes staff forget to turn on/off active signs.	**NZTA:** Address illuminated sign solar panel blocked by vegetation. Active 40 km/hr speed sign trial? **For School:** Turning sign on and off, work with neighbours to keep vegetation down for sight distance.
Te Uku School	**Highway:** Speed perceived as high, school not visible, turning in/out seems dangerous to parents/staff, poor visibility. **Around school:** Poor drop off/pick up area, not well structured and in poor condition.	**NZTA:** Fill pot holes, create barrier from road, evaluate effect of new signs. **For School:** Designs for new drop off area. May be some time yet.
Paki Paki School	**Highway:** Speed perceived as high, school not visible on Northbound approach, turning in/out a problem, poor visibility around curve. **Around school:** Poor access to pick-up/drop-off area, with entrance/exit on blind curve. Some students running across drop off/pick up area to waiting parents	**NZTA:** Investigate re-arranging speed limits between school and village, so that school is captured by lower 80 km/hr Investigate installation of barrier around curve and possibly along footpath Paint "School" on the road at northern end of School (or investigate painted threshold treatment) **For School:** Enforce rules for student access to private vehicles

Appendix B. Photos and notes from workshops from each case study school

Opiki School

Location: Southwest of Palmerston North, State Highway 56.
School Roll: 129

Notes from School/NZTA workshop

Opiki School 1 June 2011

Name	Organisation (or connection to School)
Mark Lilley	NZTA Hamilton
Richard Bean	NZTA National Office

Fiona Read	NZ Police Levin
Dan Tate	NZTA Palmerston North
David Argyle	School Parent
Adrian Holloway	Madge Coachlines
Bede Gilmore	Opiki School Principal
Ken Holst	NZTA Napier
Hamish Mackie	NZTA Consultant

Concerns raised during the meeting

- Pleased with 80 km restriction and noticed an improvement
- Concerned about speed on Tane Road, vehicles may increase their speeds to 80 km with the new signs
- Vehicles park up to fence, and parents and children have to walk around vehicles on the road.
- At the SH 56/ Tane Raod intersection, as you made the turn you cross on to the wrong side of the road, and trucks turn on wrong side of Popular Road traffic island.
- At 3 pm, 80 km is still too fast on SH 56 when turning out of the intersection.
- Parents drop children off on the yellow lines outside the School on Tane Road.
- Buses are turning and crossing at the SH 56 intersection.
- Noise on School bus can be distracting to the bus driver.
- School could move the car park onto School property.
- Coming from south, SH 56 is narrow and the Tane Road intersection is tight.
- Southern 80 km sign blends into background.
- Could an electronic "your speed" sign be used?
- Turning area approaching from North on SH 56 is narrow and motorist become impatient in overtaking and turning.
- Tane Road is used as an alternative State Highway (SH) when SH 56 is flooded, 3 - 4 times a year.
- Vehicles turning right out of Tane Road, turn across to the left of SH 56 and then wait for the traffic to clear.
- Right turn situation on SH is narrow. Parents stop on Tane Road causing congestion outside the School and intersection.
- School feel that children are at risk playing at the front of the School grounds.
- Recycling bin is an issue and can this be moved?
- Northern 80 signs may be more effective closer to the bridge.
- Could a black and yellow road safety billboard be used near the School?
- Speeds on Tane Road is an issue and can the Tane Road speed limit be lowered.

Information about the School

- 80 Km signs installed for 1 week.
- 2 School buses.
- School are moving front fence back about 4m and clearing the vegetation in this area later this year.

NZTA actions

- Looking to install threshold signs when speed limit is gazetted.
- Follow up with Council about recycling bin.
- Discuss with School and Council about changing parking layout.
- Will look at planting roadside vegetation within 80 km area.

Kai Iwi School

Location: West of Wanganui, State Highway 3.
School Roll: 98

Notes from School/NZTA workshop

Kai Iwi School 1 June 2011

Name	Organisation (or connection to School)
Mark Lilley	NZTA Hamilton
Ken Holst	NZTA Napier
Helen McDougal	Parent
Bobbie-Jo Pringle	Parent
Richard Bean	NZTA National Office

Raewyn Gillgan	Kai Iwi School Board of Trusties (BOT)
Dan Tate	NZTA Palmerston North
Tanya Ross	Police
Val Overweel	BOT
Kerry Terry	BOT
Hamish Mackie	NZTA Consultant

Concerns raised by the School Community

- Limited speed zone was removed 4 – 5 years ago, and at that time a pull off area and carpark area was added.
- School upgraded bus pull off area about 2 years ago
- Vehicles that are slowing down are overtaken by other vehicles.
- Would like to have better visibility and brighter School signs.
- Overtaking is an issue, can double yellow lines be used outside the School.
- Carpark congestion is an issue.
- Some parents park in the pull off area.
- Coming out of the carpark visibility is an issue.
- Trucks use the straight outside School to pick up speed for the hill.
- Can staff cars be parked in another location and more drop-off and pick up space provided?
- Can the community hall carpark be used for School car parking?
- Police work with Schools to educate students who take information home to parents.
- Some drivers wait to turn right into the School on the left shoulder on the left shoulder, and some wait in the centre of the road.
- It is difficult to slow down and turn left into the School when other vehicles are following closely behind.
- Could a larger "Kai Iwi School" sign be helpful, i.e. sign on the School roof, mural.
- Road signs are blocking the bus drivers view from School entrance.

Information about the School

- School roll about 80 and will be about 100 at the end of the year
- 2 School buses

NZTA actions

- Look at installing double no-overtaking lines outside School with rumble strips.
- Move the road sign blocking bus driver's visibility.
- Investigate a lower permanent speed Limit.
- Remark no-stopping lines outside school entrance.

Dairy Flat School

Location: North of Auckland, State Highway 17.
School Roll: 191

Notes from School/NZTA workshop

Dairy Flat School 7 June 2011

Name	Organisation (or connection to School)
Mark Lilley	NZTA Hamilton
Murray Parker	NZTA Auckland
Bill Russell	NZ Police
Debbie Marshall	Principal
Tony Strange	Resident
Mark Van Dam	Teacher/Parent
Robyn Mowat	Teacher
Martin Bradsman	Board of Trustees
Dave Mitchell	NZ Police
Bridget Farmilo	Auckland Transport
Jackie Dawson	Auckland Transport
Rojina Baisyet	Transfield Services
Hamish Mackie	NZTA Consultant

Concerns raised by the School Community

- Speeds outside the School are too fast.
- Sight distance is blocked by parked vehicles at School exits.
- School is not very visible from the road.
- There is a marked difference in speeds when the speed camera is present.
- More awareness of the School is required – i.e. Thresholds.
- Right turn out of School is a concern.
- No adequate parking is available for after School.
- School buses were cut from three to one bus in the previous year.
- People being ticketed for speeding do not realise they are passing a School.
- Trucks are noisy past the School
- Slow down sign on School shed has faded
- Waitoki School has a good treatment
- Trees outside School keep dust and noise levels down.
- Trucks stop in School carpark
- Carpark is overflowing onto State Highway
- School are wanting the Rodney District Council School threshold and not a pedestrian crossing and 40 km speed limit.
- School parents are not prepared to pay for an additional bus.

NZTA actions

- Investigate yellow no stopping lines at South carpark exit.

Hamish actions

- Collect data on Rodney School Treatments
- Update Martin Bradshaw on progress martin@intra-opmedical.co.nz

Whenuakite School

Location: South of Whitianga, Coromandel Peninsula, State Highway 25.
School Roll: 144

Notes from School/NZTA workshop

Whenuakite School 13 June 2011

Name	Organisation (or connection to School)
Mark Lilley	NZTA Hamilton
Richard Bean	NZTA National Office
Jim Corbett	Police
Jamie Marsden	Principal
Sheryl Whiteman	Teacher
Sally MacNeilage	Teacher
Justin Murphy	Board of Trustees (BOT)
Hamish Mackie	NZTA Consultant

Concerns raised by the School Community

- Turning right into School is difficult and vehicles behind often travel past at speed.
- Cars parking on opposite side of the road block visibility from turning area.
- Sun strike is an issue in the mornings, especially turning right into School.

- Bus turning right is a risk due to the limited visibility.
- Rumble strips are used in the U.K.
- Active School sign to the North is shaded by the trees and does not work in the winter.
- School have difficulty in remembering to turn on the active signs on busy days.
- People from the early childhood centre are crossing the road in front of the School.
- The bus turning out is a risk, especially with the logging trucks using the State Highway
- Traffic Volumes outside School is very seasonal and higher in summer.
- Friday afternoon is worst due to the extra traffic and vehicles towing boats.
- Right turning into School is difficult.
- Seabreeze motor camp beside the School opened about five years ago, and has limited visibility from its driveway.
- Vehicles are not stopping at the Hot Water Beach Road intersection limit line and are at risk of being hit by through vehicles.
- Concerned about the speed of through traffic, especially turning right into School.
- The School hear screeching brakes quite often
- Road is busy with logging trucks and other commercial traffic.
- School is concerned about the vulnerability of the children playing in the School grounds close to the State Highway.
- Police would like to see a 70 km outside the School.
- School would like to have an automatic timer on the active School signs.
- Can "Slow" be painted on the road outside the School?
- Can rumble strips be used?
- A large number of tourists use the road.
- Police recorded 70 – 90 km speeds outside the School.
- With a lower speed limit, the police can use a speed camera.

Information about the School

- 90 % of students travel to School on bus.
- The School are modifying the bus walkway, so people crossing to the early childhood centre are not walking through the busy bay.

NZTA actions

The lights on Northern School active warning signs are not working due to being shaded by the trees

Te Uku School

Location: West of Hamilton, State Highway 23.
School Roll: 160

Notes from School/NZTA workshop

Te Uku School 14 June 2011

Name	Organisation (or connection to School)
Mark Lilley	NZTA Hamilton
Akshay Thaker	NZTA Hamilton
Keith Moyes	Opus
Chloe Hartstone	Parent & Board of Trustee (BOT)
Jacqui Kay-Smith	Parent & Own/Operated Raglan Chronicle
Jenny Bruce	Parent & BOT
Polly Jackson	Parent
Gareth Bellaway	Opus
Richard Beam	NZTA National Office

Megan Jolly	Waikato DC
Rachel Allan	Te Uku School Principal
Hamish Mackie	NZTA Consultant

Concerns raised by the School Community

- Cars travel at high speeds past the School.
- Poor visibility both at School entrances and at Okete Rd intersection.
- Turning right from Okete Road and the School is dangerous due the limited visibility.
- When turning into the School there is uncertainty if other vehicles are turning into the coffee shop or the petrol station.
- People park on the opposite side of road to the coffee shop and then right turning traffic blocks the whole road.
- People park in the School carpark to go into the coffee shop.
- Campervans and stock trucks often stop on the roadside outside the School.
- Pedestrian access is difficult along the roadside and through the School carpark.
- Vehicles pull into carpark at speed.
- Carpark needs to be organised and paint marked.
- There is a lack of visibility from the School entrances.
- If the hedge was trimmed South of Okete Road visibility would be improved.
- School like the red strip of paint used at other Schools.
- Potholes are a hazard.
- School aged pedestrians cross the road.
- School would like better road markings.

NZTA actions

- Pot holes need filling.
- Look at pedestrian access past coffee shop.
- Look at trimming hedge west of Okete Road.
- Look at small fence outside School along the State Highway.
- Paint mark the school carpark entry and exit.

Paki Paki School

Location: Southwest of Hastings, State Highway 50A.
School Roll: 47

Notes from School/NZTA workshop

Paki Paki School 17 June 2011

Name	Organisation (or connection to School)
Mark Lilley	NZTA Hamilton
Tanisha Puriri-Juaau	Kaiako-Paki Paki
Trace Kenrick	Kaiako – Paki Paki (Parent)
Julie Munro	Grandmother Paki Paki
Sau Hui	Parent
Jessie Munro	Principal/Parent
Ken Holst	NZTA Napier

Linda Anderson	Roadsafe HB
Chris Wallace	Eastern Power HNQ
Aaron Campion	Hastings District Council – Traffic Engineer
John Holschier	Opus International Consultant, Napier
Hamish Mackie	NZTA Consultant

Concerns raised by the School Community

- Can the 70 km sign at the South end of Paki Paki village be moved closer to the SH 2 intersection?
- Can the 70 km speed limit be lowered to 50 km?
- Can electronic signs be used outside the School?
- Turning right into School from North is difficult, especially when trucks are following.
- Turning right out of School is difficult, sometimes when the bus turn out, trucks come around the corner at speed.
- Trees opposite the School block visibility and can they be cut down?
- A car broke down outside the School and blocked the road.
- Up to 6 Children walk to School, and no children bike to School
- Concerned about the security of Children walking to School
- People throw bottles into the roadside drain and this has to be cleaned regularly
- School is not obvious from the road and could the swimming pool fence be painted?
- No roadside shoulder approaching the School
- Can a fence be installed between the footpath and road
- No School marking on Southbound approach
- Most of the traffic is commuter traffic or heavy freight traffic who know the road and travel faster.
- Tractors pull into School gates to let traffic past.
- School teacher's patrol the gate in the afternoon, but can the parents be encouraged to come to the gate and collect the children?
- Can yellow bending posts be installed outside the School?
- Discussed: Can the 70 km speed limit be changed to 80 km and extended from the SH 2 intersection to Turamoe Road.
- If 80 km speed limit is used, the School would like to have electronic signs.

NZTA actions

- Look at lowering speed limit outside School.
- Look at shifting the 70 km sign at the Southern end of the Village.
- Look at installing a barrier around the curve and along the footpath.
- Paint "School" on the road at the northern end of School.