PROJECT PRIORITISATION FOR SAFER JOURNEYS TO SCHOOLS IN CAPE WINELANDS DISTRICT MUNICIPALITY

LYNNE PRETORIUS, ZAIDA TOFIE and BEVAN KURTZ

Pendulum Consulting, Po Box 12916, Mowbray, 7705
Scarab House, 8 Nuttall Road, Observatory, 7925, Cape Town
Tel: 021-447 8904. Fax: 021 448 6499. E-mail: lpretorius@pendulumsa.co.za

ABSTRACT

In an environment where funding is limited, prioritisation of projects is necessary to ensure that limited funds are spent in the most cost-effective manner, i.e. High priority projects need to be implemented first, and thereafter those projects of lesser priority will follow. A prioritisation strategy was proposed as part of the Safer Journeys to Schools in the Cape Winelands District Municipality. This prioritisation strategy not only considers the technical feasibility of projects and programmes, but the social impact and the level of community support are also considered. It involves a step-by-step prioritisation process which the local authorities can follow to choose which projects should be implemented first. This paper aims to describe the prioritisation methodology, as well as various case studies where it has been tested.

1. INTRODUCTION

Due to increased non-motorised transport (NMT) and learner travel awareness generated by the National Land Transport Transition Act (NLTTA), and the development of the provincial NMT Strategy for the Western Cape Province, the Cape Winelands District Municipality (Cape Winelands) recognised the need for a comprehensive policy framework that would address the travel needs of learners. The primary objective of the policy document was to develop a framework referred to as the Safer Journeys to Schools in the Cape Winelands that will facilitate the implementation of learner travel improvements projects at schools in the Cape Winelands.

However, in an environment where funding is limited, prioritisation of projects is necessary to ensure that limited funds are spent in the most cost-effective manner, i.e. High priority projects are implemented first, and thereafter those projects of lesser priority are implemented.

The nature of the Safer Journeys to Schools projects is such that it not only considers the technical feasibility of projects and programmes, but the social impact and contributions are also considered. Owing to the vulnerability of young learners and their contribution as future citizens, learner education and learner travel to education, have been identified as a national and local priority. Furthermore, the rural areas of the district have a historical, economic, financial and social disadvantage. Therefore, those social and technical issues that directly impact learner travel negatively are viewed as priority.

This paper aims to present a methodology to undertake prioritisation. This methodology is not necessarily “cast in stone” and can be adapted to suit the unique requirements of a particular local authority.

2. LITERATURE REVIEW

A review of available applicable literature on the Internet was undertaken in an attempt to learn from other countries who undertook the development of a prioritisation methodology that includes both technical and social criteria. As expected very little applicable literature was available. Those that were consulted include the Ghana Feeder Road Prioritisation process and the Toolkit for Rural Community Coordinated Transportation Services. Of the two, the former was the most applicable.

The Ghana Feeder Road prioritisation methodology combines economic benefits with social benefits. Thereafter the sum of the economic and social benefits is divided by the improvement cost in order to rank roads by benefit:cost ratio. One of the remarkable approaches is that it uses extensive consultation before and after the technical analysis. This allows the needs of all rural communities to be incorporated in the process. Details are also provided to calculate the benefits from road improvements, estimate the cost of those improvements and assess existing road conditions. Although very comprehensive and technically sound, it is a very technical and "data-hungry" approach. It is this very technical approach that makes it unsuitable for the needs of the Cape Winelands.

3. INDICATORS OF PRIORITY

With respect to learner travel, the following social and technical parameters are indicators of priority in considering projects that form part of Safer journeys to schools in Cape Winelands.

3.1 Social Parameters

The social impact of any type of intervention to support learner travel and the basic assumptions about social priorities are further discussed hereafter.

3.1.1 Location of school and socio-conditions of learners

In this prioritisation process the location of the school is viewed in relation to the rural/urban environment of the district, municipality and surrounding community. The Cape Winelands, like the rest of South Africa, is struggling with the disparity in quality of life levels and the degree of access to opportunities between the more affluent, historically advantaged communities and the poorer, historically disadvantaged communities. This manifests itself in the noticeable differences in infrastructure, finance, social and economic means between urban and rural centres in the district, as well as within communities. Therefore it is assumed that schools in rural settings located in disadvantaged areas or municipalities should be prioritised.

3.1.2 Age of learners

The younger learner in the age group 6-10 is considered to be the more vulnerable learner in the road environment owing to their still undeveloped cognitive abilities. Therefore, the primary school is assumed to have priority over secondary schools.

3.1.3 Dominant travel mode of learners

Generally learners attending rural schools are forced to walk excessive distances to schools when they do not qualify for the state-subsidized learner travel scheme. It is assumed that learners walking these excessive distances have priority.

3.2 Technical Parameters

The technical impact of any type of intervention to support learner travel and the basic assumptions about them to decide to prioritise or not, are further discussed hereafter.

3.2.1 Road Safety

Road safety is a key indicator of whether learners are experiencing problematic travel conditions to school, especially learners that use NMT to school. The following are assumed to be indicators of priority:

- Number of accidents and hazardous accident locations (hazlocs): Although the number of accidents is an indicator of the severity of the problem, it should not prevent the implementation of pro-active road safety measures.
- Location of school relative to high speed roads: Learners walking or cycling along higher speed roads are travelling within a hazardous environment. Therefore, the lack of space for pedestrians along these roads and crossing facilities are indicators of priority.

3.2.2 Transport level of service (LOS)

As education and access to education for learners are considered to be a social priority, the level of service that learners experience through using the various forms of transport to schools are indicators of priority.

- Walking and cycling: Learners walking and cycling in excess of 2 km and 5km to school, respectively, are priority.
- Buses: Long travel times in excess of 1 hr experienced by learners travelling by bus are priority. Furthermore, learners walking in excess of 2 km to the bus collection point are priority.

3.2.3 Environment

The condition of travel and the conditions of accesses at schools are key indicators when environmental factors are considered. There is a greater need for intervention where travel conditions during the trip to school and the access conditions at the school are poor.

3.2.4 Comfort and Convenience

A general lack of facilities would provide an uncomfortable and inconvenient travel experience for learners and should be prioritised. However, it should be noted that comfort and convenience is a secondary priority after road safety and LOS.

Over and above considering social and technical parameters, projects/ interventions are also classified according to high, medium and low priority. These priority classifications are based on combinations of key parameters as indicated in Table 1 and further elaborated on thereafter.

Table 1. Priority classifications.

Priority level	Social parameters	Technical parameters
High	Socially disadvantaged	Road Safety or Transport LOS
Medium	Socially disadvantaged	Environment or Comfort & Convenience
Medium	Socially advantaged	Road Safety or Transport LOS
Low	Socially advantaged	Environment and Comfort & Convenience

- High priority schools are those schools that are socially disadvantaged and are also technically a priority. The technical considerations that are high priority are Road Safety or the transport LOS.
- Medium priority schools are schools that are socially disadvantaged, but technically environmental or comfort and convenience are key considerations. Medium priority schools also include schools that are socially advantaged, but have high road safety or transport LOS concerns.
- Low priority schools would be those schools located in advantaged areas where environmental concerns and comfort and convenience issues are problematic.

4. PRIORITISATION METHODOLOGY

The prioritisation methodology consists of two levels of assessment, a screening process and a second assessment. The two processes are discussed hereafter and illustrated in Figure 1.

4.1 First Assessment: Screening Process

The first assessment is a screening process that includes collecting general information of the applicant school, considers social and technical parameters and results in a priority classification. The purpose of the first assessment is to determine whether a school qualifies for intervention. Three steps are undertaken during the screening process and are discussed hereafter.

4.1.1 Step 1: General assessment of school and road

This includes collecting relevant information from the school and road to provide sufficient understanding of their needs and concerns. School assessment form requires input wrt to the following:

- General information about the school such as the name of the school and contact details, size of the school and the urban or rural location of the school.
- Road safety that records the number of accidents per mode for last 3 yrs and the typical accident locations, as well as the main causes thereof.
- Transport level of service for the different ways learners travel to school which focus on the average travel time and the level of service concerns.
- Comfort and Convenience considerations
- Environment that includes the condition of travel, conditions of the school access.

The road assessment form requires input wrt to the following:

- General information about the road such as the road and route number, as well as the road classification.
- Physical description of the road that includes parameters such as the type of road, surface type, presence of road shoulder and the condition thereof and the presence of roadmarkings.
- Road traffic volumes information such as the Annual Average Daily Traffic and the % heavy vehicles.

4.1.2 Step 2: Social and technical parameters

This step involves assessing each school on its social and technical merits. The information collected in this step will result in determining whether the school is socially disadvantaged, has a road safety problem, transport level of service concerns, problems with the environment that learners move within, or whether it is comfort and convenience concerns that should be addressed.

4.1.3 Step 3: Priority classifications

Based on the results of Step 2 (i.e. the completion of the social and technical assessment) the school is classified as high priority, medium priority and low priority. See an example of the assessment form in Table 2. See at the end of the paper.

4.2 Second Assessment

In the event that more projects are categorised as high priority than the amount of funds available, the Cape Winelands will have to prioritise within the high priority categories to determine which projects will have to be implemented within a given financial year. The parameters that are considered in the second assessment are as follows:

- Financial contribution from the community, other government agencies or from the private sector.
- Cost of the improvement
- Complexity of the design and implementation of the remedial/ improvement measures
- Use of labour-intensive methods during construction
- Political or community priority
- Coordination and integration with initiatives of other departments within the district municipality or government agencies.

This second assessment can only take place once a project has been identified and designed to address the learner travel needs of a particular school as the second assessment considers the cost of the project, as well as the complexity of the intervention. The latter decision has to be made by the relevant technical expert at the district or local municipality.

The criteria and the score allocated in the second assessment are indicated in the example provided in Table 3. Three (3) points are allocated to the most beneficial response to the criteria and one (1) point is allocated to the least beneficial response. The projects with the highest scores will be implemented within the availability of the budget.

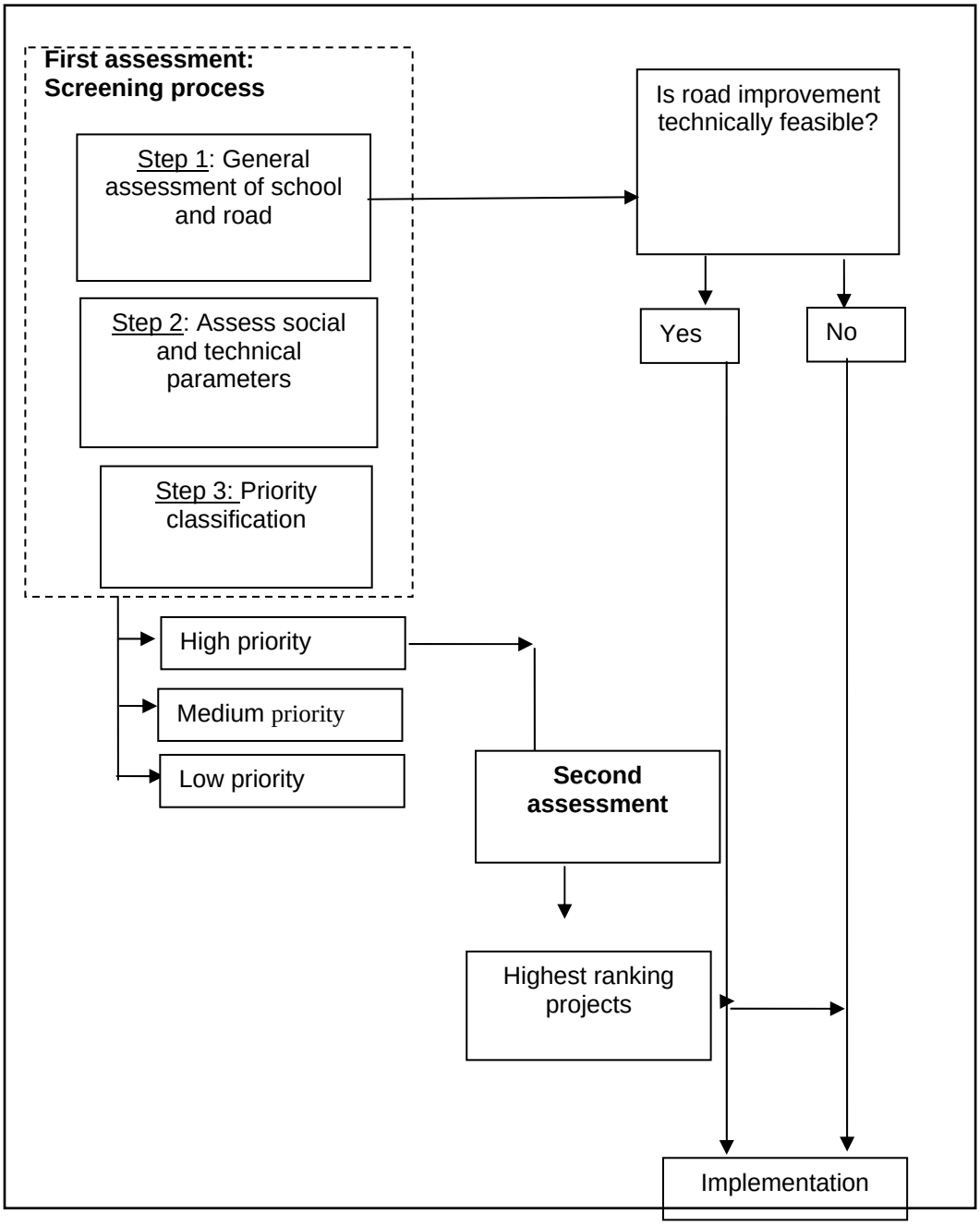

Figure 1. Methodology flowchart.

Table 3. Second assessment.

Criteria	Score
A. Is there a financial contribution from the community, other government agencies or the private sector? **Yes** ☐ **No** ☐ If yes, then 3: Considerable contribution, > 50% 2: Little contribution, < 50% 1: No contribution	
B. What is the cost of the improvement? 3: Greater that R1 million 2: Between R500 000 and R1 million 1: Less than R500 000	
C. Are the remedial/ improvement measures simplistic in design? **Yes** ☐ **No** ☐ If yes, then 3: Simple technical application 2. Acceptable design complexity 1: Considerably complex If no, then 3 points	
D. Will labour-intensive methods be used during implementation? **Yes** ☐ **No** ☐ If yes, then 3: More than 50 people of local community will be employed 2: Between 30-50 people of local community will be employed 1: Less than 30 people of the community will be employed	
E. Is the project a political and community priority? **Yes** ☐ **No** ☐ 3: Yes 1: No	
F. Is the intervention coordinated and integrated with projects of other departments or government agencies? **Yes** ☐ **No** ☐ 3: Yes 1: No	
SCORE	

5. CASE STUDIES

The schools assessed as part of the investigation for developing the Safer Journeys to Schools in the Cape Winelands policy framework, as well as evaluating the prioritisation methodology, included the following schools in Table 4.

Table 4. Schools assessed.

Name Of Municipality	Urban	Semi-Rural	Rural
Witzenberg and DMA north	Witzenberg Primary, Wolseley	Petra Gedenk Primary, Breerivier La Plaissant Primary, Wolseley	Rosendal Primary, Op die Berg
Stellenbosch	Idasvalley Primary, Stellenbosch	Nondsame Primary, Pniel JJ Cloete Primary Vlottenberg Primary Devonvalley Primary	
Drakenstein	Charleston Hill Primary, Paarl	Nieuwedrift Primary, Paarl Bodal Primary, Drakenstein	
Breede Valley	Breerivier Secondary, Worcester	Slanghoek NGK Primary, Slanghoek Valley Bonne Esperance Primary, De Doorns Rabie Primary, De Doorns Sibabalwe Primary, De Doorns	Stettyn Primary, Rawsonville
Breederivier/ Winelands and DMA south	Masakheke Combined, Nqubela Robertson	Vinkrivier Primary, Robertson	Keisie VGK Primary, Montaque Le Chasseur, Primary Bruintjiesrivier Primary Welville Primary Gelukshoop Primary

Using the proposed methodology the schools that were identified as High Priority included the following. Some of these schools have all ready been identified for project implementation and the proposed projects are also described in Table 5.

Table 5. High priority schools.

School	Town	Municipality	Location	Identified for implement tation	Project Description
Nondsame	Pniel	Stellenbosch	Semi-rural		
La Plaissant	Wolseley	Witzenberg	Semi-rural	Yes	Sidewalks and bus embayments
JJ Cloete	Stellenbosch	Stellenbosch	Semi-rural		
Vlottenberg	Stellenbosch	Stellenbosch	Semi-rural		
Devonvalley	Stellenbosch	Stellenbosch	Semi-rural		
Bodal	Paarl	Drakenstein	Semi-rural		
Bruintjiesrivier		Breederiver/ Winelands	Rural		
Welville		Breederiver/ Winelands	Rural		
Gelukshoop		Breederiver/ Winelands	Rural		
Nieuwedrift	Paarl	Drakenstein	Semi-rural	Yes	Sidewalks and bus embayments. Currently ongoing
Breerivier	Worcester	Breedevalley	Urban		
Slanghoek	Worcester	Breedevalley	Semi-rural	Yes, currently ongoing	Sidewalks. Currently ongoing
Rabie	De Doorns	Breedevalley	Semi-rural	Yes	Sidewalks, bus embayments and access improvements
Sibabalwe	De Doorns	Breedevalley	Semi-rural	Yes	Sidewalks, bus embayments and access improvements
Bonne Esperance	De Doorns	Breedevalley	Semi-rural	Yes	Sidewalks, bus embayments and access improvements
Stettyn	Worcester	Breedevalley	Rural		
Vinkrivier	Worcester	Breederivier/ Wynland	Semi-rural		
Keisie	Montague	Breederivier/ Wynland	Rural	Yes	Sidewalks and bus embayments. Currently ongoing

6. DISADVANTAGES AND ADVANTAGES OF THE METHODOLOGY

6.1 Disadvantages:

- This could become a laborious process if the data is not collected routinely.
- The input into this process is based on a subjective interpretation by the assessment agent and can result in abuse or mismanagement of the process.
- Weights are not applied to the priority criteria. However, this can be adapted to suit the needs of a particular local authority or for a particular application.

6.2 Advantages

- The input into this process is based on a subjective interpretation by the assessment agent to determine the perceived issues experienced by the learner. It is common knowledge that certain criteria can be technically correct, but is not necessarily the site-specific interpretation by the user.
- Although this issue was also listed as a disadvantage, a subjective interpretation can also be an advantage, if applied correctly. This allows the assessment agent a degree of sympathetic understanding of the unique local context, which is not always reflected in technical criteria. This is especially relevant when social issues are evaluated.
- This data collection process can be a simple application if it is undertaken routinely within a larger framework such as the Safer Journeys to Schools policy framework
- This is a proposed methodology only and the criteria can be changed to suit the needs of a particular local authority or for a particular application.
- The information sheets can be structured in such a manner that it does not require a lot of input information. The required input information can be obtained from an interview with the school representative.

7. CONCLUSIONS:

The objective of this paper was to present a simple methodology for prioritisation of projects, especially in the rural context, taking into account both technical and social criteria. From the information presented and the experiences in the Cape Winelands this can be achieved. However, it should be noted that this is a proposed methodology only and the criteria can be changed to suit the needs of a particular local authority.

8. REFERENCES

[1] Cape Winelands District Municipality, *Safer Journeys to Schools in the Cape Winelands*, prepared by Pendulum Consulting, 2005, Stellenbosch.

[2] John Hine, Simon Ellis, Simon Done and David Korboe, *Ghana Feeder Road Prioritisation*, accessed on Internet site http://www.transport-links.org/transport_links/filearea/publications/1_789_pa3835.pdf on 28 March 2006.

[3] Transportation Research Board, *Executive Summary of TCRP Report 101, Toolkit for Rural Community Coordinated Transportation Services*, Executive Summary, accessed on Internet site http://trb.org/publications/tcrp/tcrp_rpt_101_execsum.pdf on 28 March 2006.

[4] National Department of South Africa, *A rural transport strategy and development strategy for South Africa*, Executive Summary, Pretoria, 20 September 2002.

Table 2. Priority Form.

Social criteria			Technical criteria					
			Road safety			Transport LOS		
	Yes (Y)	No (N)		Yes (Y)	No (N)		Yes (Y)	No (N)
1. Is the school located in a rural area?			1. Have learners been involved in accidents in the last 3 years? How many? _____			1. Do the learners who walk and cycle to school have to walk and cycle > 2km and 5km, respectively, to school?		
2. Is the school located in a previously disadvantaged municipality?			2. Is the school located next to a road with posted speed > 60 km/h?			2. Do the learners who use state subsidized travel scheme travel for > 1 hr to school?		
3. Is it located in a previously disadvantaged community or is it serving a poorer sector of the community?			3. Are adequate crossing facilities for learners crossing the high speed road absent?			3. Do the learners travel to school in Light Delivery Vehicles (bakkies)?		
4. Is the school located in a poorer part of the community?			4. Are the adequate safe paths/ footways/ space for learners having to walk along the high speed road, absent?					
Is the school a primary school?								

Scoring: No of Y 's and N's If 3 or more Y's then school is socially disadvantaged.				**Scoring**: No of Y 's and N's If 2 or more Y's then the school has a road safety concern.				**Scoring**: No of Y 's and N's If 2 or more Y's then school has transport level of service problem.			
Technical criteria											
Environment				**Comfort and Convenience**							
1. Is the necessary infrastructure (streetlighting, road signage, traffic calming) absent?				1. Are the learners using the state subsidized travel scheme experiencing poor travel conditions?							
2. Are bus shelters required?				3. Are learners cycling to school lacking proper lock-up facilities?							
4. Are adequate bicycle facilities required?				5. Are learners travelling to school by other means that include bakkies, tractors and trucks experiencing poor levels of service?							
Scoring: No of Y 's and N's If 2 or more Y's then school has environmental concerns.				**Scoring**: No of Y 's and N's If 2 or more Y's then school has a concern wrt comfort and convenience issues.							
Priority Classification				Low/ Medium or High Priority							