The Asia Foundation
&
Global Vision
CENTRE FOR KNOWLEDGE ADVANCEMENT
Kandy, Sri Lanka.

STUDY ON

KANDY TRAFFIC

Summary Report

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ABBREVIATIONS USED

CBD	Central Business District
CKE	Colombo-Kandy Expressway
CPC	Central Provincial Council
DCS	Department of Censes and Statistics
GOSL	Government of Sri Lanka
GV	Global Vision – Centre for Knowledge Advancement
ICES	International Centre for Ethnic Studies
KMC	Kandy Municipal Council
LT	Long Term
MSL	Mean Sea Travel
MT	Medium Term
MW	Mawatha (Road)
PC	Provincial Council
RDA	Road Development Authority
SBM	Sirimavo Bandaranaike Mawatha
SHD	Sustainable Human Development
SLCTB	Sri Lanka Central Transport Board
ST	Short Term
SLT	Sri Lanka Telecom
STM	Sustainable Transportation Model
SWRDBM	S.W.R.D. Bandaranaike Mawatha
SWRM	Sri Wickrama Rajasinghe Mawatha
TAF	The Asia Foundation
TWs	Three-wheelers
TTS	Travel Time Survey
UDA	Urban Development Authority
WGM	William Gopallawa Mawatha

ACKNOWLEDGMENTS

The Asia Foundation (TAF), Colombo commissioned this research study on the Kandy traffic problem and the preparation of this report in June 2007. The project originated at the International Centre for Ethnic Studies, Kandy. Due to circumstances beyond the control of the TAF and the research team, halfway through the project in July 2008 it was transferred to Global Vision – Centre for Knowledge Advancement, Kandy.

In the last five years or so the traffic conditions in Kandy have deteriorated to a point where travel of a few kilometers ether to or from Kandy town has become a time-consuming and exasperating experience for the motorist and the commuter. TAF decided to undertake this study under its "Local Governance" project that promotes good governance at the sub-national level, provincial and local. The goal of the TAF is to use this report as a launching pad to help the Kandy Municipal Council (KMC), Central Provincial Council (CPC), other government agencies such as the Road Development Authority (RDA) and Police as well as the stakeholders in the Kandy community ranging from the business community to transport service providers to collectively address the Kandy traffic problems and find solutions that are broadly acceptable to the citizenry.

The research team used a multi-disciplinary and consultative approach in the research on which this report is based. We are confident that we have produced a report that is of more than academic interest. We were aware from the very beginning that the Kandy community expected us to say something that is of practical use. We have tried to live up to those expectations and have proposed an array of proposals for consideration by the policy makers.

This report would not have been possible without the generous assistance of a whole host of individuals and institutions too numerous to mention here by name. However, a special word of thanks goes to the Governor of the Central Province Hon. Tikiri Kobbakaduwa, Chief Minister of the Central Province Hon. Sarath Ekanayaka and His Worship the Mayor of Kandy L B Aluvihare. We also acknowledge with thanks the assistance that we got from senior officials in the Police, KMC, CPC, RDA, UDA and other government agencies, leaders of the Kandy business community and the trade chambers and trade associations and the principals of several Kandy schools. We also appreciate all those who attended our several consultation meetings and focus group meetings and made a valuable contribution to the discussions that helped make this report much stronger than otherwise it would have been.

We recall with great appreciation the support we got from the Representative of TAF Colombo Mr. Nilan Fernando and his officials, especially Mr. Suresh Bartlett and Mr. Ranjith Wijekoon.

Finally, we want to place on record the debt of gratitude we owe to The Kandy News for the assistance it rendered and the army of young research assistants who helped us conduct the several field research surveys and process the data.

Professor S. W. R. de A Samarasinghe
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ABOUT GLOBAL VISION

Global Vision (GV) - Centre for Knowledge Advancement is a non-profit non-government think tank located in Kandy, Sri Lanka. The main objective of GV is the advancement of knowledge through research, publication and other related activities.

GV is headed by a group of senior scholars, researchers and professionals with vast and varied experience in their chosen fields both in Sri Lanka and aboard. We have proven expertise and outstanding credentials in fields ranging from economic development, environment, education, gender and governance to public sector management, media and business. GV does its own independent work as well as undertake consultancy on behalf of clients from Sri Lanka and abroad.

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1. INTRODUCTION

This is a summary of a report titled **"Study on Kandy Traffic"** (December 15,2008) that deals with road transport problems confronting the city of Kandy in Sri Lanka. The term transport includes roadways, motorised vehicular traffic flows, type of vehicles used for transportation of people and goods, pedestrian traffic and parking.

The report takes into account the relatively small land area that is available to accommodate the growth of the Kandy city, the population size of the city – around 150,000 – as well as the 500,000 people who live in adjacent areas outside the city and use Kandy as a service centre. The report also recognises Kandy's great religious (Buddhist), cultural and historical significance, its status as a UNESCO World Heritage City, and the need for Kandy to balance its historic past with the needs of the present as a modern service centre.

The study report subscribes to the concept of a sustainable transportation model (STM) consisting of the following components:

- Economic growth
- Environmental sustainability
- Poverty reduction and equity
- Good governance
- Transportation institutional development

The STM model asserts that the problems of traffic and transport are not mere engineering problems. They are also part economic, part political, part social and part cultural as well. This report looks at Kandy traffic from all these perspectives noting that even the best designed road from an engineering perspective may fail to serve the transport and traffic needs of the community because of the intervention of these other factors ranging from weak governance and management to inadequate maintenance. The designing of an elaborate road network for the city is beyond the scope of this report. What it does is to analyse the Kandy traffic problem from an inter-disciplinary perspective and propose a series of short term, medium term and long term proposals for consideration by the relevant authorities.

2. METHODOLOGY

This study was carried out on behalf of ***The Asia Foundation (Colombo)*** by a group of researchers specializing in economic development, road engineering traffic and transportation systems, development management, geographic information systems and other related fields who are members of the Kandy-based think tank ***Global Vision – Centre for Knowledge Advancement***. The research methods used, such as traffic surveys and archival research are standard for a study of this nature. In addition the study also used broad-based community consultation – one-on-one interviews, focus group discussions, sample surveys - of key stakeholder groups ranging from state officials, school authorities and business leaders to bus operators and three-wheeler drivers. The members of the general public were given an opportunity to express their views at two public meetings. Most important, two meetings were held with participation by invitation only where the provincial and municipal political leadership including the Governor, Chief Minister and the Mayor were present to discuss the report first in its draft stage and later in its final format. The bureaucracy of key government agencies, private business and other key stakeholder groups were also represented at the highest levels at both these meetings. The participants provided critical input for the report at

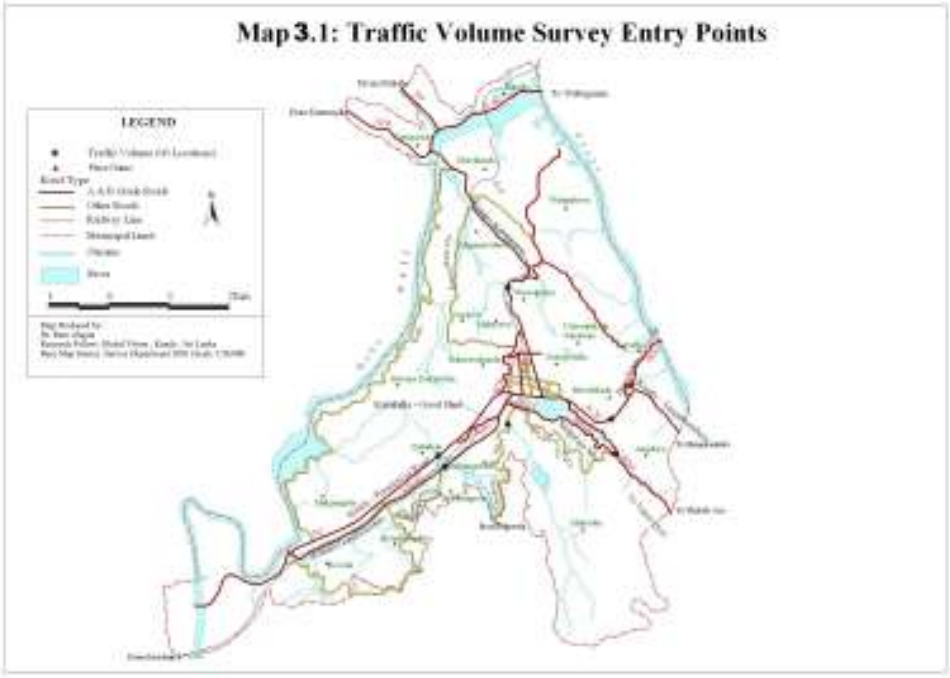
the first meeting, and at the second expressed strong support for making a serious bid to implement the report.

At the end of the report the reader will find a specific set of proposals based on these discussions to create an institutional mechanism to implement the proposals contained in this report and other proposals that may emerge in the future to solve the Kandy traffic problems. It is also the hope of the authors of this report that this would serve as a useful model to address traffic problems in other urban areas in Sri Lanka.

3. THE KANDY ROAD NETWORK

The traffic congestion that gave rise to this report is primarily found in the Kandy city (Central Business District - CBD) itself and on the main access roads from Peradeniya, Katugastota and Nattaranpotha-Lewella (Map 3.1). These fall within the Kandy Municipal Council (KMC) limits. However, this report proposes that for a long term solution it is essential that we also take into account the road network in the adjacent "Greater Kandy" area (Map 3.2).

Map 3.1: Map of Kandy City Showing Traffic Volume Survey Entry Points



MAP 3.2 Map of Proposed Greater Kandy Area

Table 3.1 identifies all A and B roads (Road Development Authority (RDA)) while Tables 3.2 identifies all C grade roads (Central Provincial Council (CPC) & KMC) within the KMC limits (Map 3.1). There are a total of 18.29 km of A and AB grade highways, 14.45 km of B grade highways and 25.02 km of C grade highways within KMC limits. Of these the most public attention in respect of traffic congestion is focused on Sirimavo Bandaranaike Mawatha (SBM, aka Peradeniya Road), William Gopallawa Mawatha (WGM), and Buwelikada-Kandy along Sangharaja Mawatha (Lake Road) that together cover approximately 13 km.

Table 3.1: A and B Grade Roads within KMC Limits

Class	Name	Length
AA001	Colombo-Kandy (from Kandy to Peradeniya)	6.35 km
AA009	Kandy-Jaffna (from Kandy to Katugastota)	4.14 km
AA026	Kandy-Mahiyangana-Padiyatalawa (from Kandy to Tennekumbura)	4.00 km
AB042	William Gopallawa Mawatha	3.80 km
B027	S.W.R.D. Bandaranaike Mawatha	1.40 km
B195	Kandy-Kirimetiya (from Kandy to Ketawala)	2.50 km
B069	Buwelikada-Lewella	1.30 km
B670	Asgiriya Bypass	1.70 km
B518	Sangaraja Mawatha	1.69 km
B519	Yatinuwara Veediya	0.60 km
B520	Kande Veediya	0.12 km
B521	Mosque Road	0.38 km
B551	Louis Peiris Mawatha	0.86 km
B550	Dharmasoka Mawatha	2.76 km
(B)*	Ehelepola Kumarihamy Mawatha	0.54 km
(B)*	Dharmasena Mawatha	0.14 km
(B)*	Link Road 01	0.18 km
(B)*	Link Road 02	0.28 km

Source – Road Development Authority, Kandy.

*B class roads which have been taken over by the RDA recently and have not been given a number so far.

Note: The A and B class roads are further sub-divided with AA denoting the major highways and AB denoting roads that fall between AA and B.

Table 3.2: C Grade Roads within KMC Limits

Class	Name	Length
5C	Hantana Uduwela	1.80 km
6C	Heeressagala Bowala Getambe	6.62 km
13C	Rajapihilla Mawatha	2.95 km
14C	Mahamaya Mawatha	0.45 km
15C	Wariyapola Sri Sumangala Mawatha	0.85 km
16C	Mapanawatura Road	2.35 km
17C	Niththawela Road	2.00 km
18C	Kuda Rathwaththa Mawatha	8.00 km

Source – Central Provincial Council, Kandy

3.1. MAIN DEFICIENCIES OF KANDY ROAD NETWORK

The following are some of the main problems of the existing road network related to traffic congestion. None of these problems are unique to Kandy and are common to almost every urban road network in Sri Lanka.

3.1.a. Poor Quality of Road Surface

The national highways categorised as A and B grade roads are asphalt paved (carpeted). Other local authority roads that are located in the Kandy area are stone aggregate (metal) overlay with bitumen seal coat and fairly old. These roads require regular surface maintenance.

There are several problems in respect of the quality of surface of these roads. First, given the relatively heavy rainfall — annual average rainfall is 1,783.6 mm — in Kandy except for the drier first quarter of the year, potholes caused by rain are a perennial problem. The lack of adequate drainage in most roads only makes matters worse Overloaded vehicles that break the law and usually get away with it also cause severe damage to road surfaces. Further, inadequate funding, deficiencies in technical know-how, use of substandard material for construction, or simple mismanagement and rent-seeking practices (bribery and corruption) in construction contribute to the poor conditions of the roads. These are directly or indirectly related to management capacity and broader issues of weak governance and must be addressed as such.

3.1.b. Excavation for Utilities

National highways are frequently excavated for the purposes of providing utility services. Excavations for utility services are rarely if ever coordinated. RDA, CPC and KMC officials complain that the utility companies often fail to restore the backfilling up to acceptable standards. Therefore the surface repairs also fail usually causing subsidence. The underlying reason for this unsatisfactory state of affairs is either lack of funds and/or poor coordination, management and supervision.

Even though various utility service providers (water, telephone, etc.) use the road platform for their purposes, they do not pay the agency that is charged with the responsibility of maintaining the road. A system should be worked out where these service providing companies either have to pay for the road platform, which they are using for their purposes, or have to contribute to the cost of road construction/development at the stage of road construction or development.

Construction of service ducts is the real solution to this problem. But these are expensive to construct and none of the Kandy roads have them.

3.1.c. Inadequacy of Road Width and Road Shoulder

Kandy has only a very limited number of roads with a road shoulder or foot walk space. For example, national highways like the AA001 (SBM) from Kandy to Peradeniya) and AA009 (from Kandy to Katugastota) have, if at all, very limited space for road shoulders. Although these roads have concrete or built-up drains, these drains are not properly covered with concrete slabs as a result of which the safety of the pedestrians is at stake.

The road shoulder is often encroached by wayside traders, hawkers and other businesses for private use, thus denying a safe walking space for pedestrians.

The absence of proper road shoulders makes the pedestrians enter the carriageway, which in turn creates another safety hazard and results in slowing down vehicular traffic. This is a problem that can be addressed in the short-term and without much financial outlay. But it does require political, good management and effective traffic policing.

A related problem that affects both the quality of the sidewalks as well as the durability of the carriageway is rapid silting of storm water drains in Kandy. One reason is the washing away during rains of excavated earth from construction sites that builders illegally dump on roadsides. Municipal workers are frequently seen cleaning the silt and in the process the sidewalks are also damaged.

Road engineers note that a space of at least 2.5 meters is required for parking a car. Most Kandy roads such as SBM do not have adequate road width even to allow parking on one side of the road let alone on both sides. But haphazard and illegal parking is common contributing to traffic congestion. The short term solution is systematization of roadside parking and the police strictly enforcing parking rules. The long-term solution is to construct a few small car parks along busy commercialised roads such as SBM and Kandy-Katugastota.

On main highways such as the Kandy-Peradeniya Road (SBM) T-junction (bell-mouth) entrances (wide and curvy entrances) to link roads at intersections are a must to facilitate the smooth flow of traffic. In Kandy some intersections do have bell-mouth entrances. But often they are blocked by haphazard parking, in many cases by three-wheelers.

In some others such bell-mouths do not exist and must be constructed. Keeping the bell-mouth clear of obstructive parking and constructing bell-mouths are relatively inexpensive short-term remedies.

3.1.d. Turning Lanes

In general not much attention is paid to the creation of turning lanes on Sri Lankan roads. In some cases inadequate space is a constraint. But, as WGM illustrates, even when adequate space is available for this purpose the road managers do not provide for turning lanes.

Relocation of bus halts and pedestrian crossings, proper use of existing bus bays and construction of new bus bays are other relatively inexpensive solutions to ease traffic congestion.

3.1.e. Use of Road Space for Unauthorised Activities

The utilisation of road space for various activities - space for sundry vendors, vehicle repairs, unauthorised parking of vehicles (buses and lorries in particular), storage space for construction material, dumping of rubble, and as a graveyard for old vehicles – that hamper the smooth flow of vehicular and pedestrian traffic is a major problem in Kandy just as much as elsewhere in Sri Lanka. In the long term some of these illegal users of road reservations become a major impediment to road widening projects because they claim, usually with political backing, permanent right to the property that they occupy.

3.1.f. Construction in Violation of Road Reservation Laws

Table 3.3 below shows the minimum distance that should be kept between the centre of the road and any building that is constructed along a road. The distance varies depending on the grade of road.

Table 3.3: Minimum Distance from Centre of the Road to Building Along the Road

Grade of Road	Distance
A	**15 m (50 feet)**
B	**12 m (40 feet)**
C	**7.2 m (25 feet)**

Source: RDA, Thoroughfare Ordinance

All over Sri Lanka this law is violated with impunity and Kandy provides plenty of examples. Even if we limit ourselves to more recent examples the numbers are staggering. Moreover, some of the violators are either nationally known commercial establishments or "respected" local business houses.

3.2. DEVELOPMENT OF ROAD NETWORK

3.2.a. Integrated Plan

The development of the road network should be treated as an integrated plan especially because the negligence of one small part of the network could cause severe problems with regard to the traffic conditions of the whole area. But under the current system with responsibility for Kandy area roads split among RDA, CPC and KMC. Integrated road development and management is harder to achieve. With devolution of power as an irreversible political reality, the only solution is better coordination among the different agencies.

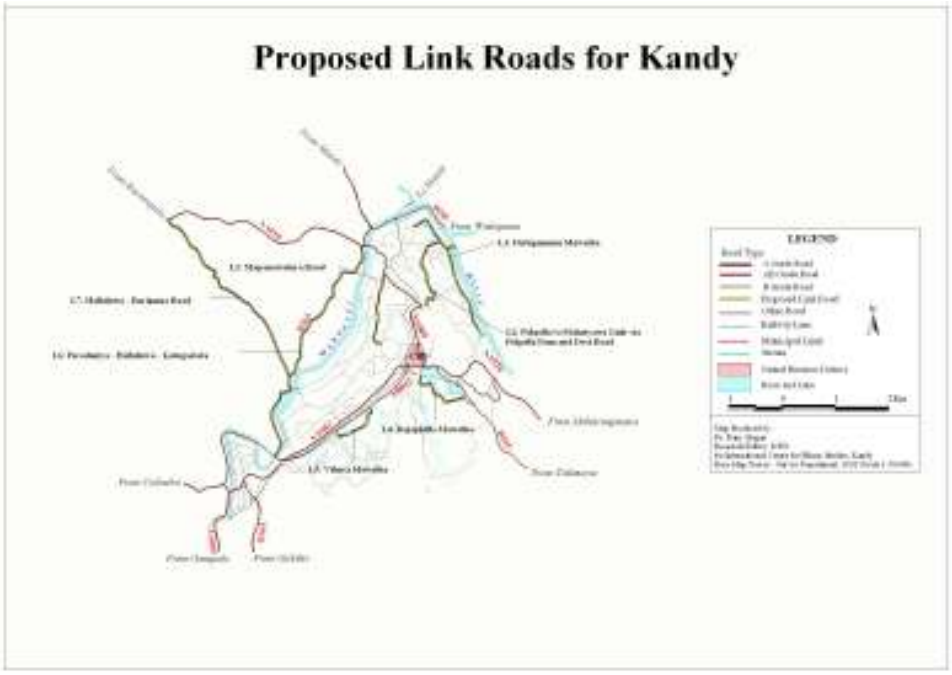
3.2.b. Overhead Bridges and Under-Passes

Kandy has already acquired several overhead pedestrian bridges under an RDA proposal. The original reason for construction of these bridges was to ensure the safety of the pedestrians when traffic speed increased under the Peradeniya-Kandy one way traffic system introduced in early 2007. It lasted only for a few weeks and was abandoned under strong public objection. This report also does not recommend the reintroduction of the one way system. This report also does not support the construction of overhead bridges without further consideration. Overhead bridges are not popular among pedestrians. They also mar whatever beauty that remains of Kandy. We recommend under-passes as a superior solution to cope with heavy pedestrian traffic. The extra cost of construction of under-passes is more than compensated by the benefits they bring.

3.2.c. Potential Link Roads in Kandy

The development of link roads will result in easing the traffic congestion of the Kandy city area. The following are a few existing roads (Map 3.3) that can be developed as link roads to reduce the distance that motorists have to travel between two points and also to reduce the pressure on the main roads:

Map 3.3: Proposed Link Roads for Kandy



1. **Mapanawatura Road** (Length – 2.4 Km, Width –About 4.0 M)
2. **From Polgolla To Mahaiyawa Link Via Polgolla Dam and Devy Road** (Length – 4.5 km, Width – about 4.5 m)
3. **Dutugemunu Mawatha** (Length – 1.7 km, Width – about 7.0 m)
4. **Rajapihilla Mawatha** (Length – 2.5 km, Width – about 5.0 m)
5. **Vihara Mawatha** (Length – 1.5 km, Width – about 3.5 m)
6. **Peradeniya-Haloluwa-Katugastota Road** (Length – 6.0 km, Width – about 7.0 m)
7. **Haloluwa-Barigama Road** (Length – 5.76 km, Width – about 5.0 m)

3.2.d. Potential Ring Roads

Map 3.4: Sketch Map of Kandy Ring Roads Proposed by the RDA

As a long-term solution the RDA has proposed a network of ring roads (Maps 3.4) which consists of an inner circular road, second inner semi-circular road, and outer semi-circular road. Almost all roads that have been identified for the ring roads are already available except for a link of about 500m, which will have to be constructed linking the Hantana-Uduwela road and Sambodhi Mawatha, in order to make the inner ring road circular. As far as the second inner semi-circle and outer semi-circle are concerned, it is simply impossible to make them circular due to physical barriers (mainly due to the Hantana range). This proposal has also identified a number of roads that link these ring roads.

3.3. PROBLEM-SOLUTION MATRIX

In conclusion we have prepared a Problem-Solution Matrix on the Road Network (Table 3.4). It shows at a glance the main problems that we discussed in this chapter, the main causes, possible solutions and the agencies that are responsible.

Table 3.4: Road Network: Problem-Solution Matrix
(ST Short Term; M/LT Medium to Long Term)

Problem	Cause of problem	Solution	Agency responsible for solution
1.Poor riding quality of the road surface & road shoulders	1.1.Inadequate funding	1.1. Better use of available funds while seeking additional funds (S/M/LT)	1.1 Request Central Government for additional funds; Line agencies - RDA, CPC and KMC – improve coordination and mange the available funds more efficiently.
	1.2.Poor construction 1.3. Inadequate drainage	1.2 & 1.3 Improved technical design of roads and drainage systems, more funds, better management, eradication of corrupt practices, and better supervision of construction work to enforce standards (M/LT)	1.2 & 1.3 RDA, CPC and KMC; (Action against officials responsible for negligence; Bribery Commission assistance to combat corruption)
	1.4. Overloaded lorries	1.4. Enforce the law (ST)	1.4. Police, RDA and CPC
	1.5. Excavation for utilities	1.5a Better coordination between agencies (ST)	1.5a & 1.5b RDA, CPC, KMC, CEB, SLT, NWSDB
		1.5b. Improved backfilling of excavation trenches (ST) 1.5c Construction of service ducts (M/LT))	1.5c. KMC & Utility companies – CEB, SLT, NWSDB,
	1.6. Silting of storm water drains causing water to overflow to the carriageway damaging it	1.6. Prohibit dumping of excavated earth on road shoulders and require builders to remove excess earth to designated sites	1.6. KMC

		(ST)	
2.Inadequacy of the road width (especially roads under CPC & KMC)	2.1.Roads originally constructed when traffic density was much less	2.1a. Acquire land for road widening if land available (M/LT) 2.1b. If land not available develop alternative roads (M/LT)	2.1a & 2.1b. RDA,, CPC & UDA
	2.2.Encraochment of road reservations set aside for road widening	2.2. Enforce the law (ST)	2.2 RDA, UDA, CPC and KMC
	2.3. Illegal construction violating minimum distance from road centre line	2.3. Enforce the law (ST)	2.3. RDA, UDA, CPC and KMC
	2.4. Lack of planning and weak management	2.4. Better planning and stronger management (M/LT)	2.4. RDA and CPC
	2.5. Shortage of funds	2.5.Allocate funds according a plan that identifies priorities & raise additional funds both local and foreign aid (S/M/LT)	2.5. Ministry of Finance, RDA and CPC ,
3. Inadequacy of foot-walk space (side-walks aka "pavements)	3.1.Repair pavements on a regular basis including covering of drains with concrete slabs	3.1. More finds for maintenance & proper supervision (ST)	1. KMC
	3.2. Encroachment of pavement space by hawkers and others	3.2.Law enforcement (ST)	2. Police and KMC
	3.3. Parking on shoulders and pavements causing pedestrians to walk on the carriageway	3.3a. Systematize parking – used double yellow lines where feasible (ST)	3a. KMC, Police and RDA
		3.3b. Mini car parks in strategic locations (LT)	3b. KMC with assistance from CPC & RDA
4a. Absence of bell-mouth intersections	4a.1.Encraochment of road reservation	4a1. Prevention of future encroachment (ST) & Removal of past encroachers (M/LT)	4a.1. RDA, KMC, CPC, UDA and Police
	4a.2. Unavailability of land and difficulty	4a.2.Acqusition of land (M/LT)	4a.2. RDA, KMC, CPC, UDA and Police

	of acquiring land		
4b. Blocking of existing bell-mouth intersections with illegal parking	4b.1. Illegal parking -, often those responsible are three-wheelers	4b.1. Law enforcement & creating designated parking areas (S/MT)	4b.1. RDA, KMC, CPC, UDA and Police
5. Lack turning lanes	5.1.Inadequate road width	5.1. Widen road if land & other resources available (e.g. William Gopallawa Mawatha) (M/LT)	5.1 RDA with KMC and Police assistance
	5.2. Failure to utilize existing road width to provide turning lanes.	5.2. Improve road design (M/LT)	5.2 RDA with KMC and Police assistance
6. Lack of flyovers/elevated roundabouts	6.1.Lack of planning & shortage of funds	6.1. Consider the proposal for an elevated intersection near the Kandy General Post Office (M/LT)	6.1.RDA, CPC & KMC
7. Inadequate safety for pedestrians when crossing main roads	7.1.High speed traffic	7.1a. Enforcement of speed limits (ST) 7.1b Current RDA solution is a set of overhead bridges (S/MT) 7.1c. Consider underpasses as a superior alternative (S/MT)	7.1a Police 7.1b & 71c .RDA, CPC & KMC
8. Weak integrated planning for road development	8.1.Poor inter-agency coordination	8.1. Consider the creation of a new institutional structure proposed in the concluding chapter of this report & also strengthen the KMC Traffic Advisory Committee (ST)	8.1. CPC in cooperation with KMC RDA, SLT and other agencies
	9.1. Weak integrated	9.1 Strengthening of	9.1 CPC, KMC, RDA,

9.Shortage of good link roads and by-pass roads	road development planning	the KMC Traffic Advisory Committee as a first step (ST); Establishment of body a such as a Kandy Transit Authority with Executive Powers (MT) 9.2. Consider development of the ring roads/by-pass roads identified in this report (M/LT)	UDA. Police and other relevant agencies 9.2 RDA
10. Absence of Circular (Ring) Roads	10.1. Lack of planning and shortage of funds	10.1 Consider the RDA proposal for an Inner Circular Road, Second, Inner Circular Road and an Outer Semi-Circular Road (M/LT)	10.1.CPC, RDA, KMC and the relevant Pradesheeya Sabhas

4. KANDY TRAFFIC FLOWS

4.1. INTRODUCTION

The term traffic flow is defined here to mean the entry and exit of all categories of motorised vehicles ranging from motorcycles, scooters and three-wheelers at one end to large multi-axle trucks and buses at the other and vehicle of every description in-between.

The main reason for reviewing Kandy's traffic volume/flow arises from the severe congestion that the motorists, bus passengers and others experience at "peak hours" when travelling to and from Kandy. The disadvantages are many. People waste time on the road that they could use more productively. Slow moving and halted traffic consumes more petrol to cover a given distance and causes more pollution. It also increases the turnaround time for vehicles. This adversely affects especially bus services because the greater the delay, the higher the number of buses required per hour to cover the same distance. This is a waste of scarce capital and contributes toward the poor bus service about which people complain.

We reviewed the following aspects of traffic flows:

- Volume of daily traffic
- Types of vehicles in the traffic flow
- Travel time taken to enter and exit the city along the main entry/exit roads
- The origin and destination of traffic

There are five principal entry points to the Kandy Central Business District (CBD) - Map 3.1). One is from Peradeniya in the south-west, the entry point for all traffic from the Colombo-Kandy road and from the Kandy-Nuwara Eliya road. The second is Katugastota in the north, the entry point for the traffic that comes in from Kurunegala and Matale. Traffic coming from Hanguranketha, Teldeniya, Digana and Lewella use Buwelikada as the entry point. Ampitiya is the entry point for traffic coming from Thalathuoya in the east. The southern entry point of Hantana is used by traffic coming from Uduwela in the south.

The study of the entry points capture mostly the traffic that enters the city from the periphery of the KMC area and from outside the municipal area. A large proportion of the traffic to the city is generated from within the KMC area. The data surveys were carefully designed to capture this traffic as well.

4.2. FIELD SURVEYS

We conducted the following surveys to gather quantitative data for the study of traffic flows:

- Six Traffic Volume Surveys
- Four Travel-Time Surveys
- Five Origin-Destination Surveys

4.2.a. Traffic Volume Surveys

Table 4.1 and Graphs 4.1 and 4.2 summarise the results of the traffic volume survey.

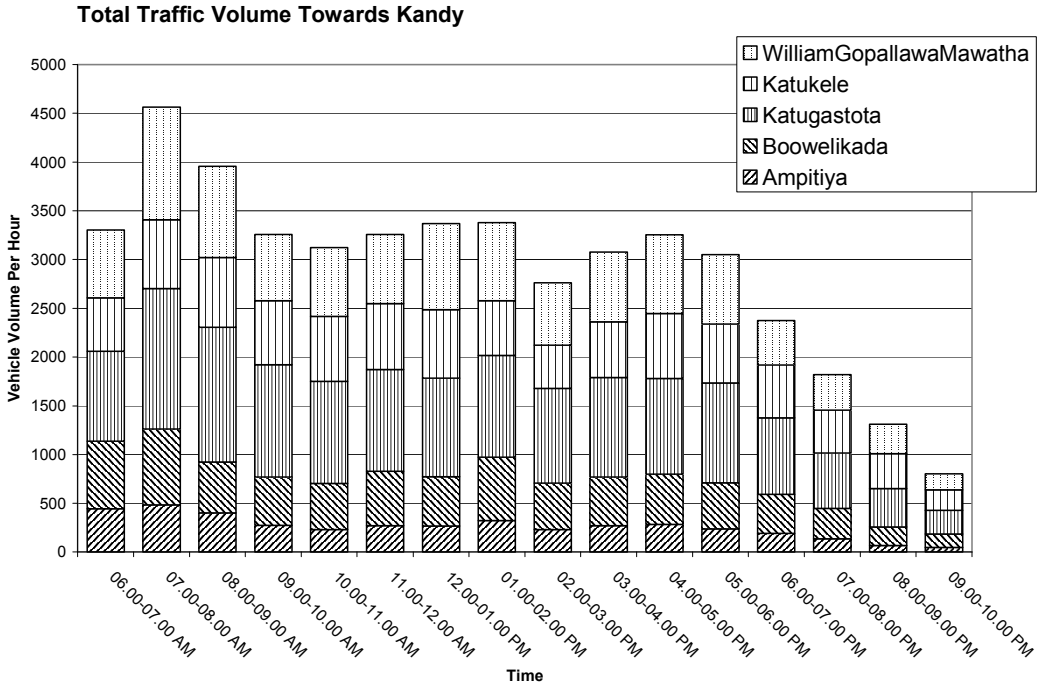
Table 4.1

Inward and Outward Traffic to / from Kandy City

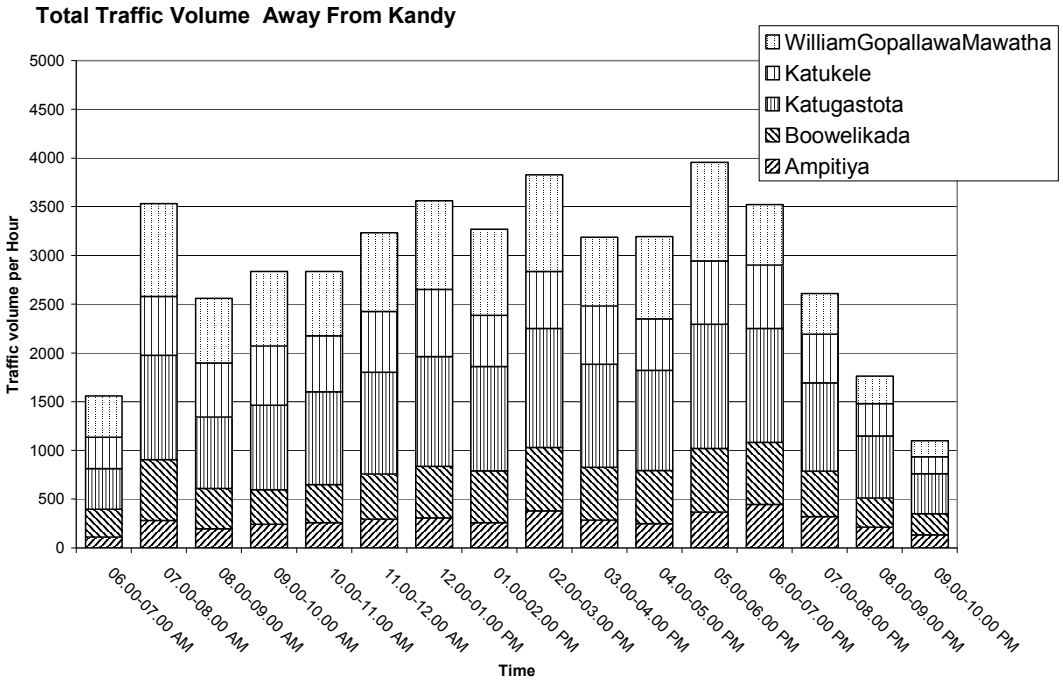
Table 4.1 shows the net balance of traffic entering and exiting the city between 6.00 a.m. and 7.00 p.m.

Time	6 – 7 a.m.	7 - 8	8 - 9	9 - 10	10 – 11	11 - 12	12 – 1 p.m.	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 - 7
Inward	3303	4563	3956	3257	3121	3258	3368	3378	2762	3076	3255	3049	2372
Outward	1557	3532	2560	2836	2834	3233	3562	3270	3828	3187	3193	3956	3521
Inward / Outward Traffic + or _	+1746	+1031	+1396	+421	+287	+25	-194	+108	-1066	-111	+62	-907	-1149
Cumulative Total	1746	2777	4173	4594	4881	4906	4712	4820	3754	3643	3705	2798	1649

Graph 4.1: Kandy Daily Traffic Vehicle Volume Entering the City per Hour by Main Access Roads – July 2007



Graph 4.2: Kandy Daily Traffic Vehicle Volume Exiting the City per Hour by Main Access Roads – July 2007



Based on those we can come to the following conclusions:

- The average daily traffic volume (ADT) of all descriptions that enters and exits the city on a normal work day is in the order of about 50,000.

- Much of the traffic flows along three roads, William Gopallawa Mawatha (WGM) and Sirimavo Bandaranaike Mawatha (SBM) and Katugastota Road and much of the traffic congestion is also encountered on these three roads, especially the latter two.

- Entry rush hours: 7.00 a.m. to 8.00 a.m. is the peak hour in the inflow of the total volume of traffic to Kandy. A little over 4,000 vehicles enter the town in this period. The period 8.00 a.m. to 9.00 a.m. is the next highest with about 4,000 vehicles. The 7.00 to 8.00 morning rush hour holds for every road.

- Overall, in respect of traffic that enters the city, 6.00 a.m. to 7.00 a.m., 9.00 a.m. to 2.00 p.m. and 3.00 p.m. to 6.00 p.m. are also busy times in terms of the total volume of traffic. In each of these time intervals about 3,000 to 3,300 vehicles enter the city. The 9.00 a.m. to 2.00 p.m. high and steady traffic volume entering Kandy is mainly attributable to the inflow from Katugastota and Katukele (SBM and WGM.)

- The major exit rush hour is 5.00 p.m. to 6.00 p.m. with nearly 4,000 vehicles leaving the city. This is closely followed by 2.00 p.m. to 3.00 p.m. with around 3,800 vehicles. This pattern holds for all the exit points.

- Morning 7.00 to 8.00 is a minor rush hour for traffic leaving Kandy. All the exit points share this feature. In general starting about 11.00 a.m. there is a steady outflow of traffic from the city until 7.00 p.m. This pattern is also generally true for all exit points subject to the rush hours mentioned above.

- Buses are only 11% of the total traffic volume although a bus does occupy about twice or a little more of the road space that an average car or van occupies. Three-wheelers (TWs) account for 22% of the traffic volume. A TW occupy slightly less space than a car.

- A large percentage of the vans that come to Kandy are for transport of school children.

- Lorries and container trucks that account for about 10% of the total traffic in Kandy enter the Kandy city during the hours of 6.00 a.m. and 7.00 p.m. more or less in the same pattern that other vehicles do. At present there is no regulation of such traffic.

- Consultation with various categories of stakeholder revealed that there is a great deal of public and official attention and focus on the "problems" that buses create in respect of congestion. Complaints against undisciplined bus drivers and congestion in the main bus stations have merit. But our traffic counts indicate that buses account for only about 11% of the total traffic and two-thirds of passenger transport.

- In contrast cars and vans that account for roughly about 40% of the road traffic in Kandy account for only about 25% of the passengers. These numbers suggest that the viable long term solution to Kandy traffic congestion must give priority to the development of public transport.

- Three-wheelers account for about 25% of the traffic overall and for 2% to 3% of total passenger traffic.

- Bicycles are not a popular mode of transport in Kandy.

4.2.b. Travel Time Surveys

Table 4.2 provides information that the researchers collected on travel time between Getembe and Hindu Kovil on SBM (Peradeniya Road), one of the most congested during rush hours. Similar data is available for all the principal access roads but what is presented here is sufficient to give the reader an idea of the situation that prevails.

In general the in the morning (7.00 a.m. to 9.00 a.m.) and afternoon (2.00 p.m. to 5.00 p.m.) rush hours traffic speed slows down.

There is significant variation in travel time and speed depending on the road. Between Getembe and Kandy WGM has a reasonably smooth flow of traffic overall with the slowest average speed of around 21km per hour during rush hours and 40km per hour during non-rush hours. In sharp contrast along SBM over the same two points the rush hour speed during 2.00 p.m. to 3.00 p.m. averages 7km per hour travelling in to the town and about 11km per hour travelling out of town.

Travel speed between Katugastota and Kandy averages about 8km per hour in the mid afternoon rush hours.

In the Nattaranpota and Lewella to Kandy city traffic the main problem is the last 1.5km. mainly around the Kandy Lake where the average speed drops to about 10km per hour in the afternoon rush hours.

We calculate that the traffic delays in Kandy cost the community anywhere between Rs 500,000 and Rs 1,000,000 per work day in terms of income forgone due to lost time. This excludes wasted fuel and environmental damage caused by carbon emission. The annual cost is likely to be in the order of several hundred million rupees.

Table 4.2: Travel Time Peradeniya-Kandy & Kandy-Peradeniya

Road/ Direction/ Time of travel	Segment	Distance in meters	Time taken to travel (minutes/seconds) Ave	Mini	Max	Speed: Km per hour Ave	Mini	Max
Peradeniya-Kandy (SBM)	Getembe to Hindu Kovil	3,950						
Morning 9 to 10			15.32	11.36	29.26	15	8	20
Afternoon 2 to 3			32.10	18.58	46.01	7	5	13
Kandy-Peradeniya- (SBM)	Hindu Kovil to Getembe	3,950						
Morning 6 to 7								
Afternoon 2 to 3			10.00	4.32	18.43	24	13	55
			22.52	7.45	28.56	11	8	30
Peradeniya-Kandy (WGM)	Getembe to Kandy Hosp Junction	3,400						
Morning 8 to 9			5.59	3.34	9.40	34	21	58
Afternoon 2 to 3			9.41	6.46	11.54	21	16	42
Kandy-Peradeniya- (WGM)	Kandy Hosp Junction to Getembe	3,400						
Morning 6 to 7			5.16	3.13	11.57	38	16	38
Afternoon 2 to 3			9.07	6.46	11.54	22	16	42
Katukelle-Kandy (SWRDB Mw)	Girls High School to Post Office	850						
Morning 8 to 9			3.22	2.14	4.37	15	11	23
Afternoon 1 to 2			10.05	7.36	13.47	5	4	7

Source: Research Project Survey: October, 2007

4.2.c. Origin-Destination Surveys

Table 4.3 is a summary of the results of the Origin-Destination Survey that the researchers conducted.

Table 4.3: Kandy Traffic Origin-Destination Survey, November 2007

Approach Direction	Total number stopped for survey	Stop before town	Pass through Town (after stopping)	*Pass through town (without stopping)*
Katugastota	284	116 (40.9)	156 (54.9)	***12 (04.2)***
Tennekumbura	582	130 (22.3)	234 (40.2)	***218 (37. 5)***
Ampitiya	282	28 (9.9)	148 (52.5)	***106 (37.6)***
Peradeniya (William Gopallawa Mawatha)	455	138 (30.3)	177 (38.9)	***140 (30.8)***
Peradeniya (Sirimavo Bandaranaike Mawatha)	874	350 (40.0)	308 (35.2)	***216 (24.7)***
Total	***2,477***	***762 (30.8)***	**1,023 (41.3)**	***692 (28.0)***

Source: Project Survey: November 2007.

Note: The numbers in parentheses are the percentages.

Overall over one quarter of the traffic pass through the city without stopping. This obviously adds to the traffic congestion and can be reduced if by-pass roads are developed. For example, only 4% of the traffic going to Katugastota passes through the city without stopping. That is mainly because there is a bypass for traffic between Peradeniya and Katugastota.

4.3. PROPOSAL TO IMPROVE TRAFFIC FLOW

4.3.a. Rapid Rail Transit: Peradeniya-Katugastota

The main long term equitable and viable solution to the Kandy traffic problem lies in encouraging and developing a sound public transport system. Provision for private transport is of secondary importance.

Improvements in the quality of the existing road network, increase in its capacity by expanding the road network and improvements in parking arrangements will also help ease traffic flows. However, it is important to note that better roads and more parking space create more demand ultimately leading to more congestion and further demand for even more roads and more parking. Thus public transport (and geographical disbursement of human activity) is the most viable solution to urban traffic problems.

A rapid transit railway between Peradeniya Junction and Katugastota using the current single track and available technology should be introduced in the short term and developed in the long term.

In the long term a separate Kandy Urban Transit Authority should be created to develop and manage the Kandy urban public transport system.

4.3.b. Other Short-term Proposals

- The one-way system on SBM and WGM must <u>not</u> be reintroduced.

- Enforce road rules (buses stopping outside bus halts, jay walking etc) through better policing.

- Strict regulation of pavement hawkers and construction of informal "*petti kada*" outlets and enforcement of construction regulations by RDA, UDA and KMC along roads.

- Streamline the operations of the three major city bus stations

- Redesigning and relocation of bus halts after a detailed study

- Open Malabar Street (and Anaagarika Dharmapala Mawatha - Lake Round) at least for peak hour traffic (morning 7 to 9 one way to the city and afternoon 1.0 to 6.00 one way from the city is a possibility. Stopping of vehicles in the security zone can be strictly prohibited) with strengthened security for the Maligawa.

- Review bus routes and redefine them to improve the efficiency of the service and also ease traffic flows.

- At least three lanes if not four should be constructed on WGM. Three lanes can be constructed without too much outlay but a fourth lane would require both considerable funds and time.

4.3.c. Medium-term Proposals

- Freeze or reduce growth of school population expansion in the city schools

- Relocate some of the schools in the city and those located along the main access roads

- Establish multiple primary schools in the periphery for each of the "leading" Kandy schools

- Develop infrastructure for cyclists

- Relocate the Kandy South Depot on SBM. This is mainly a large bus park and bus repair shop that is occupying valuable urban land. The SLTB also could benefit by capitalizing the property.

- Making Kandy city or at least parts of it a pedestrian precinct. Already the sacred area surrounding the Dalada Maligawa has become one such. The upper portion of Colombo Street is also suitable for a pedestrian mall. In the long term Dalada Veediya too can be considered.

- In the case of Katugastota Road the main bottleneck is the bridge. When the new bridge is available the traffic back up should ease. However, some of the proposals that are contained in this report are applicable to Katugastota traffic as well.

- Relocate some of the long-distance bus services to the periphery with shuttle services to the city. This proposed relocation can be integrated with the new bus services that we propose linked to the Kandy urban transit railway service.

4.3.d. Long-term Proposals

Integrate transportation and traffic planning and development with broader sustainable economic and social development under a "Greater Kandy" Plan.

4.4 PROBLEM-SOLUTION MATRIX

The Problem-Solution Matrix on traffic flows (Table 4.4) shows at a glance the main problems that we discussed in the report respect of traffic solutions, the main causes, possible solutions and the agencies that are responsible.

Table 4.4: Traffic Flows: Problem-Solution Matrix (ST Short Term; M/LT Medium to Long Term)

Problem	Cause(s) of problem	Solution	Agency responsible for solution
1.Traffic Congestion on Kandy-Peradeniya Road, Kandy Katugastota Road and Around the Kandy Lake	1.1.Inadequate road capacity	1.1 Peradeniya Junction to Katugastota rapid transit train system with possible extensions to Gampola and Kadugannawa (ST with infrastructure development in the M/LT)	1.1 CPC/KMMC should consider creating a Kandy Rapid Transit Authority with the assistance of the CGR and after a public discussion/consultation using the media and other appropriate fora
	1.2.Lack of road discipline on the part of motorists of all types and also pedestrians	1.2a Police required to enforce the law (ST)	1.2a Police
		1.2b. Educating the public (M/LT)	1.2b. Schools, Media, Civil Society Organizations such as Lions and Rotary
	1.3.Obstruction to traffic floor caused by unauthorised structures (See also Chapter 3 on Road Network)	1.3 Enforce the law (ST)	1.3 RDA, UDA, CPC, KMC and small business representatives
	1.4.Closure of Malabar Street and Anaagarika Dharmapala Mawatha for security	1.4 Open the roads during rush hours subject to restrictions to ensure security (ST)	1.4 Maligawa management, Police, RDA and KMC.

	1.5.Inappropriate location of some bus halts	1.5 Rationalise location of bus halts (ST)	1.5 RDA, KMC, CTB, Private Bus Owners, NGOs representing commuters & Police
	1.6. Non-streamlined bus routes	1.6.Streamline bus routes (ST)	1.6 SLTB, Private Bus Owners, NGOs representing commuters, Police, KMC, RDA and CPC
	1.7.Growing school traffic	1.7a.Construct bus bays near and in schools (ST)	1.7a. Schools, KMC, RDA & UDA
		1.7b. Construct under-passes (better solution than over-passes) near schools (ST)	1.7b. Schools, KMC, RDA & UDA
		1.7c Freeze or reduce growth of school population expansion in the city schools (ST, M/LT)	1.7c Ministries of Education of Central Government & CPC; School management, Parents
		1.7d. Relocate some of the schools in the city and those located along the main access roads (M/LT)	1.7d . Same as above
		1.7e Establish multiple primary schools in the periphery for each of the "leading" Kandy schools (M/LT)	1.7e .Same as above
2. Traffic congestion in the city caused by inadequate road capacity	2.1.Obstruction to pedestrian traffic from unregulated pavement hawkers	2.1.Enforce the law (ST)	2.1.KMC and Police
	2.2.Lack of pedestrian malls	2.2.Make Dalada Veediya a pedestrian mall (M/LT)	2.2 KMC, Police, RDA, Business chambers, Rate Payers Associations & Citizen Groups,

3. Traffic congestion near the three major city bus stations	3.1.Operations not streamlined	3.1.Streamline operations (ST)	3.1 SLTB, Private Bus Owners, NGOs representing commuters, Police, KMC, RDA and CPC
	3.2 Petty trader shops and pavement hawkers Outside the bus stands hinder pedestrian traffic, motor traffic and the entry and exit of buses	3.2 Remove unlawful vendors, regulate those who are allowed to trade and prohibit entry of new vendors (ST)	3.2 KMC, Police, RDA and UDA
	3.3 Shops and tea boutiques inside the bus stations making for sub-optimal use of available limited space for the convenience of buses and passengers	3.3 Remove unlawful vendors, regulate those who are allowed to trade and prohibit entry of new vendors (ST)	3.3 KMC, Police, RDA and UDA
	3.4.Limited capacity of bus stations	3.4.Relocate some of the long distance bus terminal points to the periphery establishing new periphery bus stations and provide a shuttle service to the city (M/LT)	3.4 Same as above plus Pradesheeya Sabhas where the new bus stations are to be located
	3.5.Limited capacity of the road system near the Kandy Railway Station, General Post Office and Good-shed Bus Station	3.5. Elevated roundabout based on a proposal made by the Faculty of Engineering, University of Peradeniya (M/LT)	3.5 RDA & KMC,
4. Other traffic congestions related problems	4.1 Giving state land on "temporary" lease that the government has earmarked for road expansion	4.11 Cancel giving such leases because the land is usually hard to reacquire for state use (ST)	4.1a Land-owning agency and UDA

	resulting in land not being available when needed for road development	4.1b. Freeze construction on land that is earmarked for road expansion (ST)	4.1b Land-owning agency and UDA
	4.2.Lack of infrastructure to encourage cycling	4.2 Develop infrastructure such as cycle lanes (M/LT)	4.2 KMC, RDA, CPC, UDA, School management, Environmental NGOs
	4.3 Kandy South Depot (Obstruction to traffic on SBM and valuable capital available to SLTB frozen)	4.3 Relocate (M/LT)	4.3 SLTB, CPC, KMC, UDA and RDA
	4.4 Pedestrian crossings inappropriately located	4.4 Relocate or create new crossings (ST)	4.4 KMC, RDA and SLTB
	4.5 Parking near intersections	4.5 Ban parking near intersections	4.5 KMC, RDA & Police
	4.6 Inadequate road signs	4.6 Improve road signs using internationally standardized colours and symbols	4.6 RDA & KMC

5. PARKING

5.1 PARKING DEMAND AND SUPPLY

Parking is analysed in this report using a demand and supply model. The demand for parking arises from the number of vehicles which require to be parked in a given area at a given moment in time. The supply of parking is of two kinds; first, spaces set out in a planned manner in terms of a clear cut policy to provide parking, and second, "informal" spaces pressed into service as parking areas.

"Convenient" parking for the individual motorist may create social costs such as pedestrian being denied safe walking space and traffic congestion. This report factors in both the private costs and benefits as well as the social costs and benefits of parking.

Table 5.1 shows the estimate that this study made for demand for parking in Kandy on a normal working day.

Table 5.1 Demand for Parking within Kandy town by time interval

Time	6-7 am	7-8	8-9	9-10	10-11	11-12	12-1 pm	1-2	2-3	3-4	4-5	5-6	6-7
Total Competing for Parking	1159	1756	2681	2973	3133	3185	2983	3145	2783	2284	2316	1803	1141

Source: Research Study

We estimate that the total number of cars, vans, three-wheelers and motor cycles (buses are excluded) competing for parking spaces (car equivalents) on a normal working day starts at around 1,100 to 1,200 at 8 a.m. and rises rapidly to around 3,000 by 9.00 a.m. The demand peaks around 12.00 noon at about 3,200 and remains steady at that level until about 2.00 p.m. and then declines. Thus at current levels of demand about 3,200 to 3.500 parking spaces are required in Kandy for vehicles excluding buses.

The study estimated that there are about 3,200 parking spaces in the city Table 5.2). This includes the KMC car park (862), street parking inside the Central Business District (1,100), street parking outside CBD (700) and parking in government agencies (500). This suggests that there is a very rough balance between demand and supply at peak time. But for reasons explained below there still is a "shortage" of parking spaces in the city.

Table 5.2 Parking Spaces for Cars, Vans, Three-Wheelers & Motor Cycles

Street Parking within CBD	1100
Street Parking outside CBD within Kandy town	700
Municipal Central Car Park	862
Officially restricted / pre allocated	500
Total	**3162**

Source: Research Study

The KMC car park is grossly under-utilised with parking on an average work day varying from a low of about 150 to 200 in the late afternoon to a high of about 300 to 350 in late morning to early afternoon. This is a large part of the explanation for congestion on the streets and shortage of parking from about 10.00 a.m. to 5.00 p.m. on Kandy streets.

The short term solution is to reduce the demand for street parking and increase the demand for KMC car park parking.

5.2 PROPOSALS FOR QUICK IMPLEMENTATION

1. Lower the parking rates for KMC car park and raise the rates – penal rates where appropriate - for street parking.

2. KMC car park rates should be set on a sliding scale with a lower rate for longer periods of parking.

3. Provide a shuttle bus service for KMC car park users.

4. d. Enforce restricted parking rules - limited parking time and a no-parking - on CBD streets.

5. Consider installing parking meters on an experimental basis.

6. Ensure a scheme of payments for parking attendants that minimises corruption.

7. Introduce a permit system with a fee and designated parking areas for the 700 or so school vans that need parking.

5.3 THREE-WHEELERS

There is no accurate count of the number of three-wheelers (TWs) operating from within the Central Business District of Kandy city or for that matter within the KMC jurisdiction. It is further complicated by the fact that an unknown number of TWs that operate from outside the KMC limits also enter and exit the city. Neither the KMC nor the police or for that matter any other official agency maintains a compulsory and reliable registration scheme for TWs. Based on incomplete data from KMC, the TW Drivers Central Union and our own TW counts in the major TW stands in the city and on the main access roads, we estimate that there are about 1,500 to 2,000 TWs operating from within the KMC limits. These exclude those that visit Kandy city from outside the KMC area.

TW drivers and operators complain of lack of adequate parking facilities and in some cases of police harassment. The public, especially motorists, complain of haphazard TW parking and undisciplined driving on the part of TWs.

This report recommends the following:

1. Compulsory registration with KMC of all TWs that operate within the KMC area
2. An annual registration fee to be levied by KMC from TWs
3. TWs to provided with proper parking facilities.
4. A cap on the entry of TWs for operation in Kandy city and in the KMC area. The current *laissez faire* policy is totally contrary to regulated urban transportation principles that prevail in more systematically managed urban transportation systems the world over. But we recognise that politics may hinder the implementation of effective regulation.

5.4 BUSES

The three major bus parks/stations – Goods Shed, Clock Tower and Bogambara – can accommodate about 400 buses at any given time and serve about 66 destinations. All three are congested and make a significant contribution to traffic congestion, over-crowding and pollution. The situation is made worse by the fact that informal vendors have set up shop in all three locations to cater to the commuter shopping needs. The KMC has made its own contribution by erecting small shop spaces – e.g. at Bogambara where some of which have been abandoned – to cater to the demands of informal vendors. Most important, the operations of these bus stations must be streamlined and improved to help commuters who use them.

Streamlining the operations of these bus parks/stations will require further in-depth study. However, the following are doable to relieve the congestion and ease the traffic flows.

1. Do away with or at least reduce the number of shops, eating houses etc. within the bus parks / stations, and maximise the area available for parking of buses while leaving the road area free of bus parking.

2. Carry out and implement a study on how the space within these bus parks /stations could be optimally utilised to a) park buses b) facilitate their smooth arrival from and departure to the adjacent main road.

3. Ban or at least regulate in a meaningful way pavement hawking on roads adjacent to bus parks /stations

4. In the long run, consideration may be given to separating the functions of bus parks and bus stations. The existing bus parks / stations should become bus stations only with the parking aspect transferred to another location. It only requires a smoothly functioning communications system to co-ordinate the departure of buses from the bus park and their arrival at the required time at the bus station. In our proposals designed for the long term (see Section 5.6 below) we have proposed a likely location for a future bus park.

5. By redesigning bus routes it would be possible to have more services between destination points that make Kandy town a pick up point that does not require buses to remain "standing" for a length of time. Transferable tickets, a common practices in many urban bus/train transport systems in other parts of the world, should be considered as a part of the solution.

5.5. OTHER SHORT TERM PARKING PROPSALS

1. Public institutions must be persuaded to provide reasonable parking for members of the public that come to those institutions to transact business. Currently "security" has become a stock excuse to deny such facilities. This should be reviewed.

2. About 250 street parking spaces in the city have been taken out on grounds of security. This too must be reviewed.

5.6. LONG TERM PARKING PROPOSALS

Mini car parks

We have identified three locations - present RDA (former PWD) compound behind the Sri Lanka Telecom Offices, a location near the Mahaiyawa general cemetery and a third near the Peradeniya teaching hospital that are suitable for this purpose.

Bus park

A bus park in "Beheth Kotuwa" in Getambe (or on land adjacent to WGM in Bowala-Heerassagala) to accommodate buses idling between trips

5.7. PROBLEM-SOLUTION MATRIX

In conclusion we have prepared a Problem-Solution Matrix on parking (Table 5.3). It shows at a glance the main problems that we discussed in this chapter, the main causes, possible solutions and the agencies that are responsible.

Table 5.3: Parking: Problem-Solution Matrix
(ST Short Term; M/LT Medium to Long Term)

Problem	Cause(s) of problem	Solution	Agency responsible for solution
1.Under-utilization of the KMC car park and excess-demand for street parking	1.1. Lack of a coherent policy	1.1.Increase street parking fee relative to the car park fee (ST)	1.1 KMC
		1.2.Set the car park fees on a graded scale with lower rates as the parking period increases (ST)	1.2 KMC
		1.3.Provde a mini bus shuttle service from town to car park(ST)	1.3 KMC and Car Park Operator
		1.4. Enforce "no parking" on street or segments of streets in Central Business District (CBD) of the town where parking contributes to congestion (ST)	1.4 KMC and Police
		1.5.Alternative to parking ban – penal parking fees for street parking with rate	1.5 KMC

		increasing as length of parking increase (ST) 1.6.Limit street parking to a maximum period of one or two hours with deterrent penalty for violators (ST) 1.7.Negotiate with business chambers for a reasonable rate in the car park for Kandy town businessmen (ST) 1.8. Withdraw reserved street parking privileges accorded to a few	 1.6 KMC 1.7 KMC 1.8 KMC
2. Haphazard parking of school vans causing congestion and inconvenience to residents in school neighborhoods	2.1Absence of systematic policy on school van parking	2.1.Register with KMC school vans that require parking (ST) 2.2.Identify parking areas for school vans (ST) 2.3. Issue parking permits for a fee for parking in designated parking areas (ST)	2. KMC, Police, School Management, Representatives of residents of the area
3. Unregulated three-wheeler parking	3.1.Lack of systematic registration 3.2.Lack of designated areas for parking	3.1.Systematic registration should be made a legal requirement with penalty for violators for better regulation of the industry (ST) 3.2. Cap on number of three-wheelers in the city (ST) 3.3. Create designated parking areas (ST)	3. KMC, Police, UDA and Three Wheeler industry representatives
4. Congestion in bus stations in the city	4.1.lack of streamlining of operations in bus stations 4.2.Unregulated	4.1.Streamline operations after careful study and in consultation with stakeholders (ST) 4.2.Remove	4. KMC, CTB, UDA, RDA, Private Bus Owners and Police

	construction of shops, and hawkers acquiring space 4.3.Using the bus station as a bus park for idle buses	unauthorized construction and regulate trading (ST) 4.3. This Report suggests a location in Getembe (or Bowala) as a suitable site for a bus park; other locations can be considered as alternatives (M/LT)	
5. Inadequacy of Parking Spaces at both public and private institutions such as hospitals, channeling centres, schools, Kachcheri, post office, police station and other such public institutions	5.1.Banning of public parking for "security" reasons 5.2.Lack of concern on the part of management of these institutions for provision of public parking	5.1.Review "security" considerations 5.2a.Require large public and private institutions that service the public to provide parking for a fee (ST/M/LT) 5.2b.Establish mini car parks – this report proposes three locations for consideration (M/LT)	5.1 KMC, Police and relevant institution 5.2a KMC and relevant public institution 5.2b KMC, UDA, management of key institutions that would be served by the proposed mini car parks and Police
6. Making Kandy more pedestrian-friendly by declaring Dalada Veediya a pedestrian mall.	6.1This is not a "problem" but a challenge to make Kandy a more agreeable city	6.1 There is no need to allow parking at any time of the day because the KMC public car park is available in close proximity. Free parking can be allowed in the evening if the operator does not want to spend on personnel. On an experimental basis traffic can be banned in the evenings and later extended to all day (MT/LT)	6.1 KMC, RDA, Police and UDA

6. CONCLUSIONS

In this report, when seeking solutions to the traffic congestions that currently prevails in Kandy city, we have taken into account the limited land space available for the expansion of Kandy city, its historic and cultural significance, its role as a modern service centre, the financial and other resources limitations that constrain the development of transportation facilities and the problems of governance that also limit what is politically feasible. We also base our recommendations on the belief that public transportation should be given priority for reasons of economic feasibility, equity and environment.

6.1. RECOMMENDATIONS

The proposals for improvement of the road network, traffic flows and parking have been divided into short term and medium/long terms proposals. The former require not much additional financial and other resources to implement. But they do require determination and commitment on the part of those in authority, especially the Central Provincial Council, KMC and the police. They also require public cooperation. Our research shows that the public will support sensible reforms. It is mainly up to the public officials to launch reforms without further delay. If not the public will lose whatever little confidence it still has in the authorities to do something meaningful to resolve this pressing problem.

We do not recommend the levy of a toll from vehicles entering Kandy city. It is a good potential source of revenue for the KMC. But in the current context there are major constraints that will prevent the KMC from effectively implementing such a scheme. We also do not recommend a scheme based on vehicle registration numbers to restrict entry of vehicles to the city because the weak governance and public indiscipline are almost certain to undermine such a scheme.

However, we strongly recommend integrating transport and road development with broader sustainable development planning for Kandy city and the "Greater Kandy" region. This means, among other things, integrating road and rail transport – for example, the Peradeniya-Katugastota rapid rail transit – and the development of public amenities such as a leisure park adjacent to the Peradeniya town end in Gannoruwa of the newly rehabilitated Getembe-Peradeniya Road.

6.2. NEXT STEPS

We wish to suggest the following as the next steps to translate ideas contained in this report and other useful proposals from elsewhere into action:

1. That a Kandy Traffic Steering Committee (KTSC) be established headed by the Chief Minister that will be responsible for a program of action. This could be the principal policy making body with full executive powers.

2. That the KTSC establish a Technical Committee (Techcom) consisting of technical personnel and representatives of key stakeholders to convert the proposals to an actionable program.

3. That the Steering Committee then mobilise support and resources including financial resources from the different government agencies, donor agencies and private sector organisations to convert the program to an action plan for

implementation. These implementation agencies - CPC, KMC, RDA, UDA, Police et al - will be allocated specific tasks and they will report to the Steering Committee. The Technical Committee could remain as the implementation supervisory/advisory arm of the Steering Committee.

4. That an independent body be tasked with the job of monitoring and evaluation of the implementation of the program and report to the Steering Committee.

5. As the Kandy transport and traffic development program progresses the feasibility of establishing a Kandy Transit Authority (KTA) to manage an integrated urban public transport system should be considered.

6.3. SUGGESTIONS FROM THE PROPOSAL REVIEW MEETING

This meeting, held on December 11th 2008, was organized by the Central Province Chamber of Commerce and Industry to present the main recommendations of the study to key stakeholders. Those present included the Governor and the Chief Minister of the Central Province, Kandy Mayor, Members of the Municipal Council, senior officials, leaders of the business community, civil society representatives, academics, media personnel and others. The following were some of the main ideas that emerged from the deliberations:

- A sub-committee of the Greater Kandy Development Committee should be tasked to implement the proposals of the study
- The KMC Traffic Committee should adopt those proposals that come under its purview
- An "Action Plan" that includes, among other things, funding and clearly designated executive responsibility should be prepared to implement the proposals.
- The Police should adopt those proposals that it can implement, especially those that do not need additional funding.
- The legal dispute between the KMC and the management contractor of the KMC car park must be speedily resolved to facilitate implementation of the proposals pertaining to parking.