Capacity Building Project for the

Improvement of Dar es Salaam

Urban Transport

Discussion Paper (Volume 3)

CBD Traffic Improvement Plan in Dar es Salaam

This paper has been prepared only for internal discussions amongst the designated stakeholders for this project.

Secretariat for the Capacity Building Project

and

JICA Expert Team

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Appendices

Part 1. Strategic Planning

1. Introduction

There is a common understanding that the prevalent traffic congestion in Dar es Salaam is unsustainable, and inflicts huge costs in terms of lost time and productivity for the city and the nation as a whole[1]. There is (or needs to be) a sense of 'crisis' to spur into action a series of sound policy decisions to address these concerns and the re-orientate the city toward a better and more sustainable future where quality of life, the environment and productivity is improved.

The JICA-funded 'Capacity Building Project for Improvement of Dar es Salaam Transport' involves 11 secretariat members from different public agencies/academic institutions. The project has involved various capacity building elements including coordination, training, urban transport policy development, and planning of prioritized projects. This **CBD Traffic Improvement Plan in Dar es Salaam** is a product of secretariat members and JICA Experts, with a consensus reached on a planning framework and a number of projects.

The document contains three sections, principally based on the following areas:

Firstly, the Strategic Policy Framework (SPF) that sets out a logical and principled approach to guide action and implementation. It starts with a **Strategic City Vision** and espouses a set of planning principles to guide the planning process. All recommendations fall under this policy framework to ensure strategically aligned actions, prudent use of resources and effective project outputs. This SPF also forms the basis of consensus amongst stakeholders - typically a 'first level of agreement' that directs decision making.

Secondly, demand management is the main element to address traffic congestion, as it aims to reduce the volume of traffic. Ever increasing car ownership and private car use (fuelled by lack of good transport alternatives) will soon overtake all efforts to increase capacity (supply) through improved traffic management. Even with the most efficient traffic management measures[2], without demand management the city will soon be in the same situation. Demand management involves proactive measures such as improved bus services, cycling, and pedestrianization, and also restrictive measures such as increasing parking charges or reducing parking availability.

Thirdly, in tandem with demand management is traffic management, intersection improvements, and parking management to make most efficient use of road space and ensure proper transport within the CBD.

This discussion paper raises these issues in turn:

[1] *Considering that Dar es Salaam as an economic centre represents a high proportion of nationwide GDP*

[2] *A good example is Bangkok, where automated traffic signalling was abandoned, as traffic saturation made the signalling inefficient and ineffective. Police crisis managing ' the intersections became the norm, however arguably no improvement was evident.*

- Part 1 as an introductory and policy framework;
- Part 2 as the demand management measures including improved bus services involving BRT, Northern Busway proposal and improved daladala services;
- Part 3 covers traffic management and control measures and parking management.

2. Review of Empirical Studies and Present Progress

2.1 One way CBD Circulation Plan

The most significant action to date has been the decision to adopt a one way traffic plan, following a meeting in 2010, by engineers from Dar es Salaam Region, DCC and DART to discuss quick solutions to de-congest traffic congestion in CBD. The parties agreed to introduce one-way traffic circulation as proposed in 2007 by consultants for the DART project to accommodate the proposed DART BRT system with a dedicated BRT along Morogoro Rd with a one way mixed traffic carriageway along Sokoine Drive. The associated traffic plan involved changing all major two-way streets in CBD to one-way and diverting Samora Avenue and Sokoine Drive to the opposite direction.

In response to the request by Dar es Salaam Regional Administrative Secretary, Ilala Municipality set aside a development budget for implementation of one-way traffic circulation and in July 2011, and commenced installing one-way traffic signboards along major streets in the CBD. Since then, the focus of the secretariat has been centred on this one-way operation supported by JICA experts in developing supporting measures.

However, during this exercise, a consensus of concern arose that the one-way traffic circulation requires traffic improvement measures, including parking management and daladala rerouting and also design guidelines for sidewalk and traffic safety measures.

To support this, a series of traffic surveys, including parking survey, daladala survey and topographic survey were carried out from October to December, 2011. These traffic surveys were conducted as part of the capacity building project, involving secretariat members in planning the survey, designing survey forms, implementing as supervisors, data analysis and report writing. Furthermore, it is generally acknowledged that the plan has certain shortcomings, and that further work is required to consider implementation issues.

The expressed concerns are:

- The One Way Plan was designed to meet the express needs of the BRT but does it meets any other objectives of traffic management?
- Unilateral one-way streets reduce intersection conflicts but may increase travel distance
- Current roundabouts are not designed for one-way operation and will cause bottlenecks
- One way pattern is more complex for motorists to understand and use

- Many streets are capable of managing 2-way direction, allowing freer movement of traffic.

2.2 Daladala Re-routing Plan

In **2007** the DART Consultants, proposed a rerouting plan as shown in **Figure 2.2.1** which prevented Daladala from using the BRT corridor, and removed the circular daladala service, since they proposed that all the major streets in CBD will be changed to one-way.

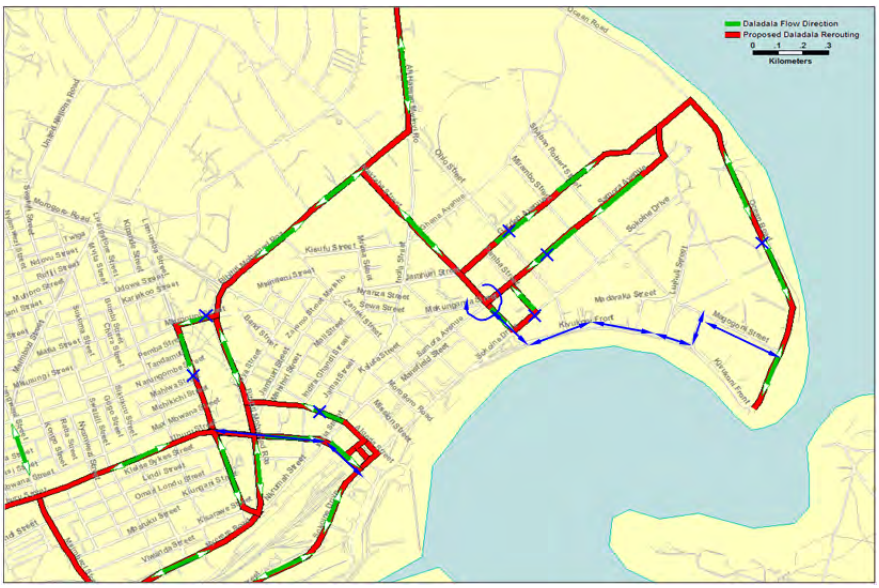


Figure 2.2.1 2007 DART plan for daladala showing later amendments as fine lines

In **2010**, DART Agency, together with other stakeholders, reviewed and revised the DART consultants daladala rerouting plan, made the following changes as shown a blue lines on **Figure 2.2.1.**

- Avoid ocean road area due to congestion and location around Government house.
- Daladala bound for Posta should turn at Askari Monument and return on the same route.
- Considering the small road capacity of Aggrey Street, daladala bound for Stationi should use Uhuru for both inbound and outbound to/from Stationi.[3]

In **2011**, following the proposals made by DART Agency, the secretariat members proposed some further alternations. Secretariat members agreed to:

Maximize use of available infrastructure: currently, daladala terminals are located in New Posta, Old Posta, Kivukoni, and Stationi and current daladala operation allow all daladalas to service at least two or three terminals. If, as is proposed by the 2010 plan, daladala terminate only at New Posta and turn at Askari Monument, New Posta will be more overcrowded by boarding/alighting passengers, which increase problems along Maktaba. Therefore Posta/Kivukoni routes should maintain to use either Old Posta or Kivukoni as terminals to de-congest New Posta terminal.

[3] *Note that this has subsequently been modified so that Daladala operate one way along Aggrey Street, for services to Posta. Daladala services for Uhuru Rd Kariokoo operate two way along Uhuru Street.*

Maximize efficiency of daladala operation: On-board daladala surveys indicate a desire for passengers to reduce travel time spent in CBD. One option to achieve this is to develop daladala terminals on the fringe of the CBD namely Stationi and YMCA which have available space can be managed in the rerouting plan.

Some (but not all) daladala routes to/from Uhuru/Nyerere/Kilwa are proposed to terminate at Stationi and then return via same route Uhuru or Sokoine Drive (and not travel to Old Posta and Kivukoni). Also, some daladala routes to/from Ali Hassan Mwinyi (and Morogoro before operation of BRT Phase 1) will terminate service at the newly developed YMCA, (and not travel on to Old Posta and Kivukoni).

Reduce traffic congestion in CBD: Morogoro daladala routes will be terminated when BRT Phase 1 commences operation, significantly reducing the daladala numbers in the CBD thereby reducing traffic congestion. Also, rationalization of daladala routes between Posta, old Posta and YMCA will de-congest existing terminals.

Ensure smooth implementation of the BRT Phase 1 project: According to secretariat member from TANROADs, Morogoro Street in CBD would have been closed for construction works of BRT Phase 1 by the end of 2012. It was agreed by secretariat members that traffic modifications should be enacted before commencement of construction works, and therefore, the bus rerouting plan (and ideally development of new terminals) should be examined and tested to implement BRT Phase 1 smoothly. However, Morogoro Street in CBD was closed on 21st October, 2012 for construction of BRT earlier than its original schedule, and due to financial constraints, the civil works to allow the proposed traffic operation, including bus rerouting, were not implemented.

In April 2012 a staged implementation plan was developed within the framework of discussions held with the secretariat and JICA experts, to commence with a daladala re-routing plan and associated infrastructure. The various stages also include traffic modifications and one-way treatments. The plan also proposed a new circulation route for Daladala operations.

2.3 Review of CBD issues in the JICA Master Plan

The 2007 JICA Master Plan contained a CBD traffic management plan. It outlined two alternative plans, quoted as follows:

> *"Plan A which emphasizes traffic optimization and alternatively, Plan B with a greater emphasis on Traffic Demand Management.*
>
> *To illustrate the different approach between the two plans: Plan A starts with the present level of demand (forecasted to 2009 levels) and then designs the CBD network to cope with that demand as efficiently as possible. By contrast, Plan B challenges the acceptance of the present demand level, questioning the balance needs to be achieved between car travel and the other functions of the city. It seeks to create a more balanced inner city precinct and then design a traffic plan that sits within the identified objectives of a livable city. Once the unmet demand is defined and quantified it will plan and design modal alternatives to meet the unmet demand.*
>
> *Plan A attempts to make the city fit the level of traffic demand, while Plan B adjusts the traffic level to fit within the design of the city; a design that meets other objectives as well. The aim of Plan B is to develop action on number of fronts to reduce traffic demand to create a space where some choice is available in the future of the city."*

The shortcomings of the JICA master Plan was that it focused heavily on a Plan A (building to meet traffic demand) as opposed to the alternative of Plan B which considered demand management an essential first step before optimizing traffic management.

In response to the issues raised above, it has become clear that further examination of the one-way traffic plan would be beneficial, particularly to be confident that the outcome is a successful one. Also daladala rerouting is a primary action that involves associated terminal improvements and road and intersection modifications.

To this end, the Steering Committee in a meeting on the 24th August 2012 agreed to a staged implementation plan that incorporates the above elements, for the purpose of setting clear steps to implementation and also as each step is successfully implemented, building confidence toward attaining the complete objectives.

3. Planning Framework

3.1 A Strategic City Vision

The vision for Dar es Salaam should be to develop a livable, sustainable and prosperous city that provides for the economic and social needs of its citizens, employing strategies to protect the environment, with sustainable urban development and mobility to ensure access and equal opportunity for all, to the benefits of education, employment, services, and social inclusion; at the same time striving to manage the transition to a less energy and emissions-intensive economy.

As an important national economic hub, Dar es Salaam has a large impact on productivity and economic growth of the nation, and the quality of urban governance is a key indicator for visitors, investors, and tourists alike, to demonstrate Dar es Salaam as a place to visit and do business.

The city also faces challenges of energy security, increasing costs of oil; environmental challenges with carbon emissions, air pollution and negative environmental impacts of traffic, and worldwide financial uncertainty. These conditions represent a considerable development challenge and demand new and innovative approaches.

Almost all world cities face these challenges[4], but Dar es Salaam as a developing city has the advantage of a low starting point to develop sustainably and to create a city that is aware of future challenges with the capacity to adapt. European cities are engaging policies that promote public transport; create better spaces for cycling and walking within the public mobility network, and actually make car travel more difficult within cities. In doing so they improve the standard of living, improve productivity, preserve their historical assets, and promote tourism.

Specifically Dar es Salaam needs to contain and manage traffic, create safe walking paths and improve opportunities for safe cycling, to improve the transport balance, and ensure equity across all road users.

[4] *Many world cities have built large road infrastructures in an age of cheap energy and are now faced with high maintenance costs of the infrastructure while now trying to build improved mass transit to find a more sustainable future (example: American cities).*

Berlin Cycling | Copenhagen Walking Street | Stockholm Public Transport

Figure 3.1.1 European Cities – Balance in Urban Spaces

The proposed DART BRT system will be a major step forward in absorbing travel demand, by offering a viable alternative to car use, and also offering more efficient and higher capacity mode of public transport. This will create an opportunity for the city to redesign itself as a more peaceful and livable city; a city that exploits its natural harbor setting and provides its citizens and its visitors an attractive and harmonious urban environment.

While demand management strategy is an essential first step, a traffic management strategy is also required to ensure that traffic in the city can move efficiently. However given that traffic saturation of the CBD will be reached at some point (if not already), traffic management cannot be viewed as a traffic solution, but rather as a management measure.

Within this policy framework (how to contain and manage traffic), lies the opportunity for the city to decide how to set the balance correctly as to how the city will develop and function in the future. A sustainable urban design policy can guide development and strategy to ensure the rights of pedestrians are respected as equal to the rights of a person driving a car. There needs to be a shift in focus from 'how to accommodate traffic' to 'how to make the city a pleasant and livable environment' that provides opportunity for all.

3.2 What is Strategic Planning Framework

A Strategic Planning Framework (SPF) provides a principled and logical structure that underpins subsequent recommendations and proposed projects. The planning principles serve as a valuable first level of agreement and consensus amongst the various stakeholders and can be used as a point of reference to evaluate action plans and projects, prioritizing projects that contribute to objectives and then downgrading or eliminating those that do not.

If there is disagreement on action plans, a SPF can serve as a reference to remind decision makers of the agreed objectives. It also assists planners where conditions change, as unlike prescriptive Master Plans, planners can revert to the strategic objectives to adjust plans and actions.

A Strategic Planning Framework should take into account risk and constraints as well as opportunities and strengths, to ensure a sound and implementable plan.

3.3 CBD Planning Principles aligned to the Urban Transport Policy

The planning principles for the CBD traffic improvement plan are closely tied to the **Urban Transport Policy** being discussed in parallel to this exercise. Also working in tandem is the development of the DART BRT as an improved public transport option, with a proposal for a Northern Busway also on the table for discussion.

Based on the Urban Transport Policy, the following planning principles are listed in **Table 3.3.1** with explanations.

Table 3.3.1 Urban Transport Policy and CBD Planning Principle

1. *Improve coordination of CBD management between all stakeholders*	*Good outcomes always start at the institutional level.* *The success in traffic improvement in CBD requires holistic approach, involving wide range of stakeholders, including DCC, Ilala Municipality, TANROADs, SUMATRA and Traffic Police.*
2. *Develop a Traffic Management Plan (TMP) based on road classification, parking management and control and traffic rules.* *(This includes efficient bus and daladala routing)*	*The purpose here is to make the best and most efficient use of existing infrastructure through optimizing traffic flows in relation to other road users.*
3. *Diversify funding sources and enhance local revenues*	*Though it is minimal, the CBD traffic improvement plan requires finance for its implementation and operation, and therefore, both public and private funds should be secured.*
4. *Improve the public transport network to improve access, connectivity and integration. This includes NMY (walking and cycling as part of the network)*	*Passenger transport development needs to be focused on customer service (demand)* *Seamless networks to improve accessibility and connectivity* *Public transport that is convenient, reliable, safe, and affordable and treats customers with respect* *Dar es Salaam has an excellent terrain and scenery for cycle-ways providing low cost and environmentally friendly travel means for citizens and also a potential tourism opportunity.*
5. *Improve public transport through improving the business models for public transport*	*The success of DART, the Northern busway proposal, or Daladala services depends on sustainable business models.*
6. *Prioritize road safety and equity for all road users*	*Improve road-use balance.* *To respect all road users through an improved balance between car use, safe cycling and NMT space and pedestrian areas. Cars should not have automatic priority.*

CBD improvements tend to be focused on infrastructure improvements and traffic control; however, traffic management measures can be quickly overtaken by increasing demand, if travel demand is not addressed. Therefore this discussion document addresses demand management first, and then discusses measures to manage and control traffic.

Part 2. Demand Management

4. Overview of demand management proposals

Travel demand management relates to any measures that will reduce traffic, including both pro-active and restrictive measures.

Proactive measures are factors that provide good alternatives to motorized travel such as cycling and improved walking conditions and more efficient modes such as public transport. They also include city development policies that reduce the need for travel, such as increasing development density along transport corridors.

Restrictive measures are those that create disincentives to car or motorcycle use, such as increasing the cost of parking; reducing parking availability; and charging for road use by means of tolls or 'congestion charging' where a cost in levied on cars entering the CBD area.

There are three important issues that stand out regarding demand management.

These are:

1. **Managing travel demand structurally through city development policies is highly effective.** Building parking stations etc . may attract more cars and therefore solve little.
2. **Restrictive measures only work when good alternatives are available**; therefore good public transport and cycle/walkways are critically important, and make it easier to apply restrictive measures.
3. **Managing traffic is more achievable if demand management practices are applied**. If not, traffic management becomes an impossible task.

The discussion below covers the public transport improvements as proactive measures while the restrictive measures are addressed in the traffic management section.

4.1 DART BRT

The DART BRT system will be the largest single project that Dar es Salaam has ever undertaken to develop a mass transit system for the city. It is aimed at providing affordable, high-quality mass transit for the city.

Key features of the system include:

- Modern low-emissions buses, privately owned and operated,
- Scheduled bus services,
- Segregated bus lanes, allowing for high speed service,
- Level boarding from pre-paid stations located in roadway medians
- Privately-managed fare collection system using contactless smart cards.

DART is a key demand management measure, introducing mass transit into the city, replacing daladala services and improving the quality of public transport.

4.2 Northern Busway Proposal

The area to the north of the city is the source of much of the traffic entering the CBD. As the suburbs around the peninsula are more car dependant, there are less daladala routes operating from these areas, meaning that residents from these areas have in some cases, little choice but to use a car for the daily commute. Consequently the traffic situation along Ali Hassan Mwinyi can involve lengthy delays especially in the peak hour.

The Northern busway is a proposal to provide a high quality bus system from the northern area to reduce car use or at least to provide motorists with a viable choice, to be able to leave the car at home.

A tidal flow bus lane across the Selander Bridge increases the total capacity of the bridge 3.5 times – similar to building 2 new bridges. It is expected that the bus lane could carry 7,000 passengers per hour per direction.

The 2007 JICA Master Plan developed a fully integrated bus network based on six development stages of BRT coupled with secondary bus routes which provided essential cross suburban services and access to the trunk corridors of the busway. The corridor of Ali Hassan Mwinyi and New Bagamoyo Road was identified as a secondary route corridor, complemented by a degree of bus priority. This proposal builds on this idea, by proposing a tidal busway (morning inbound priority and afternoon outbound priority) on a single exclusive bus lane.

The proposal, presented in a separate document, includes a commercial management model that can operate as part of the DART system or complementary to it. In fact it is the institutional arrangements which make this proposal viable; its ability to operate as a sustainable business and the ability to integrate the existing daladala operators into the business.

Figure 4.2.1 Showing space available for a tidal busway

Part 3. Traffic Control Plan and Parking Management

5. Approach to addressing CBD traffic issues

A three prong approach is proposed, as outlined in T**able 5.1.1** being management measures that are required to help resolve some of the above mentioned issues. In the adjoining column, the proposed actions contained in this report are listed.

Table 5.1.1 Issues and proposed actions

Traffic management ■ Design a balanced flow pattern to reduce congestion and maximize use of infrastructure ■ Respect BRT priority on planned BRT routes ■ Signalize turns on major corridor intersections to maintain order and sequence and program signal operation to manage traffic flow efficiently ■ Design and improve road geometry/markings/signage	**Proposed Actions** Establish a clear road hierarchy to guide road management & develop a modified and balanced traffic circulation plan Develop BRT corridors and manage traffic accordingly Select key locations in the staged implementation plan and improve these intersection operations Refer to the Tanzanian Road Marking Standards and apply these to improve traffic guidance (and enforcement)
Parking management ■ Manage inner city parking to improve traffic flow and balance the use of available space for all users ■ Establish well marked city parking spaces using signage, marking, barriers and strictly enforce rules and charges	Under the framework of the road classification, define parking protocols for the various road types Apply these measures, and review and improve the institutional structures and regulations to create a realistic, practical enforcement.
Public Transport Management ■ BRT and Priority Corridor development ■ Design public transport routes to improve efficiency ■ Improve public transport facilities and stopping bays to create order and a good service standard for passengers ■ Ensure safe walking accessibility to bus stops and termini.	Develop BRT corridor and implement priority signaling and associated traffic management Reroute daladala and rationalize services to create more efficient public transport and reduce traffic Improve the facilities for daladala at Posta, Stationi, and Old Posta, and develop a fringe terminal at YMCA Improve pedestrian walkways to all daladala termini and develop selected 'pedestrian–only' streets

6. Draft Traffic Control and Management Plan for the CBD

6.1 Road hierarchy system and road classification

Dar es Salaam lacks a functional classification of the streets in the CBD, which leads to an ad hoc approach to traffic management and control. Establishing a functional road hierarchy will provide: (i) an understanding of road functions and what level of service it must provide, and (ii) help to define road standards and road markings suitable for an urban environment. A road hierarchy includes 3 types of road classification being Distributor roads, Collector roads and other minor roads.

Distributor roads accommodate in-bound and out-bound traffic to/from CBD and are linked to Bibi Titi as the main arterial road. Collector roads within the CBD accommodate shorter distanced trips, like inner traffic and connect to distributor roads. Other minor roads accommodate accessibility to and between local communities.

Considering the current/future traffic demand in CBD, derived from the 2007 Master Plan study, it is proposed that:

- Distributor roads include Ohio Street, Sokoine Drive/ Samora St (as one way pair), Kivukoni Drive, Uhuru Street, and Maktaba Street ,
- Collector roads are Jamhuri Street, Indra Gandhi Street, India Street and Zanaki Street be classified to collector roads,
- The road section of Morogoro Street in CBD is excluded from any classification since it is soon diverted to transit mall when the BRT is installed.

Figure 6.1.1 shows the street classifications.

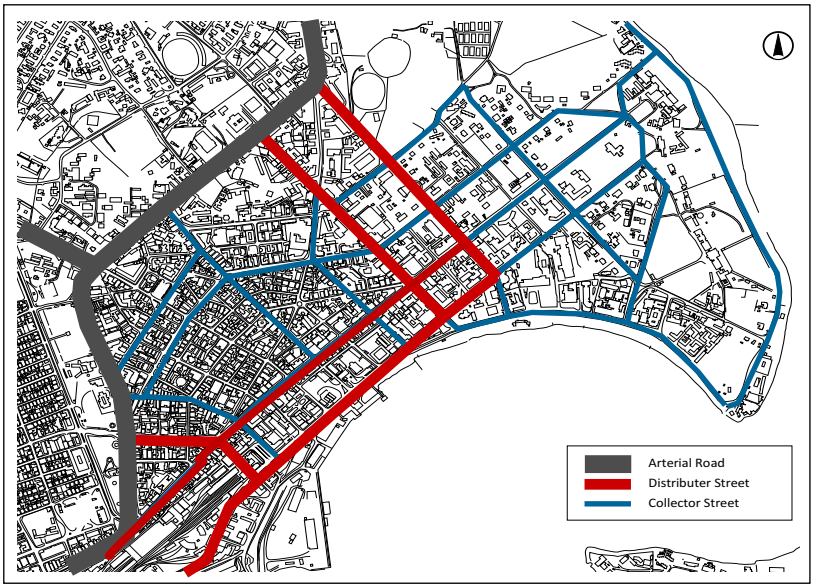


Figure 6.1.1 Proposed Road Classifications in the CBD

The purpose of classifying roads is to define what design is required and also what parking rules should be set. **Table 6.1.1** proposes such a set of rules.

Table 6.1.1 Conditions imposed by proposed Road Hierarchy on Traffic Control and Management

Road Hierarchy	Function/ Geometric Condition	Proposed Traffic Control and Management Scheme
Distributor roads	Accommodate inter-zonal traffic Link to arterial road Enough road width of 2 lanes or more	On-street parking prohibited (with the exception of limited parking along Samora) Signalized intersection (or roundabout), crossing at the major collector roads
Collector roads	Accommodate zonal circulated traffic Link to distributor roads Limited road width of 2 lanes	On-street parking allowed At grade non-signalized intersection

6.2 CBD Traffic Circulation Plan

Furthermore to the concerns mentioned previously on the efficacy of the one-way CBD plan, are the concerns on implementation. It has been agreed that a staged approach be implemented to avoid a chaotic traffic situation that may arise out of a 'big-bang' change.

The stage implementation starts with daladala re-routing which will have an immediate 3-prong benefit being:

1. It reduces overall daladala traffic by shortening some bus routes
2. The efficiency of the daladala is improved by less time wasted in the CBD (helping operators improve productivity)
3. The quality of public transport is improved through upgrading of bus terminals.

Once the daladala routes are reorganised, two further stages involving traffic circulation can then be completed.

The staged approach allows a more gradual adjustment of conditions and each step successfully completed can serve as a confidence building measure. Community consultation is obviously important, but should always be conducted within the framework of a sound and well thought out plan, and also with the aim of serving the wider public interest. It is important that the community understands and acknowledges the aims and objectives of the city set out in the strategic planning principles.

6.3 Daladala Rerouting

Private car users often criticize daladala is a major contributor to traffic congestion in CBD, however, daladala are the main transport option for the majority of the citizens in Dar es Salaam and 70% of all trip made are with daladala (2008 Urban Transport Master Plan). The efficiency of daladala as a transport mode was shown in the traffic count surveys which indicated that while 50% of passenger trips are by daladala (the other 50% by cars), daladala represented only 9% of total vehicles crossing the boundary. Nonetheless, daladalas are a cause of traffic congestion in CBD, especially when daladalas stop at overcrowded bus stops at New Posta, Akiba and Kivukoni.

Passengers survey on daladala indicates that the current circular daladala route through Maktaba, Kivukoni, Sokoine Drive and Uhuru, is inefficient and consumes a lot of time in traffic congestion and the future redirection of Sokoine Drive traffic will also interfere with daladala routes. For these reasons daladala routes need to be reorganized, with the aim to make the route more attractive for both passengers and owners/operators by improving the efficiency of daladala business and by reducing travel time. Also daladala terminals should be improved and services adjusted to integrate with the BRT.

On 20 March, 2012, members of secretariat overviewed the result of traffic surveys and discussed countermeasures to resolve daladala related issues in CBD. These short term measures are to include:

1. Application of new daladala rerouting plan
2. Improvement of daladala terminals at YMCA and Stationi
3. Introduction of shuttle bus service/circular bus service

Table 6.3.1 shows the rerouting plan by route, where some buses travelling to Posta are terminated at Stationi and 50% of Mwenge-Posta buses will terminate at YMCA. Should YMCA become overcrowded, some buses van be diverted to Posta.

6.4 Redeveloping the Daladala terminals as a PPP development

There is a considerable advantage to redevelop the Daladala terminal through a PPP facility, where the government contract with the private sector to build and operate the terminals.

The aim is to offer an investment opportunity with advertising rights to one or more private parties where the investor will build the superstructures, signage and improvements, in return for the considerable advertising rights and opportunities such a business offers.

The contract will define the responsibilities of all parties, and will specifically have the private sector investor as the terminal manager, be responsible for managing the site, its uses (controlling vendors) cleaning s and maintaining.

Such a proposal is designed as a win – win, offering a quality business opportunity and securing a well-managed terminal facility.

Table 6.3.1 Reassignment of buses

Route Description	No. buses per day Present		No. buses per day 50% of Posta to terminate at Stationi	
Kilwa	**Posta**	**Kivukoni**	**New Posta**	**New Stationi**
Mb/rangi3 – Posta	300		150	150
Temeke – Posta	158		79	79
Mb/ Kuu – Posta	58			
Mb /Rangi3 – Kivukoni		134		
Temeke – Kivukoni		1		
Mb/ Kuu- Kivukoni		3		
Ali Hussein Mwinye	**Posta**	**Kivukoni**	**New Posta**	**YMCA**
Mwenge – Posta	322		161	161
Maskai – Posta	55			
M/Mbusho – Posta	3			
Kawe/ Africana – Posta	44			
M/Mbusho – Kivukoni		188		
Kawe/Africana – Kivukoni		3		
Uhuru / Nyerere	**Posta**	**Kivukoni**	**New Posta**	**New Stationi**
Buguruni – Posta	63			
K/Mbarahati – Posta	16			
G/ Mboto – Posta	98		49	49
Temeke - Posta	256		128	128
Vigunguti – Posta	96		48	48
T/Segerea – Posta	97		49	49
Buguruni – Kivukoni	270			
K/Mbarahati – Kivukoni		59		
G/ Mboto – Kivukoni		156		
Temeke- Kivukoni		40		
Kigogo – Kivukoni		3		
Vigunguti – Kivukoni		3		
T/segerea Kivukono		54		
Morogoro Rd (replaced by future BRT)	**Posta**	**Kivukoni**	**New Posta**	**YMCA**
Ubungo – Posta	92		46	46
Mwenge - Posta (via Ubungo)	266		133	133
Kimara- Posta	140		70	70
TOTAL	**2334**	**644**		

7. Staged Implementation Plan

The Implementation Plan has 3 stages, as follows:

Stage 1: Daladala route modifications

- Project 1 Old Posta/ Maktaba Traffic Improvements
- Project 2 YMCA & New Posta & pedestrian Improvements
- Project 3 Stationi improvements and pedestrian walkways.

(Each project completed has associated route changes)

Stage 2: Traffic Modifications

- Samora/ Sokoine Dr modification

Stage 3: Local Traffic Treatments

- Project 1 India Street pedestrianization and inner CBD traffic /parking modifications
- Project 2 Mosque St area modifications

7.1 Stage 1 Daladala rerouting and facilities improvement

7.1.1 Process of rationalizing daladala routes

Developing the process of rationalizing daladala routes has involved a sequential process that has considered the peak hour volumes of daladala (from the traffic surveys) and restructured the routes taking into account desired level of service (for passengers) and also the traffic impacts. While some new routes will terminate at Stationi instead of Posta, this is not expected to create any greater inconvenience for passengers as other buses from the same origin will continue to Posta. **Figure 7.1.1** outlines the planning process.

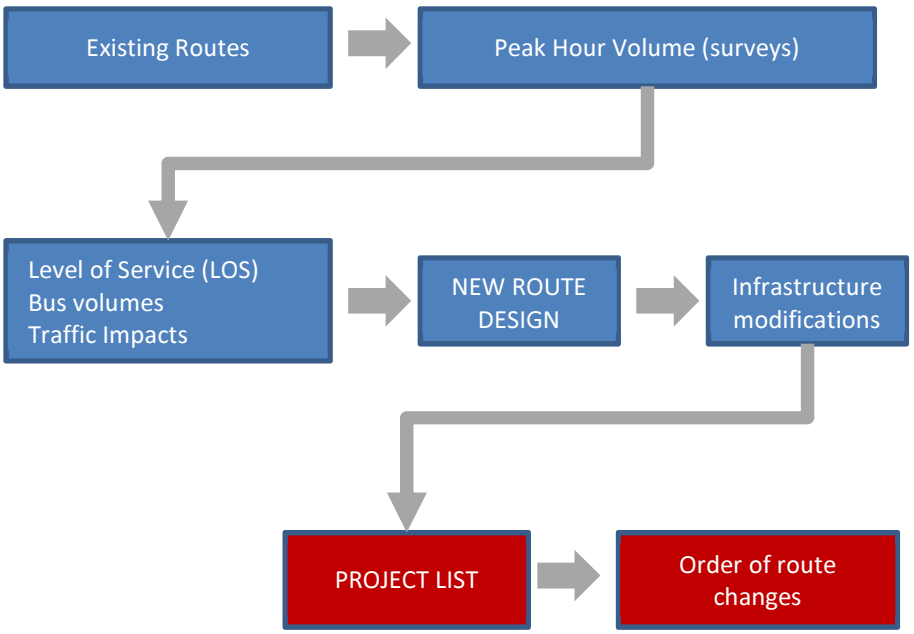


Figure 7.1.1 Planning Processes for Route Changes

Changes to route design has defined the necessary infrastructure improvements which become the projects as described previously. In turn, when completed, these projects define the order of route changes that can be implemented.

- All Posta routes will be redirected to Old Posta to terminate once **Project P1** is complete. See **Figure 7.1.2**
- All routes to YMCA can commence once **Project P2** is complete. See **Figure 7.1.3**
- All routes terminating at Stationi can do so once the **Project P3** Stationi development is complete. See **Figure 7.1.4.**

7.1.2 Executing agencies for Daladala rerouting

For daladala rerouting, DART and SUMATRA are key executing agencies, and DARCOBOA and Daladala Drivers Association are key stakeholders. SUMATRA, as public transport administrator, is expected to coordinate with all daladala operators through DARCOBOA and Daladala Drivers Association, for implementation of daladala rerouting plan. TANROADS DSM should be also involved as one of executing agencies for the intersection modification and signalization at Ohio-Bibi Titi.

For development of daladala terminals, Ilala Municipality, as an asset holder of daladala terminals, is expected to plan, budget and supervise development project of daladala terminals.

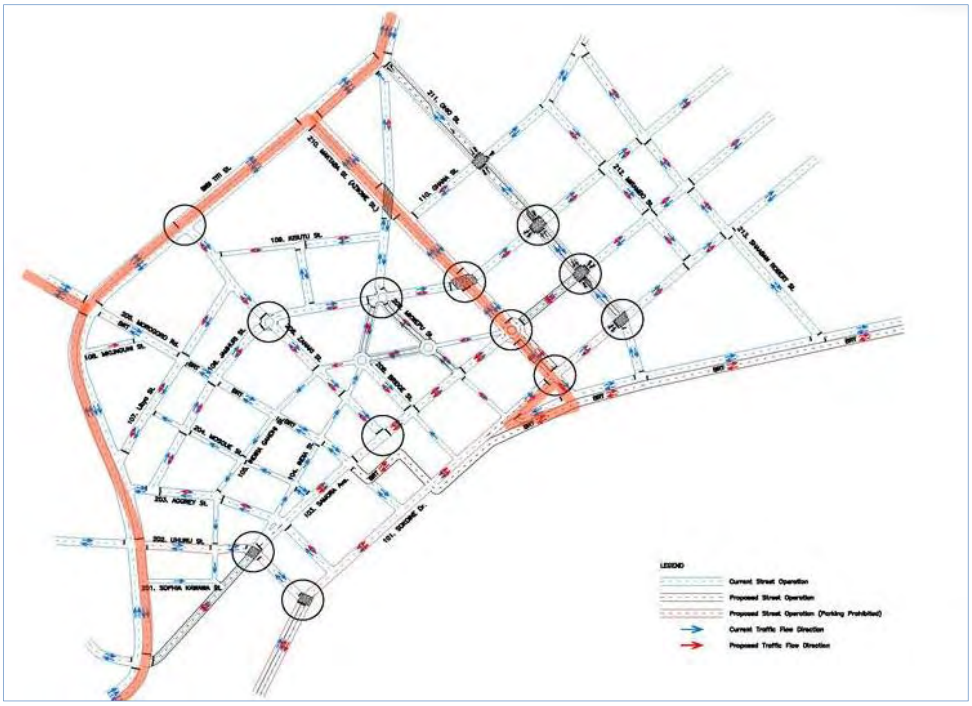


Figure 7.1.2. Modified Daladala routes at P1 completion

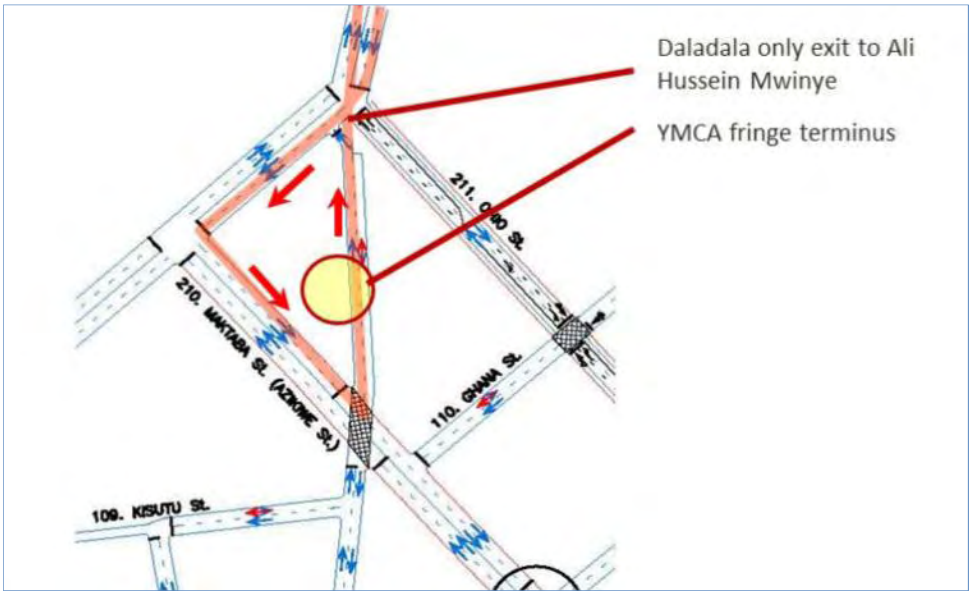


Figure 7.1.3 Modified Daladala routes at P2 completion

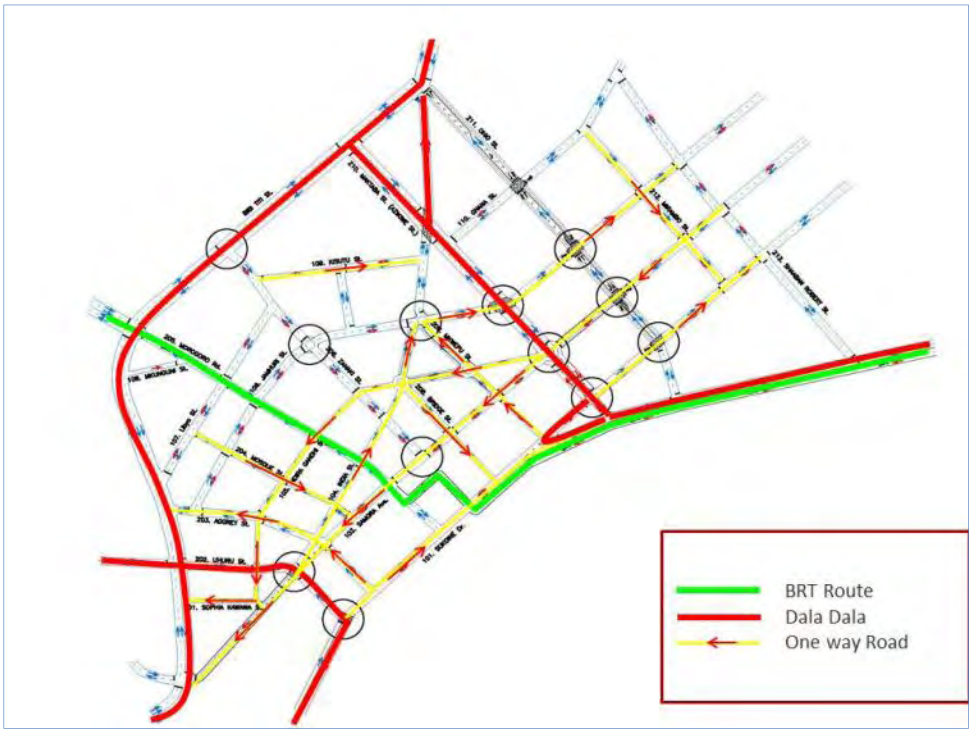


Figure 7.1.4 Modified Daladala routes at Stationi completion (Final)

7.2 Stage 1 Scope of Works

Project 1-P1 mainly includes relocation and development of the Old Posta stop from the harbor-side to the kerb-side adjoining the park opposite the NBC Bank to avoid daladala (and pedestrians crossing the BRT lanes).

It must operate in an anticlockwise manner to enable set-down and boarding at the park side instead of the bank side. **Figure 7.2.1** shows the layout of the Old Posta terminus.

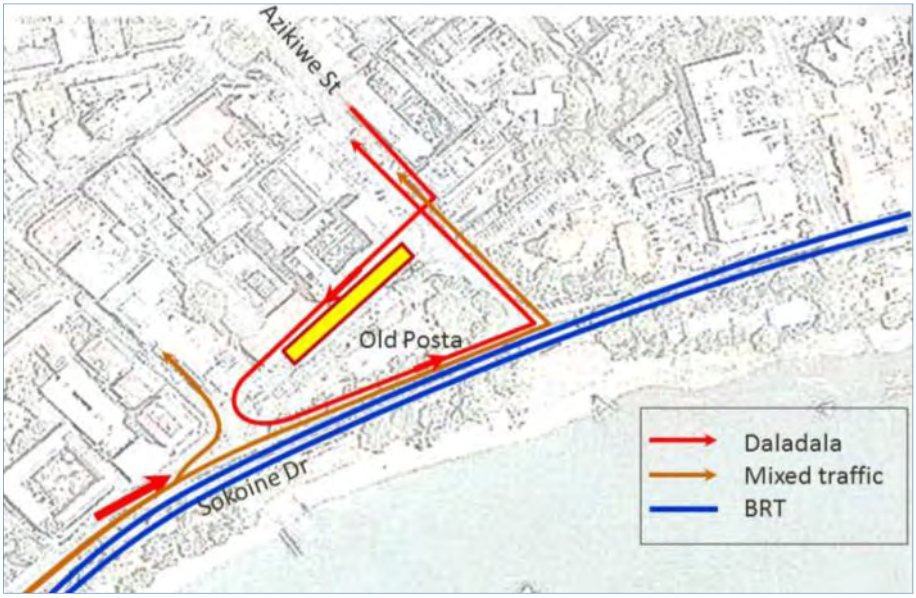


Figure 7.2.1 Daladala Circulation around Old Posta

Traffic improvements need to be made along Maktaba St to cope with the additional daladala traffic, including:

- Remove angle parking at Maktaba Street – replace with parallel parking to reduce the occurrence of parking traffic interfering with traffic flow
- Paint lane marking full length of Maktaba to define traffic lanes (to be kept free of obstruction)
- At Upanga St to Maktaba St (eastbound) restrict right turn to reduce pressure on this intersection (alternate route via Jamhuri) and make Upanga Street (north past Citibank) a one way northbound for mixed traffic to reduce movements at the Upanga intersection.
- At the intersection of Maktaba St make new left turn to Bibi Titi (one left turn lane and two right turn lanes).
- The traffic signals at Upanga St need to be made operational and new traffic signals must be installed at Jamhuri.

Figure 7.2.2 shows an overview of the Stage 1-P1 project works.

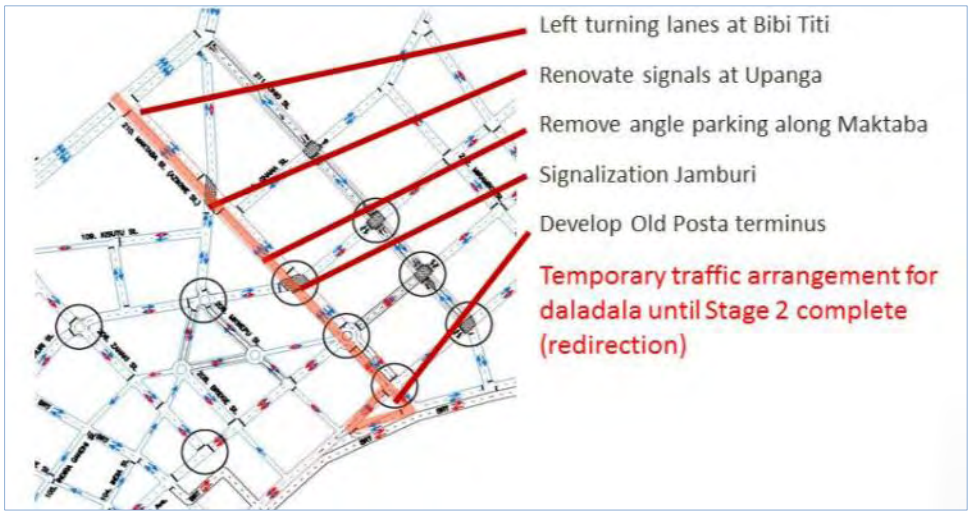


Figure 7.2.2 Overview of Stage1 –P1

Project 1-P2 adds to the work done in P1 by developing the YMCA fringe terminal on Upanga St and renovates New Posta bus stop, with extensive pedestrian improvements in this area.

Further necessary works include:

- Ohio St Intersection works – remove bollards to create daladala only exit/ signage
- Develop pedestrian walkway from Askari Monument to Ohio St (Barclays bank) & Upanga St/ Jamhuri St. This includes 3 raised crossings as shown in **Figure 7.2.5.**

Figure 7.2.3 shows the poor condition and overcrowding at New Posta Daladala terminus. While some of the passengers will be able to relocate to YMCA around the corner, the Posta stop improvements should include:

- Improve waiting area (shelters/paving/seating)
- Improve lighting
- Control vendor areas to remove obstructions

Figure 7.2.3 Present conditions at New Posta Bus Stop area

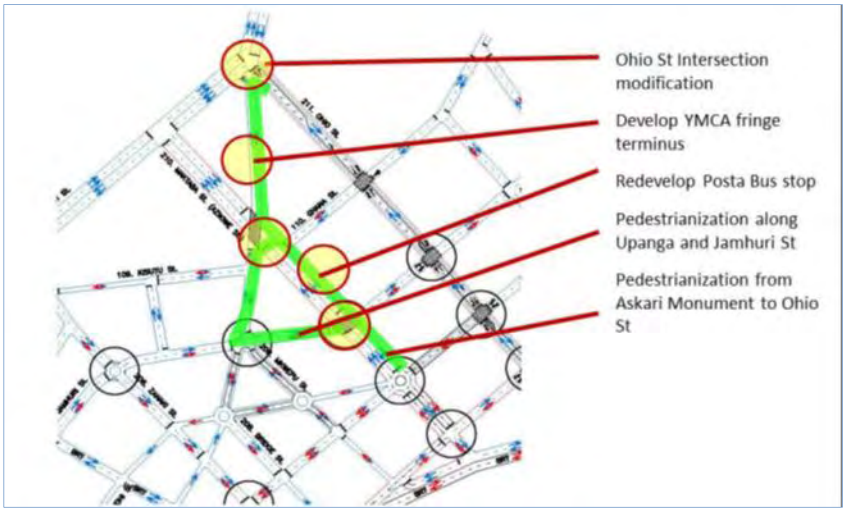


Figure 7.2.4 Overview of 1-P1 projects

Figure 7.2.5 showing location & design of raised crossings

Project 1-P3 renovates the Stationi Terminal and improves daladala circulation (see overview **Figure 7.2.6**.) Under the new routing arrangements the Stationi terminal will be the terminus for Kilwa Rd and Nyerere/Uhuru Rd routes. **Figure 7.2.7** outlines a schematic view of the alterations and improvements.

Pedestrian walkways are constructed from Stationi along Aggrey St to Samora and Morogoro Rd, and along Sokoine Dr. and a pedestrian/cycleway built to Old Posta.

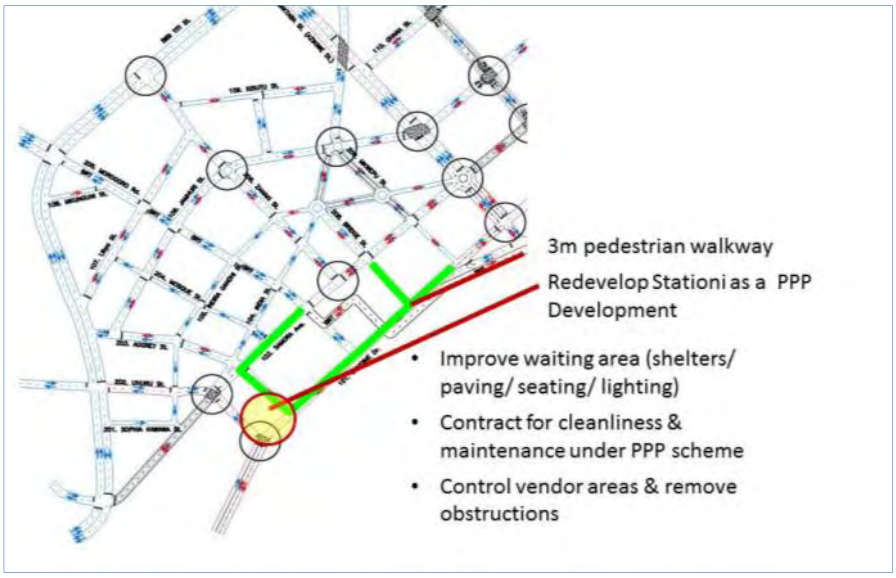


Figure 7.2.6 Overview of 1-P3 projects

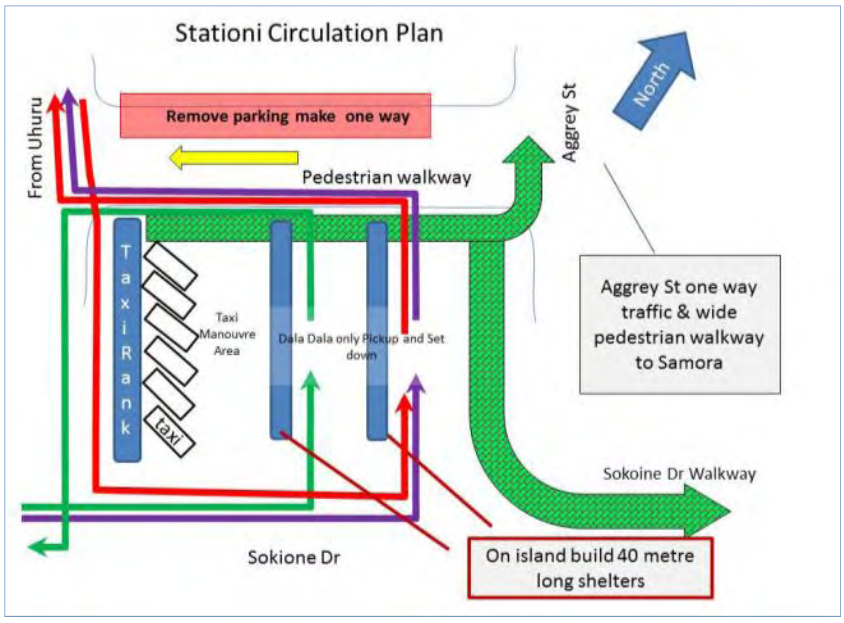


Figure 7.2.7 Stationi Circulation Plan

7.3 Stage 2 Scope of Works

Stage 2 involves modifying of the Askari Monument Roundabout and the Clock Tower Roundabout in preparation for the traffic direction changes along Samora St and Sokoine Drive. Concurrently modifications need to be made to Aggrey St Intersection (accommodate the one way direction) and the Zanaki St Intersection (make a two way turn) at Bibi Titi. **Figures 7.3.1 and 7.3.2** show the respective layouts.

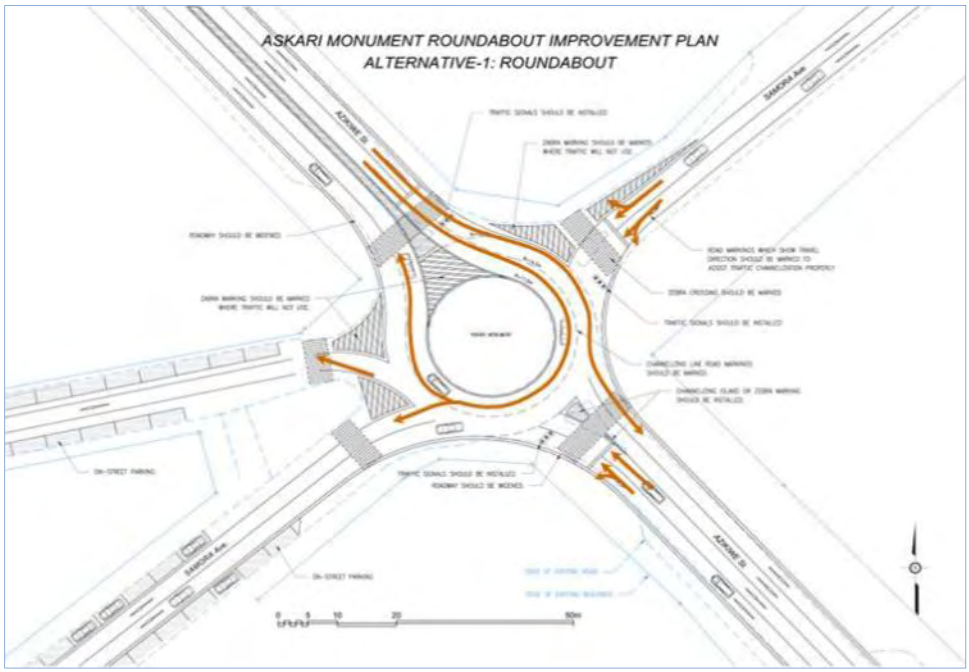


Figure 7.3.1 Askari Monument modifications

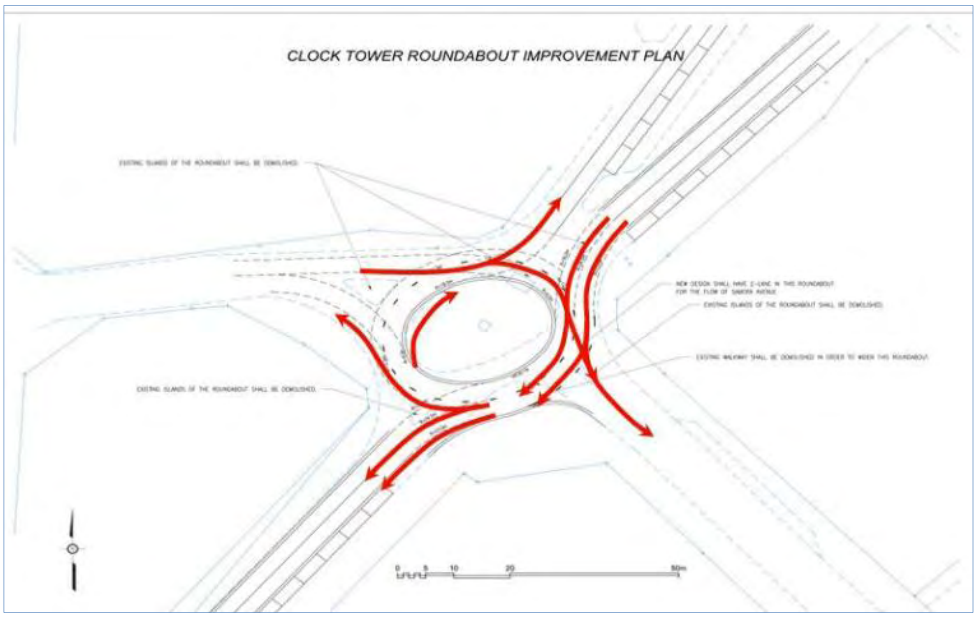


Figure 7.3.2 Clocktower Roundabout modifications

7.4 Stage 3 Scope of Works

Stage 3 involves local traffic treatments and parking changes in the local communities of Zanaki to Maktaba Street area and includes building pedestrian walkways (3m wide unobstructed) along India Street to link it to Morogoro Rd which will be developed as a transit/pedestrian street.

The aim of the improvements will be to create order in the parking system to restore good walking areas and restore the quality of life in this inner city community. As such, this project should get community support, therefore, good community consultation is required to understand specific needs that affect livelihoods.

Similarly is the reorganization of the Mosque St area south of Morogoro Rd, to improve traffic flow, manage parking and develop some pedestrian only streets to accommodate the BRT/transit street along the BRT corridor. The aim is to restore some community atmosphere into this area and lessen the dominance of cars and traffic. Consultations with the community have been undertaken by DART for this precinct. **Figure 7.4.1 and 7.4.2** show the respective areas.

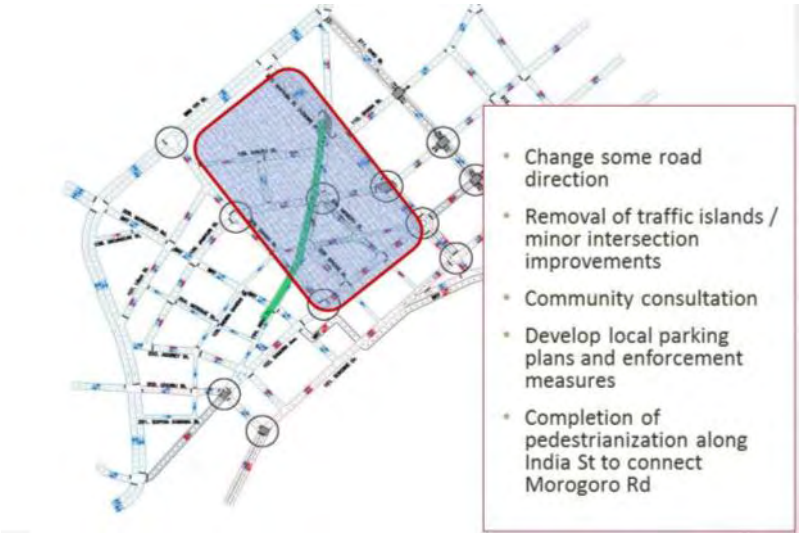


Figure 7.4.1 Maktaba to Zanaki Local area

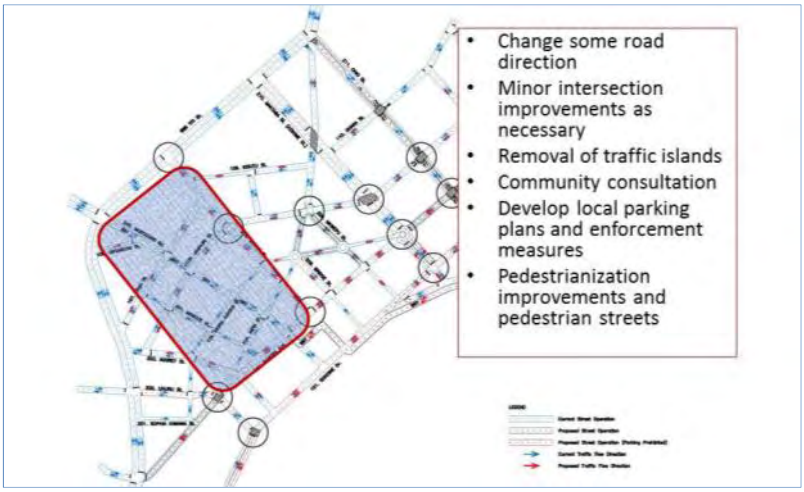


Figure 7.4.2 Mosque St Local area

7.5 Project Tasks and Responsibilities

Table 7.5.1 shows the list of activities and tasks and assigning responsibilities, and lists the funding sources. Although these Short-term projects have generally been limited to essential items, if budget constraints require a 'do-minimum' approach, some items are listed as 'non-critical'. However this terminology does not imply non-essential and every effort should be made to deliver the complete project in order to optimise the benefits.

Table 7.5.1 Activity /Task list showing responsibility & Funding Sources

	Task/ Work Detail	Responsibility	Funding / Source
Stage 1	**Project List for Daladala Route Changes**		
Stage 1 General	Negotiate PPP agreements for terminal facility construction & maintenance for 4 locations: Old Posta, New Posta, YMCA, Stationi	Ilala Municipality	N/A
1-P1Critical Works	• Establish Old Posta waiting areas Opposite NBC bank • DCC remove parking	Engineer Sumatra / Police/ DCC parking contractor	TANROADS
	• Establish new daladala traffic circulation around Old Posta stop (signage & barriers)	IlalaEngineer	TANROADS/Ilala
	• Remove angle parking at Maktaba Street – replace with parallel parking	Ilala Engineer/ Municipal Guard/DCC parking Contractor	DCC/ Ilala
	• Paint lane marking full length of Maktaba	Ilala Engineer	DCC/Ilala
	• Upanga St to Maktaba St (eastbound) restrict right turn	Ilala Engineer	Ilala
	• Renovate signals at Upanga St	Ilala Engineer/ TEMESA	Ilala
	• Upanga Street make one way northbound for mixed traffic	Ilala Engineer	Ilala
	• Maktaba St make new left turn to Bibi Titi	Ilala Engineer/ TANROADS	TANROADS
	• Public Awareness Campaign	RAS/ SUMATRA/ DARCOBOA/ DCC/ Police	CUPID
	• Change affected Daladala Routes	SUMATRA/ RAS/ Traffic Police/ Ilala/ DARCOBOA	N/A
P1-1 Non- Critical	Jamhuri Traffic lights install	Ilala Engineer/ TEMESA	Ilala
	Develop Old Posta Bus Stop structure (under PPP scheme)	Ilala/ DCC/ PPP	Private
1-P2	Ohio St Intersection works – remove bollards to create daladala only exit/ signage	TANROADS	TANROADS
	YMCA bus stop ground works/ crossing/ kerbside waiting areas. Road markings	Ilala	Ilala
	New Posta stop ground works/ crossing/ kerbside waiting areas. Road markings	Ilala	Ilala
	Public Awareness Campaign	RAS/ SUMATRA/ DARCOBOA/ DCC/ Police	CUPID
	Change affected Daladala Routes		
1-P2 Non-critical	Develop YMCA & New Posta Bus stop structure (under PPP scheme)	Ilala	Ilala
	Develop Pedestrian Walkway Askari Monument to Ohio St (Barclays bank) & Upanga St/ Jamburi St. Include 3 raised crossings.	Ilala	Ilala
1-P3	Rearrange traffic circulation and bay assignments at Stationi Public Awareness Campaign & Change affected Daladala Routes	Ilala	Ilala

1-P3 Non-critical	Pedestrian Walkway Aggrey St / Samora St to Morogoro (minimum 3 m wide unobstructed)	Ilala	Ilala
	Pedestrian Walkway / Cycleway Stationi to Old Posta via Sokoine (1.5m cycle.1.5m walkway unobstructed)	TANROADS	TANROADS
	Develop Stationi Bus stop structure (under PPP scheme)	Ilala	Ilala
Stage 2	**Project list –Traffic Modifications**		
2-P1	Modify Askari Monument Roundabout & Clock Tower Roundabout	Ilala	Ilala
2-P2	Modify create 2-way turn at Zanaki St Intersection at Bibi Titi St	TANROADS	TANROADS
2-P3	Change traffic flow along Samora & Sokoine& one way Aggrey St (extra Police/ temp. marking & signs) Public Awareness	RAS/DCC/Police	DCC/SUMATRA/CUPID
	Close Morogoro Rd	TANROADS/ RAS/Police	TANROADS
Stage 3	**Project List Local Traffic Treatments**		
3-P1 Maktaba to Zanaki local traffic modifications	Public Consultation	RAS/DART	DART
	Prepare parking signage & markings	DCC/Ilala	DCC
	Implement and manage change process	Ilala/ DCC Parking	RAS
3-P2 Mosque St Area local traffic modifications	Public Consultation	RAS/DART	DART
	Prepare parking signage & markings	DCC/Ilala	DCC
	Implement and manage change process	Ilala/ DCC Parking	RAS

7.6 Project Schedule

It was anticipated that the projects could be completed by the end of December 2012, in line with the anticipated closure of Morogoro Rd for BRT construction.

Figure 7.6.1 outlines the schedule of each stage to completion. As many of the infrastructure modifications are small, the procurement process can be reduced, and in some cases existing contracts can be varied through an addendum to the contract to facilitate progress.

Stage 3 has not been assigned specific calendar dates as it is non-critical to the deadline of the closure of Morogoro Rd. However, there will be local impacts of the road closure in that area, but these are presently being managed by DART Agency.

Also the period of public consultation for this stage is uncertain, so the consultation is places as a 'pre-project' task, where the project preparation, procurement, Implementation has been assigned 4 months.

However, since the funding for implementation of critical works is not secured as of December 10, the project schedule needs to be revised.

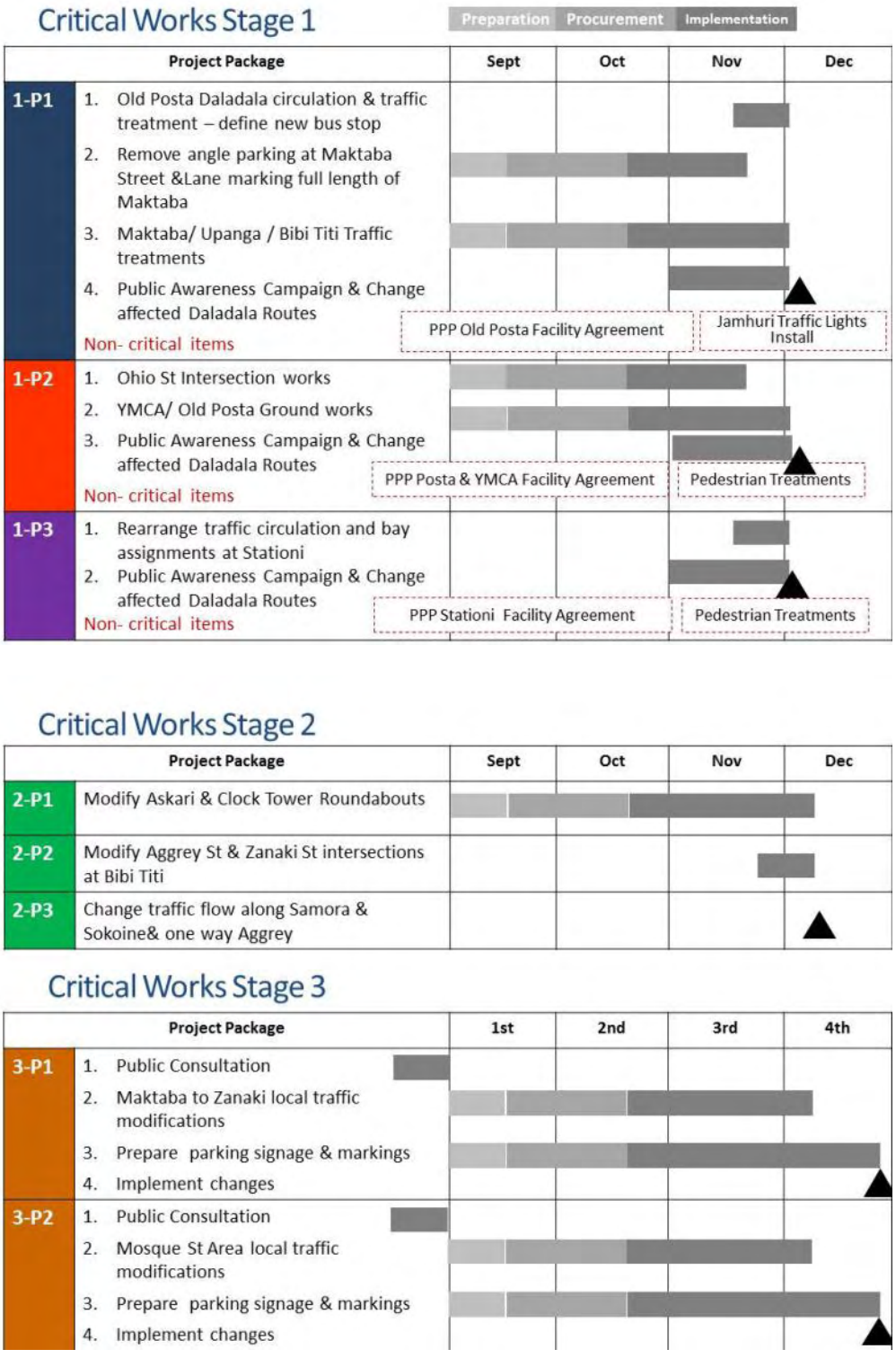


Figure 7.6.1 Project Schedule

7.7 Project Cost Estimates

As of November 17th, the preliminary design and the bill of quantities for each project component was prepared and, thus, the project cost for Stage 1 and 2 was estimated at 1.4 million USD, including critical works of 0.48 million USD of and non-critical works of 0.93 million USD.

Table 7.5.2 Preliminary Cost Estimation (Unit: USD)

	Critical	Non-critical	Total
Project 1: Old Posta/ Maktaba Traffic Improvements	147,305	196,500	343,805
Project 2: YMCA & New Posta & pedestrian Improvements	105,093	324,233	429,325
Project 3: Stationi improvements and pedestrian walkways	1,674	366,770	366,770
Stage 2: Traffic Modifications Samora/ Sokoine Drive modification	223,505	45,000	268,505
Total	477,577	932,502	1,408,405

The secretariat discussed and reviewed the scope and design of the critical works and unit cost of the construction work. Accordingly, construction costs for each road/street were estimated based on the redesigned drawings attached in the appendix 2 and which amount to 725 million Tshs (0.45 million USD).

Table 7.5.3 Construction Cost for Critical Works (Unit: million Tshs)

No.	Road/Street	Construction Cost
1	Samora Avenue	12.2
2	Sokoine Drive	13.0
3	Kivukoni Road	4.9
4	Maktaba Street	302.7
5	Aggrey Street	4.8
6	Upanga Street	80.7
7	Intersection: Bibi Titi Mohammed Road x Samora Avenue	2.9
8	Intersection: Bibi Titi Mohammed Road x Aggrey Street	50.0
9	Intersection: Bibi Titi Mohammed Road x Zanaki Street	70.5
10	Intersection: Clock Tower Roundabout	131.5
11	Intersection: Askari Monument Roundabout	51.8
	Total	725.0

8. Parking Improvement and Management Plan

8.1 Project Outline

Improving the management of parking is a critical part of resolving traffic congestion in the CBD. Presently, there is no standard or guidance for on-street parking, resulting in an ad-hoc approach, aimed at maximizing parking lots in limited space, without considering the impact on the traffic flow. Illegal parking, mostly on sidewalks is prevalent as shown in **Figure 8.1.1**

Figure 8.1.1 Parking on sidewalks is widespread in the CBD

Another issue is the saturation of parking capacity in the CBD. The survey result (Dec 2011), showed over 3,000 parked cars and 500 illegally parked cars were observed along distributor and collector roads during office hours, indicating saturation, which road capacity and creates serious traffic congestion.

Adding to the problem is an increase in parking demand. Survey of CBD buildings (Oct, 2011) show that that the overall floor size increased by 37% between 2007 and 2011 and now reaching 2.0 million square meters, with residential buildings being a major contributor for this increase, significantly adding to the saturation of on-street parking.

Note: The increase in residential on-street parking is a particular concern, as this is the most difficult to enforce. Inner city car owners expect free on-street parking to be provided. Tough choices will have to be made to reclaim city streets for the community, including cost penalties to encourage car owners to find alternate off street parking options.

On 20 March, 2012, the secretariat viewed the result of traffic surveys, and discussed countermeasures to tackle above-mentioned issues. It decided on five short term measures, being:.

1. Application of new on-street parking design
2. Proper management of on-street parking/no parking street/illegal parking
3. Development of fringe parking/off-street parking
4. Introduction of area parking charge/fluctuated parking charge
5. Introduction/enforcement of parking permit law

8.2 Design Considerations

8.2.1 Application of new on-street parking design

An improved parking design will maximize the traffic flow/road capacity and create better streetscape and walking environment for pedestrians. As an example of design standards, **Figure 8.1.3** shows the Japan Traffic Guidelines which indicates parked vehicles capacity for each type of road width and parking design. The guidelines show that:

- Parking is prohibited if a carriageway width is less than 6.05 meters for single-lane traffic and 8.80 meters for double-lane traffic.
- Parallel parking is allowed if carriage way width is between 6.05 meters and 9.00 meters with single-lane traffic.
- Angled parking lots are shown with varying degree angles which provides varying capacity.

Thus it can be seen that for Dar es Salaam, a simple set of standards can be applied depending on the width of streets and the traffic assignment. Topographic surveys (Oct-Dec, 2011), carriageway width of collector roads in CBD was shown to vary between 9 and 14 meters.

At a broad level, the classification of streets sets rules for parking restrictions (no on-street parking on distributor roads) although where space exists, a parallel pick-up and set down zone can be provided, as shown in **Figure 8.2.2.** On collector streets, well designed parking should be provided and properly managed.

Figure 8.2.2

As an example, the angle parking on Maktaba St Opposite Posta) can be relocated to the Benjamin Tower Parking garage and this area be used for a pick-up and set down zone only.

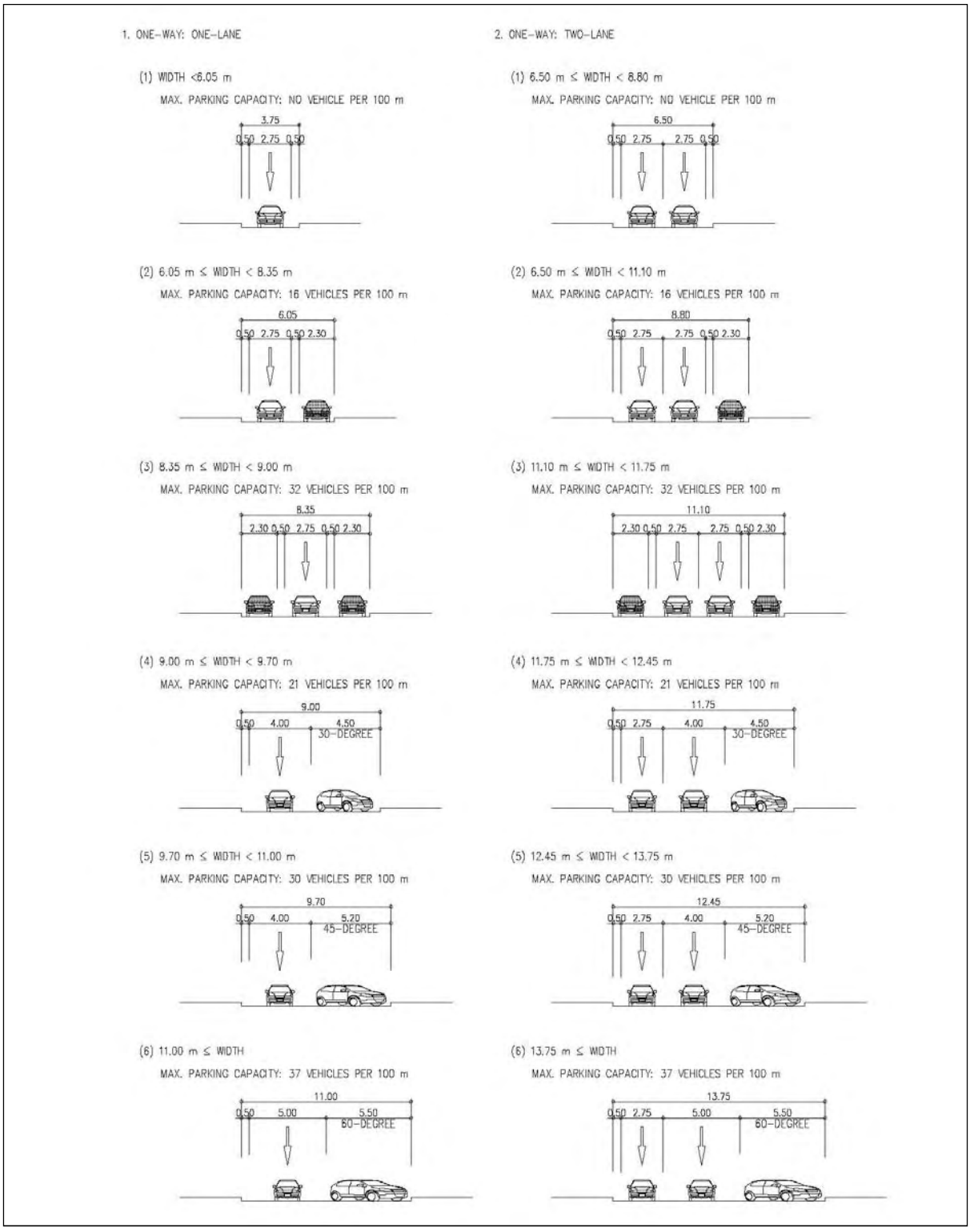


Figure 8.2.3 Proposed Typical Cross Section with On-street Parking

8.2.2 Recommendations for parking assignments

On-street parking in the carriage way should be prohibited at 5 distributor roads in CBD, being Ohio Street, Sokoine Drive, Kivukoni Drive, Uhuru Street, and Maktaba Street. Note that Samora St as a one way pair to Sokoine Dr. has sufficient space for parallel parking on the right (southbound), however this should be monitored. Should congestion occur, time based restrictions can be enacted.

Well-designed on-street parking lots should be secured and clearly marked at 12 collector roads, including Jamhuri Street, Indira Gandhi Street, India Street, Aggrey Street, Libya Street, Mirambo Street, Shaaban Robert Street, and Zanaki Street.

Analysis shows that approximately 1,300 on-street parking lots can be accommodated along 13 collector roads in CBD (includes Samora Ave) and the excess demand of around 2,000 cars, currently parking at distributor and collector roads, needs to be accommodated at off-street/fringe parking (or alternatively, to be shifted to other modes of transport, like BRT).

Table 8.2.1 Cross Sections and Parking Capacity for Each Street

ROAD NAME	DIRECTION	LANE FOR ONE DIRECTION	TOTAL LANE	LENGTH	CROSS SECTION
101. SOKOINE Dr.	1-WAY	2-LANE	2-LANE	1,380	2-1
102. MANSFIELD St.	1-WAY	1-LANE	1-LANE	345	1-3
103. SAMORA Ave.	1-WAY	2-LANE	2-LANE	1,761	2-2, 2-3
104. INDIA St.	1-WAY	1-LANE	1-LANE	1,305	1-2, 1-3
105. INDIRA GANDHI St.	1-WAY	1-LANE	1-LANE	1,119	1-3
106. JAMHURI St.	1-WAY	2-LANE	2-LANE	1,621	2-2, 2-3
107. LIBYA St.	1-WAY	2-LANE	2-LANE	542	1-2
108. MKUNGUNI St.	1-WAY	1-LANE	1-LANE	170	1-3
109. KISUTU St.	1-WAY	1-LANE	1-LANE	419	1-3
110. GHANA St.	1-WAY	1-LANE	1-LANE	450	1-3
201. SOPHIA KAWAWA St.	1-WAY	1-LANE	1-LANE	183	1-2
202. UHURU St.	2-WAY	1-LANE	2-LANE	460	2-2
203. AGGREY St.	1-WAY	1-LANE	1-LANE	575	1-3
204. MOSQUE St.	1-WAY	1-LANE	1-LANE	450	1-3
205. MOROGORO Rd.	2-WAY	1-LANE	2-LANE	912	BRT
206. ZANAKI St.-1	1-WAY	2-LANE	2-LANE	717	2-2
207. ZANAKI St.-2	1-WAY	1-LANE	1-LANE	120	BRT
208. BRIDGE St.	1-WAY	1-LANE	1-LANE	170	1-2
209. MKWEPU St.	1-WAY	1-LANE	1-LANE	428	1-2, 1-3
210. MAKTABA St. (AZIKIWE St.)	2-WAY	2-LANE	4-LANE	943	4-1
211. OHIO St.	2-WAY	1-LANE	2-LANE	1,025	2-1
212. MIRAMBO St.	1-WAY	1-LANE	1-LANE	527	1-2
213. SHAABAN ROBERT St.	1-WAY	1-LANE	1-LANE	576	1-2

	Design Capacity On street Parking (Peak Hr)		
Road / Street	Current	Future	Surplus Demand
Bibi titi	126	0	126
Uhuru	32	0	32
Aggrey	77	104	-27
Samora	264	221	43
Sokoine	363	0	363
Libia	132	59	73
Kisutsu	115	114	1
Ghana	150	20	130
Jamhuri	464	222	242
Indira Gandhi	579	199	380
Morogoro	88	0	88
Mansfield	152	36	116
Mkwepu	129	58	71
Maktaba	99	0	99
India	255	135	120
Ohio	97	0	97
Mirambo	94	34	60
Shaaban Robert	108	41	67
Zanaki	117	50	67
Total	**3,440**	**1,293**	**2,147**

8.2.3 Development of fringe parking/off-street parking

Fringe parking/off-street parking is required to accommodate the growing parking demand. In the CBD, multi-story parking buildings have been built, including JM Mall (700 spaces), PPF Tower (470 spaces) and TDFL (233 spaces). The parking /building survey shows that almost all multi-story parking buildings are occupied with contract parking of tenants in/nearby parking buildings. Only JM Mall provides off-street parking service to the public and charges 1,000 Tsh/hour, whereas on-street parking charges only 300 Tsh/hour. The on-street price advantage means less public parking occurs at JM Mall.

Fringe parking and off-street parking requirements in the CBD will need to accommodate at least 2,000 cars to meet present demand, indicated by those cars which will be displaced when the

revised on-street parking management scheme is introduced. This will require about 40,000 square meters of open space should be secured for use of fringe and off-street parking.

Furthermore, to improve the prospect of smooth implementation, these parking facilities should consider user needs[5].

- On-street parking interview surveys indicate that potential fringe/off-street parking users prefer parking with full security, so security guards, street lights, fences, etc. should be provided (costs levied on users).
- Obviously users prefer minimum walking distances, so accessibility such as good walking paths must be provided, and also a regular shuttle bus may allow parking to be developed in the outer fringe where land may be more available.
- Incentives should also be provided to make more remote parking attractive, such as free parking or a significantly lower charge and free shuttle bus service.
- Incentives for private developers should also be considered by developing a business model to attract investment in fringe parking facilities.

It is important to note that any support given to fringe parking development will reap many indirect dividends such as less city traffic. Building inner city parking facilities will inevitably increase city traffic. Therefore inner city parking developments need to be discouraged while fringe parking facilities encouraged and supported.

8.2.4 Introduction of area parking charge/fluctuated parking charge

Revenue collection for on-street parking is contracted out to Nation Parking Solutions (NPS) under the authority of the Street Parking bylaws (1998), which provide for the following:

(i) Parking charges in CBD/Kariakoo,

(ii) Hours of operation of 8 AM to 5 PM on weekdays, and 8 AM to 2 PM on Saturdays,

(iii) Fees of 300 Tsh per hour in CBD, and

(iv) Exemptions for diplomatic, emergency, government, public transportation, taxi vehicles and loading and unloading trucks (up to 5 minutes).

On-street parking interviews conducted in December 2011 show that on-street parking users park an average of 4-5 hours indicating that one on-street parking lot accommodates only 2-3 parking cars per day. If parking allowances are reduced to 1-2 hours turnover of on-street parking will increase by 3 times. This would absorb much of the excess demand when the 1300 well-designed lots are in place, however does not provide the hours of parking inherent in the present demand. What it does show however, that if long term parkers and residents park in fringe parking areas, the short term visitor to the city has a greater and more convenient access. Clearly, long term (whole day) parkers should be targeted for fringe parking and this can be incentivized by reducing parking periods allowed.

[5] *Reorganizing the parking is a difficult task, however it can be made easier if the parking alternative go some way to meet the needs of users such as security and access.*

Parking charges in CBD have remained unchanged for a decade and is used mainly as a revenue raising measure instead of a demand control measure.

While increasing charges is an unpopular measure, and approval a lengthy process, all secretariat members support increasing parking charges as a price mechanism to reduce parking (and also raise funds to invest into better parking management. A level of 1,000 to 2,000 Tsh/hour was considered appropriate although it is acknowledged that this should be implemented gradually to reduce unnecessary backlash, and also in parallel with parking alternatives to be available.

A fluctuating parking charge can be also applied where costs increase sharply over longer periods. This favours short term parkers and discourages long term parking. However the technology needs to be improved to achieve this as presently the manual charging does not cope well with monitoring parking time[6], although even with modern parking management technology, the enforcement needs to work effectively.

It is logical however to consider a plan to develop free fringe parking facility with a free shuttle bus, paid for by the increased parking charges on inner city parking lots.

An awareness campaign for parking issues and new parking charges should be also carried out to develop public understanding and avoid unnecessary disputes from the on-street parking users, reduce resistance to the new parking charges communicate alternatives.

8.2.5 Introduction/Enforcement of parking permit law

While a parking permit law exists for the CBD, the law does not effectively address current parking issues. One reason is that the law was developed in the 1983 Sustainable Dar es Salaam Development Plan and after 30 years, is outdated an unable to meet the challenges of rapid growth in traffic.

Table 8.2.2 Parking Permit Law suggested by 1983 Sustainable Dar es Salaam Development Plan

Use	Parking Requirement
Offices	1 parking lot per 100m^2
Commercial	1 per 200 m^2
Hotel	1 per 10 beds
Hospital	1 per 10 beds
Residential Flat	1 per unit

Parallel to, and possibly because of the weak law, is a lack of enforcement. Ilala Municipality and Ministry of Land share responsibility to provide building development permits, including building design and off-street parking provided.

Secretariat members have commented that even if off-street parking space is properly designed to meet the current parking requirement, developers tend to change the use of space from parking space to offices/flats/retails' use to increase their rental returns. There appears to be no strict

[6] *Do manually mange this would require the parker to pay in advance for the estimated parking time, with penalty applied for exceeding this time.*

enforcement of parking permit law, and especially, monitoring/post evaluation of building permits is not carried out.

It can therefore be recommended that:

(1) Existing parking requirements according to development approvals be enforced, to ensure availability of existing off-street parking spaces.

(2) The current parking permit law should be revised, to ensure it is applicable to today's modern demands.

However, Item (2) raises a development dilemma: enforcing space requirements for parking in new buildings, encourages car use and inevitably increases traffic congestion, placing increased financial burden on the city to which the developer does not contribute.

To manage this issue it is suggested that the new parking laws recognize the concept of transit-oriented development, meaning that every development addresses the adverse impacts of traffic caused by the development.

Developers have the choice then, to:

(a) Provide sufficient off-street parking to cater for the inhabitants of the building, and if necessary contribute to entry and exit roadwork to reduce traffic impacts; and pay an annual tax per car parking space.

(b) Demonstrate that the users of the building have a good public transport alternative (say by building close to the BRT system) which provides the developer with a concession to reduce car parking spaces

(c) Building a public transport friendly development allows the developer to gain more income producing space, and reduce traffic impacts

(d) Building owners may also operate private bus services to transfer workers to work and home to reduce private car use.

The annual parking tax helps fund on-going traffic issues, and acts as a price mechanism to encourage more efficient travel behaviour (by ensuring off-street parking is not free) and it also encourages developers to look at public transport friendly alternatives such as mentioned in (d). A reduction in annual parking tax can be given where building occupier demonstrate ongoing public transport commitments.

By building incentives into the law, the above suggestions may not be difficult to implement. It may be that the 1983 Parking law provisions are adequate, and alternative measures are included to disincentivize inner city parking.

Appendices

Appendix 1: Traffic Survey Results

Appendix 2: Drawings and Cost Estimates

Appendix 3: Public Awareness Campaign Plan

Appendix 1 – Traffic Survey results

Traffic Survey Results

From October to December, 2011, a series of traffic surveys were carried out to understand current traffic conditions in CBD and to provide essential inputs for development of CBD traffic improvement plan. Also, these traffic surveys were conducted as part of capacity building project, involving secretariat members in planning the survey, designing survey forms, implementing as supervisors, data analysis and report writing.

By looking at current traffic issues in CBD, a focus was made on two issues: 1)improvement and management of parking and 2) public transport. To provide inputs to the improvement and management of the parking plan , the following six surveys were carried out to understand current parking demand and users' preferences where they may relate top arking policy:

1A. Topographic survey

1B. On-street parking count survey

1C. Traffic count survey

1D. Parking building survey

1E. On-street parking interview survey

1F. Building survey

Also, for public transport improvement and management planning, the following four traffic surveys were carried out to understand current daladala service, passenger demand, and passengers' preferences for new daladala services.

2A. Dala dala count survey

2b. Traffic count survey

2C. Dala dala on-board survey

2D. Dala dala passenger interview survey

The following discussion reveals current traffic conditions and traffic problems we are facing in CBD, through data analysis obtained from traffic surveys.

Input Data for	Survey	Purpose	Survey Area	Outputs	Duration	Note
1. Parking Improvement Plan	1A. Topographic survey	To understand geometric condition and plan proper on-street parking in CBD	Distributor/collector roads in CBD	・Road width ・Sidewalk width ・On-street parking space	Oct/Nov /Dec	
	1B. On-street parking count survey	To understand current demand of (on-street) parking in CBD	Distributor/collector roads in CBD	・Hourly/classified number of on-street parking (5:00-19:00) * Vehicles are classified into 4 types: passenger cars, taxis, buses, trucks	2 days	Types of on-street parking should be recorded: On-street (non designated parking), On-street designated parking, Off-street parking
	1C. Traffic count survey	To understand in/outflow traffic demand to/from CBD	Ohio Street Maktaba Street Zanaki Street Morogoro Street Samora Avenue Uhuru Street Sokoine Drive Ocean Road Aggrey Street Kigamboni Feri	・Hourly/classified/directional number of traffic (5:00-21:00) * Vehicles are classified into 4 types: passenger cars, buses, trucks, bikes/bajajis	1 day	Cross sectional traffic count survey at 10 survey points
	1D. Parking building survey	To understand capacity of off-street parking space/service in CBD	Parking buildings in CBD	・ Location/number of parking space ・Service (monthly contract or on-demand, hourly charge)	Dec	Interview survey to parking owners/guards at All parking buildings in CBD (See attachment)
	1E. On-street parking interview survey	To understand features of on-street parking users and needs for off-street parking in CBD	Selected distributor/collector roads in CBD	・Vehicle type ・Purpose of parking ・Duration of parking/parking charge ・Frequency of use of on-street parking ・Km/time spent to destination ・Preference to use off-street parking	2 days	Sample size: 50 samples per day per selected road Selected roads include: Ohio Street, Maktaba Street, Zanaki Street, Samora Avenue, Jamhuri Street, Uhuru Street, etc. (8 streets in total)

Input Data for	Survey	Purpose	Survey Area	Outputs	Duration	Note
	1F. Building survey	To understand floor size of existing/under-construction buildings in CBD	Buildings in CBD	・Type of building ・floor size/floor	Oct	
2. Bus Improvement Plan	2A. Dala dala count survey	To understand current operation of dala dala	New Posta	・Hourly number of dala dala by route (color)	1 day	
	2b. Traffic count survey	To understand current traffic demand	Along Ali Hassan Mwinye	・Hourly/classified/directional number of traffic (5:00-21:00) * Vehicles are classified into 4 types: passenger cars, buses, trucks, bikes/Bajaj's	1 day	Cross sectional traffic count survey at selected cross sections, including Mwenge, Shekilango, Morocco, Haile Selassie, Selander Police Station, UN road (7 cross sections in total)
	2C. Dala dala on-board survey	To understand travel speed/operation of dala dala	Selected bus route (sample)	・Arrival/departure time at origin/ destination and major bus stops ・Arrival time at landmarks ・No of passengers at origin/ landmarks/ destination	2 days (6:00 – 20:00)	3 selected bus routes include: Mwenge – Posta (Kivukoni), Ubungo – Posta (Kivukoni), Mbagala – Posta (Kivukoni). Sample size: 6 buses per route (surveyed full day by 1 hour interval for each direction)
	2D. Dala dala passenger interview survey	To understand features of dala dala users	Old Posta New Posta Feri Akiba	・Origin ・Purpose of travel ・Tariff charged ・Frequency of use of dala dala ・Km/time spent to destination ・Preference to use new bus stop/terminal	2 days	Sample size: 100 samples per day per selected bus stop

Traffic Volume in CBD

Major streets/roads in CBD are all oversaturated by the vehicular traffic to/from CBD. The result of traffic count survey reveals 157 thousand vehicles (PCU: passenger car unit) are observed in a weekday at 9 streets/roads crossing the boundary of CBD, showing a volume capacity ratio exceeding 1.2 the estimated capacity of 128 thousand vehicles per day. The largest number of vehicles is observed at Maktaba (26 thousand), followed by Sokoine (22 thousand), Morogoro (19 thousand), Ocean Road (18 thousand) and Ohio (18 thousand). Amongst these 9 streets/roads, Morogoro (volume/capacity ratio of 1.59), Ocean Road (1.54), Ohio (1.53), and Uhuru (1.36) are considered as most congested roads.

Table A1.1 Daily Traffic Volumes of Surveyed Streets/Roads in PCU and Road Capacity

S/N	Street Name	15 hour traffic volume (PCU)	24 hour traffic volume (PCU)	Capacity (PCU/day)	Volume/Capacity Ratio
1	OHIO	16,396	18,404	12,000	1.53
2	MAKTABA	23,305	26,160	24,000	1.09
3	ZANAKI	6,990	7,846	12,000	0.65
4	MOROGORO	17,038	19,125	12,000	1.59
5	SAMORA AVE	11,850	13,302	12,000	1.11
6	UHURU	14,568	16,353	12,000	1.36
7	SOKOINE DRIVE	19,947	22,390	20,000	1.12
8	OCEAN ROAD	16,510	18,533	12,000	1.54
9	AGGREY	13,215	14,834	12,000	1.24
10	FERRY	4,506	-	-	-
	Total		156,947	128,000	1.23

By looking at inbound traffic at the boundary of CBD, about 72 thousand vehicles are bound for CBD in 15 hours (6:00 - 20:00) in a weekday. Almost 80 % of inbound traffic is dominated by passenger cars. The traffic volume of buses depends on existing Dala-dala routes, and most inbound buses are observed at Maktaba, Sokoine Drive, and Uhuru. Western parts of the CBD, especially west of Morogoro is the commercial district of the CBD. There are many small retail shops and wholesalers in this area, and the share of trucks at access roads such as Aggrey and Uhuru are higher than that on other roads.

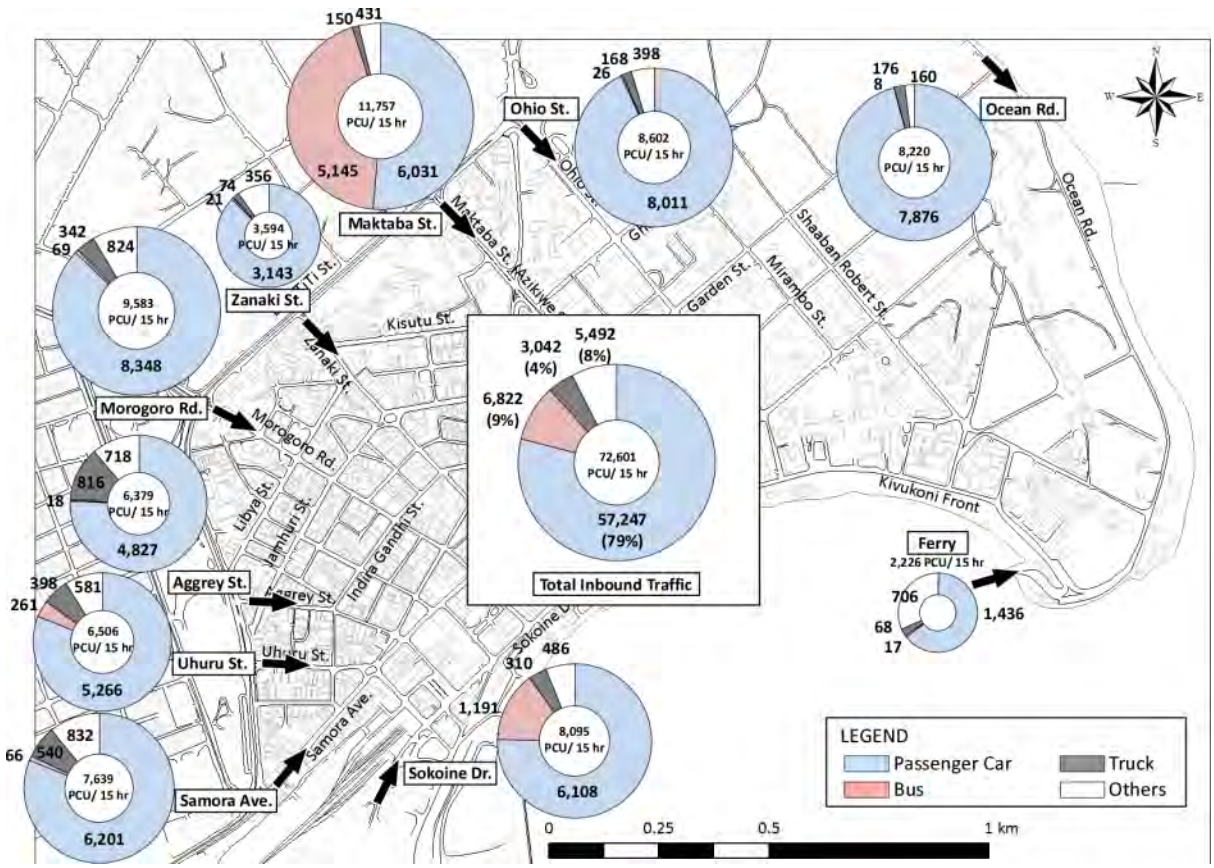


Figure A1.1 Observed Inbound Traffic Volume in PCU from 6:00 - 20:00 (15 hours)

Peak hour inbound traffic is observed between 7:00 - 8:00 a.m. and peak hoursoutbound traffic is between 15:00 - 17:00 p.m. The estimated number of vehicles in the CBD including parked vehicles and vehicles on the streets is calculated by accumulated inbound and outbound traffic volume. During 9:00 a.m.- 15:00 p.m., more than 10,000 vehicles (PCU) are observed in CBD.

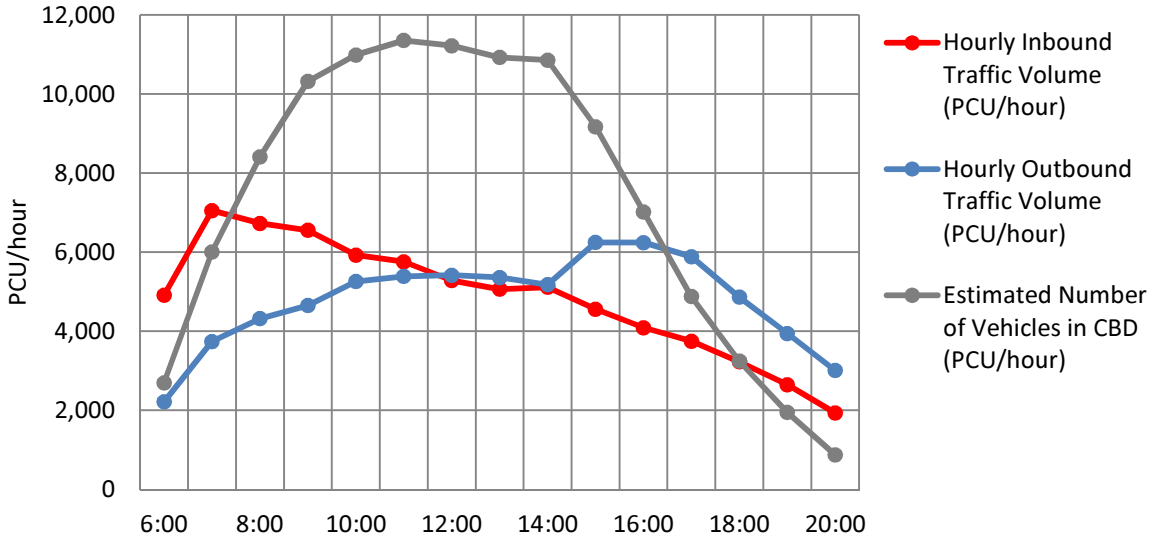


Figure A1.4 Hourly Fluctuation of Total Inbound/Outbound Traffic Volume

On-Street Parking

Parking space along the major roads/streets in CBD are fully occupied with on-street parking vehicles and some are illegally parking on the sidewalk. The result of the on-street parking count survey shows the number of on-street parking vehicles, observed at 19 major roads/streets in CBD (total length is 17 km) exceeds 3,000 vehicles (PCU) throughout working hours (10:00 - 15:00). Note that on-street parking, here, includes non-reserved off-street parking such as illegal parking on sidewalk of the street.

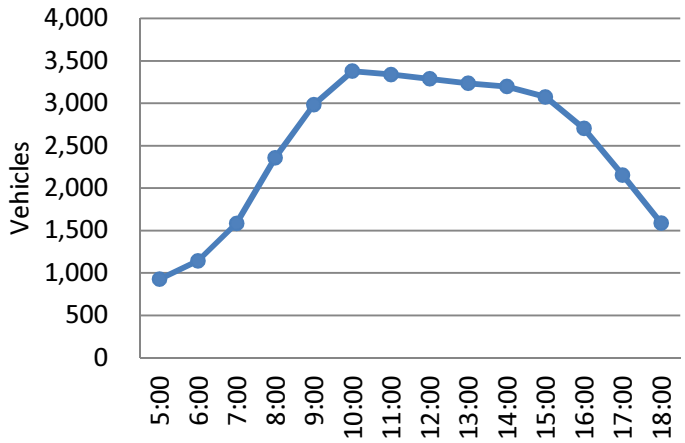


Figure A1.6 Observed On-Street Parking (Total of Survey Road Section)

It is observe3d that on-street parking demand by road/street, the most congested road section is Indira Gandhi (Samora Ave. - Morogoro Rd.) with more than 60 vehicles per 100 meter road length being recorded. Also, more on-street parking vehicles (per 100 meter distance) are observed along the streets in the centre of CBD, such as Jamuhuri, Mansfield and Sokoine Drive, where reserved on-street parking spaces are available.

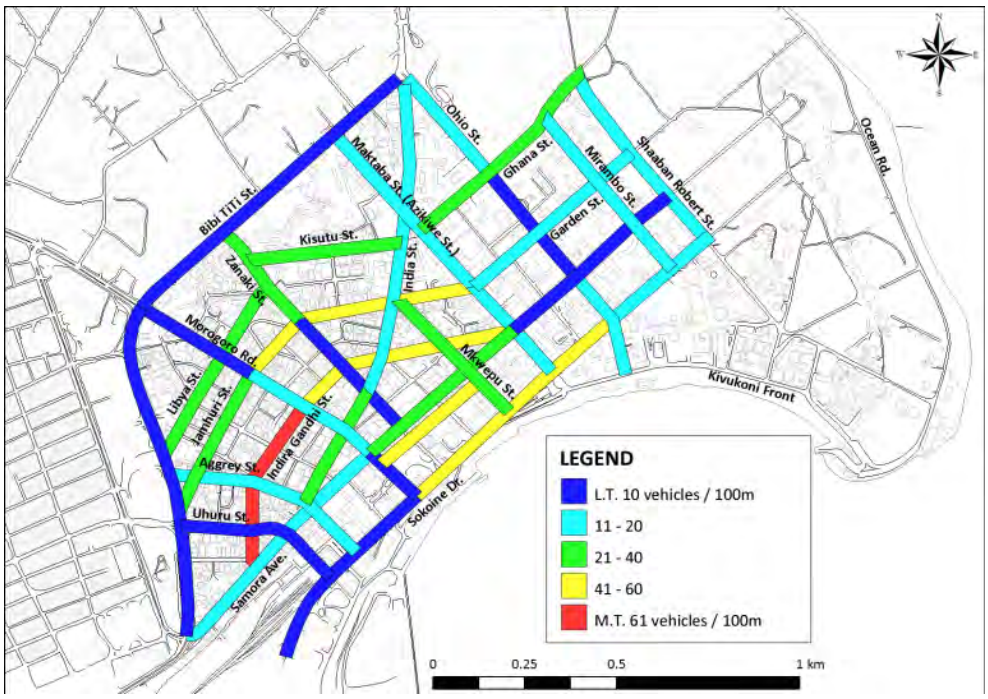


Figure A1.6 On-Street Parking by Density in Peak Hour (10:00 - 11:00)

During peak hours, illegally parked vehicles, frequently observed on the sidewalk, are recorded at around 500 vehicles and represent 14% of all on-street parking vehicles. Amongst major surveyed streets in CBD, more illegally parked vehicles are observed at Jamhuri (93 vehicles on the average between 9:00 – 17:00), followed by Ghana (69 vehicles), where sufficient on-street parking lots or reserved off-street parking space are not provided.

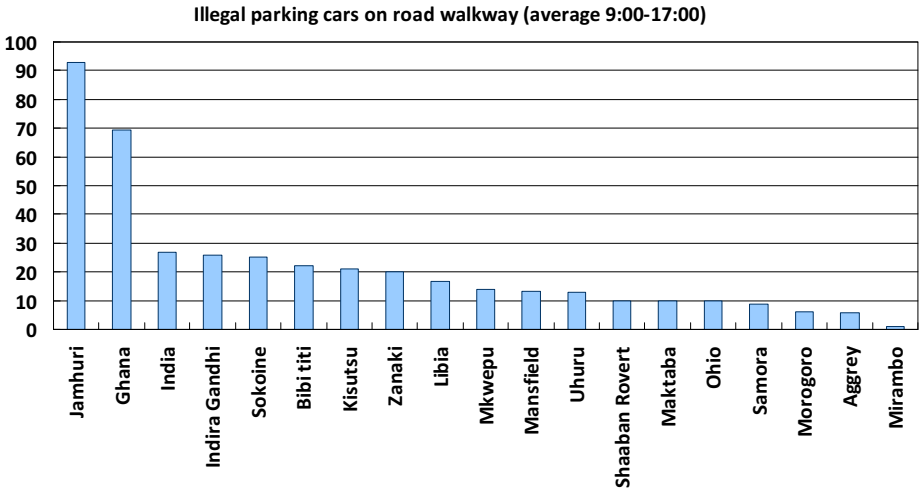


Figure A1.6 On-Street Parking by Density in Peak Hour (10:00 - 11:00)

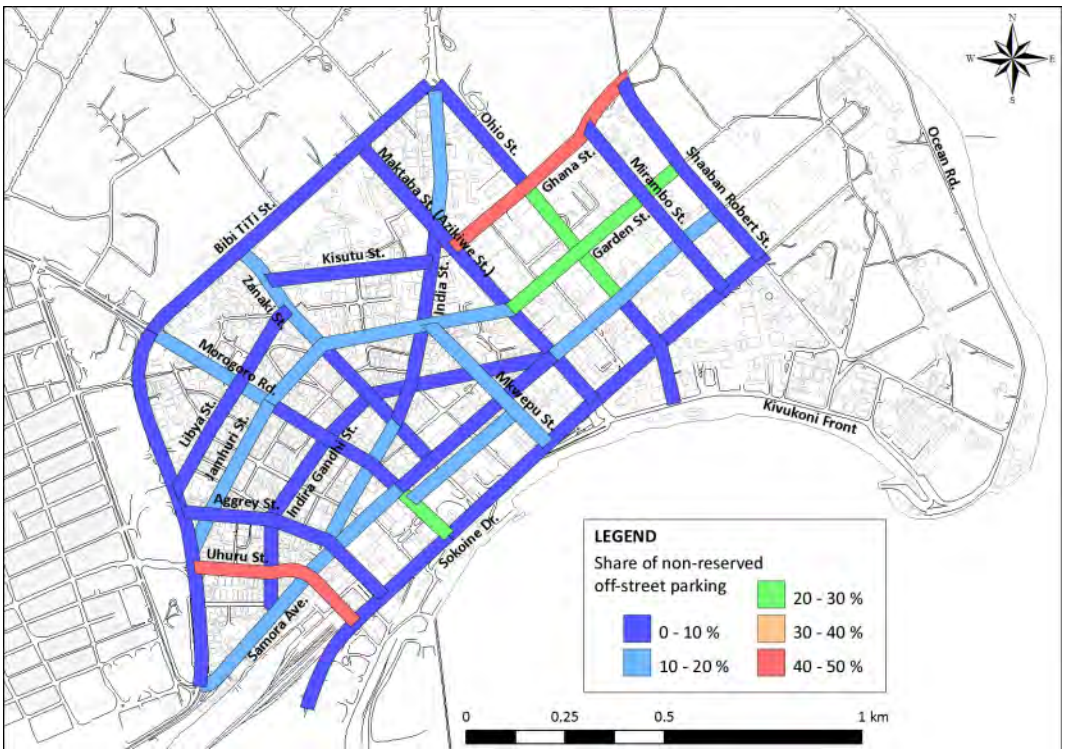


Figure A1.7 Share of Illegal On-street Parking in Peak Hour

The following section discusses the features and preferences of on-street parking users, obtained through on-street parking interview survey. The purpose of on-street parking in CBD is dominated by business use such as "to work place (45%)" and "other business such as meeting, visiting (23%)".

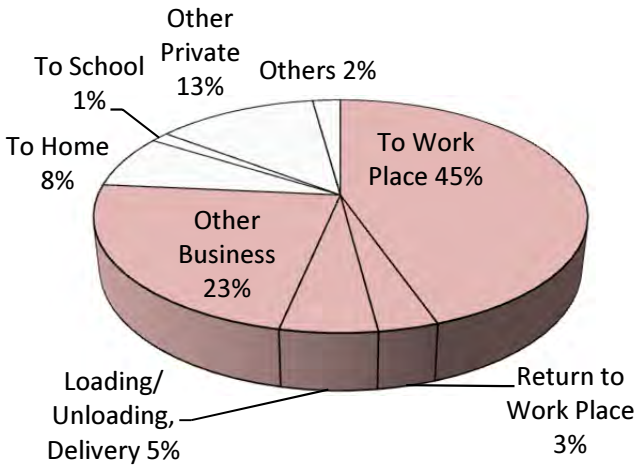


Figure A1.7 Composition of Purpose for On-Street Parking

Average on-street parking hours for the purpose of "to working place" is 5.4 hours and "other business" is 2-3 hours. Turnover of on-street parking in CBD can be up to 3 times (one parking lot can accommodate 1-3 vehicles per day), over an 8 hour period, which is a relatively small turnover and concludes that on-street parking space in the CBD is not efficiently utilized, as it alolows longer-hours of parking and thus lower turnover. It should be noted that on-street parking space is also used by residents in CBD, parking for 8 hours on the average.

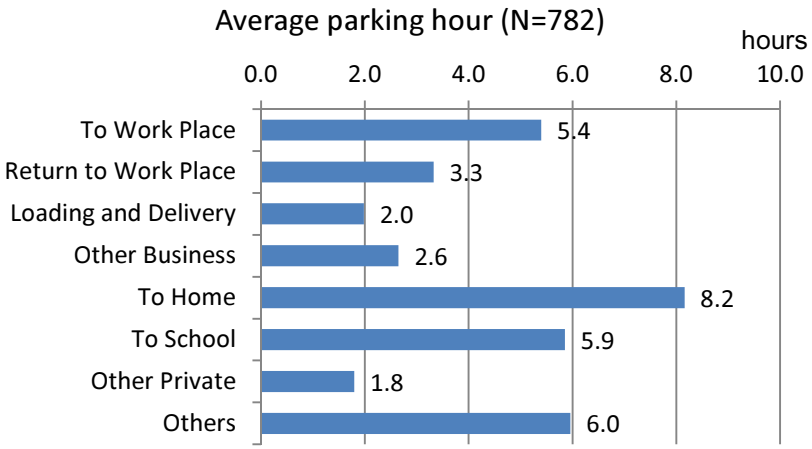


Figure A1.8 Average On-street Parking Hour by Purpose

Average vehicle occupancy is relatively high and reaches around 2-4 passengers (saloon) and 3-5 (wagon). The result shows all vehicles are almost fully occupied with passengers by car sharing. It demonstrates that measures to increase car sharing would not be effective in reducing vehicular traffic to/from CBD.

Table A1.1 Average Vehicle Occupancy by Trip Purpose

Trip Purpose	Saloon	Pick-up/Wagon	Bus	Truck
To Work Place	3.36	5.16	7.14	2.50
Loading and Delivery	-	2.50	2.00	2.80
Return to Work Place	3.13	4.83	N/A	2.50
Other Business	3.29	4.34	19.00	3.00
To Home	3.88	5.03	N/A	N/A
To School	2.56	4.00	30.00	N/A
Other Private	2.73	3.93	5.00	3.00
Others	3.22	3.00	N/A	N/A
Total	3.28	4.76	11.20	2.80

Walking distance from on-street parking places to final destination are almost less than 10 minutes. About 70% of on-street parking is located in 3 minutes to final destination, suggesting on-street parking users are reluctant to walk even short distances and seek parking spaces nearest their destinations, although parking places are always fully occupied (this may indicate why illegal parking is prevalent).

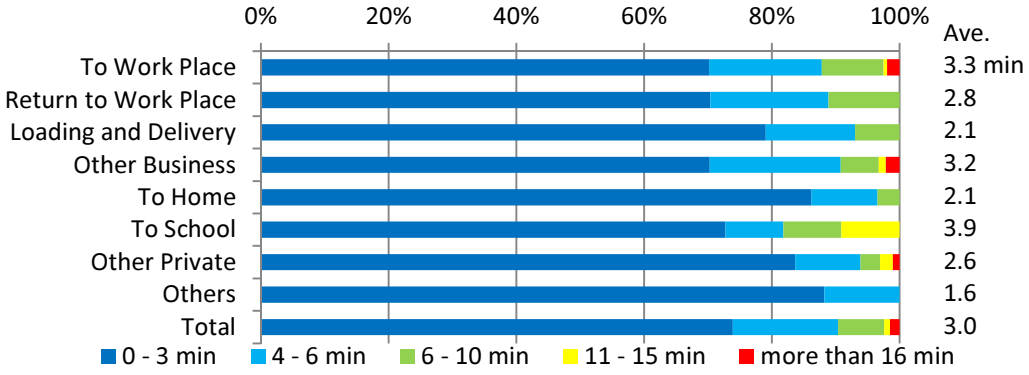


Figure A1.9 Walking minutes from parking place to final destination

The major reasons for use of on-street parking are, i) "It is near the destination (28%)", ii) "No off-street parking space available in the destination (27%)", and iii) "I don't know where off-street parking is located (19%)". The result of the parking building survey, which surveyed 13 multi-story parking buildings in CBD, also indicates that though around 1,300 off-street parking lots are available in CBD, almost all are contract parking and used by tenants in/nearby the parking building. So, in reality, on-street parking users in the CBD have no alternative parking space, such as off-street and fringe parking.

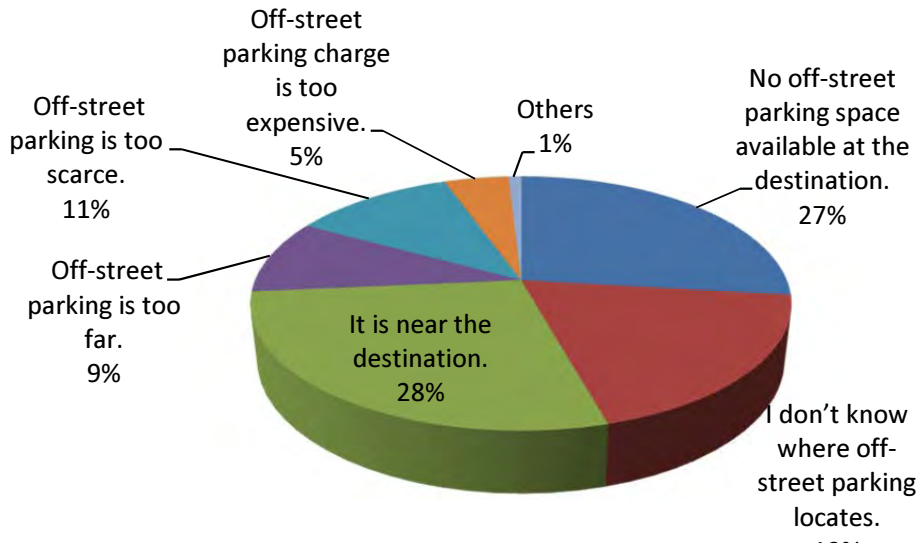


Figure A1.9 Reason of On-street Parking

The following discusses preferences of on-street parking users. First is the willingness to pay for on-street parking. If on-street parking tariffs increase to 500 Tshs/hour, about 60% of on-street parking users will hesitate to use on-street parking. If tariffs increase to 1,000 - 2,000 Tshs/hour, about 70% to 85% of parking user will hesitate to use on-street parking. The result shows on-street parking users tend to be very cost sensitive although some parking demand will persist even if the parking charge is significantly increased.

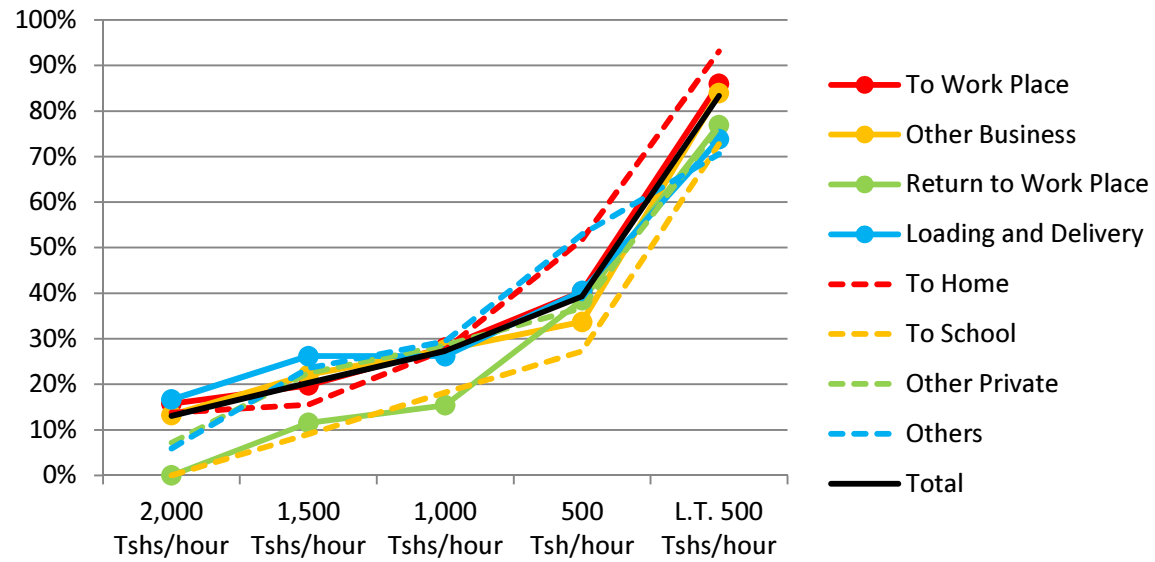


Figure A1.10 Willingness to Pay for on-street Parking

If free off-street parking is located in the same walking distance (3 minutes on the average) from their destination, around 90% of on-street parking users will shift their parking space to off-street parking. Where walking distance increases, the preference for free off-street parking drops considerably.

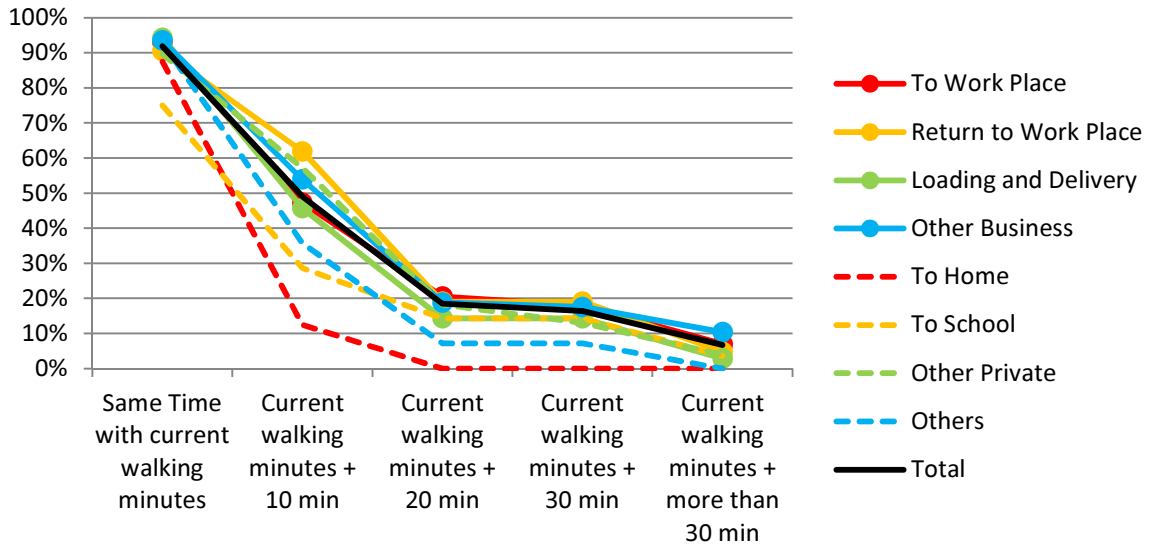


Figure A1.11 Preference of free off-street parking

Parking users, if they use off-street parking, prefer that security is assured with 95% of on-street parking users regarding security as a (very) important function. Other important functions of the off-street parking include shuttle bus service to the destination and footpath/sidewalk to the destination.

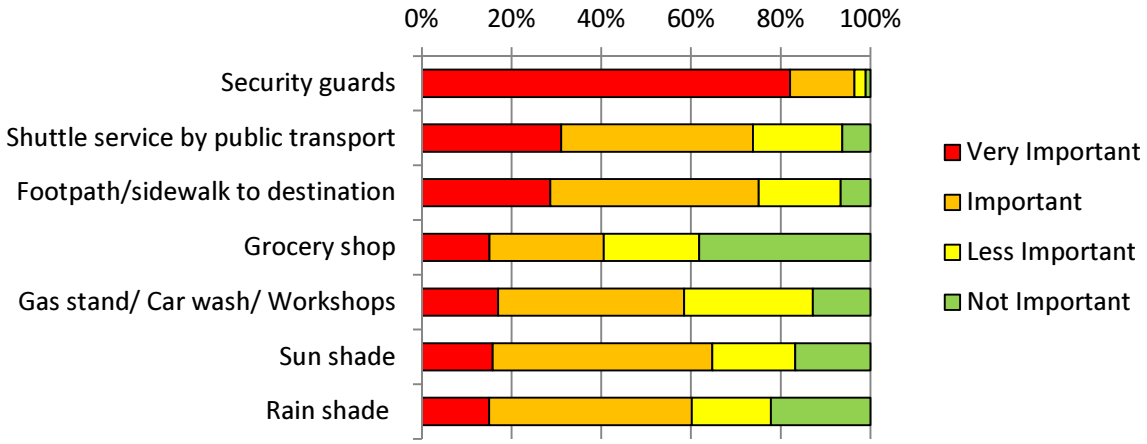
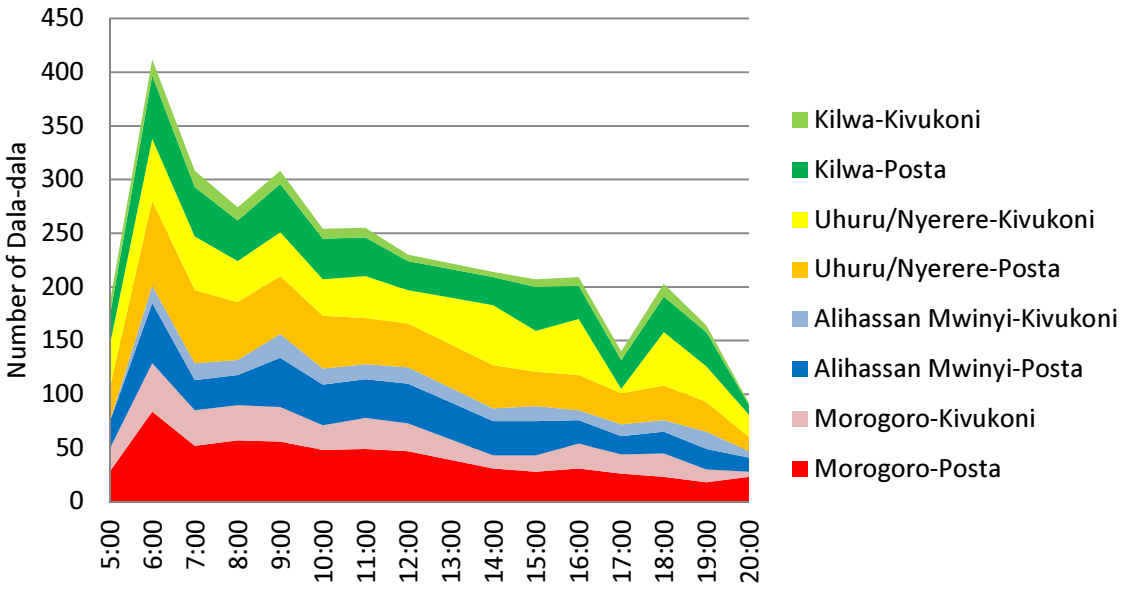


Figure A1.12 Expected function to off-street parking

Dala-dala Operation and Demand

A high number of daladalas operate in the CBD. The daladala count survey shows more than 3,600 daladalas are observed in front of New Posta between 5:00 and 21:00 with greater density in the morning peak hours, with 400 daladala observed arriving at New Posta between 6:00 - 7:00. The results suggests that the number of daladala might be determined not only by the passenger demand but also by severity of congestion and travel time consumed.



Note: Some survey data are missing or miscounted such as Uhuru/Nyerere - Kivukoni in 17:00 - 18:00.

Figure A1.13 Hourly Fluctuation of Dala-dala at New Posta

Amongst 3,600 daladalas observed at New Posta between 5:00 and 21:00, 2,300 daladalas bound for Posta and other 1,300 daladalas bound for Kivukoni. The busiest routes include Uhuru/Nyerere (1,300 daladalas between the same period) and Morogoro (1,000 daladalas). In peak hour, daladala arrival frequency at New Posta is every 13 seconds and at Kivkoni is every 27 seconds.

Table A1.2 Average Headway in Peak Hour and Day

Route / Destination		Peak Hour (6:00 - 7:00)		16 hours (5:00 - 21:00)	
		Number of Daladala	Ave. Headway (seconds)	Number of Daladala	Ave. Headway (seconds)
Morogoro	Posta	84	42.9	640	90.0
	Kivukoni	45	80.0	368	156.5
	Total	129	27.9	1,008	57.1
Ali Hassan Mwinyi	Posta	56	64.3	484	119.1
	Kivukoni	16	225.0	205	281.7
	Total	72	50.0	688	83.7
Uhuru/Nyerere	Posta	79	45.6	667	86.4
	Kivukoni	58	62.1	629	91.6
	Total	137	26.3	1,295	44.5
Kilwa	Posta	59	61.0	542	106.4
	Kivukoni	15	240.0	144	401.4
	Total	74	48.6	685	84.1
Total	Posta	278	12.9	2,332	24.7
	Kivukoni	134	26.9	1,345	42.8
	Total	412	8.7	3,676	15.7

Daladala travel time/speed varies by route and operation hours. The results of on-board daladala travel speed survey at three corridors (Mwenge, Ubungo and Mbagala) shows that it takes longer

travel time in p.m. peak hours than that in morning peak and off-peak hours, and it indicates that traffic congestion in evening peak hours is considered more serious than that in morning peak hours. Less daladala are observed in the CBD during evening hours which may be the result of the congestion.

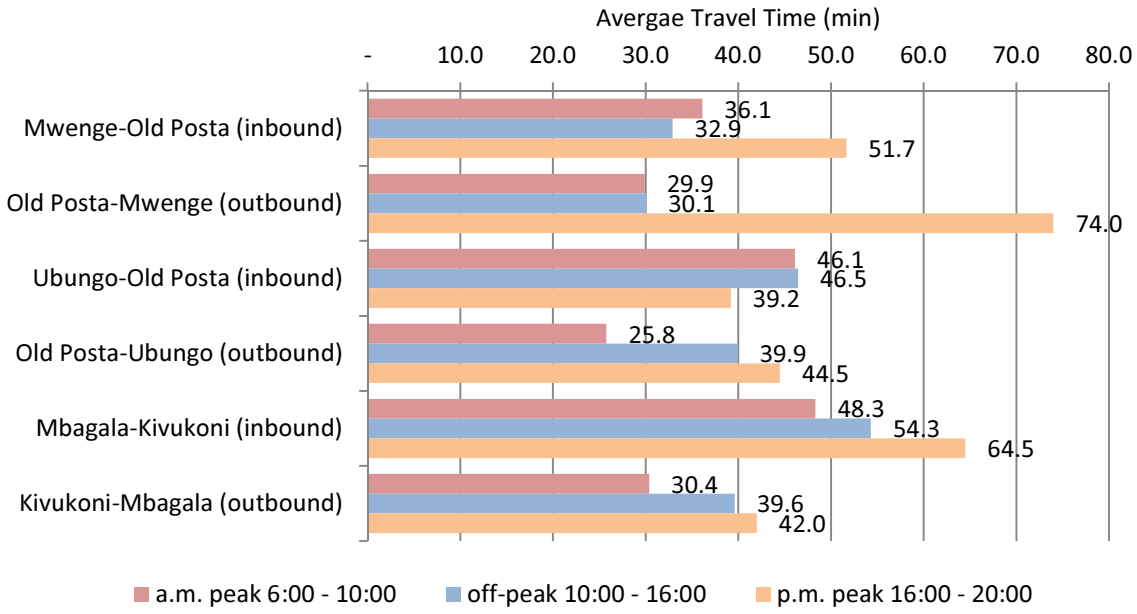


Figure A1.14 Average Travel Time at Three Daladala Routes

A trip by daladala consumes considerable time in CBD, waiting for passengers and traveling in congested roads in CBD. The survey result shows that daladalas along three corridors spend around 80-100 minutes per round trip and consumes around 20-30 % of total time in CBD, indicating that efficiency of the daladala business can be significantly improved by re-organizing current daladala routes to spend less time in the CBD, and/or improving traffic flow.

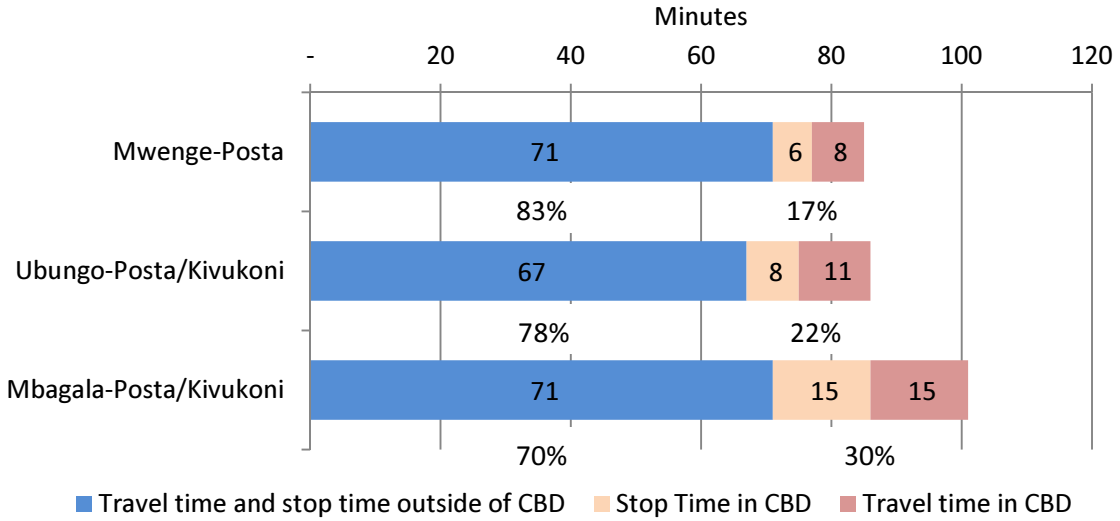


Figure A1.15 Average Travel Time at Three Dala-dala Routes

Preferences of Daladala passengers

The result of passenger interviews at Old Posta, New Posta, Feri and Akiba shows that sampled daladala passengers use daladalas mainly to go work (30%), for business (26%).

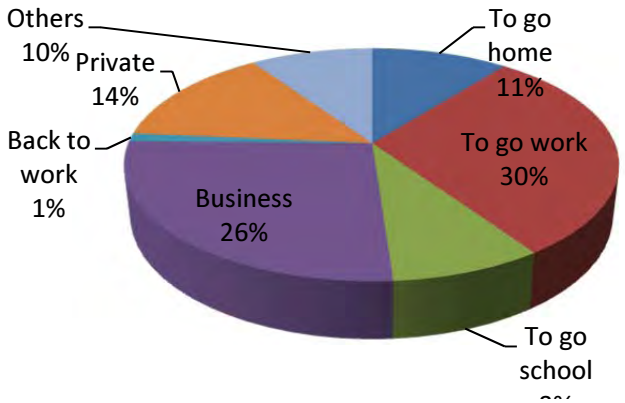


Figure 4.16 Trip Purpose of Daladala Passengers in CBD

Regarding the level of service daladala provides, daladala travel per trip consumes about 60 minutes at average cost of around 500 Tshs, with an average 16 minutes for waiting time at bus stops. Average travel length from bus stop in CBD to destination is estimated at 9 minutes walking distance.

Table A1.3 Travel Time/Fare/Transfer/Waiting Time at Three Daladala Routes

Surveyed at	Average Travel Time (min)	Average Fare per trip (Tshs)	Average Transfer	Average Waiting Time at Bus Stop (min)	Time to destination from Bus stop in CBD (min)
Feri	65	439	1.1	9	11
Old Posta	54	625	1.3	21	8
New Posta	60	455	1.4	13	8
Average	60	512	1.3	16	9

Interviews of daladala users rated dissatisfaction with (i) quality of bus stop (77% of sampled passengers answer either never acceptable or not satisfied), (ii) on-board comfort (75%), (iii) on-board security (74%), and (iv) travel time (72%). Countermeasures to ease these passengers' discomforts should be considered to increase customers' satisfaction.

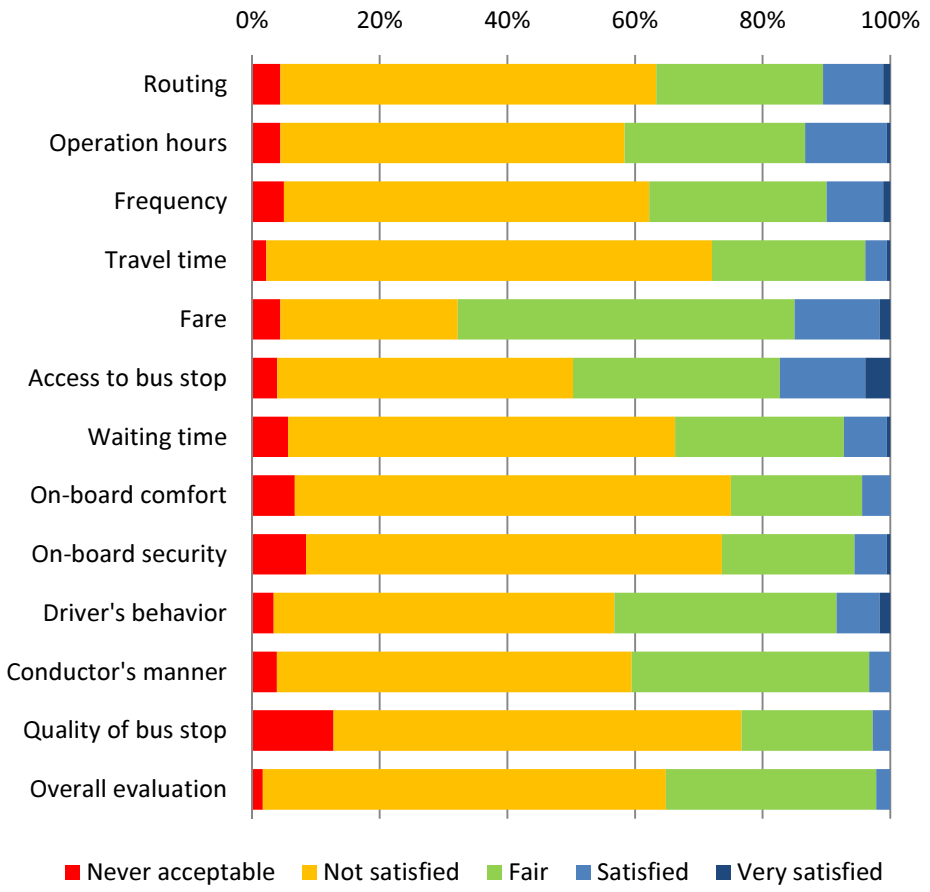


Figure A1.17 Evaluation of Current Daladala Operation

Willingness to pay

Passengers indicate they are willing to pay more for better services. For instance, sampled daladala passengers answer that they can afford to pay 812 Tshs per trip for air conditioned bus, 770 Tshs for seat reserved bus, 772-842 Tshs for rapid bus, like BRT, and 847 Tshs for scheduled bus. Considering the average fare passengers pay now (512 Tshs per trip), daladala passengers are ready to pay by 50% to 65% more fares for better services.

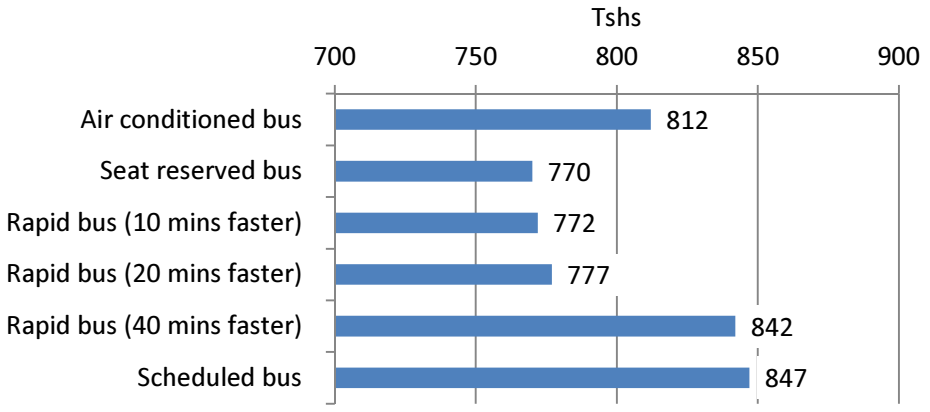


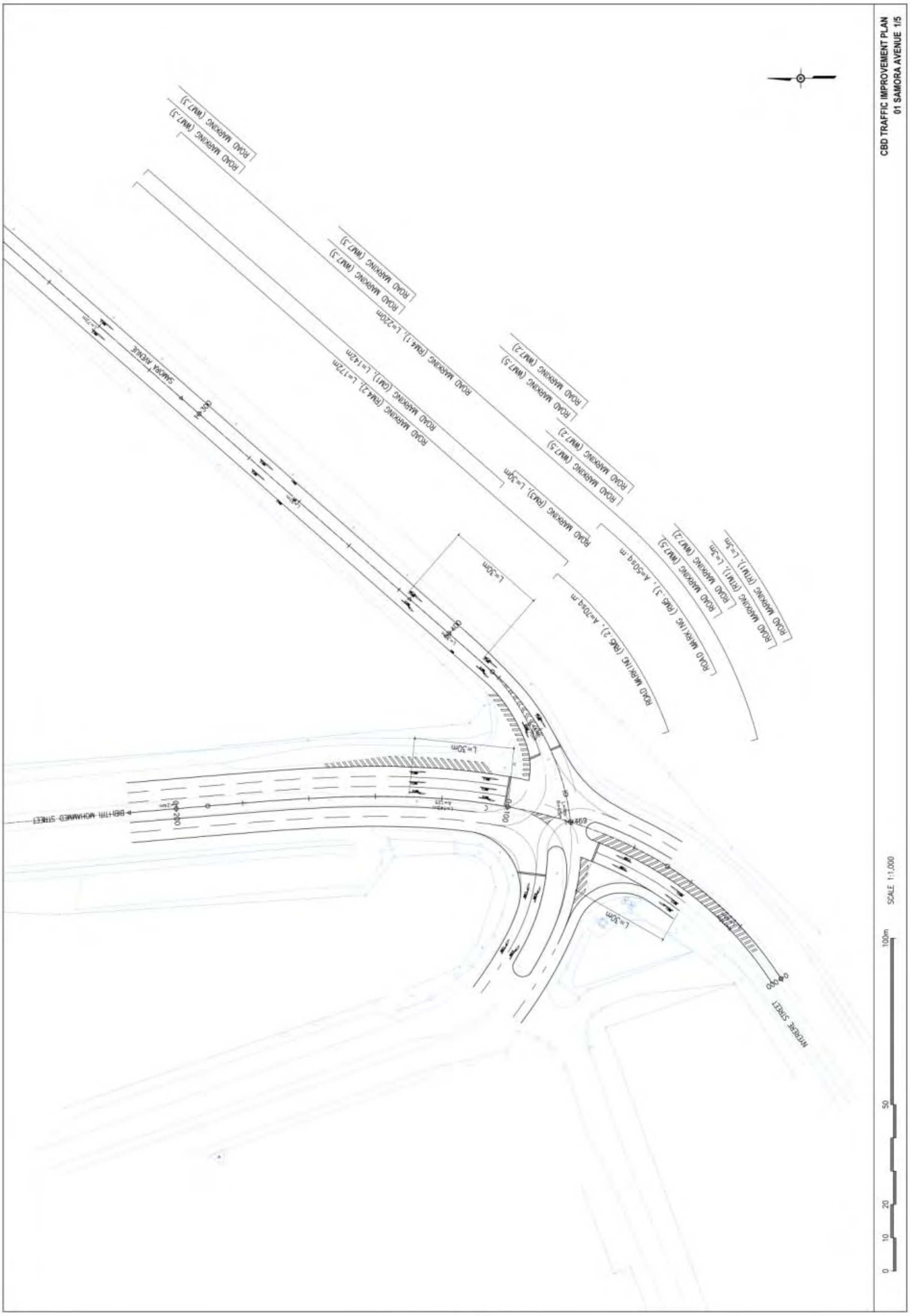
Figure A1.18 Willingness to pay for New Daladala Services

Appendix 2 – Drawings and Cost Estimates

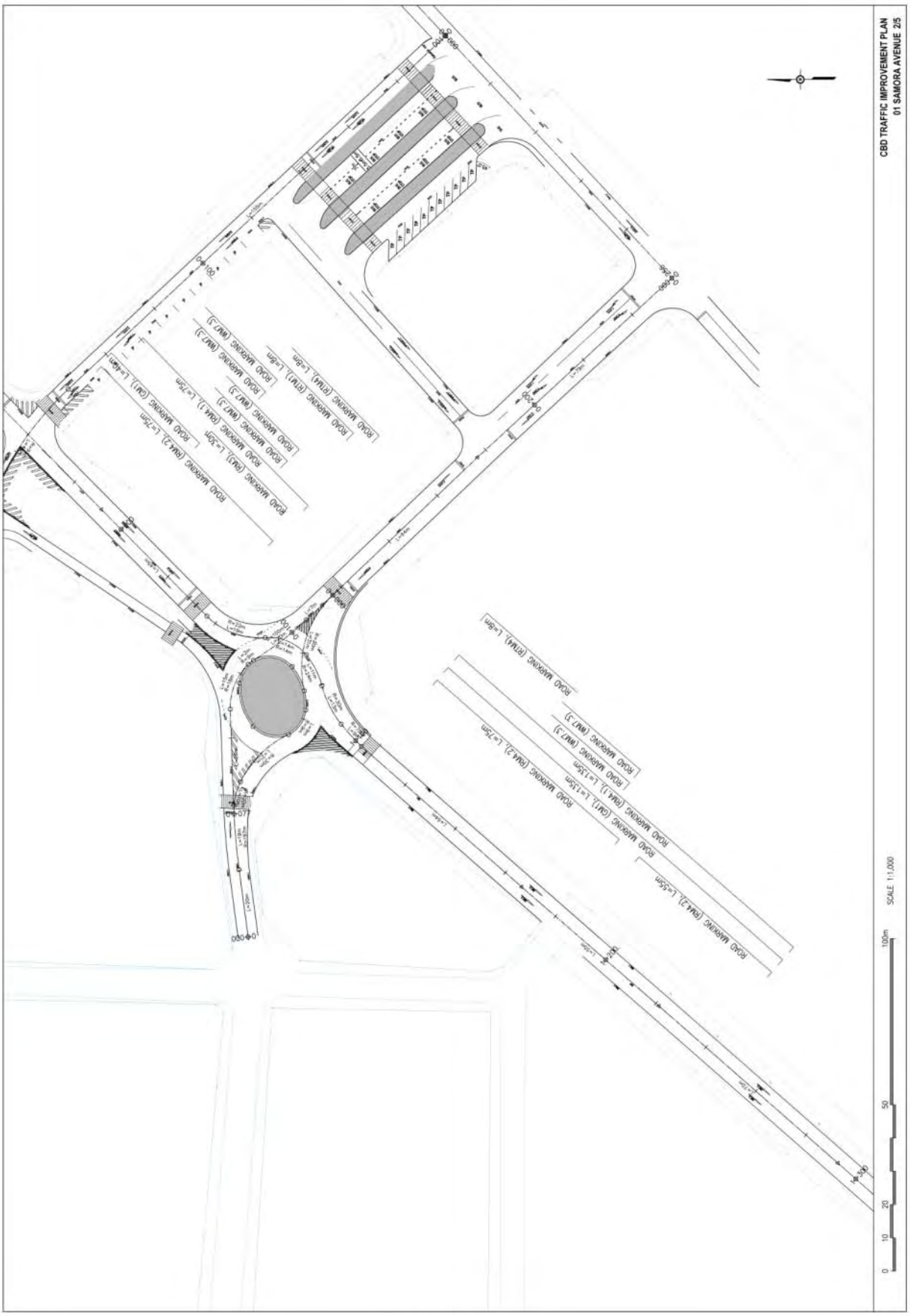
Drawings of the preliminary design for the critical works were prepared as shown in the table below. For ease of construction works, drawings were prepared for each road/street.

Also, a summary of the cost estimates is compiled after drawings.

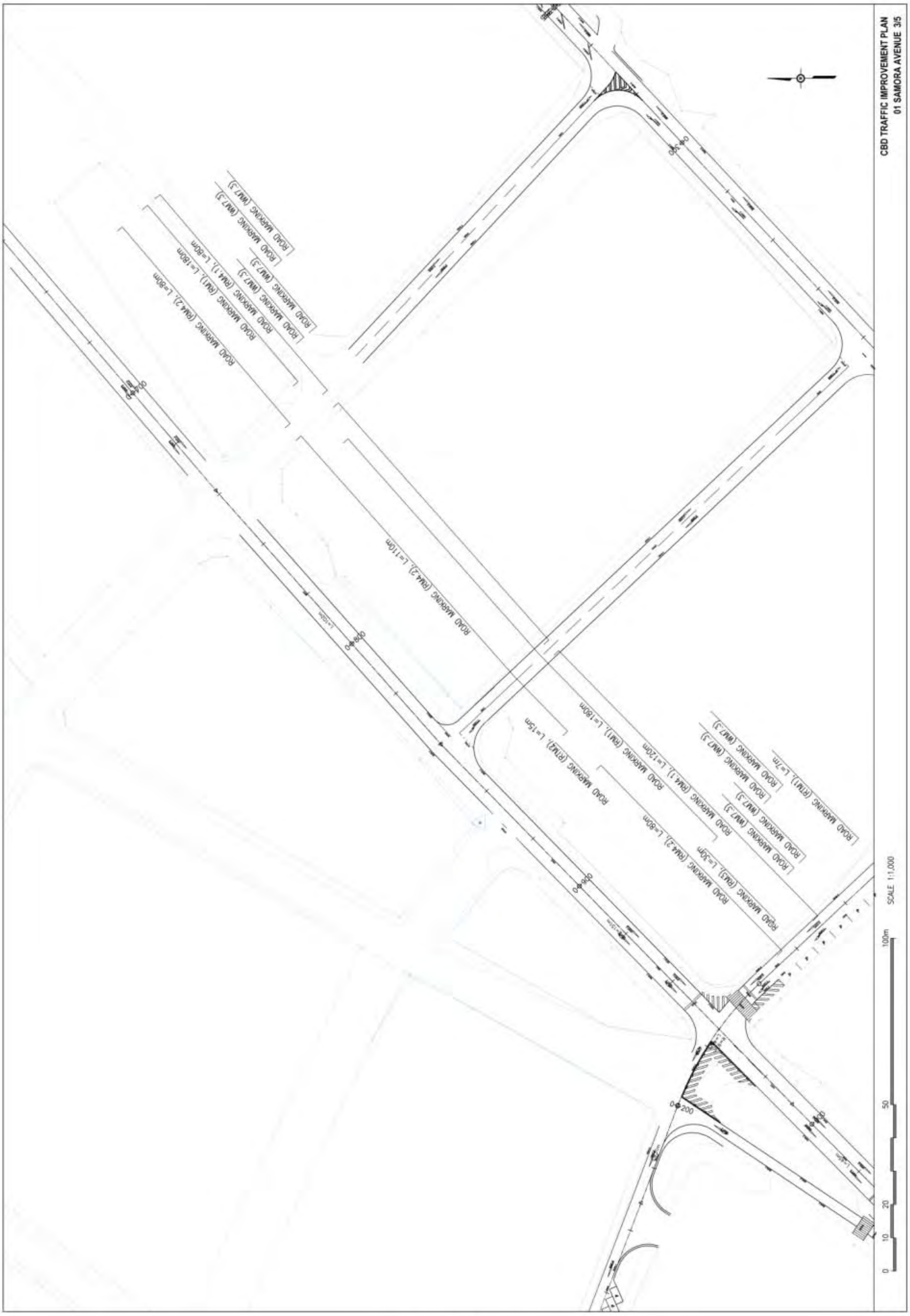
Drawing No.	Drawing Title	Number of Drawings
01-05	Samora Avenue	5
06-09	Sokoine Drive	4
10	Kivukoni Road	1
11-14	Maktaba Street	4
15-16	Aggrey Street	2
17-18	Upanga Street	2
19	Intersection 01: Bibi Titi Mohammed Road x Samora Avenue	1
20	Intersection 02: Bibi Titi Mohammed Road x Aggrey Street	1
21	Intersection 03: Bibi Titi Mohammed Road x Zanaki Street	1
22	Intersection 04: Bibi Titi Mohammed Road x Maktaba Street	1
23	Intersection 05: Clock Tower Roundabout	1
24	Intersection 06: Askari Monument Roundabout	1
25	Intersection 07: Maktaba Street x Upanga Street	1
26	Intersection 08: Sokoine Drive x Kivukoni Road	1
27	Intersection 09: Maktaba Street x Kivukoni Road	1


CBD TRAFFIC IMPROVEMENT PLAN
01 SAMORA AVENUE 1/5
SAMORA AVENUE
BIBI TITI MOHAMED STREET
SCALE 1:1,000

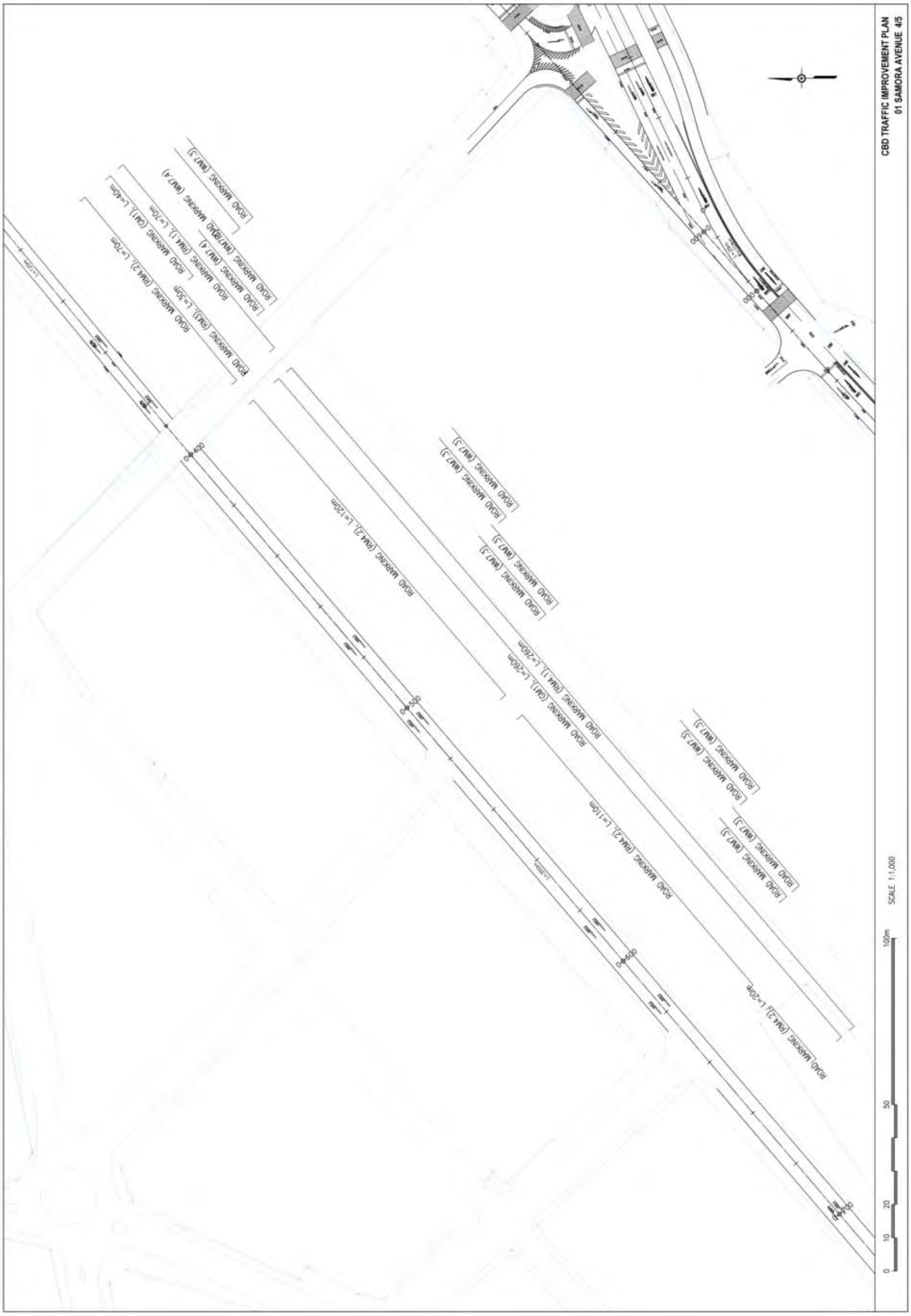
DRAWING - 1/27


CBD TRAFFIC IMPROVEMENT PLAN
01 SAMORA AVENUE 2/5
SCALE 1:1,000
0
10
20
50
100m

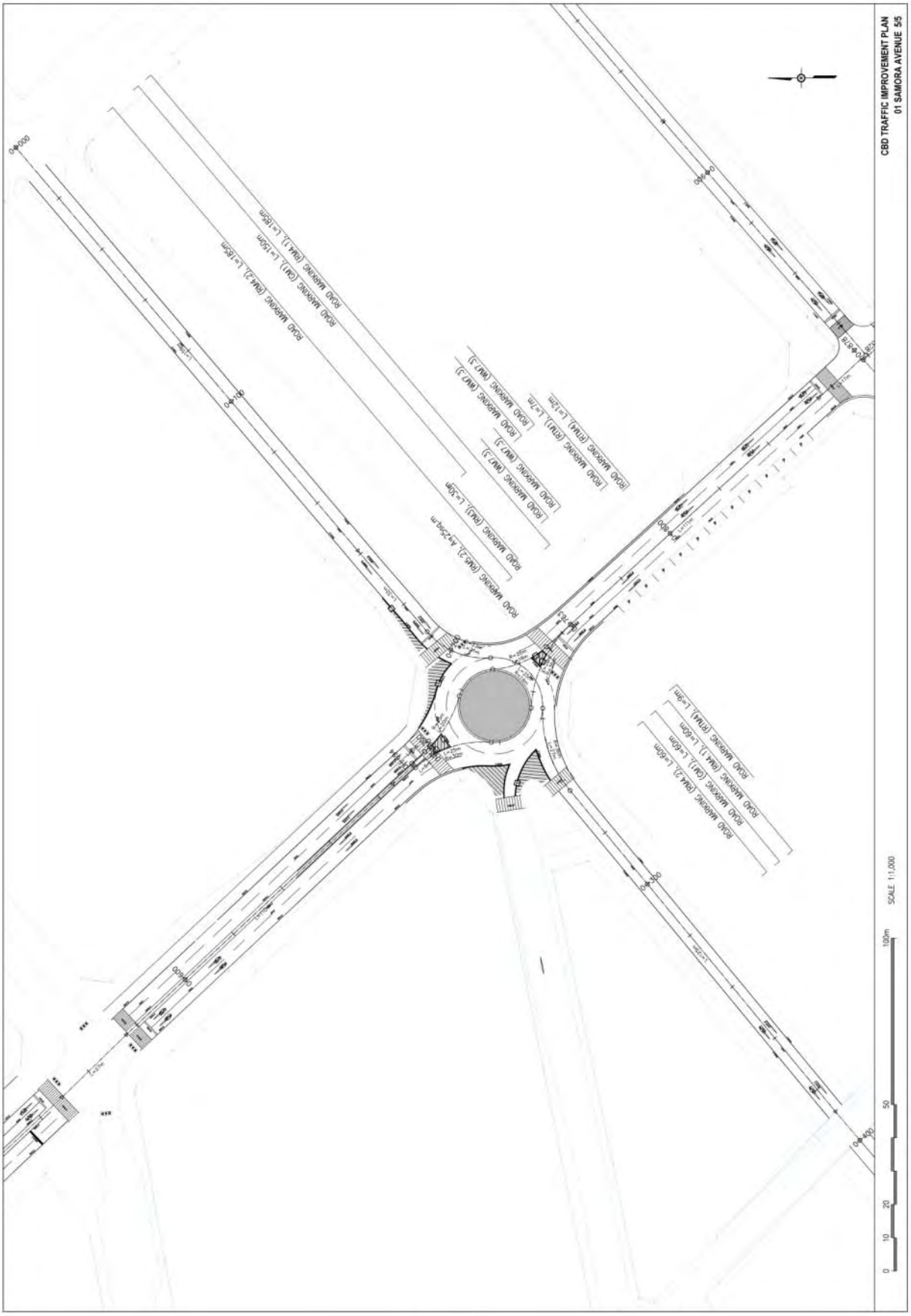
DRAWING - 2/27


CBD TRAFFIC IMPROVEMENT PLAN
01 SAMORA AVENUE 3/5
SCALE 1:1,000

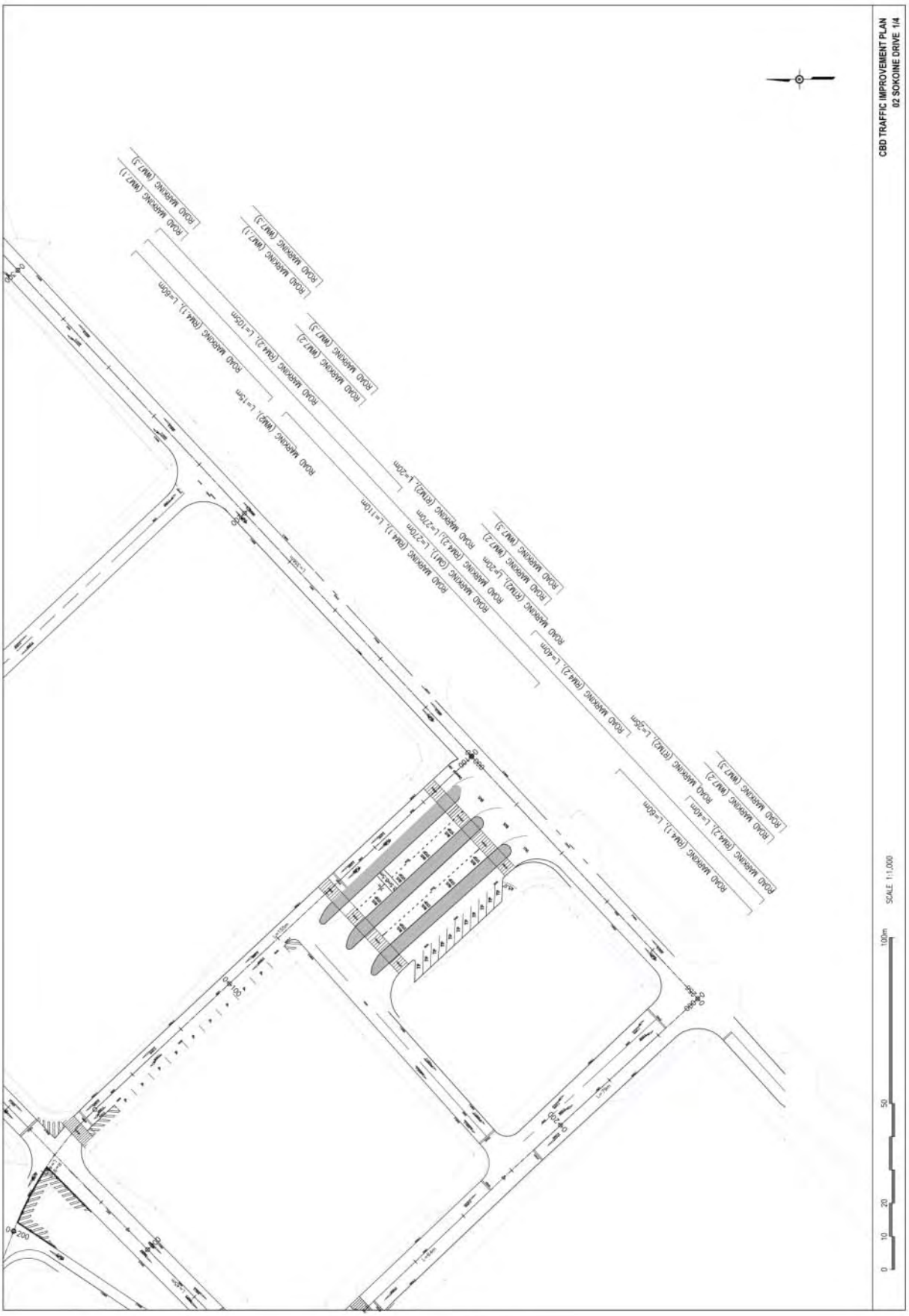
DRAWING - 3/27


CBD TRAFFIC IMPROVEMENT PLAN
01 SAMORA AVENUE 4/5
SCALE 1:1,000

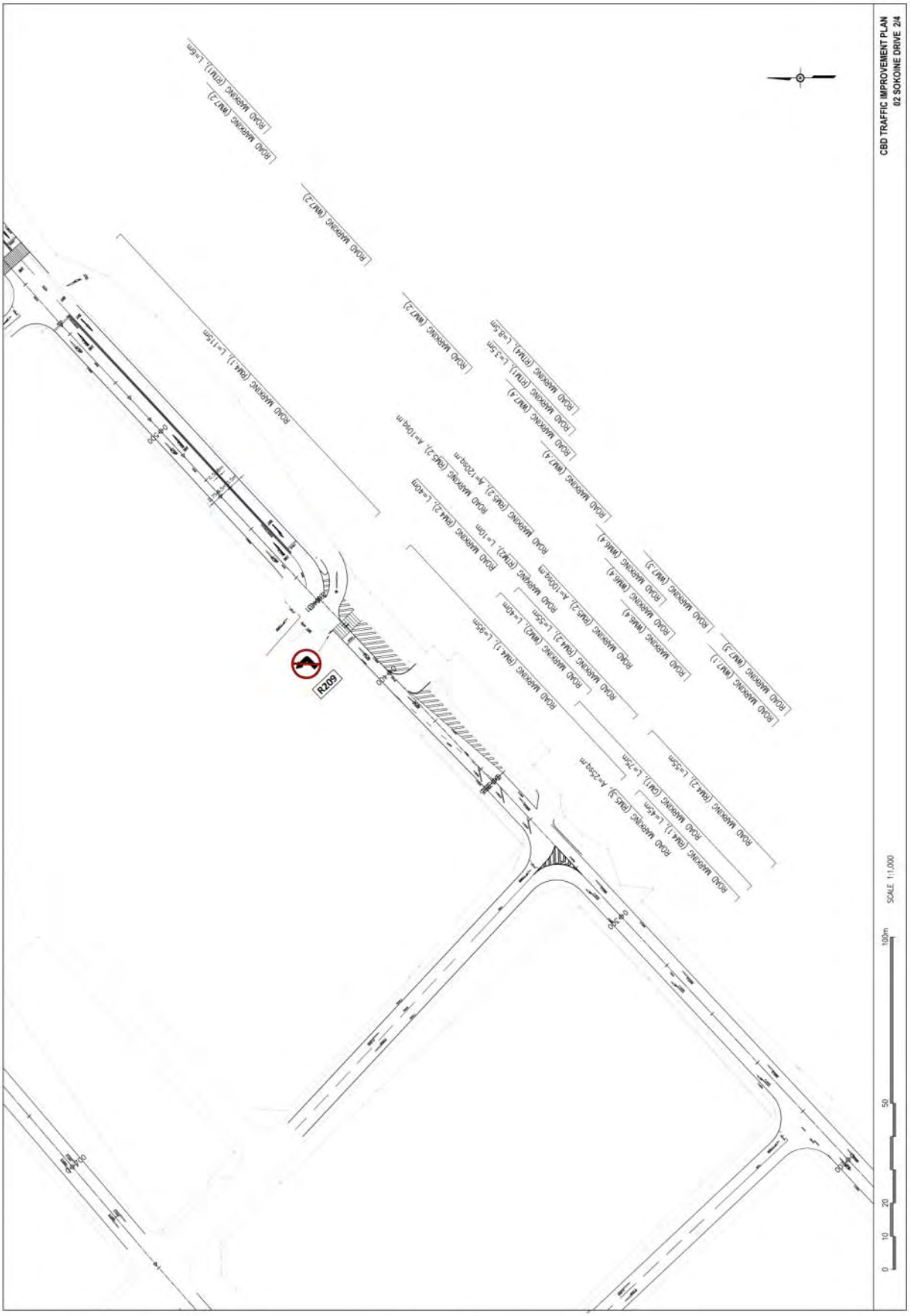
DRAWING - 4/27


CBD TRAFFIC IMPROVEMENT PLAN
01 SAMORA AVENUE 5/5
SCALE 1:1,000
100m
50
20
10
0
ROAD MARKING (RM1) L=30m
ROAD MARKING (RM2) A=25sq.m
ROAD MARKING (RM3) L=30m
ROAD MARKING (RM4) L=150m
ROAD MARKING (RM5) L=180m
ROAD MARKING (RM6) L=180m
ROAD MARKING (RM7) L=30m
ROAD MARKING (RM8) L=30m
ROAD MARKING (RM9) L=30m
ROAD MARKING (RM10) L=30m
ROAD MARKING (RM11) L=60m
ROAD MARKING (RM12) L=60m
ROAD MARKING (RM13) L=60m

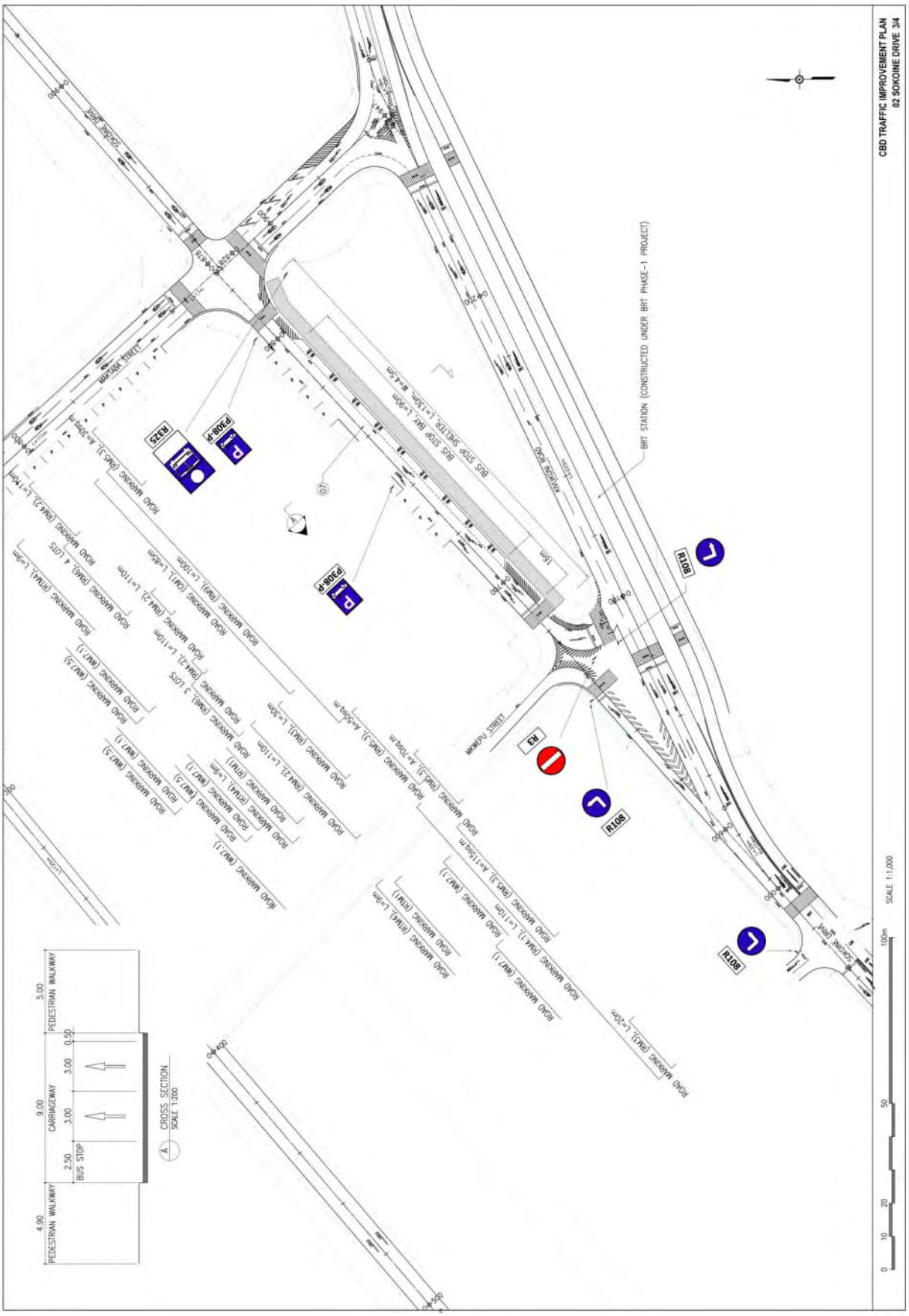
DRAWING - 5/27


CBD TRAFFIC IMPROVEMENT PLAN
02 SOKOINE DRIVE 1/4
SCALE 1:1,000
100m
50
20
10
0

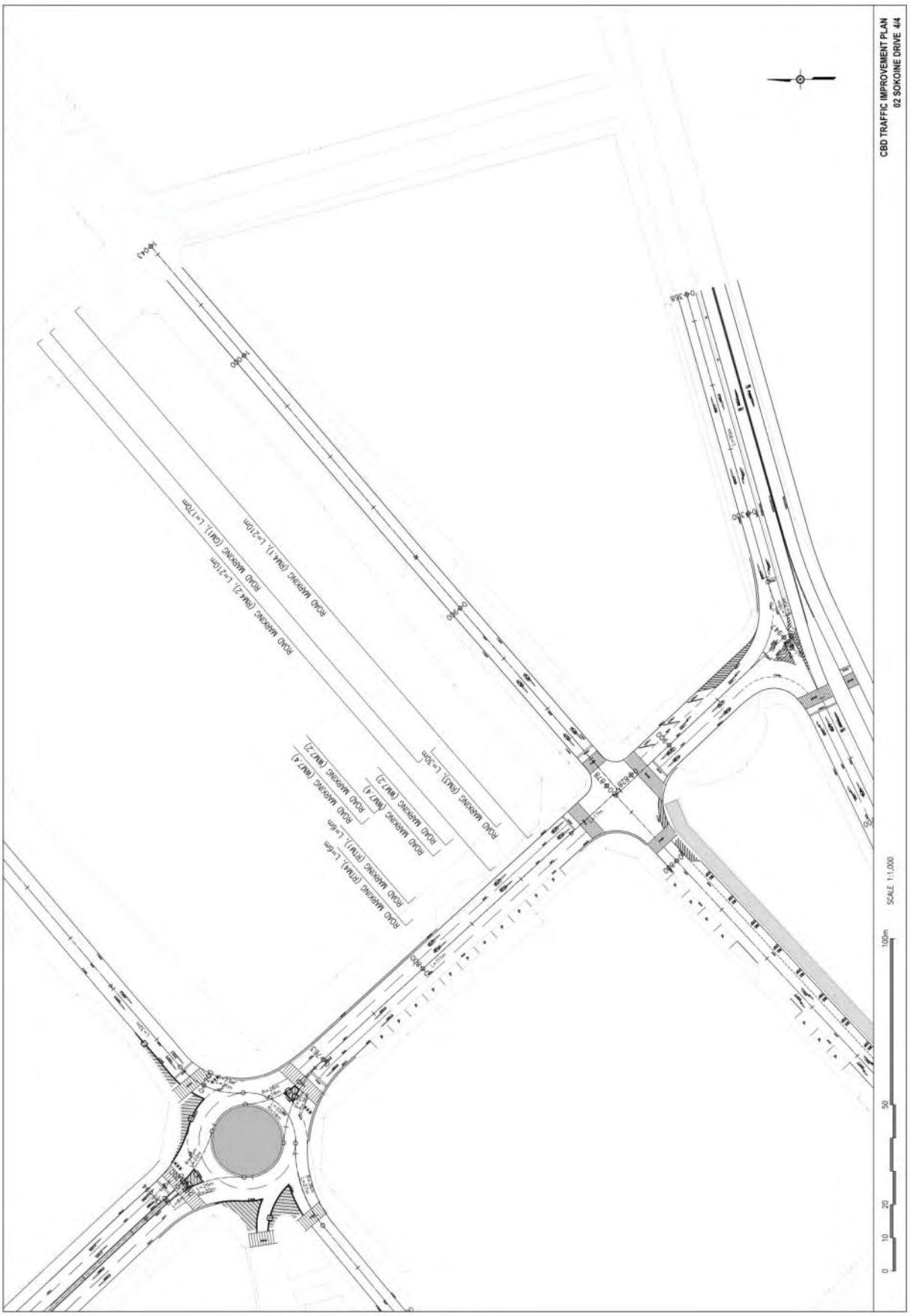
DRAWING - 6/27


CBD TRAFFIC IMPROVEMENT PLAN
02 SOKOINE DRIVE 2/4
SCALE 1:1,000
R209
0
10
20
50
100m

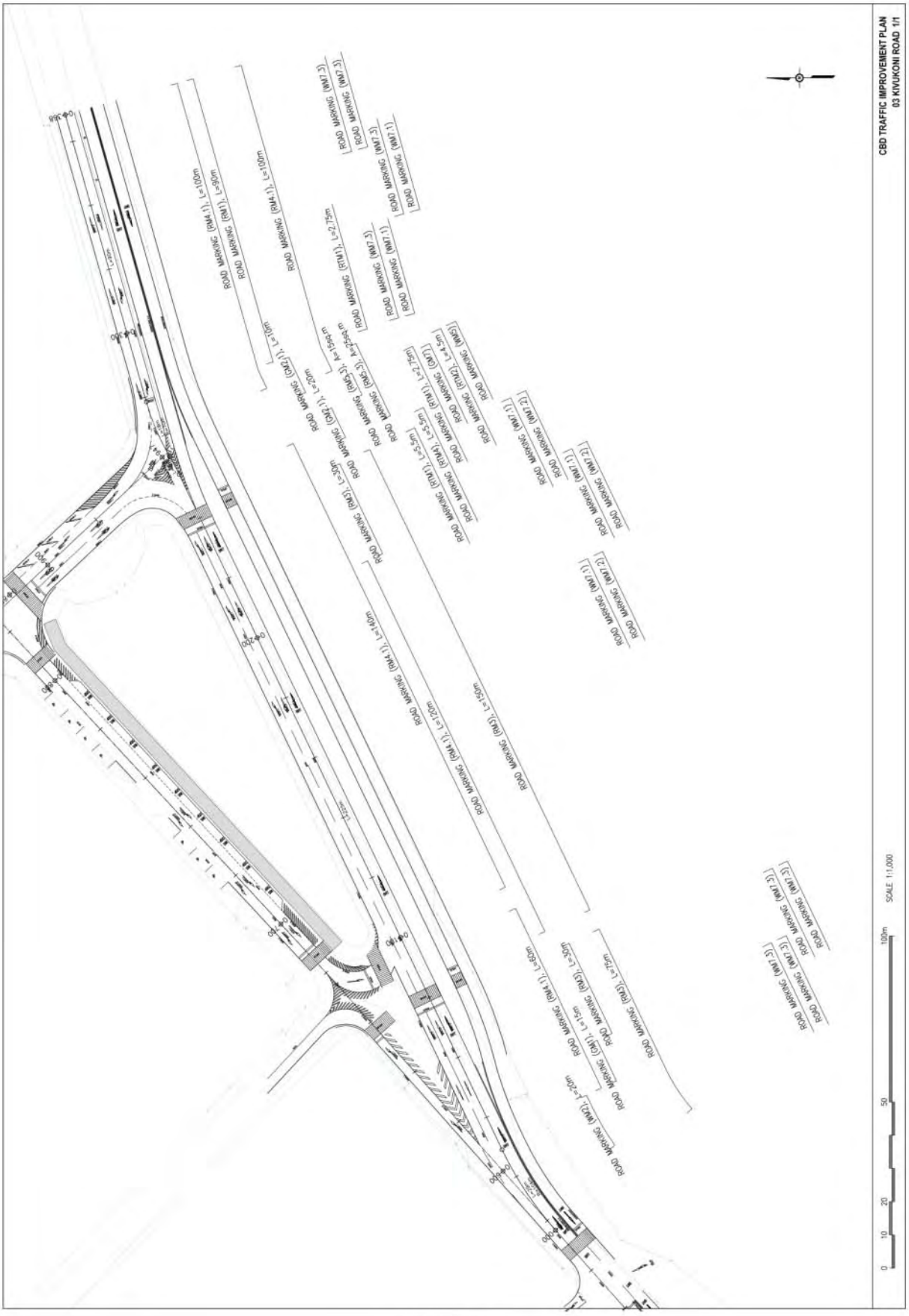
DRAWING - 7/27


CBD TRAFFIC IMPROVEMENT PLAN
02 SOKOINE DRIVE 3/4
BRT STATION (CONSTRUCTED UNDER BRT PHASE-1 PROJECT)
BUS STOP SHELTER L=13.0m, W=4.5m
BUS STOP BAY L=90m
MAKUNGU ROAD
MAWENZI STREET
SOKOINE DRIVE
R108
R3
N25
P308-R
P308-P
CROSS SECTION
SCALE 1:200
PEDESTRIAN WALKWAY
CARRIAGEWAY
BUS STOP
SCALE 1:1,000

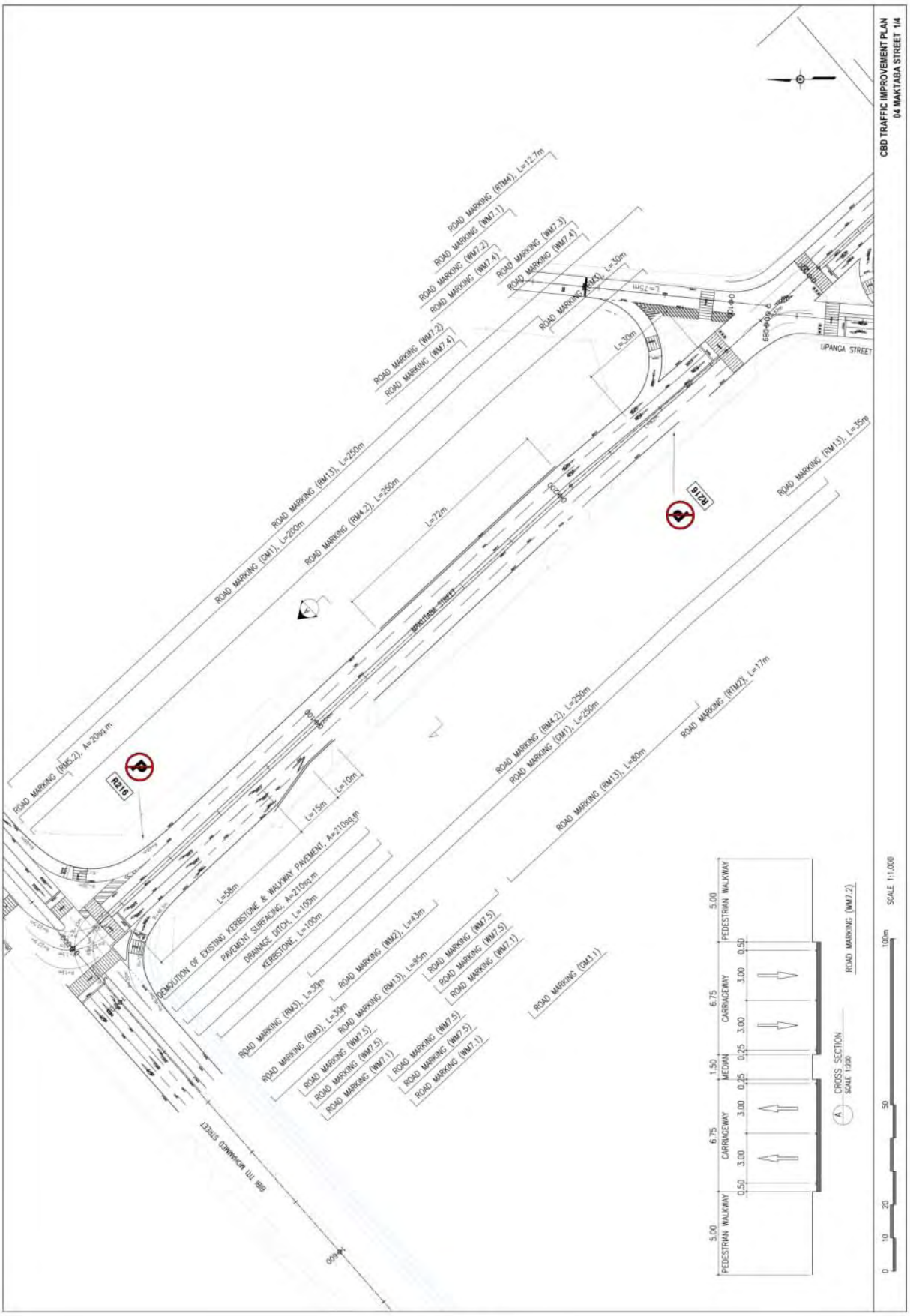
DRAWING - 8/27


CBD TRAFFIC IMPROVEMENT PLAN
02 SOKOINE DRIVE 4/4
SCALE 1:1,000
100m
50
20
10
0
ROAD MARKING (RM1.1) L=210m
ROAD MARKING (RM1.2) L=210m
ROAD MARKING (GM1) L=170m
ROAD MARKING (DM1) L=50m
ROAD MARKING (MM7.2)
ROAD MARKING (MM7.4)
ROAD MARKING (RM1) L=6m
ROAD MARKING (RM1) L=6m

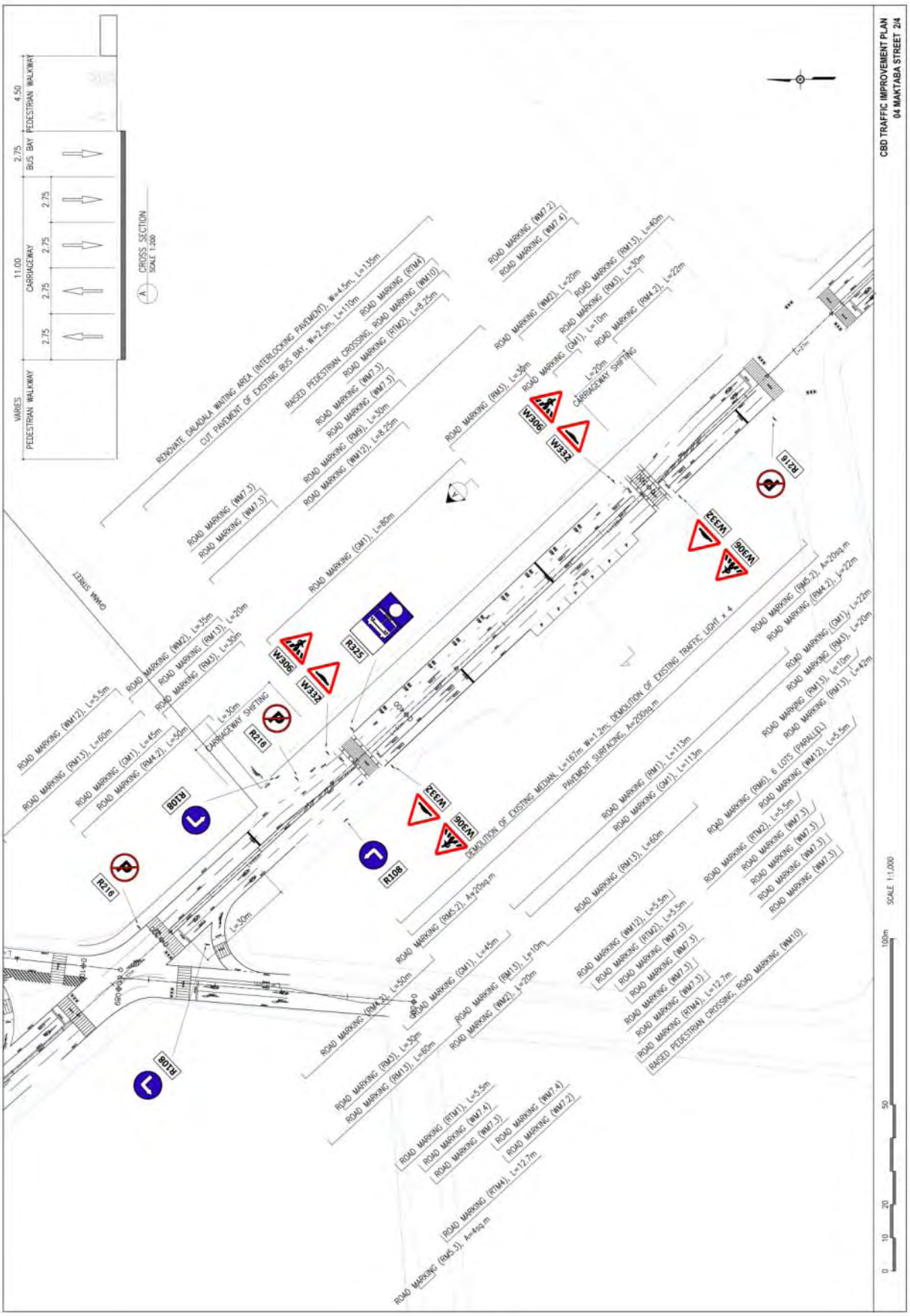
DRAWING - 9/27

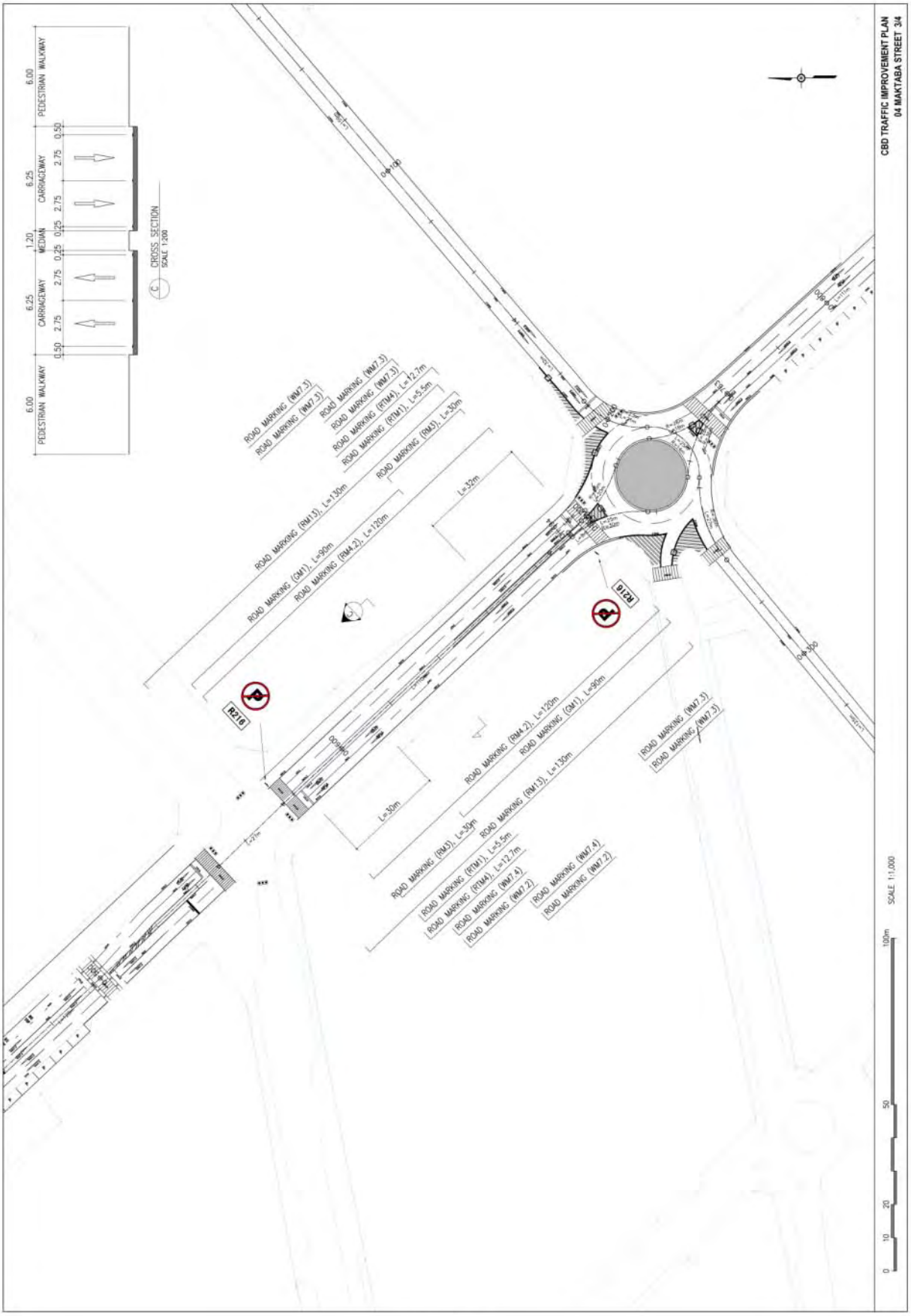


DRAWING - 10/27

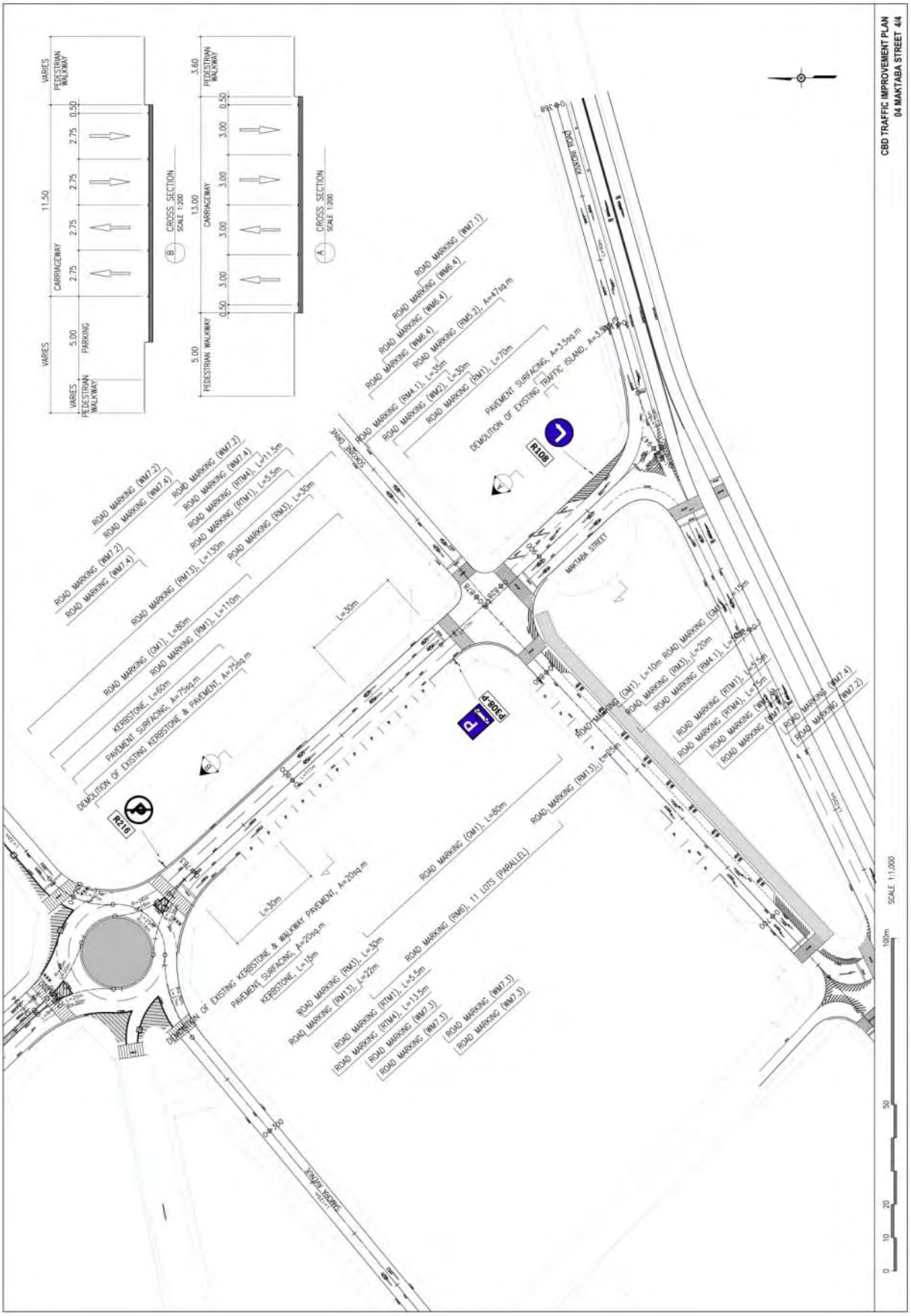


DRAWING - 11/27

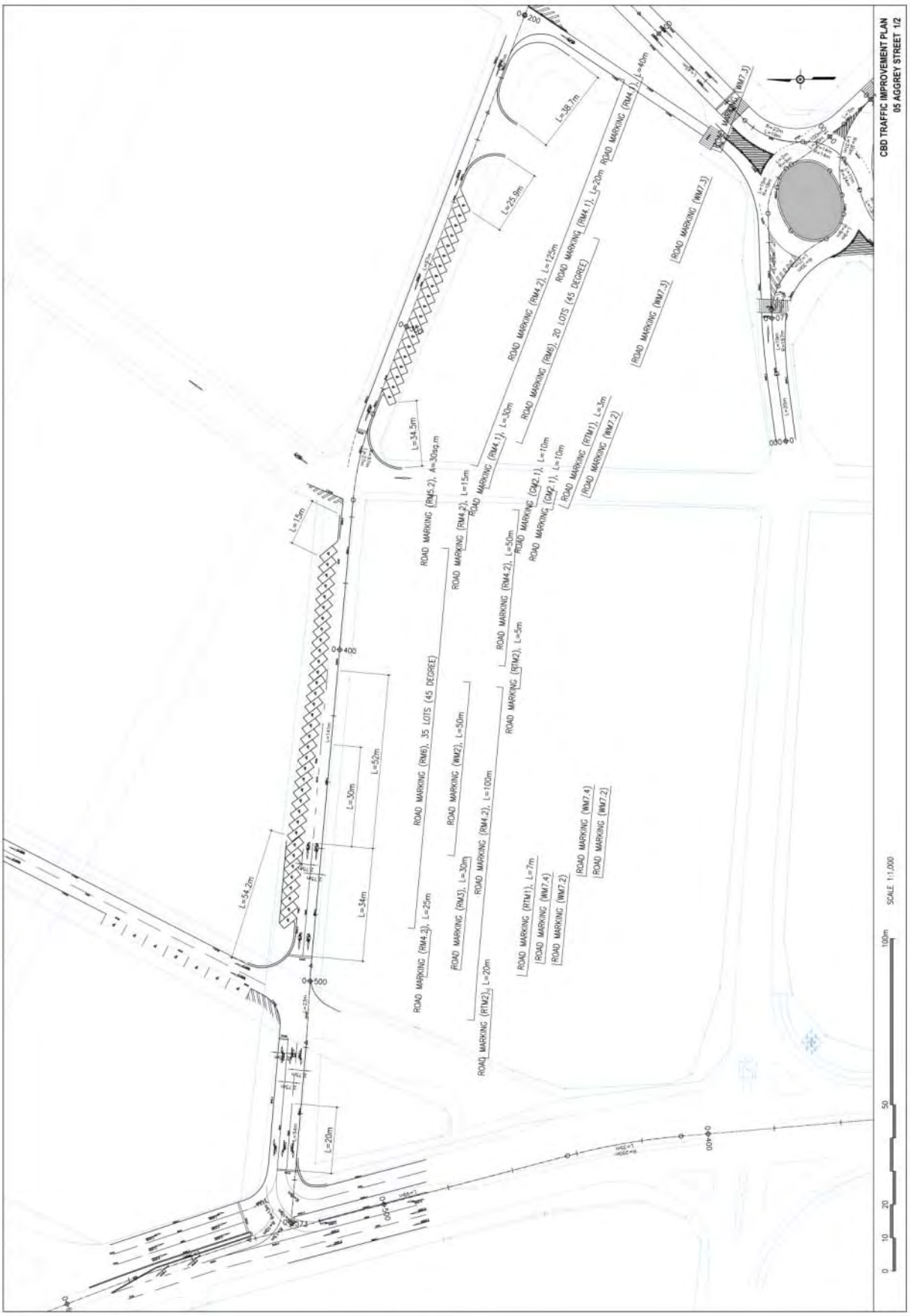

CBD TRAFFIC IMPROVEMENT PLAN
04 MAKTABA STREET 2/4
CROSS SECTION
SCALE 1:200
SCALE 1:1,000
DRAWING - 12/27



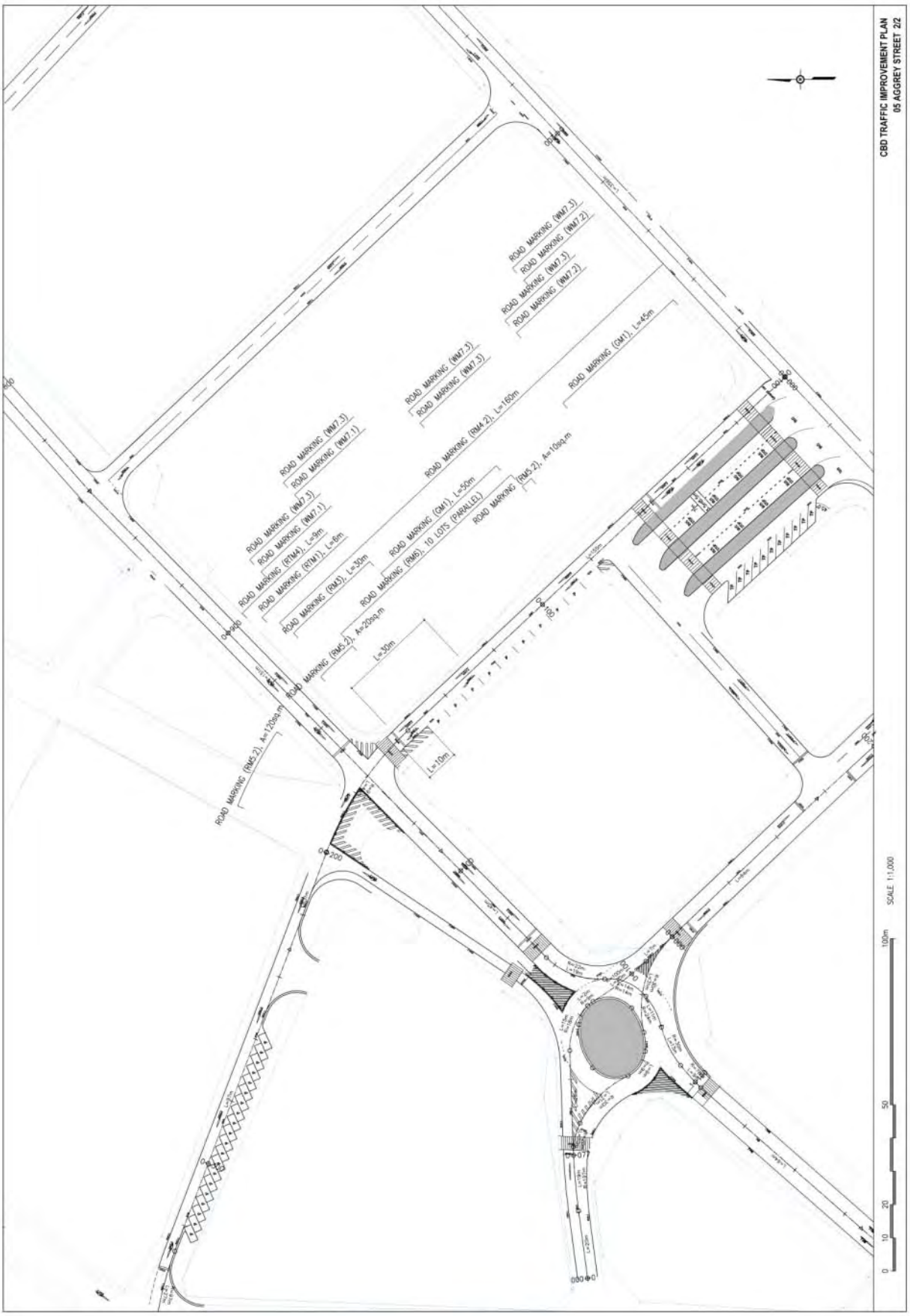
DRAWING - 13/27



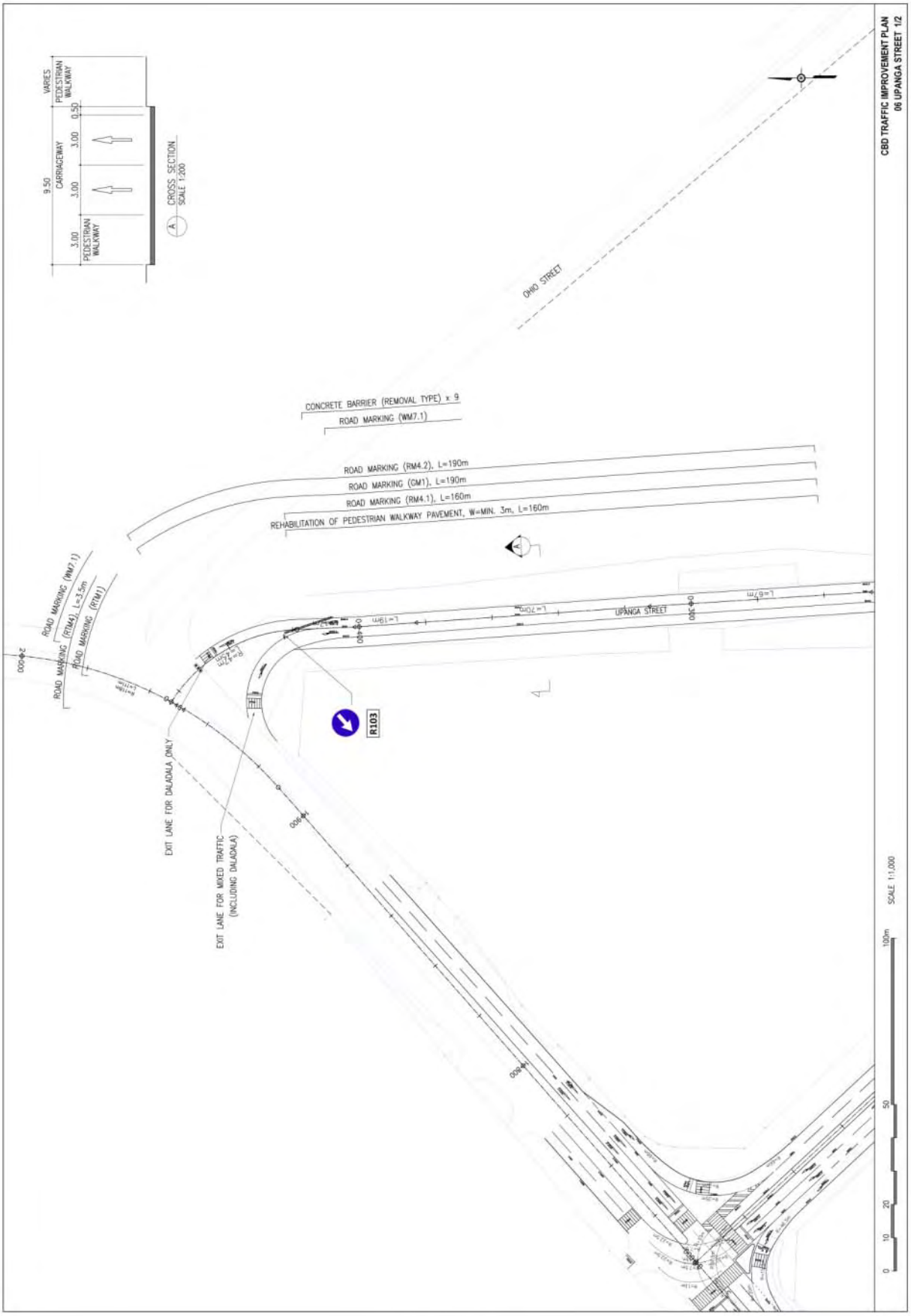
DRAWING - 14/27



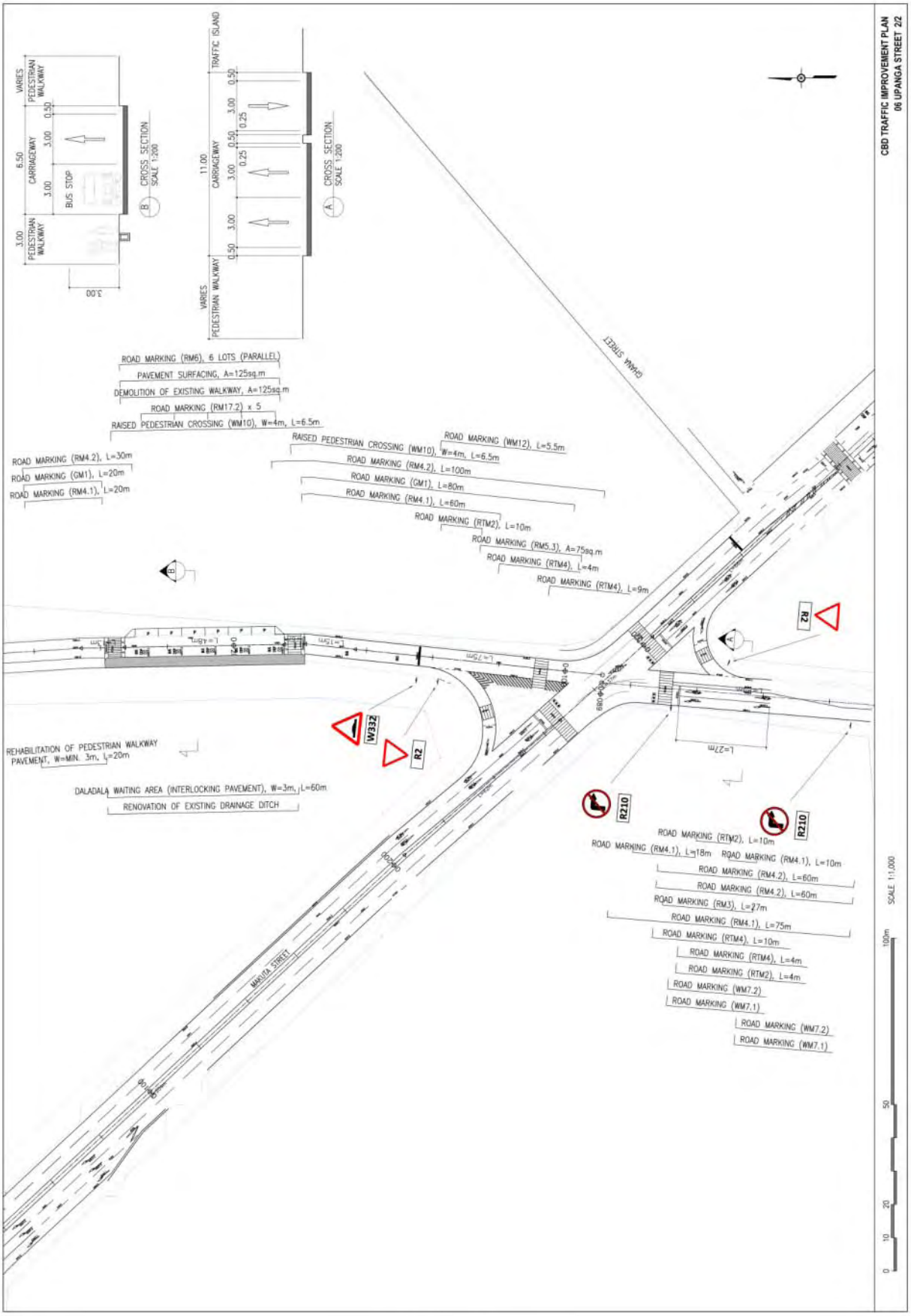
DRAWING - 15/27



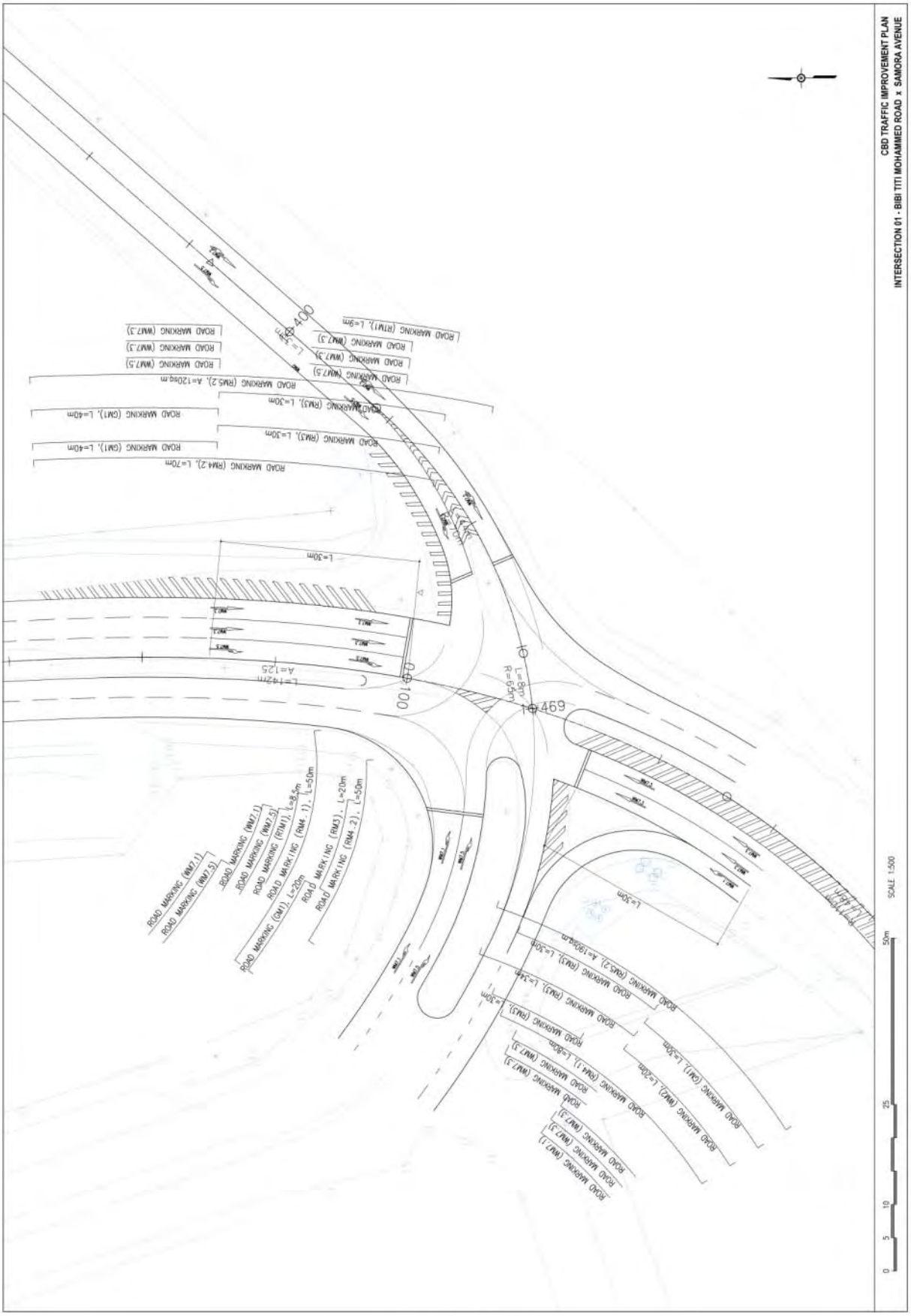
DRAWING - 16/27



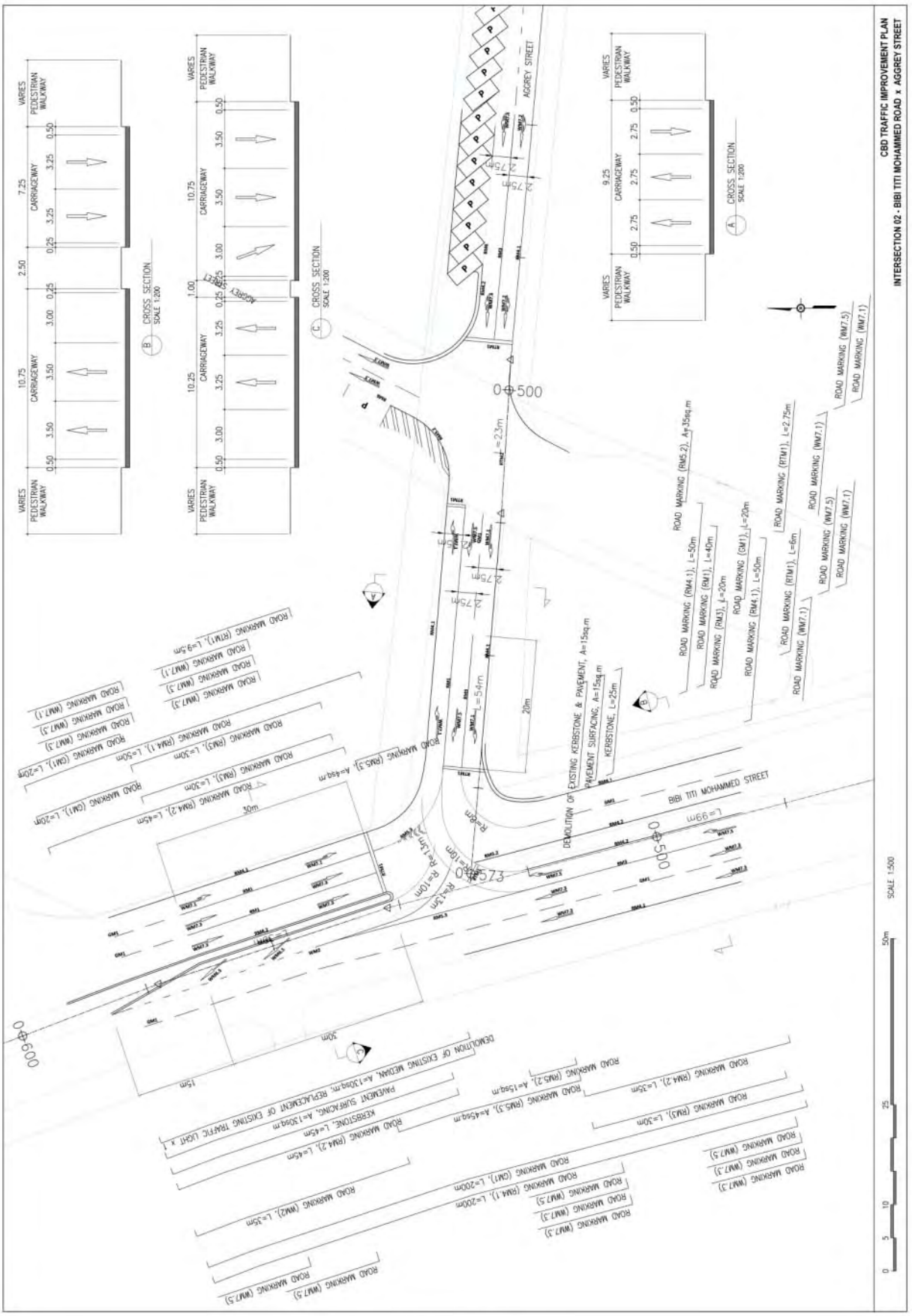
DRAWING - 17/27



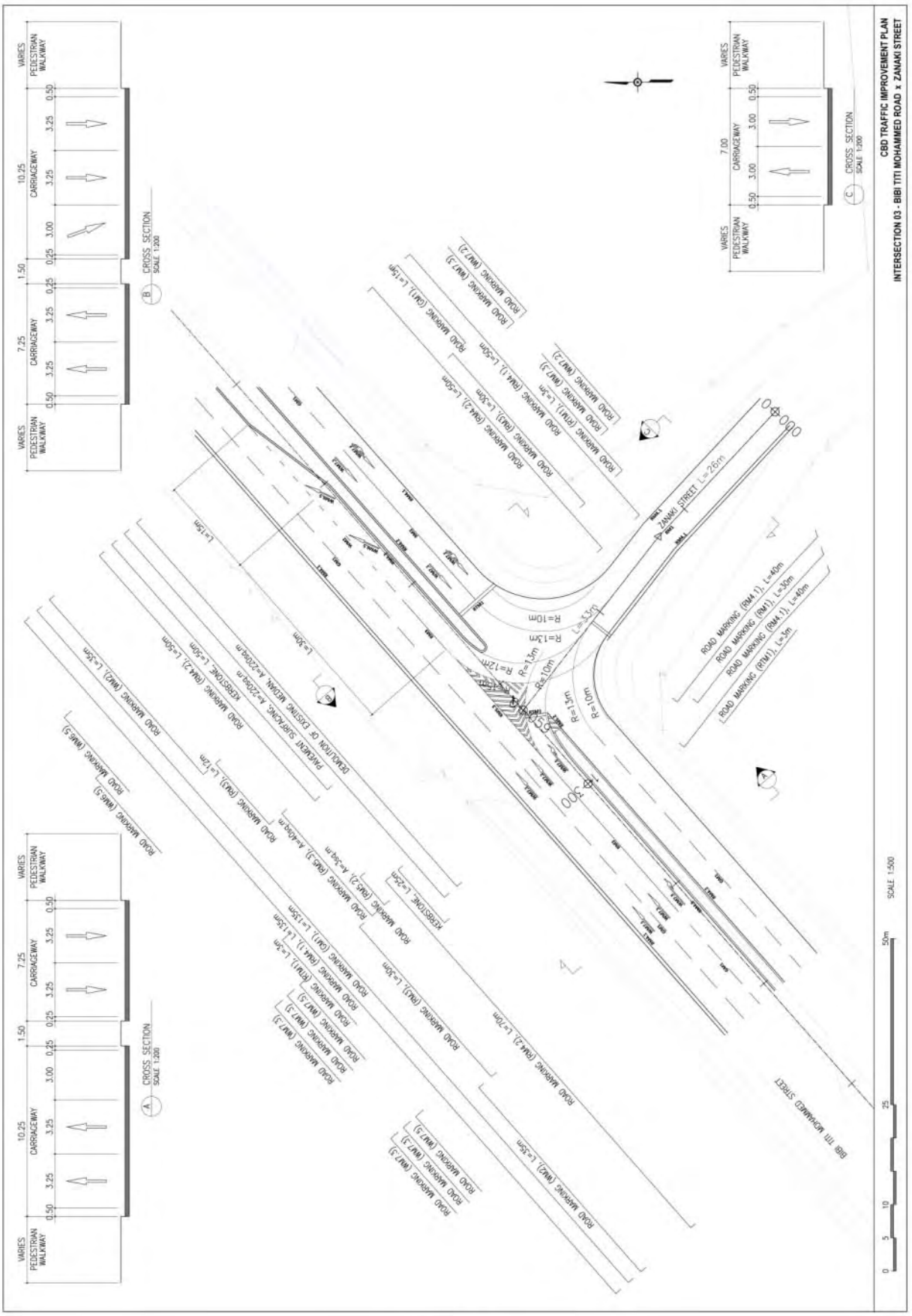
DRAWING - 18/27



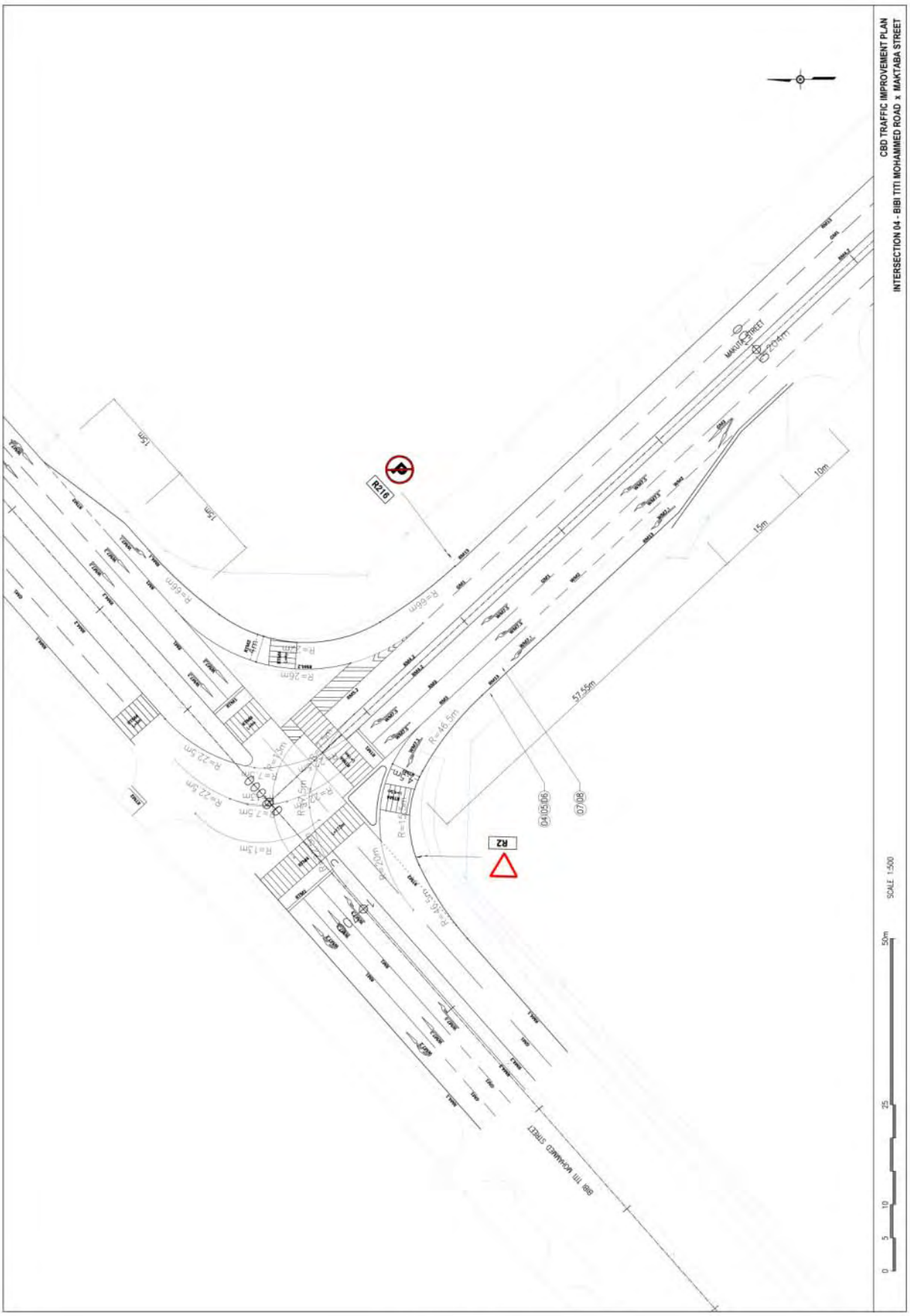
DRAWING - 19/27



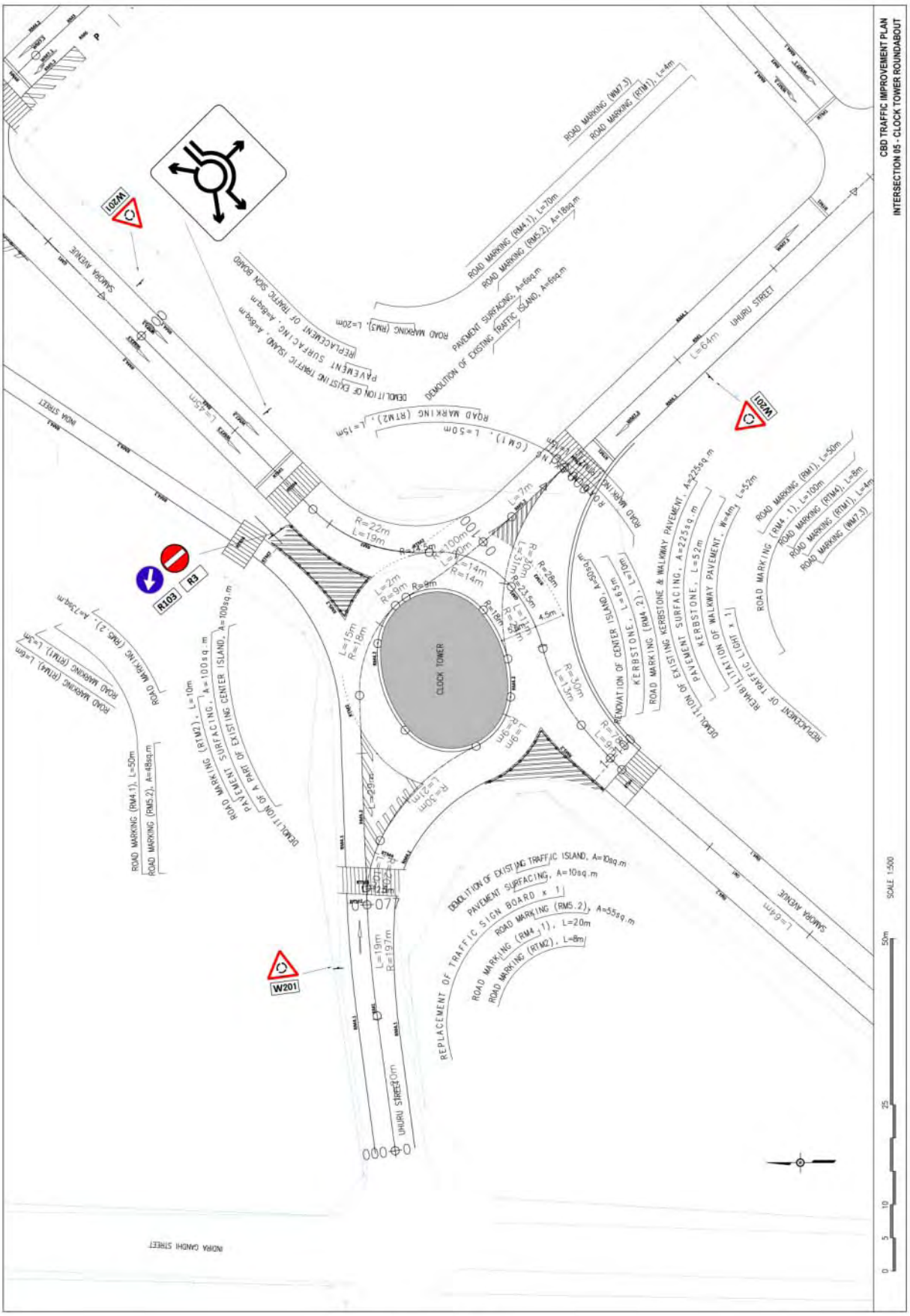
DRAWING - 20/27



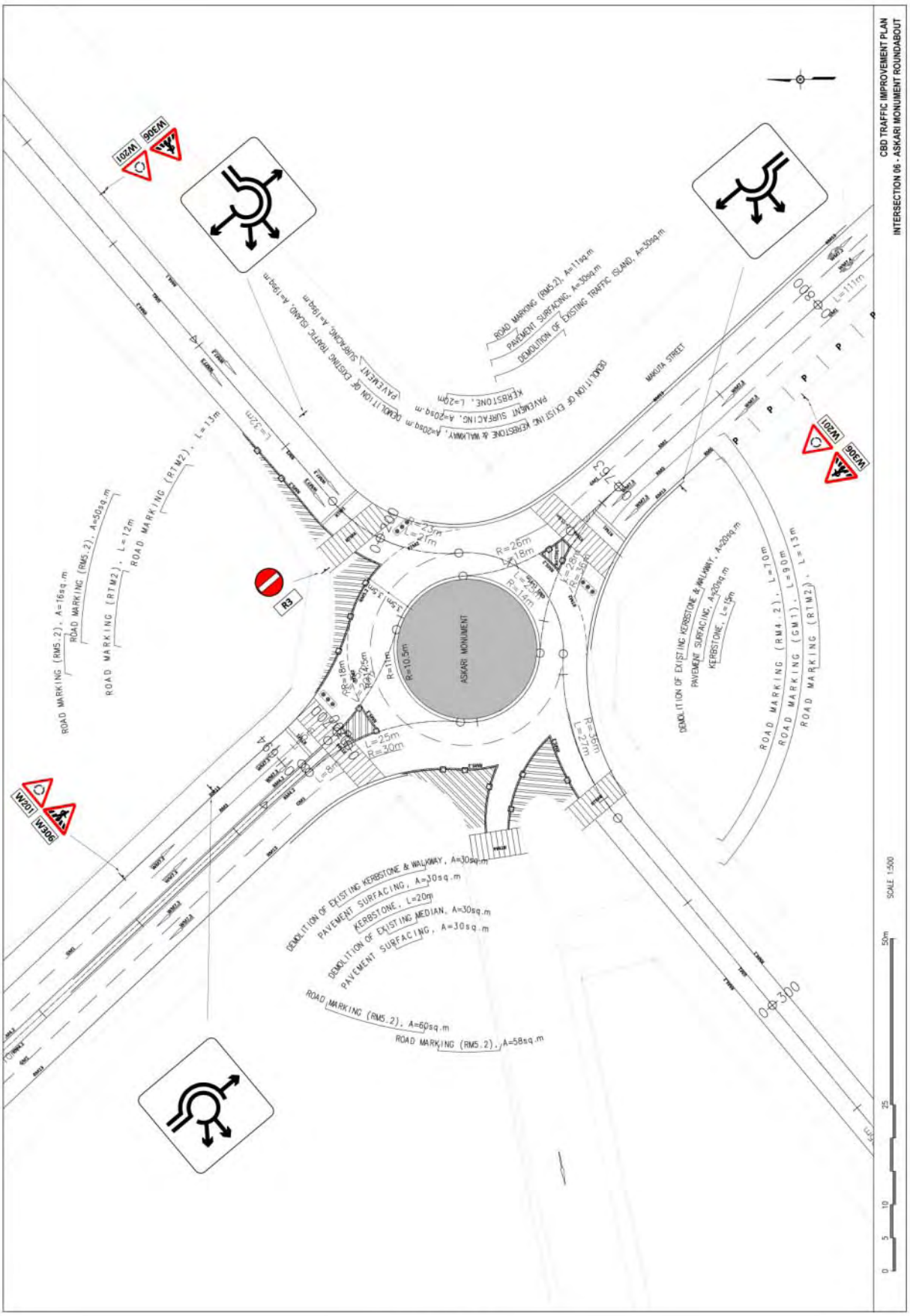
DRAWING - 21/27



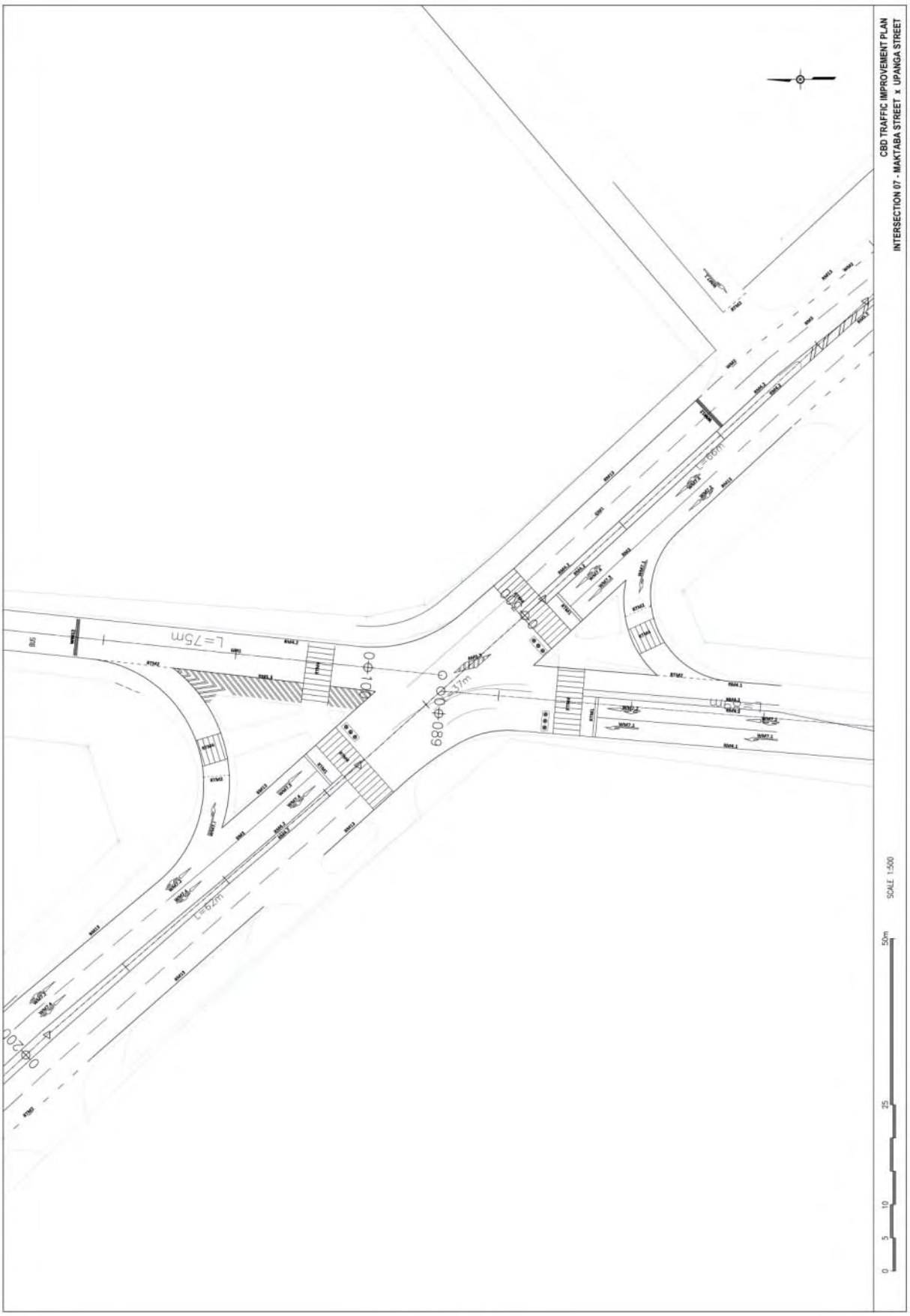
DRAWING - 22/27



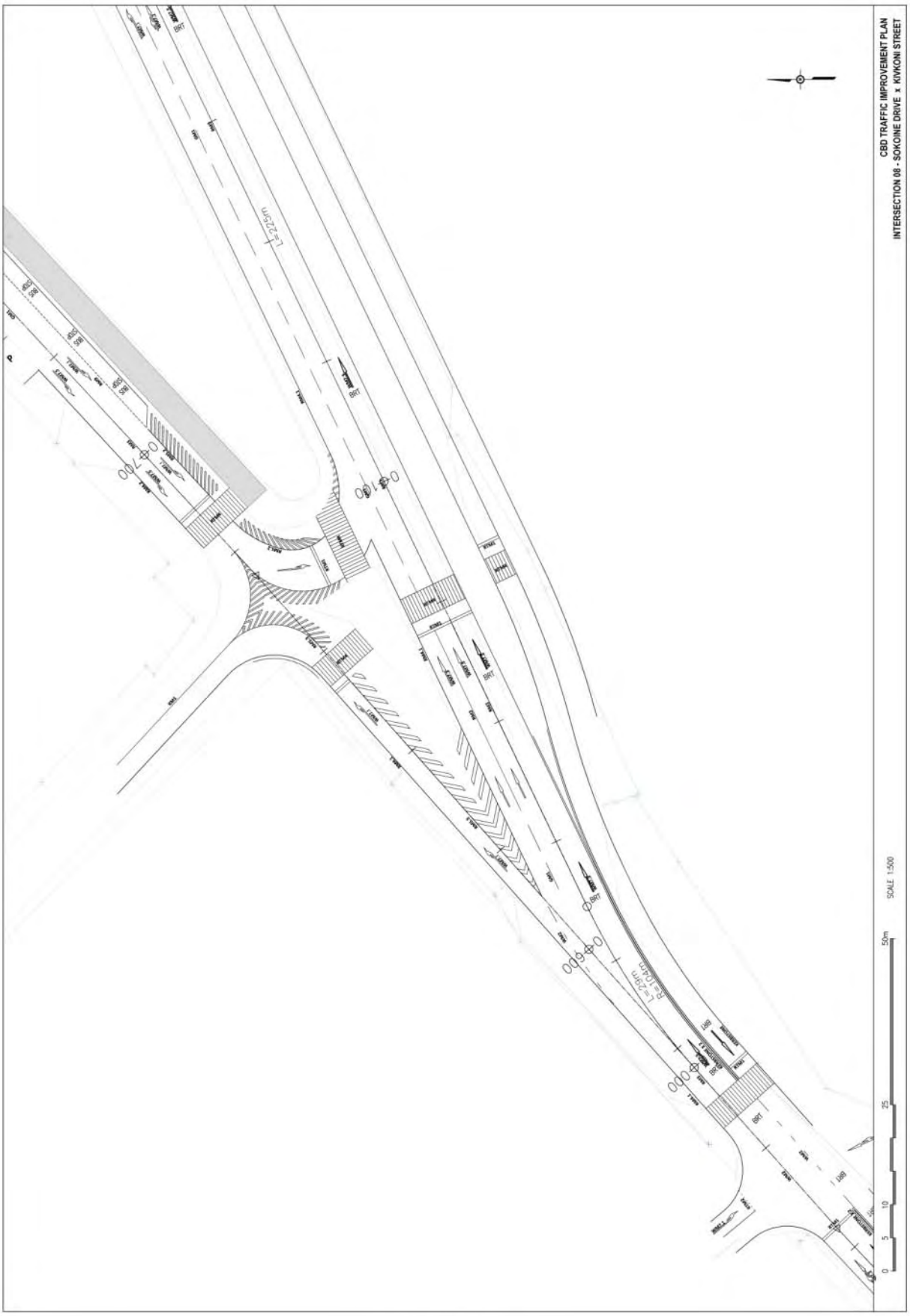
DRAWING - 23/27



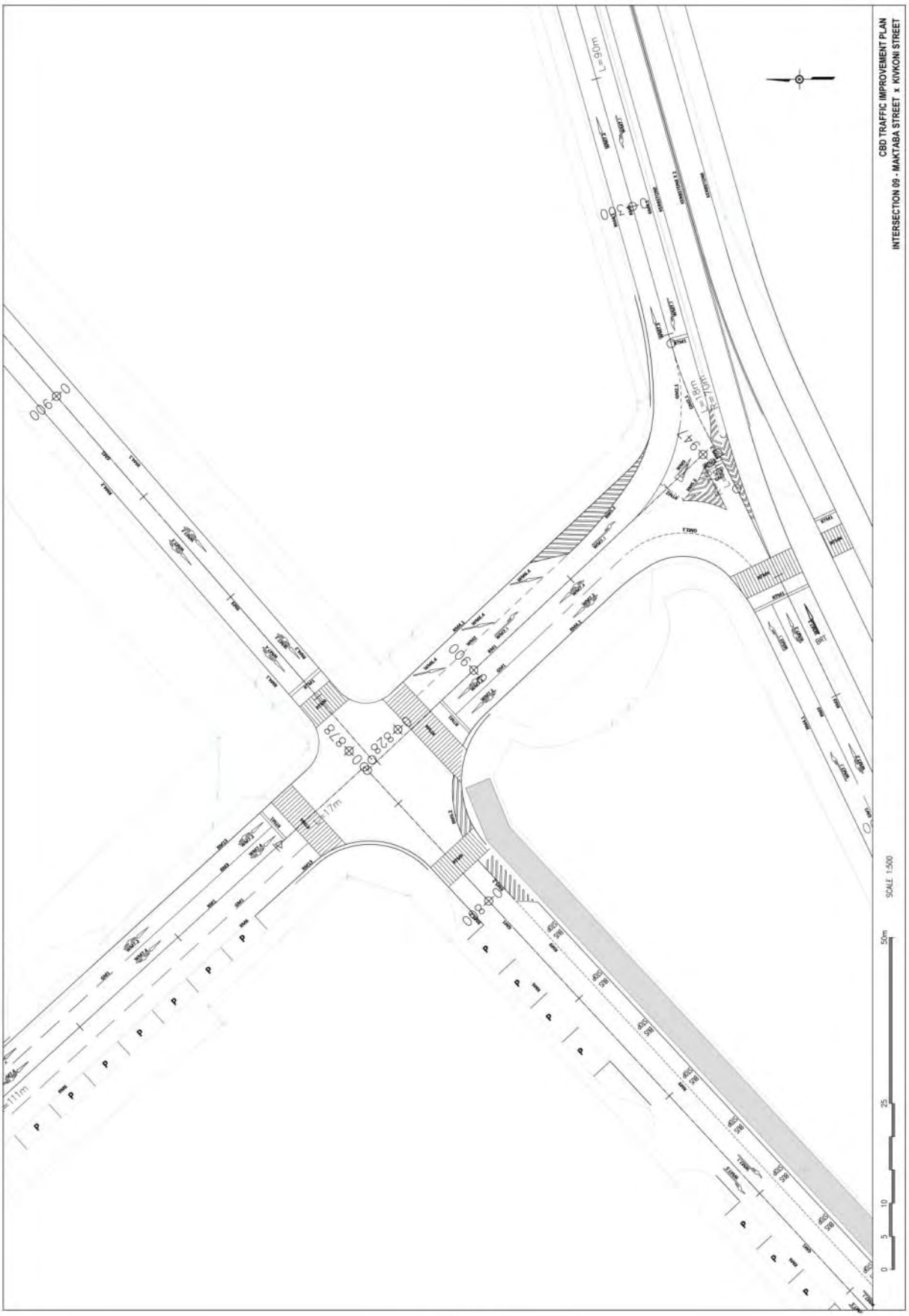
DRAWING - 24/27



DRAWING - 25/27



DRAWING - 26/27



DRAWING - 27/27

			Unit	Unit Rate	Samora Avenue		Sokoine Drive		Kiyukoni Road		Maktaba Street		Aggrey Street		Upanga Street		Bibi Titi - Samora		Bibi Titi - Aggrey		Bibi Titi - Zanaki		Clock Tower Roundabou		Askari Monument		Total	
				(Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)	QTY	Amount (Tshs)
1.00	**Road Works**																											
1.01	Demolition	Demolish existing road island including remove away from the site the demolished debris	cu.m	200,000	0	0	0	0	0	0	392	78,390,000	0	0	63	12,500,000	0	0	73	14,500,000	110	22,000,000	175	34,900,000	75	14,900,000	886	177,190,000
1.02	Filling	Supply, place, water, mix and compact to 98% MDD (BS Heavy) G15 materials to fill in the demolished area	cu.m	17,500	0	0	0	0	0	0	102	1,781,150	0	0	25	437,500	0	0	29	507,500	44	770,000	70	1,221,500	30	521,500	299	5,239,150
1.03	Subbase	Supply, place, water, mix and compact to minimum thickness of 200mm to MDD 98% (BS Heavy) cement stabilized subbase materials CM to carriageway and shoulders as per standard specifications for road works	cu.m	21,000	0	0	0	0	0	0	102	2,137,380	0	0	25	525,000	0	0	29	609,000	44	924,000	70	1,465,800	30	625,800	299	6,286,980
1.04	Base course	Supply, place, water, mix and compact to minimum thickness of 150mm to MDD 100% (BS Heavy) crushed aggregate base course materials CRS to carriageway and shoulder as per standard specifications for road works	cu.m	56,000	0	0	0	0	0	0	76	4,274,760	0	0	19	1,050,000	0	0	22	1,218,000	33	1,848,000	52	2,931,600	22	1,251,600	225	12,573,960
1.05	Prime coat	Prepare the existing road surface, supply, heat, and spray MC - 70 cut back bitumen as a prime coat at a rate of 1 litre/m to carriageway and shoulders	sq.m	2,800	0	0	0	0	0	0	509	1,424,920	0	0	125	350,000	0	0	145	406,000	220	616,000	349	977,200	149	417,200	1,497	4,191,320
1.06	Surface course	Provide and construct a layer of AC20 asphalt concrete final thickness 75mm using 60/70pen .Grade bitumen and 20mm granite aggregates rolled to fall to carriageway to meet the standard specifications issued by then MoW	sq.m	60,000	0	0	0	0	0	0	509	30,534,000	0	0	125	7,500,000	0	0	145	8,700,000	220	13,200,000	349	20,940,000	149	8,940,000	1,497	89,814,000
1.07	Walkway Pa	225x100x80mm thick precast concrete interlocking paving blocks; natural colour; laid on and including 50mm thick compacted sand; bedding joints with sand; vibrated to pedestrian walkway	sq.m	31,500	0	0	0	0	0	0	608	19,136,250	0	0	180	5,670,000	0	0	0	0	0	0	208	6,552,000	0	0	996	31,358,250
1.08	Kerbstone	Supply and construct kerbstone including all associated works	m	24,500	0	0	0	0	0	0	175	4,287,500	0	0	0	0	0	0	70	1,715,000	75	1,837,500	65	1,592,500	55	1,347,500	440	10,780,000
1.09	Concrete Barrier		nos	200,000	0	0	0	0	0	0	0	0	0	0	9	1,800,000	0	0	0	0	0	0	0	0	0	0	9	1,800,000
1.10	Drainage		m	250,000	0	0	0	0	0	0	100	25,000,000	0	0	60	15,000,000	0	0	0	0	0	0	0	0	0	0	160	40,000,000
1.11	Renovation of Center island		sq.m	100,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	5,000,000	0	0	50	5,000,000
1.12	Replacement of sign board		nos	60,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	120,000	0	0	2	120,000
1.13	Replacement of Traffic Light		nos	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	600,000	0	0	1	600,000	0	0	2	1,200,000
	Subtotal					**0**		**0**		**0**		**166,965,960**		**0**		**44,832,500**		**0**		**28,255,500**		**41,195,500**		**76,300,600**		**28,003,600**	**0**	**385,553,660**
2.00	**Traffic Signs**																											
2.01	P308-P	Car Park	nos	200,000	0	0	2	400,000	0	0	1	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	600,000
2.02	R2	Give Way	nos	200,000	0	0	0	0	0	0	0	0	0	0	2	400,000	0	0	0	0	0	0	0	0	0	0	2	400,000
2.03	R3	No Entry	nos	200,000	0	0	1	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	200,000	1	200,000	3	600,000
2.04	R103	Keep Left	nos	200,000	0	0	0	0	0	0	0	0	0	0	1	200,000	0	0	0	0	0	0	1	200,000	0	0	2	400,000
2.05	R108	Turn Left Ahead	nos	200,000	0	0	3	600,000	0	0	4	800,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1,400,000
2.06	R209	No Left Turn Ahead	nos	200,000	0	0	1	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	200,000
2.07	R210	No Right Turn Ahead	nos	200,000	0	0	0	0	0	0	0	0	0	0	2	400,000	0	0	0	0	0	0	0	0	0	0	2	400,000
2.08	R216	No Parking	nos	200,000	0	0	0	0	0	0	8	1,600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1,600,000
2.09	R325	Bus Stop	nos	200,000	0	0	1	200,000	0	0	1	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	400,000
2.10	W201	Roundabout	nos	200,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	600,000	3	600,000	6	1,200,000
2.11	W306	Pedestrian Crossing	nos	200,000	0	0	0	0	0	0	4	800,000	0	0	0	0	0	0	0	0	0	0	0	0	3	600,000	7	1,400,000
2.12	W332	Road Humps	nos	200,000	0	0	0	0	0	0	4	800,000	0	0	1	200,000	0	0	0	0	0	0	0	0	0	0	5	1,000,000
2.13	Directional Sign board		nos	500,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	500,000	3	1,500,000	4	2,000,000
	Subtotal					**0**		**1,600,000**		**0**		**4,400,000**		**0**		**1,200,000**		**0**		**0**		**0**		**1,500,000**		**2,900,000**	**0**	**11,600,000**
3.00	**Roard Markings**																											
3.01	GM1	Lane Line	m	1,000	827	827,000	600	600,000	15	15,000	1,130	1,130,000	95	95,000	290	290,000	130	130,000	260	260,000	150	150,000	50	50,000	90	90,000	3,637	3,637,000
3.02	GM2.1	Guide Line	m	500	0	0	0	0	30	15,000	0	0	20	10,000	0	0	0	0	0	0	0	0	0	0	0	0	50	25,000
3.03	GM3.1	Bifurcation Arrow (Left)	nos	20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.04	GM7	Word Marking (STOP)	nos	20,000	0	0	0	0	1	20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20,000
3.05	RM1	No Overtaking Line	m	3,000	360	1,080,000	0	0	90	270,000	180	540,000	0	0	0	0	0	0	0	0	30	90,000	50	150,000	0	0	710	2,130,000
3.06	RM3	Channelizing Line	m	3,000	150	450,000	80	240,000	285	855,000	340	1,020,000	60	180,000	27	81,000	174	522,000	110	330,000	72	216,000	20	60,000	0	0	1,318	3,954,000
3.07	RM4.1	Left Edge Line	m	2,000	1,205	2,410,000	805	1,610,000	520	1,040,000	85	170,000	90	180,000	343	686,000	130	260,000	350	700,000	265	530,000	240	480,000	0	0	4,033	8,066,000
3.08	RM5.2	Channelizing Island	sq.m	1,333	95	126,667	230	306,667	0	0	107	142,667	180	240,000	0	0	310	413,333	50	66,667	3	4,000	194	258,667	195	260,000	1,364	1,818,667
3.09	RM5.3	Channelizing Island	sq.m	1,333	50	66,667	290	386,667	40	53,333	4	5,333	0	0	75	100,000	0	0	45	60,000	40	53,333	0	0	0	0	544	725,333
3.10	RM6	Parking Bays	nos	19,000	0	0	7	133,000	0	0	17	323,000	65	1,235,000	6	114,000	0	0	0	0	0	0	0	0	0	0	95	1,805,000
3.11	RM9	Exclusive Use Lane Line	m	1,500	0	0	100	150,000	0	0	30	45,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	195,000
3.12	RM13	No Parking Line	m	2,000	0	0	0	0	0	0	1,292	2,584,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,292	2,584,000
3.13	RM17.2	Exclusive use lane symbol (Bus)	nos	1,500	0	0	0	0	0	0	0	0	0	0	5	7,500	0	0	0	0	0	0	0	0	0	0	5	7,500
3.14	RTM1	Stop Line	m	6,000	28	168,000	25	147,000	11	66,000	33	198,000	16	96,000	4	21,000	18	105,000	18	109,500	9	54,000	11	66,000	0	0	172	1,030,500
3.15	RTM2	Give Way Line	nos	2,667	15	40,000	85	226,667	5	12,000	36	96,667	25	66,667	22	58,667	0	0	0	0	0	0	48	128,000	38	101,333	274	730,000
3.16	RTM4	Pedestrian (Zebra) Crossing	m	40,000	37	1,480,000	42	1,660,000	6	220,000	92	3,672,000	9	360,000	31	1,220,000	0	0	0	0	0	0	14	560,000	0	0	229	9,172,000
3.17	WM2	Continuity Line	m	2,000	0	0	55	110,000	20	40,000	148	296,000	50	100,000	0	0	20	40,000	35	70,000	70	140,000	0	0	0	0	398	796,000
3.18	WM5	Give Way Control Ahead	nos	20,000	0	0	0	0	1	20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20,000
3.19	WM6.4	Lane Reduction Arrow (Right)	nos	20,000	0	0	3	60,000	0	0	3	60,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	120,000
3.20	WM6.5	Lane Reduction Arrow (Left)	nos	20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	40,000	0	0	0	0	2	40,000
3.21	WM7.1	Lane Direction Arrow (Left)	nos	20,000	0	0	9	180,000	5	100,000	5	100,000	2	40,000	4	80,000	3	60,000	6	120,000	0	0	0	0	0	0	34	680,000
3.22	WM7.2	Lane Direction Arrow (Ahead and Left)	nos	20,000	3	60,000	8	160,000	3	60,000	11	220,000	5	100,000	2	40,000	0	0	0	0	2	40,000	0	0	0	0	34	680,000
3.23	WM7.3	Lane Direction Arrow (Ahead)	nos	20,000	30	600,000	7	140,000	8	160,000	24	480,000	9	180,000	0	0	8	160,000	8	160,000	6	120,000	2	40,000	0	0	102	2,040,000
3.24	WM7.4	Lane Direction Arrow (Ahead and Right)	nos	20,000	2	40,000	4	80,000	0	0	14	280,000	2	40,000	0	0	0	0	0	0	0	0	0	0	0	0	22	440,000
3.25	WM7.5	Lane Direction Arrow (Right)	nos	20,000	3	60,000	3	60,000	0	0	6	120,000	0	0	0	0	4	80,000	6	120,000	2	40,000	0	0	0	0	24	480,000
3.26	WM10	Road Hamp	nos	40,000	0	0	0	0	0	0	2	80,000	0	0	2	80,000	0	0	0	0	0	0	0	0	0	0	4	160,000
3.27	WM12	Rumble Strip	m	12,000	0	0	0	0	0	0	25	297,000	0	0	6	66,000	0	0	0	0	0	0	0	0	0	0	30	363,000
	Subtotal					**7,408,333**		**6,250,000**		**2,946,333**		**11,859,667**		**2,922,667**		**2,844,167**		**1,770,333**		**1,996,167**		**1,477,333**		**1,792,667**		**451,333**	**0**	**41,719,000**
	Road Works					0		0		0		166,965,960		0		44,832,500		0		28,255,500		41,195,500		76,300,600		28,003,600		385,553,660
	Traffic Signs					0		1,600,000		0		4,400,000		0		1,200,000		0		0		0		1,500,000		2,900,000		11,600,000
	Road Markings					7,408,333		6,250,000		2,946,333		11,859,667		2,922,667		2,844,167		1,770,333		1,996,167		1,477,333		1,792,667		451,333		41,719,000
	Total direct cost					7,408,333		7,850,000		2,946,333		183,225,627		2,922,667		48,876,667		1,770,333		30,251,667		42,672,833		79,593,267		31,354,933		438,872,660
	Contractor's indirect cost & administrative cost (40%)					2,963,333		3,140,000		1,178,533		73,290,251		1,169,067		19,550,667		708,133		12,100,667		17,069,133		31,837,307		12,541,973		175,549,064
	VAT (18%)					1,866,900		1,978,200		742,476		46,172,858		736,512		12,316,920		446,124		7,623,420		10,753,554		20,057,503		7,901,443		110,595,910
	Total cost					**12,238,567**		**12,968,200**		**4,867,343**		**302,688,735**		**4,828,245**		**80,744,253**		**2,924,591**		**49,975,753**		**70,495,521**		**131,488,077**		**51,798,350**		**725,017,634**

Appendix 3 – Public Awareness Campaign Plan

Objectives of Public awareness campaign

Public information or information sharing is an essential component of newly introduced Dar es Salaam CBD traffic improvement plan. The objective of the public awareness campaign is to disseminate necessary information related to CBD traffic improvement plan, such as Daladala rerouting and traffic circulation change in CBD area. The scope of this campaign includes informing the public about the plan and its impacts on the traveling by Daladala or car, to avoid unnecessary confusion/ accident and to improve Daladala services due to the change of traffic circulation.

Measures of public awareness campaign

In this CBD traffic improvement plan includes big change of traffic circulation in CBD area, such as "diversion to one-way" and "diversion to opposite direction". Without enough information about this big change, public might confuse and might cause unnecessary accident. To disseminate enough information to public without any delay, Public Awareness Campaign (PAC) is quite important to conclude this CBD plan successfully.

The following elements of public awareness campaign are important facets of the overall CBD traffic improvement plan.

(1) Media Conference

Objective of Media Conference is to disseminate information to public, regarding the CBD improvement plan and make public understand "what is going to happen?" through TV, Radio and newspapers. It is expected that participated Medias of this conference will issue (or air) this conference as one of articles in their news program.

In the conference, it is necessary to provide enough information for Medias and let them understand relationship between this public awareness campaign and the CBD improvement plan.

(2) Advertisement through Media

It is obvious that TV, Radio, Web-site and other Mass-Medias, have strong influence and strong power as information provider anywhere in the world. However the cost of advertisement trough media is relatively higher than other measures. it is necessary to consider the selection of suitable Medias because of limit of available budget.

(3) Notice Board at Major Intersections, Samora Av.

Within CBD traffic circulation change area, especially around Samora and Sokoine, Will get huge impact from this CBD improvement plan due to traffic direction change. To alleviate confusion by less information or

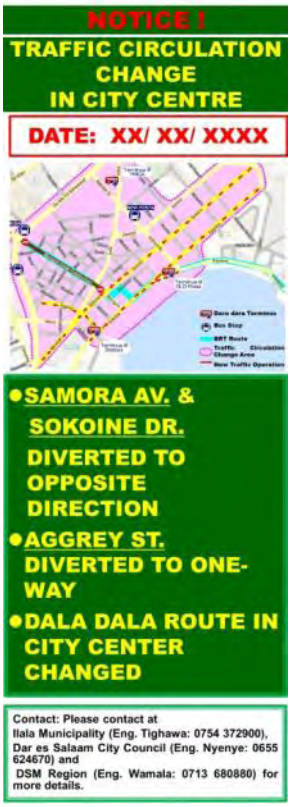


Figure A3.1 Notice Board (English, Actual Size 118.9mm*84.1mm)

understanding, it is necessary to install notice board within CBD, especially along Samora and Sokoine.

Following box shows planed banner installation intersections in CBD.

1） Morogoro/ Bibi Titi Mohammed	6） India (Mkwepu)/ Jamhuri
2） Uhuru(Railway)/ Nkrumah (Samora)	7） Azikiwe/ Samora
3） Morogoro/ Samora	8） Azikiwe/ Sokoine
4） Zanaki/ Samora	9） Ohio/ Samora
5） Zanaki/ India	10） Along Samora Av. and Sokoine Dr.

(4) Banner between CBD and Bus terminals

Not only within CBD traffic improvement area, it needs to install banners at major intersection outside CBD area to inform people who need to commute to/from CBD area to avoid confusion due to traffic circulation change in CBD.

This banner should be considered car/ bus user, so the banner design is make target people understand in short time.

It is planned to install 5 major bus route to CBD, such as Ali Hassan Mwini, Morogoro, Kilwa, Nyerere and Uhuru.

Figure A3.2 Banner between CBD and Bus Terminals (Actual size 1m*6m)

(5) Banner at Bus terminals

This CBD improvement plan includes Daladala rerouting near to bus terminus in CBD. It is needed to install banner at Major bus terminals to give enough information for bus driver and users. Following bus terminals are location to install notice board;

1） Ubungo	6） Tegata
2） Mwenge	7） Kivukoni
3） Mbagara	8） Gongolamboto
4） Temeke	9） Vingunguti
5） Mbezi	

Figure A3.3 Banner at Major Bus Terminals (A0)

(6) Flyer

Compare to other measures, flyer can includes more detail information so that people can easily spend more time to read all contents of flyer. Following box shows planned flyer distribution points within CBD area.

1） Morogoro/ Bibi Titi Mohammed	6） Bibi Titi Mohammed/ India/ Ohio
2） Morogoro/ Libya	7） Samora/ Azikiwe
3） Uhuru/ Aly Bibi Titi Mohammed	8） Sokoine/ Azikiwe
4） Central Station	9） Samora/ Ohio
5） New Posta	

In addition to major intersection, it is planned to distribute flyer at populated place in the City, such as shopping mall, government facilities and major bus terminals.

Figure A3.4 shows flyer design and Figure A3.5 shows selected flyer distribution point in CBD.

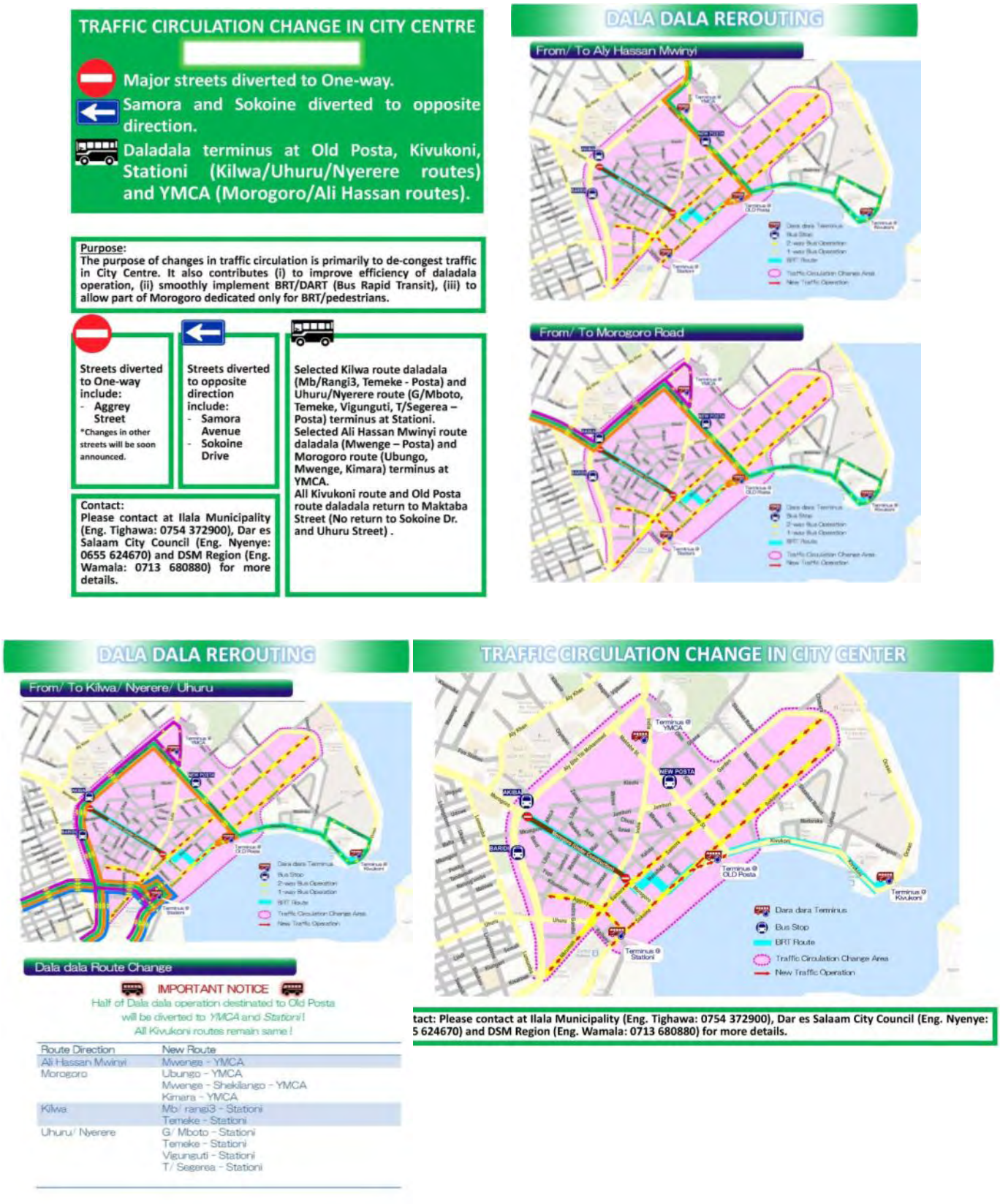


Figure A3.4 Public Awareness Champaign Flyer

Figure A3.5 Selected Flyer Distribution Location in CBD

(7) Key Stakeholder Meeting

The objective of this key stakeholder meeting is to avoid unreasonable interventions. It is necessary to invite councilors, and representative from business associations to give them explanation of traffic modification and dala dala rerouting plan.

(8) Education at School

For the primary and secondary school students, it is important to explain risks of the accident due to this CBD traffic improvement plan, especially traffic circulation flow change.

Model Schedule of public awareness campaign

It is carefully considered timing and duration to disseminate enough information to public, and also need to consider effective way to utilize each measures of public awareness campaign.

Public awareness campaign model schedule shows in Figure A3.6.

In this figure, yellow highlighted date (day "0") indicate starting date of the CBD traffic improvement plan. Before the starting date, there are lots of preparation works related to public awareness campaign.

To conduct this CBD traffic improvement plan without any unnecessary trouble, it is important to schedule public awareness campaign carefully.

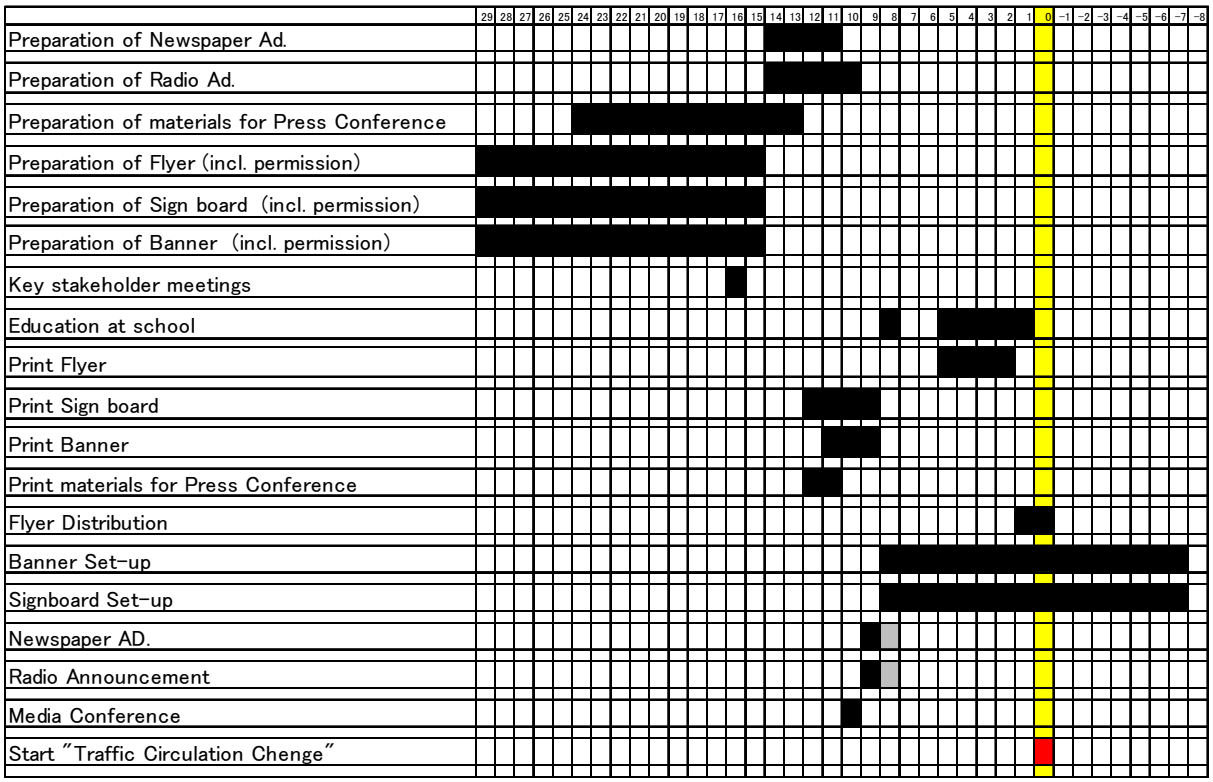


Figure A3.6 Model Schedule of Public Awareness Campaign

Capacity Building Project for the

Improvement of Dar es Salaam

Urban Transport

Discussion Paper (Volume 4)

Dar es Salaam Urban Road Improvement Plan

This paper has been prepared only for internal discussions amongst the designated stakeholders for this project.

Secretariat for the Capacity Building Project

and

JICA Expert Team

– CONTENTS –

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Dar es Salaam faces severe and chronic traffic congestion throughout large periods of the day, placing large burdens on the city in terms of economic productivity and social impacts. As Dar es Salaam is a major contributor to the nation's economy, the loss of productivity is of national concern.

In order to address urban transport issues and facilitate development of transport infrastructure, JICA conducted the Study of the Dar es Salaam Transport Policy and System Development Master Plan (herein after "the 2008 Urban Transport Master Plan") and formulated a strategic master plan of road and transport development up to YR 2030. Within the master plan, priority projects up to 2015 were selected as a short-term measure. Also, pre-feasibility study for two urgent projects, namely; Gerezani Area Transport Enhancement and Tazara Intersection Improvement Project, were conducted under the master plan and both projects were decided to be implemented by Japan's Grant Aid Project.

In addition, other numerous road improvement projects are underway to help to calm traffic congestion problems. However, these roads are not fully functioned as a road network and the benefits derived from these projects are likely to be absorbed by the ever increasing traffic demand. Accordingly, it is now high time to review the 2008 Urban Transport Master Plan in consideration of current progress of the road development in Dar es Salaam. Thus, this road improvement plan was conducted in a course of technical transfer program under the Capacity Building Project for Improvement of Dar es Salaam Urban Transport (Consensus for Urban Transport and Policy Improvement in Dar es Salaam (CUPID)).

CUPID seeks to achieve four (4) outputs; 1) Coordinating groups (i.e., Secretariat and Steering Committee) are established with charter of operations, 2) Training needs are identified and transport planning capabilities of individuals involved in the Project are improved, 3) A series of policy recommendations are provided and compiled into a policy document, 4) Coordinated and prioritized plans/projects are studied and approved for immediate actions. This paper is concerned with the last output, selection and prioritization of short term projects for road improvement can mitigate the traffic congestion in Dar es Salaam.

1.2 OBJECTIVES

The World Bank has committed to allocating US$ 75 million up to 2016 for improvement of urban infrastructure in Dar es Salaam, namely *Dar es Salaam Metropolitan Development Project (DMDP),* and the projects under the DMDP include road improvements of the local roads under jurisdiction of

Kinondoni, Ilala and Temeke Municipalities. Also, African Development Bank (AfDB) has been preparing the country investment plan and is seeking for potential urban transport infrastructure projects in Dar es Salaam listed in the investment plan.

Through the meeting and consultation with the World Bank and AfDB, the CUPID project was requested to prepare the list of the priority road improvement projects, ensuring full consultation with the local stakeholders. Accordingly, the secretariat members of the CUPID have reviewed the 2008 Urban Transport Master Plan, evaluated the long list of the projects and selected priority projects and organized a series of discussions and workshops to build the consensus and ownership of the planning work. The objective of the task is to document all the activities that secretariat members were involved, for preparation of the road improvement plan.

1.3 TARGET AREA

This road improvement plan covers all national roads under TANROADS and other local roads under Municipalities within Dar es Salaam City.

1.4 PLANNING PRINCIPLE

Planning principle of this road improvement plan consists of three pillars; 1) effective investment, 2) accountability and 3) coordination amongst corresponding agencies.

1.4.1 Effective investment

As discussed earlier, the World Bank and AfDB did and will set aside some funding for development of urban transport infrastructure projects and were seeking for the possible infrastructure projects in Dar es Salaam. Also, other donors, including JICA, and Tanzanian counterparts have been injecting considerable amount of funds for development of both national and local roads in Dar es Salaam. Accordingly, the road improvement plan, which the CUPID project develops, should be a guide for all investors to understand where their money should go and what extent the project would generate benefits, if implemented.

1.4.2 Accountability

Investment of the road infrastructure may contribute to generating both economic and social impacts, such as reduction of traffic congestion and betterment of accessibility to social infrastructure. The scale of these impacts may vary depending on where these investments would be made. The road improvement plan should be prepared, considering the scale of all the impacts that may be derived from the project. To do so, the road improvement plan would be developed, fully utilizing the transport models and database, prepared during the 2008 Urban Transport Master Plan. Also, the multi-criteria analysis, that commonly used for selection of the priority projects, would be applied to the road improvement plan, to ensure accountability of the planning process for development of the road improvement plan.

1.4.3 Coordination amongst corresponding agencies

In the course of preparation of the road improvement plan, the CUPID project organized a series of secretariat meetings. Each member of the secretariat was fully informed and participate in the planning process for development of the road improvement plan. Also, each member was assigned for, for instance, preparation of long-list of the project, mapping of the projects, selection of evaluation criteria for multi-criteria analysis, and confirmation of the priority projects.

CHAPTER 2: GENERAL UNDERSTANDING

2.1 SOCIO-ECONOMIC CONDITION AND PREDICTION

(1) Population

According to the data from National Population and Housing Census (2003), the population of Tanzania mainland has increased nearly triple since 1967; the population extended from 11.9 million persons in 1967 to 17.0 million persons in 1978, 22.4 million persons in 1988 and to 33.4 million persons in 2002. Dar es Salaam has also experienced strong population growth and it is the fastest growing region in Tanzania mainland due to the inflow from other regions; the population expanded from 0.85 million persons in 1978 to 1.36 million persons in 1988 and to 2.49 million persons in 2002 (Table 2-1). Dar es Salaam occupied about 7.4 per cent of the national population in 2002. The average annual growth rate was 4.4 per cent between 1988 and 2002, which was nearly 1.5 point higher than that of the national average during the same period.

Table 2-1 Population Trends in Dar es Salaam, 1978, 1988 and 2002

Year	Tanzania Mainland Population	Dar es Salaam		
		Population	Average Annual Growth Rate	Per centage Share in Tanzania Mainland
1978	17,036,499	851,522		5.0%
1988	22,455,207	1,360,865	4.8%	6.1%
2002	33,461,849	2,487,288	4.4%	7.4%

Source: 2008 Urban Transport Master Plan (JICA)

Taking into account the two population projections in the past: NBS and DART projections, this Maser Plan employs a population projection for Dar es Salaam with a target of somewhere in between, as a medium growth case. In this projection, the population of Dar es Salaam will increase from 2.6 million habitants in 2003 to 4.0 million habitants in 2015 and to 5.8 million habitants in 2030 (See Table 2-2).

Table 2-2 Population Projection for Dar es Salaam

Year	Tanzania Mainland	Dar es Salaam Region		
	Population (1,000)	Population (1,000)	Average Annual Growth Rate	% share in Tanzania Mainland
2003	33,846	2,564		7.6%
2007	38,291	3,030	4.3%	7.9%
2010	38,291	3,400	4.1%	8.1%
2015	41,914	4,000	3.3%	8.3%
2020	48,366	4,600	2.8%	8.3%
2025	55,356	5,200	2.5%	8.2%
2030	63,299	5,800	2.2%	8.1%

Source: 2008 Urban Transport Master Plan (JICA)

Based on the economic growth assumption, the work population is projected to grow from 0.93 million persons in 2002 to 2.32 million persons in 2030, especially the work population in the tertiary sector will increase triple from 0.64 million persons in 2002 to 1.97 million persons in 2030 (See Table 2-3).

Table 2-3 Projection of Work Population

Year	Primary	Secondary	Tertiary	Total
2002	164,279	123,016	640,239	927,534
2030	116,000	232,000	1,972,000	2,320,000

Source: 2008 Urban Transport Master Plan (JICA)

(2) GDP

Tanzania has experienced relatively high economic growth since 2000. The average annual growth rate of real GDP at constant 1992 prices was 4.2 per cent between 1995 and 2000 and it increased to 6.1 per cent between 2000 and 2005 and 6.8 per cent between 2005 and 2009. The country has also experienced continued, steady population growth over the past decades.

The 2008 Urban Transport Master Plan employs an average economic growth rate of 5.5 per cent per annum for Tanzania Mainland, as a moderate-high economic growth scenario of the country. Taking into consideration dominance of tertiary economy in Dar es Salaam, the average annual growth rate of regional GDP is assumed to be 7.6 per cent between 2003 and 2010 and then it will gradually decrease to 6.1 per cent between 2025 and 2030.

Table 2-4 Economic Growth Assumption

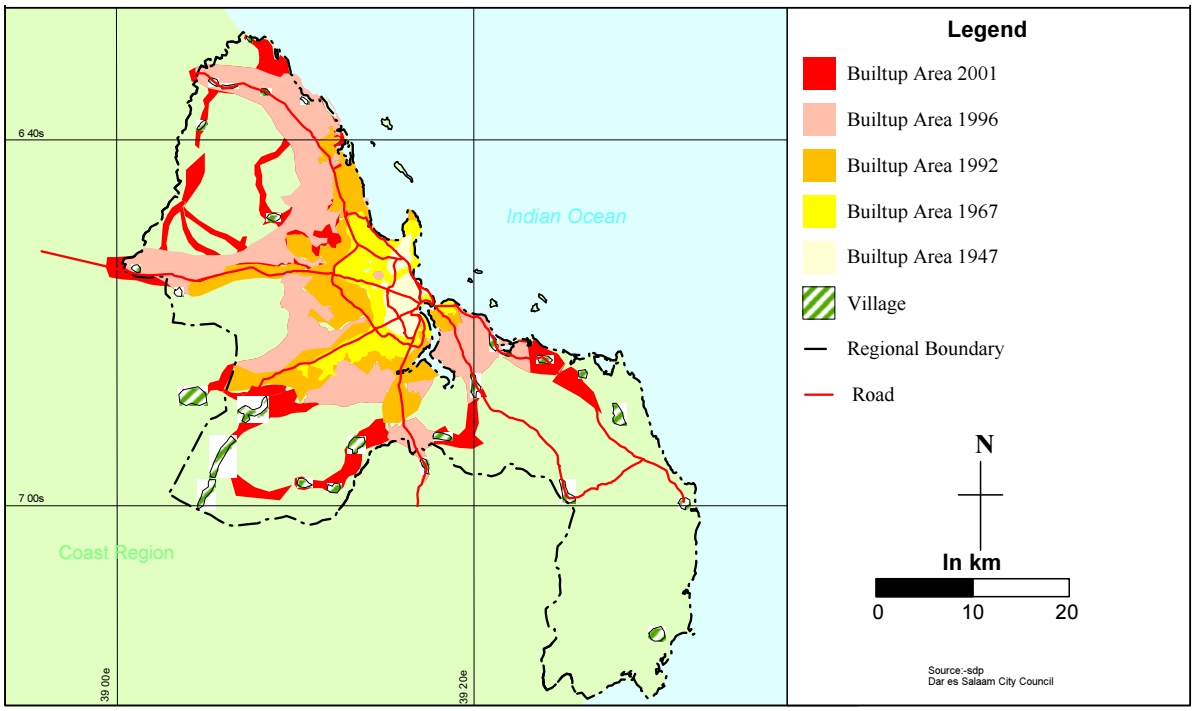
Year	TANZANIA			Dar es Salaam		
	GDP Growth Rate	GDP Percapita Growth Rate	Percapita GDP 2003=100	GRDP Annual Growth Rate	GRDP Percapita Growth Rate	Percapita GRDP 2003=100
2003-2010	5.5%	2.5%	119	7.6%	3.5%	127
2010-2015	5.5%	2.6%	135	7.0%	3.6%	152
2015-2020	5.5%	2.7%	155	6.7%	3.7%	182
2020-2025	5.5%	2.8%	177	6.4%	3.8%	220
2025-2030	5.5%	2.8%	204	6.1%	3.8%	265

Source: 2008 Urban Transport Master Plan (JICA)

(3) Urban Structure

Looking at the urban growth pattern since 1947 (Figure 2-1), urban area has expanded significantly along the coastline and the major arterial roads including Bagamoyo, Morogoro, Nyerere and Kilwa Road, resulting into a mono-centric and radial development pattern. Until the 1940s, the built-up area was only limited to the area within 5 km radius from the City Centre. For the next two decades in the 1970s and 1980s, the city experienced a rapid urban expansion and population growth. The built-up area expanded to the areas within nearly 20 km radius from the City Centre, especially along the major arterial roads. Since the 1990s, urban expansion or sprawl accelerated in the outskirts of

the city, and development activities have extended to the areas with nearly 30 km radius, especially along Babamoyo and Morogoro roads.



Source: 2008 Urban Transport Master Plan (JICA)

Figure 2-1 Urban Expansion in Dar es Salaam from 1947 to 2001

2.2 ROAD NETWORK AND TRAFFIC CONDITION

(1) Current Road Network

The road network within Dar es Salaam extends to roughly 1,700 kilometers, of which approximately one-fourth is paved. The urban road network is anchored by a series of major roads, most being classed administratively as trunk and regional roads.

- In the 2008 Urban Transport Master Plan, the modelled road content aggregates to some 772 kilometers, including near 460 kilometers of national/regional (TANROADS) roads, as well as about 310 kilometers of roads under jurisdiction of local government.

- Due to recent and on-going road improvement projects, over 4-lane multi-lane roads network was established. These include, all or in part, Morogoro Road, Nyerere Road, Nelson Mandela Road, Sam Nujoma Road, as well as Rashidi Kawawa Road, Ali Hassan Mwinyi Road and Bibiti Road.

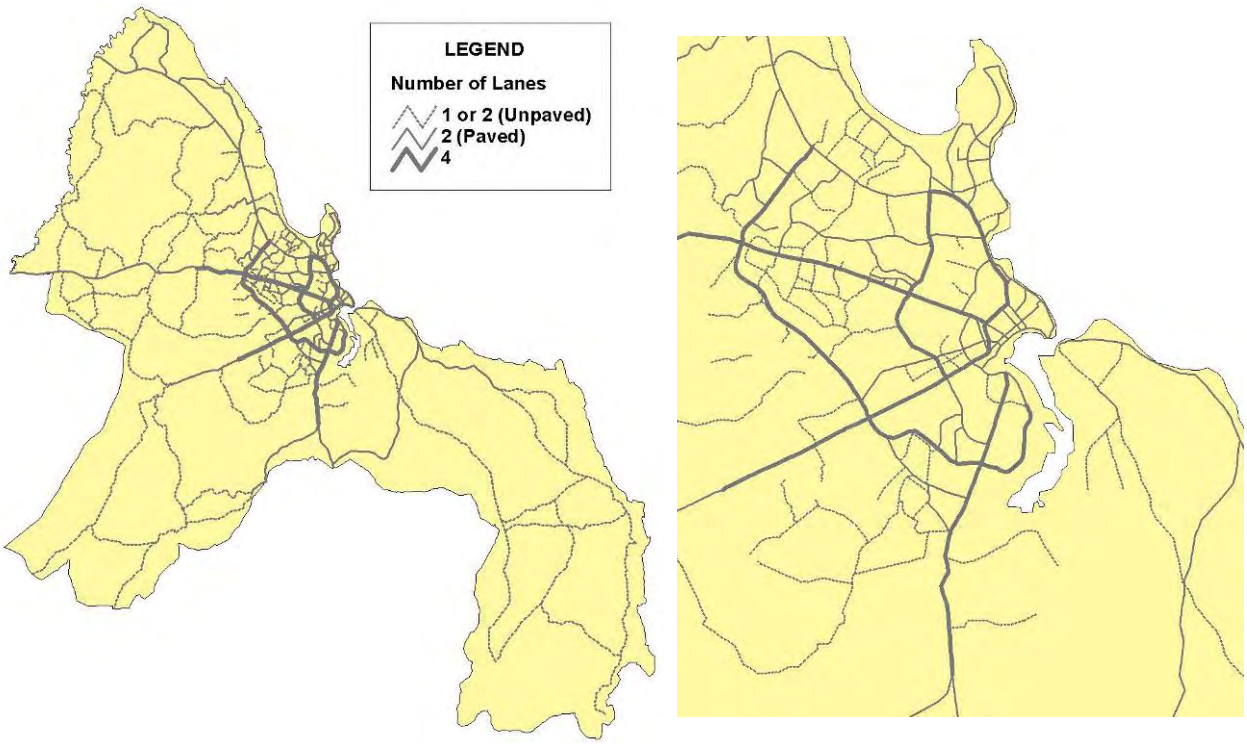
(2) Traffic Condition

Whereas the urban growth expands to the outside of city centre, business and commercial functions of the city are still centralized within Central Business District (CBD) area. The rapid urban growth in

Dar es Salaam exceeds the speed of the development of road infrastructure and public transportation so that serious traffic congestion occurs along all major trunk roads in morning and evening peak hours.

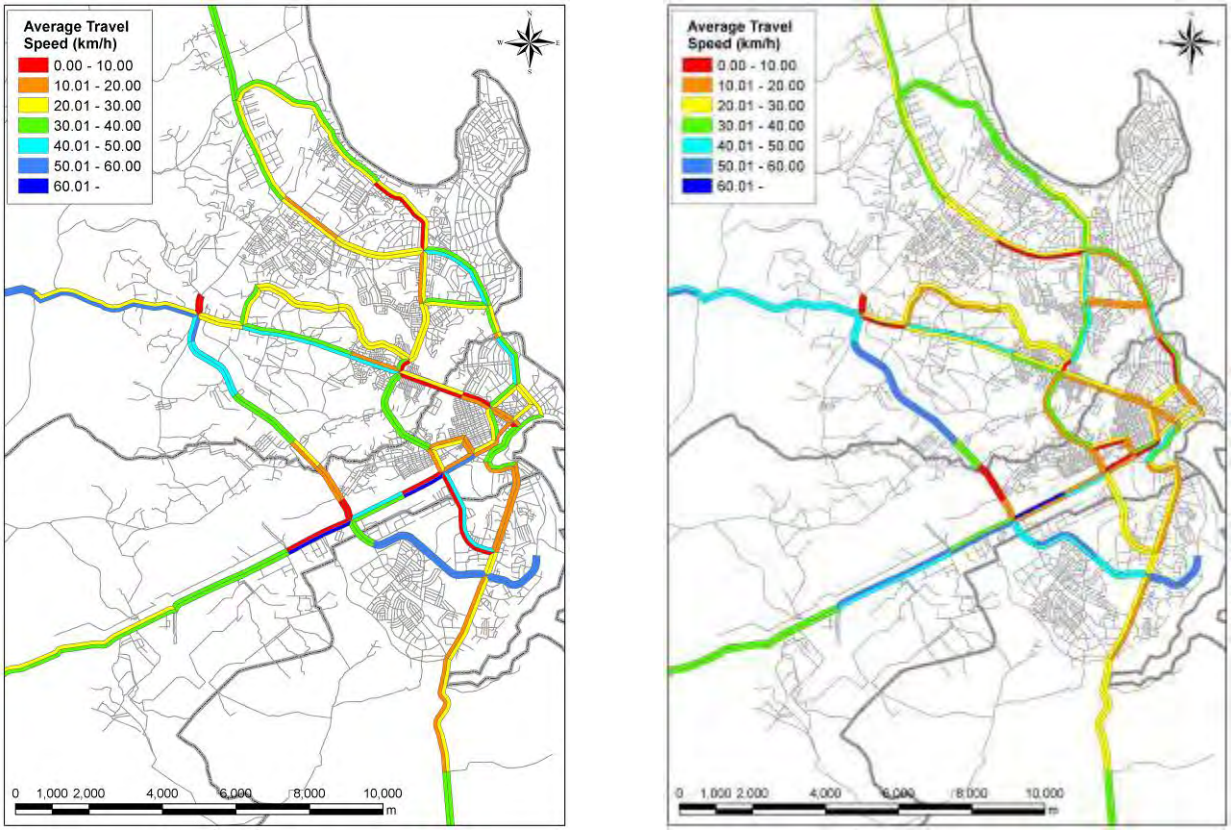
The 2008 Urban Transport Master Plan predicted that the service level of the roads in Dar es Salaam would worsen and travel speed would decrease from 25.8 km/h in 2007 to 8.5 km in 2030, if the proposed road development projects are not implemented.

Traffic congestion results from shortage of traffic capacity at intersections. Mwenge, Ubungo, Tazara and Chang'ombe Intersections especially are constantly congested and it is difficult to control without grade separation (e.g.: flyover or underpass). The result of travel speed survey in 2007 shows that travel speed near Ubungo and Tazara Intersections were 8 km/hr and 6 km/hr respectively in AM and PM peak hours.



Source: 2008 Urban Transport Master Plan (JICA)

Figure 2-2 Existing Road Network



AM Peak Hours **PM Peak Hours**

Source: 2008 Urban Transport Master Plan (JICA)

Figure 2-3 Travel Speed Survey Result

2.3 ON-GOING AND PLANNED PROJECTS

(1) Road Sector

As listed in the following tables, there are three key donors; JICA, World Bank and European Union, who are actively involved in the national road and local road development projects.

- While the project roads are not yet confirmed, considerable kilometres of local roads would be improved under the World Bank's DMDP, which allocates US$ 75 million up to 2016 for urban infrastructure in Dar es Salaam.

- New Bagamoyo Road is currently under upgrading works by JICA to a four-lane divided cross-section, with adequate median reserve for the provision of a future BRT busway. The project is expected to extend over some 13 kilometers between Mwenge and Wazo Hill Intersections. While recently committed, Gerezani Road and Tazara Intersection will be upgraded by JICA as well.

Other than those donor funded projects, TANROADs have completed design study on the improvement of Uhuru and Outer Ring Roads and seeks for the financer for those projects. NSSF have also tendered the concession project of the construction of the Kigamboni Bridge and awarded it to the Chinese contractor.

Table 2-5 Donor Funded On-going and Recently Completed Projects

Donor	Project Name	Outline
World Bank	CIUP	Upgrading to Bituminous Roads: 9.17 km Upgrading of Gravel Roads: 54 km Upgrading of Footpaths: 14 km Average Road Width: 7-9 m
	DMDP	Upgrading of Regional Roads Selection of priority roads completed. Detailed design study awaiting.
European Union	Nelson Mandela Road	Length: 16 km (Dar es Salaam Port-Ubungo) 4-lane Type: Rehabilitation and upgrading Completed in 2011
JICA	Kilwa Road	Length: 11.6 km (Kilwa-Mbagala Rangi3) 4-lane Type: Widening 2006 – present
	New Bagamoyo Road	Length: 12.9 km (Mwenge-Tegeta) 4-lane Type: Widening 2009 – present
	Gerezani Road	Length: 1.3 km (Kamata-Kilwa) 4-lane Type: Widening Under detailed design stage
	Tazara Flyover	Grade separation of interchange (Nyerere Road – Nelson Mandela Road) 4-lane bridge Basic design completed in 2011

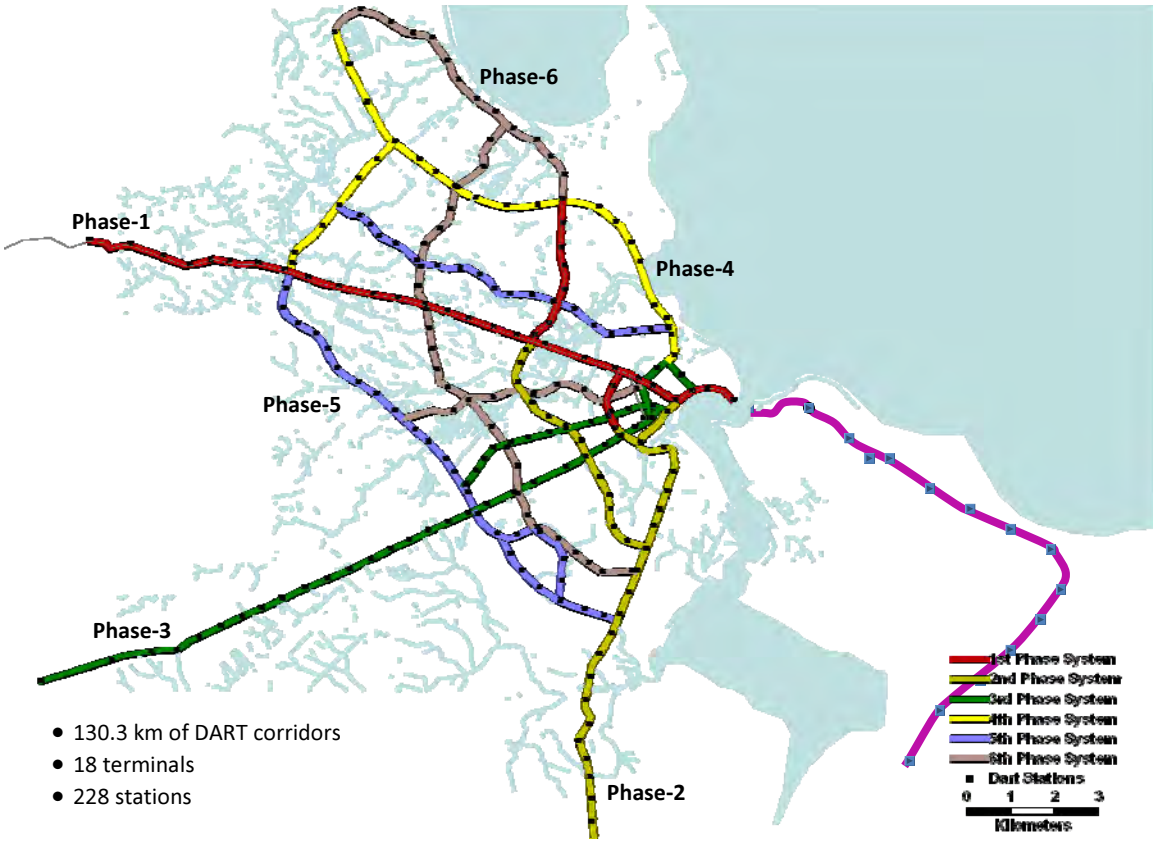
Table 2-6 Other On-going and Planned Projects

Agency	Project Name	Outline
TANROADS	Old Bagamoyo Road Widening	5.3 km 4-lane Type: Widening Feasibility study completed
	Uhuru Road Widening	4.8 km 4-lane Type: Widening Feasibility study completed
	Outer Ring Road Construction	13.2 km 4-lane with service roads Type: New construction Feasibility Study and Detailed Design completed.
NSSF	Kigamboni Bridge Construction	A total 800 m length of cable-stay bridge 4-lane Tender for concession of the project completed.

(2) Public Transport Sector

BRT system is expected to be indispensable as a solution to mitigate traffic congestion in Dar es Salaam in replace of Dala-dala mini bus service. Construction of the BRT corridor of Phase-1 along Morogoro and Kawawa Roads has been started since April 2012 and expected to complete in 2015.

- The BRT Phase I project extends over approximately 21 kilometers, mostly coinciding with Morogoro Road, but also including sections of Kawawa and Msinbazi Roads. Reconstruction allows the installation of dual (one in each direction) BRT busways, as well as median-sited stations every approximately 500-700 meters. The adjustment of the overall road cross-section will vary by sub-section and depending on current configurations and rights-of-way. Project infrastructure is under sponsorship of the World Bank.



Source: DART Agency

Figure 2-4 Planned BRT Network

(3) Dar es Salaam Metropolitan Development Project (DMDP)

The proposed Dar es Salaam Metropolitan Development Project (DMDP) is expected to allocate US$ 75 million for improvement of urban infrastructure (e.g.: road, drainage, water supply, sanitation and solid waste management). According to the World Bank, the project may have four interrelated components supporting the project development objective: (i) institutional development for improved metropolitan and council management systems; (ii) urban infrastructure investments; (iii) land management systems; and (iv) support for project management.

CHAPTER 3: URBAN ROAD IMPOVEMENT PLAN

3.1 METHODOLOGY

As discussed earlier, the road improvement plan is suggested to be developed, with full accountability and participation of all the key stakeholders ensured. Accordingly, the following conceptual methodology of this plan was discussed and agreed among the secretariat members. Following the methodology, each member was assigned to prepare a long-list of projects, mapping of the projects, selection of evaluation criteria for multi-criteria analysis, and confirmation of the priority projects. Also, to ensure accountability of the planning process for development of the road improvement plan, the multi-criteria analysis, as commonly used for selection of priority projects, was applied to the road improvement plan.

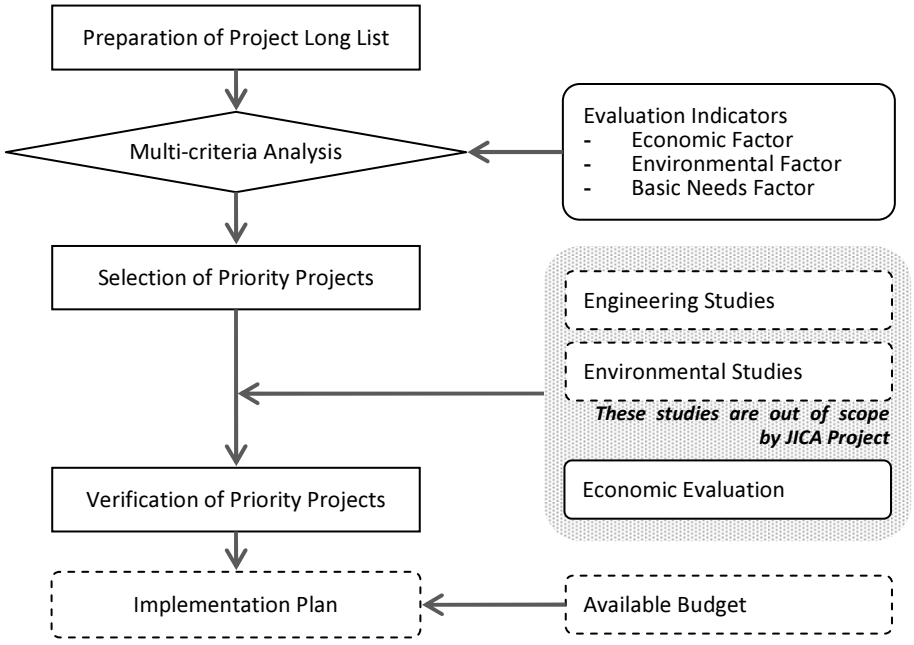


Figure 3-1 Conceptual Methodology

3.2 PREPARATION OF LONG-LIST OF PROJECT

During the secretariat meeting, it was found that each Municipality proposed their own priority projects without consensus of other Municipalities and consideration of future national road improvement project. Accordingly, secretariat members from Municipalities were requested to list up a long list of the road improvement projects in his/her municipality. At the same time, the CUPID project prepared a list of the on-going and planned national road improvement projects under the

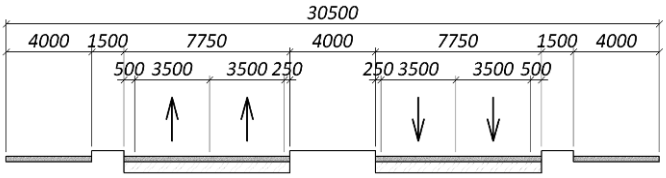
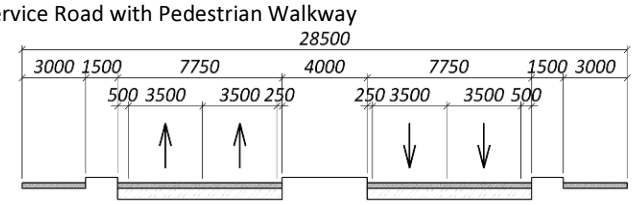
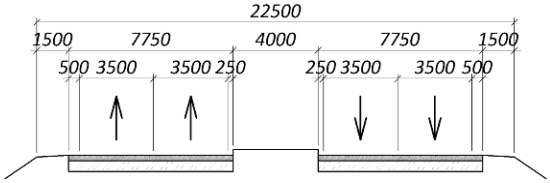
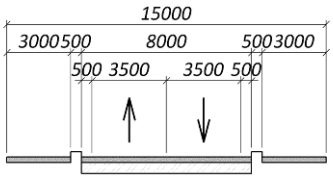
TANROADs. Then, the CUPID project compiled all the long-listed projects by adding proposed road improvement projects by the 2008 Urban Transport Master Plan.

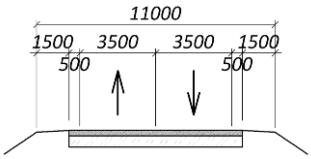
Accordingly, a total of 116 road improvement projects with road length of 420 km were identified as long-listed road improvement projects.

The preliminary project costs of these road improvement works were estimated, considering the road classification and typical cross section of each road classification. The unit cost of the project cost was estimated, referring to the detailed design of the recent Japan's Grant Aid Projects and the detailed design of Outer Ring Road project by TANROADS. Various unit costs were estimated in consideration with different cross sections of road classifications (Primary Arterial and Secondary Arterial Roads) and the topography of the road (flat and rolling), assuming the earthwork volume required for each topography (see the typical cross sections applied for estimation of the project cost in Table 3-1).

As a result, the unit costs of the road improvement works by different classification and topography were estimated, ranging from 1.54 to 4.06 million USD (see Table 3-2). The long-list of projects with estimated project cost is summarized in the Table 3-3.

Table 3-1 Typical Cross Sections for Each Road Type

Classification	Typical Cross Section
Primary Arterial	4-lane with Service Road 
	4-lane without Service Road with Pedestrian Walkway 
	4-lane without Service Road 
Secondary Arterial	2-lane with Pedestrian Walkway 

	2-lane without Pedestrian Walkway 

Source: CUPID

Table 3-2 Unit Costs for Each Road Type

Classification	Number of Lane	Terrain	Unit	Unit Cost (Mil. US$)
Primary Arterial	4-lane with Service Road	Flat	km	3.68
		Rolling	km	4.06
	4-lane without Service Road with Pedestrian Walkway	Urban	km	3.60
	4-lane without Service Road	Flat	km	3.36
		Rolling	km	3.63
Secondary Arterial	2-lane with Pedestrian Walkway	Flat	km	1.63
		Rolling	km	1.86
	2-lane without Pedestrian Walkway	Flat	km	1.38
		Rolling	km	1.54
Bridge		-	Sq.m	0.005

Source: CUPID

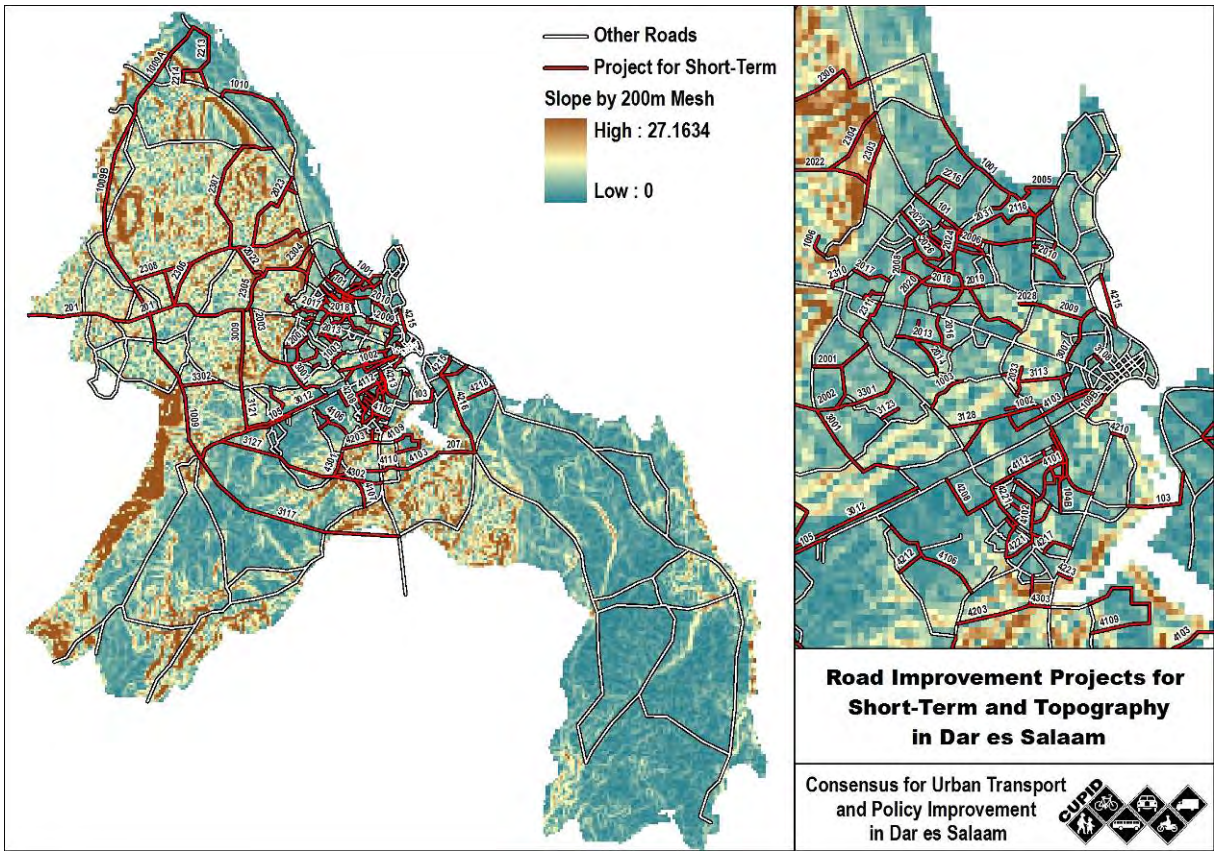


Figure 3-2 Topography (Terrain Condition)

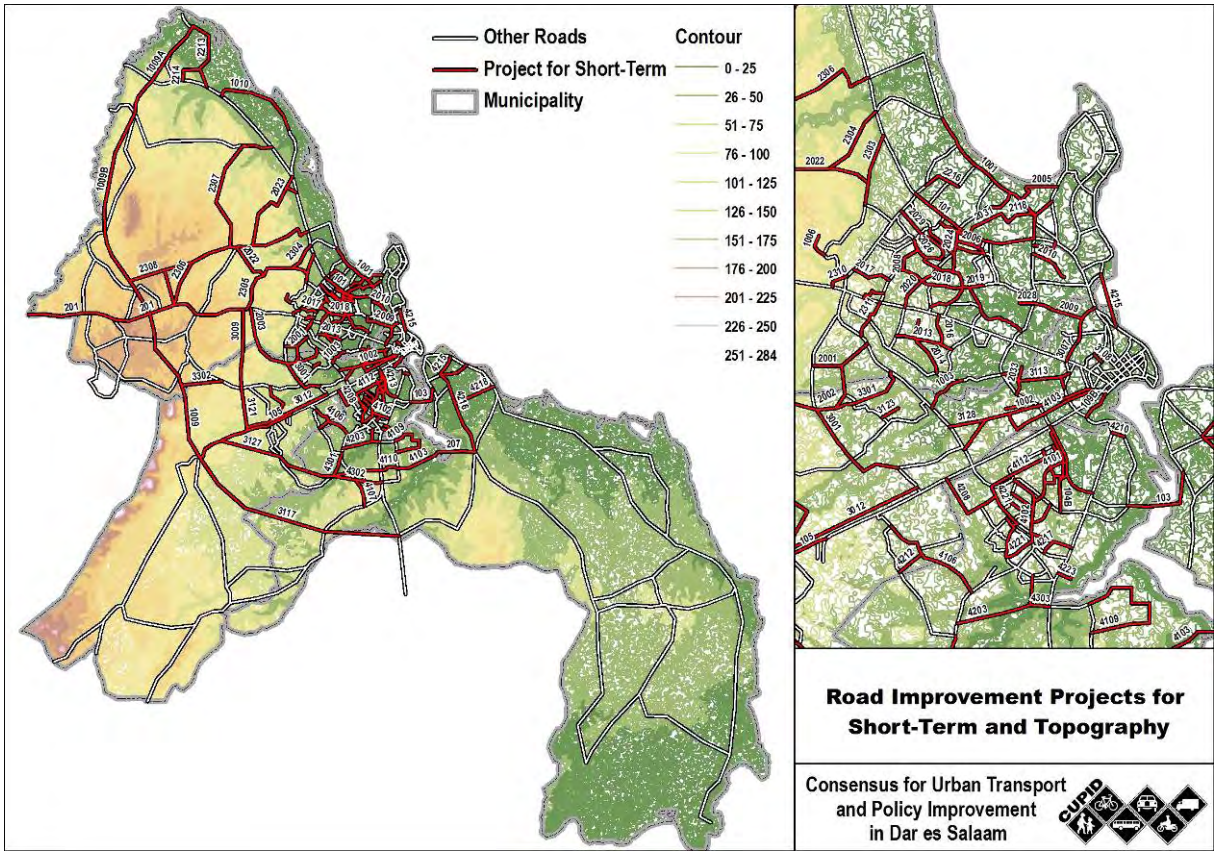


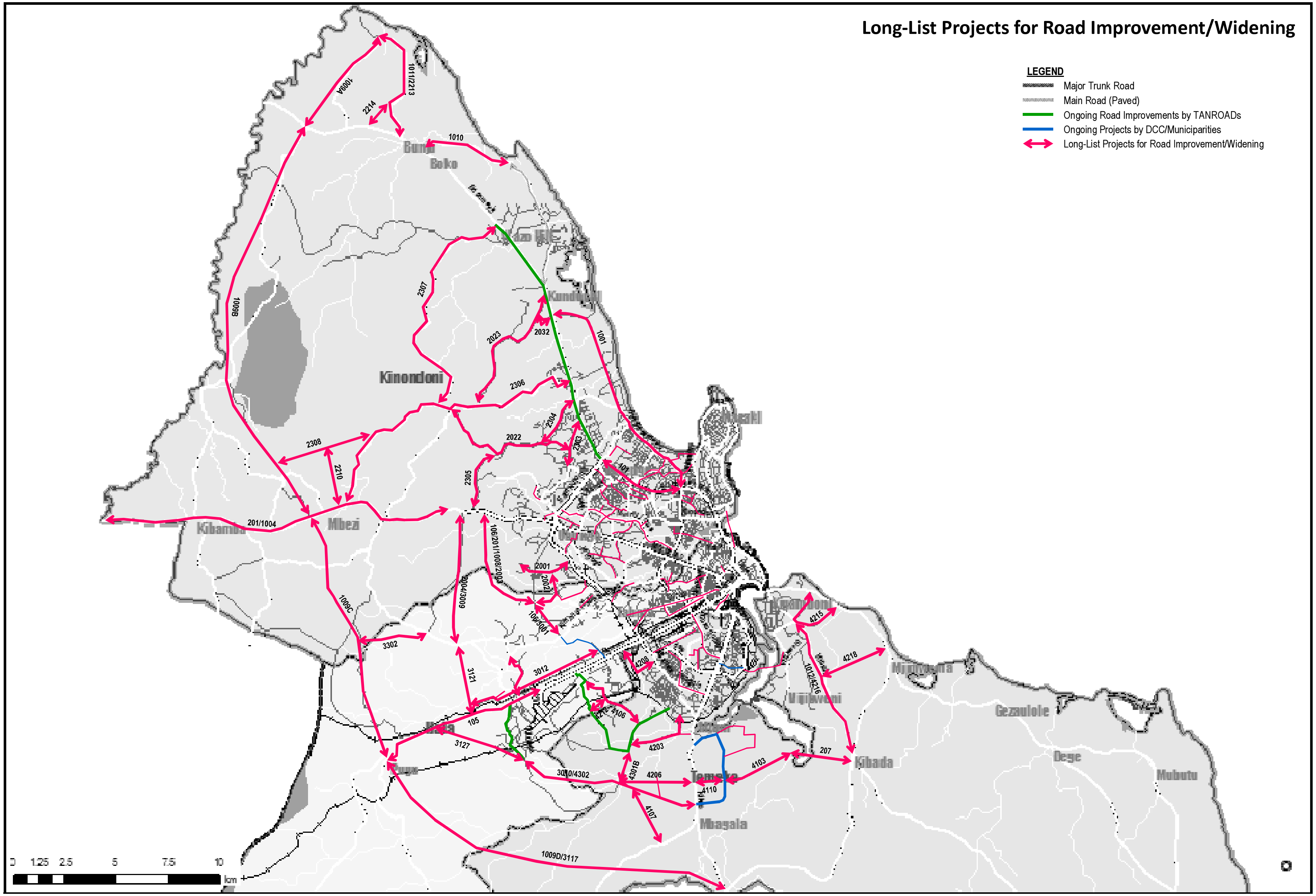
Figure 3-3 Topography (Elevation)

Table 3-3 Long-List of Project

S/N	Project Name	Type of Project	No. of Lane	Length (km)	Project Cost (Million US$)	Jurisdiction
0101	New Bagamoyo Road Widening (Morocco-Mwenge)	Widening	4	4.3	15.6	TANROADS
0103	Kigamboni Bridge (Bridge Length: 800m) and Access Road Improvement	Upgrading and new construction	4	4.0	109.0	TANROADS
0104B	Inner Ring Road/Chang'ombe Road Widening	Widening	4	4.6	16.6	TANROADS
0105	Nyerere Road Widening	Widening	4	8.7	4.9	TANROADS
0109B	Gerezani St./Sokoine Dr. Widening	Widening	4	1.5	31.4	TANROADS
0201	Morogoro Road Widening	Widening	4	18.0	65.2	TANROADS
0207	Mbagala-Kigamboni Access Road/Bridge Development (Bridge Length: 400m)	Upgrading and new construction	2	5.0	31.1	TANROADS
1001	Old Bagamoyo Road Widening	Widening	4	12.0	54.3	TANROADS
1002	Uhuru Road Widening	Widening	4	4.8	17.4	TANROADS
1003	Tabata-Kigogo Road	Upgrading	2	1.6	2.6	TANROADS
1005	Rose Garden Road Bypass	Upgrading	2	1.5	2.4	TANROADS
1006	Dar es Salaam University Road	Upgrading	2	1.0	1.6	TANROADS
1007	External - Kigogo	Upgrading	2	0.6	3.3	TANROADS
1009A	Outer Ring Road (Bunju-Mbweni)	New construction	2	6.9	10.6	TANROADS
1009B	Outer Ring Road (Victoria-Bunju)	New construction	4	22.0	96.3	TANROADS
1009C	Outer Ring Road (Kiltex-Victoria)	New construction	4	13.2	60.5	TANROADS
1010	New Bagamoyo Subsidiary Road	Upgrading	2	6.6	10.2	TANROADS
2001	External	Upgrading	2	2.6	4.2	Kinondoni
2002	Kisukuru	Upgrading	2	1.9	3.1	Kinondoni
2003	Kilungule	Upgrading	2	6.0	11.0	Kinondoni
2005	Tanesco - Soko la Samaki	Upgrading	2	2.4	3.9	Kinondoni
2006	Sokoni - Makumbusho	Upgrading	2	1.3	2.1	Kinondoni
2007	MMK	Upgrading	2	1.2	2.0	Kinondoni
2008	Mabatini	Upgrading	2	1.1	1.8	Kinondoni
2009	Hananasif - Upanga	Upgrading and Bridge Construction	2	5.0	13.3	Kinondoni
2010	Biafra - Kinondoni Shamba	Upgrading	2	1.4	2.3	Kinondoni
2011	Best Bite - Dawasco	Upgrading	2	0.9	1.5	Kinondoni
2012	Best Bite	Upgrading	2	0.7	1.1	Kinondoni
2013	Mburahati NIT	Upgrading	2	1.9	3.1	Kinondoni
2014	Binti Kayenga	Upgrading	2	1.3	2.1	Kinondoni
2015	Tipo Top	Upgrading	2	0.3	0.5	Kinondoni
2016	Midizini	Upgrading	2	1.0	1.6	Kinondoni
2017	Simu 2000	Upgrading	2	1.8	2.9	Kinondoni
2018	Makanya	Widening and Re-surfecing	2	5.1	9.9	Kinondoni
2019	Tandale Kisiwani	Upgrading	2	0.8	1.3	Kinondoni
2020	Kilimani	Upgrading	2	1.3	2.1	Kinondoni
2021	Alimauwa	Upgrading	2	1.4	2.3	Kinondoni
2022	Makongo - Goba	Upgrading	2	8.5	13.2	Kinondoni
2023	Kizudi	Upgrading	2	7.8	12.0	Kinondoni
2024	Kajenge	Widening and Re-surfecing	2	1.9	3.1	Kinondoni
2026	Qubba	Upgrading	2	3.0	4.9	Kinondoni
2027	Sayansi	Upgrading	2	0.8	1.3	Kinondoni
2028	Mafere	Upgrading	2	1.3	2.1	Kinondoni
2029	Nzasa	Upgrading	2	1.2	2.0	Kinondoni
2030	Polisi Kisiwani	Upgrading	2	0.7	1.1	Kinondoni
2031	Journalism	Upgrading	2	1.6	2.6	Kinondoni
2032	IPTL - Salasala	Upgrading	2	3.6	5.5	Kinondoni
2033	Madaba	Upgrading	2	0.5	2.7	Kinondoni
2034	Ubungo Plaza	Upgrading	2	1.0	1.6	Kinondoni
2112	Makumbusho P/S - Sayansi	Surfacing of Road	2	1.0	1.6	Kinondoni
2116	Makanya - Tandale Sokoni - Uzuri	Upgrading	2	1.6	2.6	Kinondoni
2118	Africana - Goba - Kinzudi	Upgrading	2	1.6	2.6	Kinondoni
2210	Makabe	Upgrading	2	3.3	5.1	Kinondoni
2213	Mbweni - Mpiji	Upgrading	2	7.0	10.8	Kinondoni
2214	Mbweni - Bunju	Upgrading	2	8.0	12.3	Kinondoni
2215	Maandazi	Upgrading	2	0.8	1.4	Kinondoni
2216	Keyz	Upgrading	2	1.3	2.1	Kinondoni
2303	Ring Road (Makongo-Dar es Salaam Univ.)	Upgrading	2	2.6	4.0	Kinondoni
2304	Ring Road (Kawe-Kimara)-1	Upgrading	2	2.7	4.1	Kinondoni

S/N	Project Name	Type of Project	No. of Lane	Length (km)	Project Cost (Million US$)	Jurisdiction
2305	Ring Road (Kawe-Kimara)-2	Upgrading	2	3.3	5.1	Kinondoni
2306	Kawe - Mbezi	Upgrading	2	16.8	25.8	Kinondoni
2307	Access road for outer ring road	Upgrading	2	13.1	20.2	Kinondoni
2308	Access road for outer ring road	Upgrading	2	5.7	10.3	Kinondoni
2310	Ubungo Bypass-1	Upgrading	2	0.6	1.0	Kinondoni
2311	Ubungo Bypass-2	Upgrading	2	0.9	1.4	Kinondoni
3001	Vingunguti-Baracuda-kisukuru-Maji Chumvi	Upgrading	2	10.0	16.3	Ilala
3002	Segerea -Majumba Sita	Upgrading	2	3.0	6.6	Ilala
3003	Lindi St.	Rehabilitation	2	1.0	1.6	Ilala
3007	United Nations Roads	Widening, overlaying and improvement of drainage system	2	3.0	4.9	Ilala
3009	Segerea - Bonyokwa - Kimara Mwisho	Upgrading.	2	7.0	10.8	Ilala
3012	Vingunguti - Transit motel (Karakata) - Kiltex	Upgrading (Gravel Road)	2	11.0	17.9	Ilala
3013	Shingo Feni	Upgrading	2	1.8	2.9	Ilala
3108	Olympio	Upgrading	2	1.8	2.9	Ilala
3113	Jangwani Road	Upgrading	2	4.0	6.5	Ilala
3117	Pugu - Majohe - Mbodole	Upgrading	2	16.0	19.2	Ilala
3121	Ulongoni (Kiltex) - Bangulo - Kinyerezi	Upgrading (Gravel Road)	2	10.0	17.2	Ilala
3123	Mawenzi - Tabata - Relini	Upgrading (Gravel Road)	2	2.0	3.3	Ilala
3126	Darajani - Kinyerezi - Zimbili	Upgrading (Gravel Road)	2	2.0	3.3	Ilala
3127	Kiltex - Liku - Mazizini - Relini	Upgrading (Gravel Road)	2	7.0	10.8	Ilala
3128	Rozana - Sukita Tabata Mandela	Upgrading (Gravel Road)	2	2.0	3.3	Ilala
3301	Makuburi - Mabibo	Upgrading	2	2.7	5.9	Ilala
3302	Accsess road for outer ring road	Upgrading	2	3.5	5.6	Ilala
4101B	Chang'ombe Road-2	Widening	2	1.9	3.0	Temeke
4102	Temeke - Mbagala	Widening	4	3.5	12.1	Temeke
4103	Mbagala kuu - Tuangoma road	Upgrading	2	8.0	12.3	Temeke
4105	Yemen Road	Upgrading	2	1.3	24.9	Temeke
4106	Mwinyi Road	Upgrading	2	2.5	4.2	Temeke
4107	Nzasa-Kilungule - Makangarawe (Buza)	Upgrading	2	8.2	12.6	Temeke
4109	Kijichi - Nasaco Road	Upgrading	2	4.5	7.5	Temeke
4110	Mwanamtoti Road	Upgrading	2	3.0	4.6	Temeke
4111	Zakhem - Kiburugwa - Kingugi Road	Upgrading	2	4.0	6.5	Temeke
4112	Mwakalinga Road	Upgrading	2	1.8	2.9	Temeke
4201	Wailes Road	Upgrading	2	5.9	11.2	Temeke
4202	TCC	Upgrading	2	0.5	1.0	Temeke
4203	Mtoni Mashine ya Maji Road	Upgrading	2	3.5	7.3	Temeke
4206	Mangaya - Kiburugwa Road	Upgrading	2	5.6	10.2	Temeke
4208	Sandali Road (Mchicha)	Upgrading	2	2.5	4.2	Temeke
4209	Chaga Road	Upgrading	2	0.8	1.3	Temeke
4210	Mivinjeni Road	Upgrading	2	1.0	1.6	Temeke
4211	Mahunda 2 Road	Upgrading	2	1.0	1.6	Temeke
4212	Lumo - Kilakala Road	Upgrading	2	3.0	4.9	Temeke
4213	Chuma Road	Upgrading	2	1.0	1.6	Temeke
4214	Uruwila Road	Upgrading	2	0.2	0.3	Temeke
4215	Posta Road	Upgrading	2	2.0	0.3	Temeke
4216	Kibada - Tungi Road	Upgrading	2	5.7	8.0	Temeke
4217	Mkuranga Road	Upgrading	2	0.6	1.0	Temeke
4218	Tungi - Mjimwema Road	Upgrading	2	2.0	2.4	Temeke
4219	Ruvuma Road	Upgrading	2	1.0	1.6	Temeke
4220	Ndalala Road	Upgrading	2	1.0	1.6	Temeke
4221	Dr. Omary Road	Upgrading	2	4.0	6.5	Temeke
4222	TRA Road	Upgrading	2	1.0	1.6	Temeke
4223	Somali Road	Upgrading	2	1.0	1.6	Temeke
4301B	Access Road for Ring Road	Upgrading	2	3.0	4.6	Temeke
4302	Ring Road	Upgrading	2	6.5	7.9	Temeke
4303	Mtoni New Road	New Construction	2	6.0	13.3	Temeke
Total			-	**448.0**	**1,093.8**	-

Figure 3-4 Long-List Projects (Entire City)



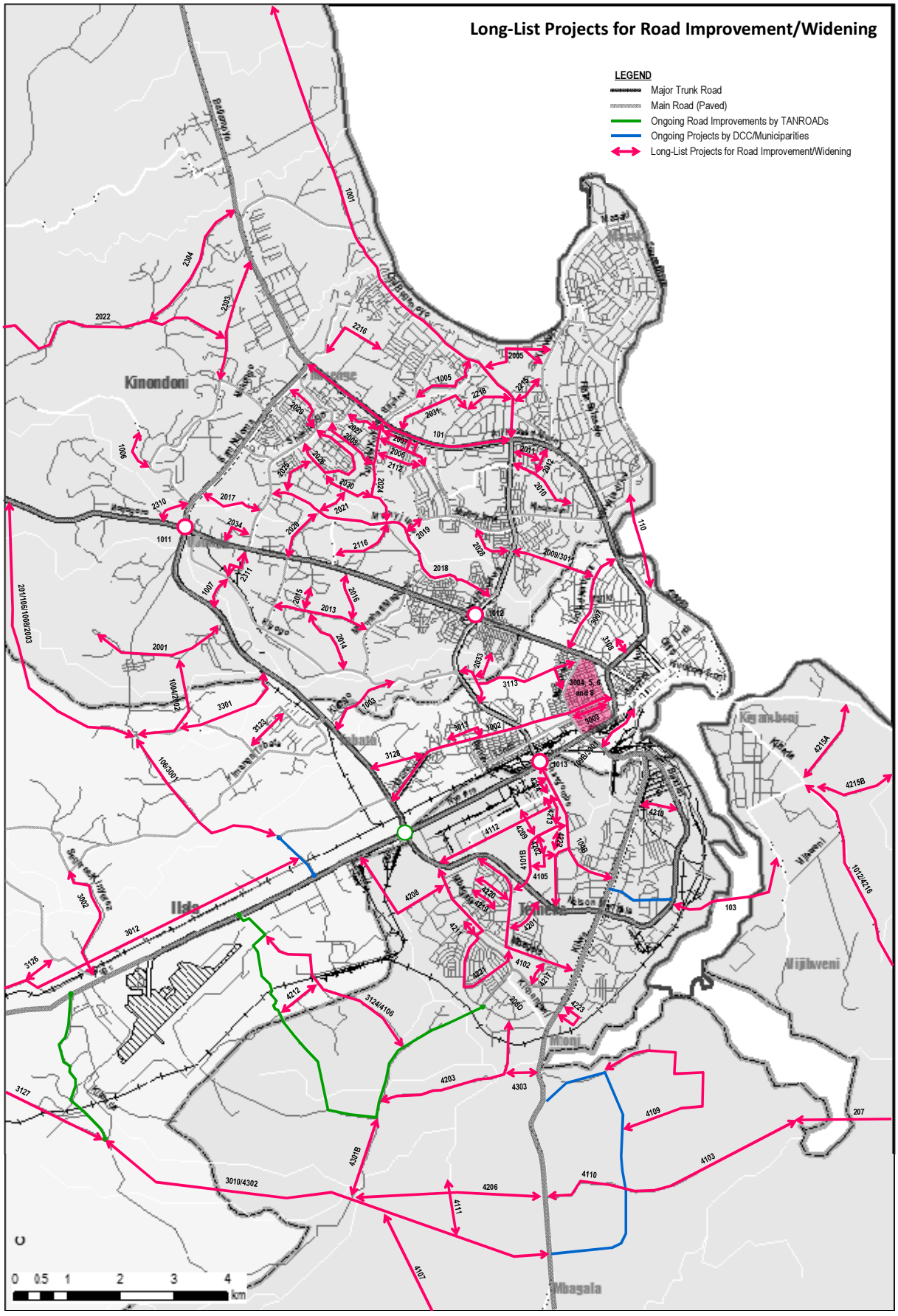


Figure 3-5 Long-List Project (City Center and Surrounding Area)

3.3 EVALUATION METHOD AND CRITERIA APPLIED

A multi-criteria analysis was employed to determine the priority projects from amongst the project long-list. This multi-criteria analysis had to involve all the stakeholders who assisted in identification of the criteria, allocation of weights and quantitative assessment of the project. To accomplish this, the long listed projects were first evaluated via a quantitative appreciation by which the projects were appreciated and evaluated against a set of decision criteria: (i) Economic and technical criteria, (ii) Environmental criteria and (iii) Basic need criteria.

- **Economic and technical criteria** evaluated how the project would contribute to future economic development of the region both positively and negatively. These criteria included project size, reliable traffic service, traffic demand, cost effectiveness, regional development and logistics network.

- **Environmental criteria** assessed the environmental impact causes by the project. Road and bridge improvement projects would adversely impact on the following natural and social environment: noise and vibration, air quality, and involuntary resettlement.

- **Basic need criteria** evaluated how the project would contribute to poverty reduction in surrounding area. These criteria included impact to the regional economy, impact to the people under poverty line, and accessibility to roads.

These evaluation criteria and its weights were discussed and agreed by secretariat members through secretariat meetings.

Table 3-4 Multi-criteria Analysis for Project Selection

1st Level Criteria	2nd Level Criteria	3rd Level Criteria	Evaluation Items	Weights	
				National Roads	Local Roads
Economic criteria	Workability	Project size	Project cost	6.3 %	5.7 %
	Sustainability	Reliable traffic service	All weather traffic	8.5 %	6.1 %
	Economy	Traffic demand	Daily traffic volume	10.0 %	10.9 %
			Volume capacity ratio	13.9 %	9.1 %
		Cost effectiveness	Cost/traffic volume	15.9 %	9.3 %
		Regional development and logistics network	External trip rate connectivity	8.8 %	5.9 %
Environmental criteria	Pollution	Noise and vibration	Heavy vehicle traffic volume	6.2 %	5.2 %
		Air quality	Traffic volume and travel speed	6.2 %	7.7 %
	Social Environment	Involuntary resettlement	Resettlement and land acquisition	10.1 %	6.9 %
Basic need criteria	Poverty Reduction	Impact to the regional economy	No. of population in project site	5.2 %	12.9 %
		Impact to the poverty reduction	No. of population in poverty in project site	4.1 %	11.1 %
		Availability of roads	Road length/households	4.6 %	9.2 %

3.4 EVALUATION OF LONG-LISTED PROJECTS

As discussed above, a long-list of the road improvement projects was prepared while evaluation criteria for selecting priority projects were determined. This section explores the evaluation process of these projects. It also provides inputs for the selection of priority projects as well as preparation of the short and mid-term road improvement plan in Dar es Salaam. In the course of the evaluation works, evaluation criteria for these projects were prepared in a numerical manner, using the transport models and database prepared in the 2008 Urban Transport Master Plan. Each evaluation criteria were scored, mostly from 1 to 5. Once all projects were scored by each evaluation criterion, the multi-criteria analysis was then conducted to estimate the total score of the project (see the following formula) and rank all the long-listed projects by using the weight of each evaluation criterion, as demonstrated in the previous Section.

$$\text{Total Score} = \sum a_i \times b_i$$

Where,

a_i: Score of each evaluation criteria

b_i: Weight for each evaluation criteria

(1) Economic criteria

Project cost

Project cost was omitted from the evaluation criteria of the long list of the projects, since the evaluation exercise in the road improvement planning was done without consideration of budgetary constraints.

All weather traffic

It was observed at the time of the project that the gravel road and road with poor drainage infrastructure are prone to be impassable after or during the heavy rain. Accordingly, the project which contains impassable road section was scored 3 points, while the project that doesn't contain impassable road section was scored 1 point.

- 3: Impassable section exists along existing road
- 1: Impassable section does NOT exists along existing road

Daily traffic volume

The daily traffic volume of the road projects was estimated based on the traffic demand forecast in the year of 2015, using the road network prepared in the CUPID project and the transport model developed in the 2008 Urban Transport Master Plan. Figure 3-6 shows the result of the traffic demand forecast. The daily traffic volume of each project was scored as follows:

- 5: more than 40,000 PCU[1]/day in 2015,
- 4: between 20,000 and 40,000 PCU/day,
- 3: between 10,000 and 20,000 PCU/day,
- 2: between 5,000 and 10,000 PCU/day,
- 1: less than 5,000 PCU/day.

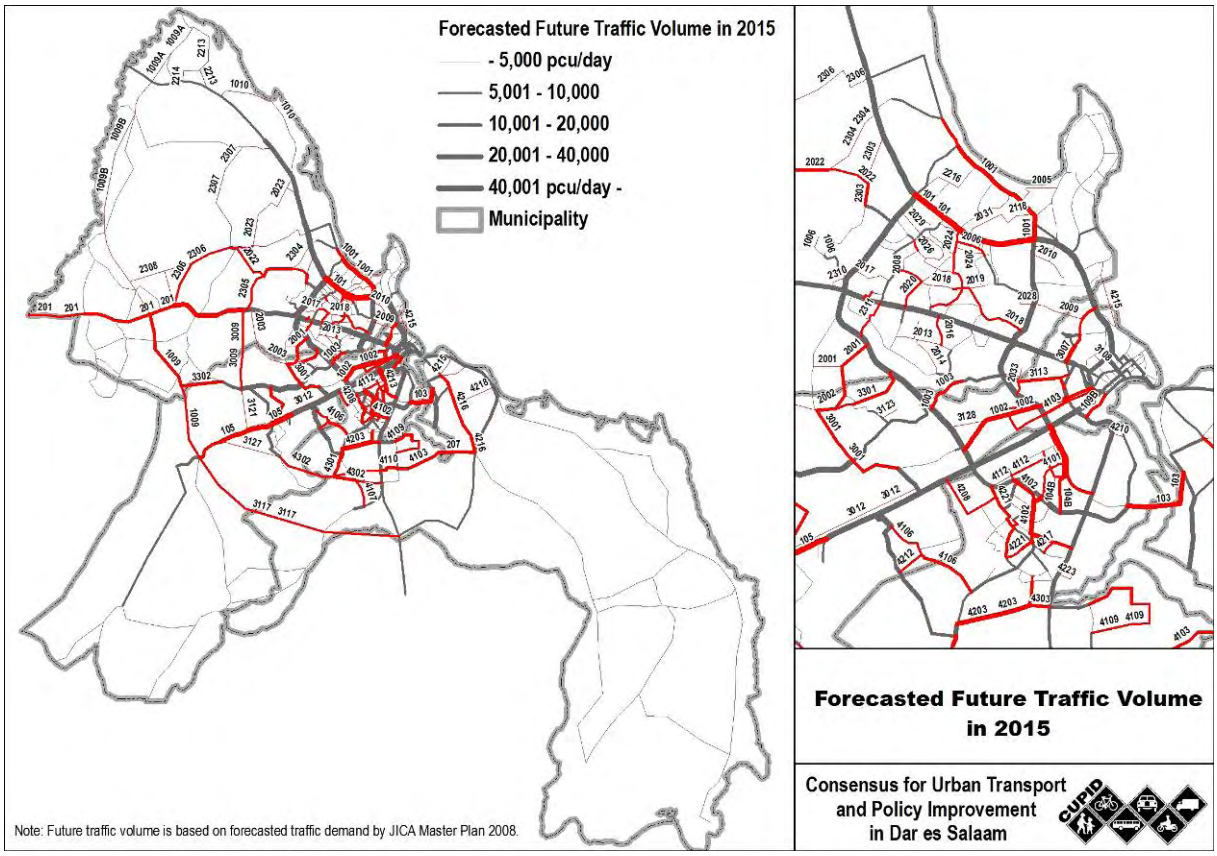


Figure 3-6 Traffic Demand Forecast

Volume capacity ratio

The volume capacity ratio (VCR) of road improvement project was estimated based on the traffic demand forecast, conducted in the CUPID project and road capacity, proposed in the 2008 Urban Transport Master Plan. Figure 3-7 shows future volume capacity ratio of each project road in 2015. The volume capacity ratio of each project was scored as follows:

- 5: more than 1.25,
- 4: between 1.00 and 1.25,
- 3: between 0.75 and 1.00,
- 2: between 0.50 and 0.75,
- 1: less than 0.50.

[1] Passenger Car Unit (PCU): The number of passenger cars that will result in the same operational conditions as a single heavy vehicle of a particular type under specified roadway, traffic, and control conditions.

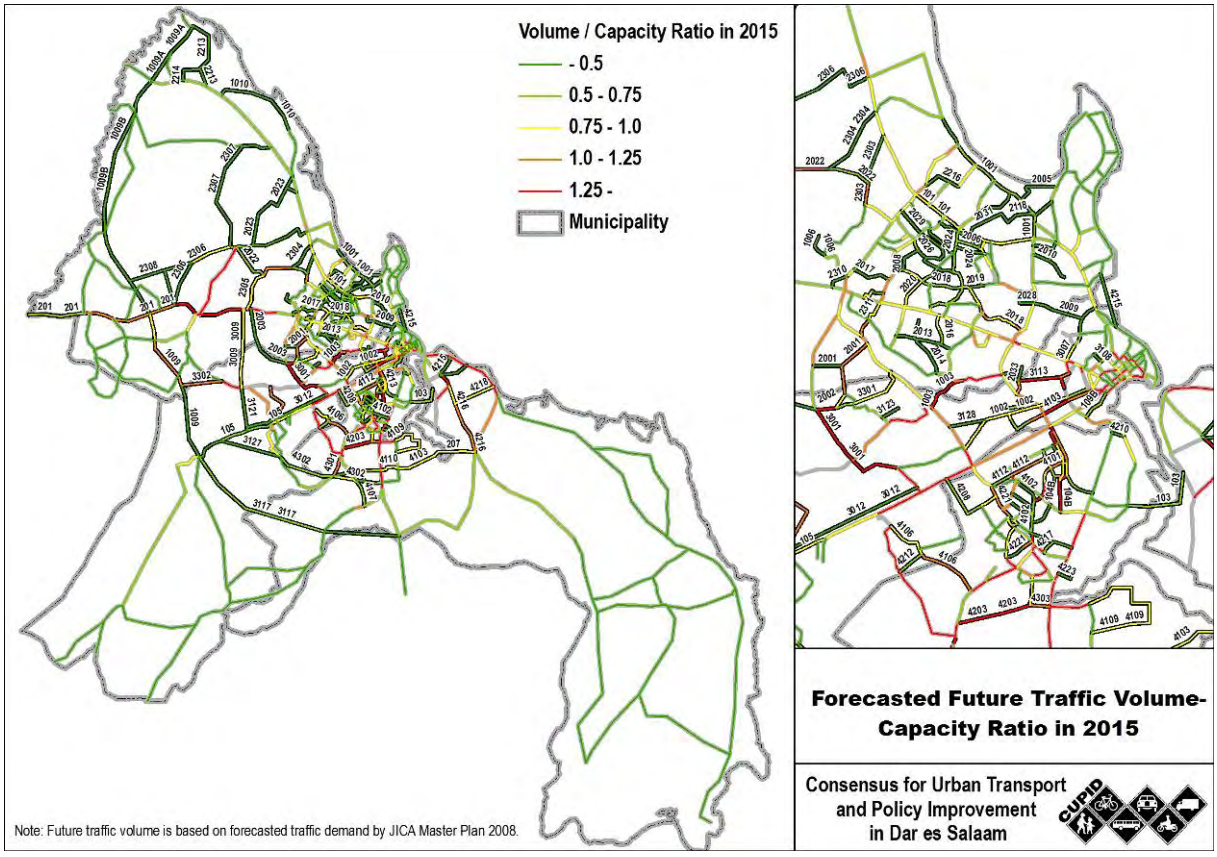


Figure 3-7 Volume Capacity Ratio

Cost/traffic volume

The cost effectiveness indices of the road projects were estimated, dividing unit construction cost by future traffic volume. Cost/traffic volume of road improvement project was calculated based on project cost and daily traffic volume, both estimated in the CUPID project. Cost/traffic volume of each project was scored as follows:

- 5: less than 0.35 thousand US$/(PCU/day),
- 4: between 0.35 and 0.90 thousand US$/(PCU/day),
- 3: between 0.90 and 3.00 thousand US$/(PCU/day),
- 2: between 3.00 and 5.50 thousand US$/(PCU/day),
- 1: more than 5.50 thousand US$/(PCU/day).

External trip rate/connectivity

External trip rate/connectivity indices of road improvement project were scored by the connection of the project road to National Road. External trip rate/connectivity of each project was scored as follows:

- 5: If the project road is National Road,
- 3: If the project road is not National Road but connected to National Road,
- 1: other roads.

(2) Environmental criteria

Noise

The level of noise generated by a project can be gauged by the volume of heavy vehicular traffic. Besides, adverse environmental impact in terms of noise could be exacerbated in cases where more people live in the vicinity of the project road. The level of noise and its environmental impact was assigned the following scores:

- 5: less than 500 PCU/day of heavy traffic in 2015,
- 4: between 500 and 1,000 PCU/day,
- 3: between 1,000 and 2,000 PCU/day,
- 2: between 2,000 and 4,000 PCU/day,
- 1: more than 4,000 PCU/day.

Air quality

The level of impact on air quality by a project can be gauged by a combination of the traffic volume and vehicle capacity ratio (travel speed). The level of impact on air quality and its environmental impact were scored as follows:

- 5: VCR is less than 0.50,
- 4: VCR is between 0.50 and 0.75,
- 3: VCR is between 0.75 and 1.00,
- 2: VCR is between 1.00 and 1.25,
- 1: VCR is more than 1.25,

However

- If VCR was more than 1.00 but PCU/day was between 5,000 and 10,000, the score was changed to “3”,
- And if scope of the project was widening, the score was changed to “5”.

Resettlement and land acquisition

Resettlement and land acquisition indices were not employed in the evaluation of the project due to insufficient and reliable information on resettlement and land acquisition. Consequently, a list of priority projects for DMDP should be finalized, considering the scale of the resettlement and land acquisition, in full consultation with the Municipal engineers.

(3) Basic need criteria

No. of population in project site

The extent to which a project will contribute to the local economy can be gauged by the size of the population in the affected area. Using GIS database prepared in the 2008 Urban Transport Master Plan, the population within each sub-ward was estimated. Figure 3-8 shows the result of GIS analysis of population density in 2002. Based on this figure, the number of population in project site was scored as follows:

- 5: more than 400 people/sq.km,
- 4: between 200 and 400 people/sq.km,
- 3: between 100 and 200 people/sq.km,
- 2: between 50 and 100 people/sq.km,
- 1: less than 50 people/sq.km.

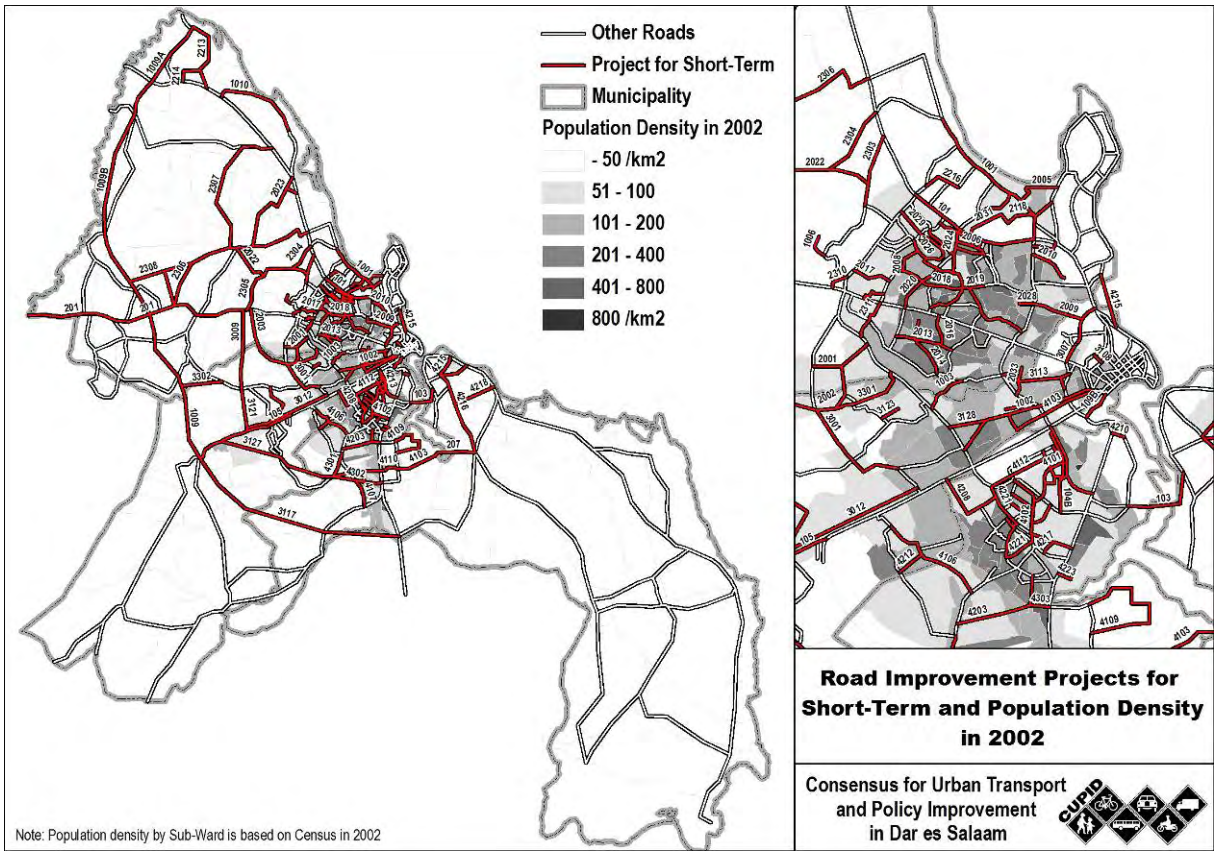


Figure 3-8 Population Density

No. of population in poverty in project site

Implementation of road improvement projects is one of the key measures to alleviate poverty; helping people under the poverty line access basic infrastructure and providing them low cost public transport. We assume that the projected degree of poverty reduction is commensurate with the size of impoverished populations living in the vicinity of the project road, which implies the net poverty reduction effect of the project. Figure 3-9 shows the result of GIS analysis of the average of household income in 2007. Based on this figure, the number of population in poverty in project site was scored as follows:

- 5: less than 100,000 Tshs/month of householed income
- 4: between 100,000 and 250,000 Tshs/month
- 3: between 250,000 and 500,000 Tshs/month
- 2: between 500,000 and 1,000,000 Tshs/month
- 1: more than 1,000,000 Tshs/month

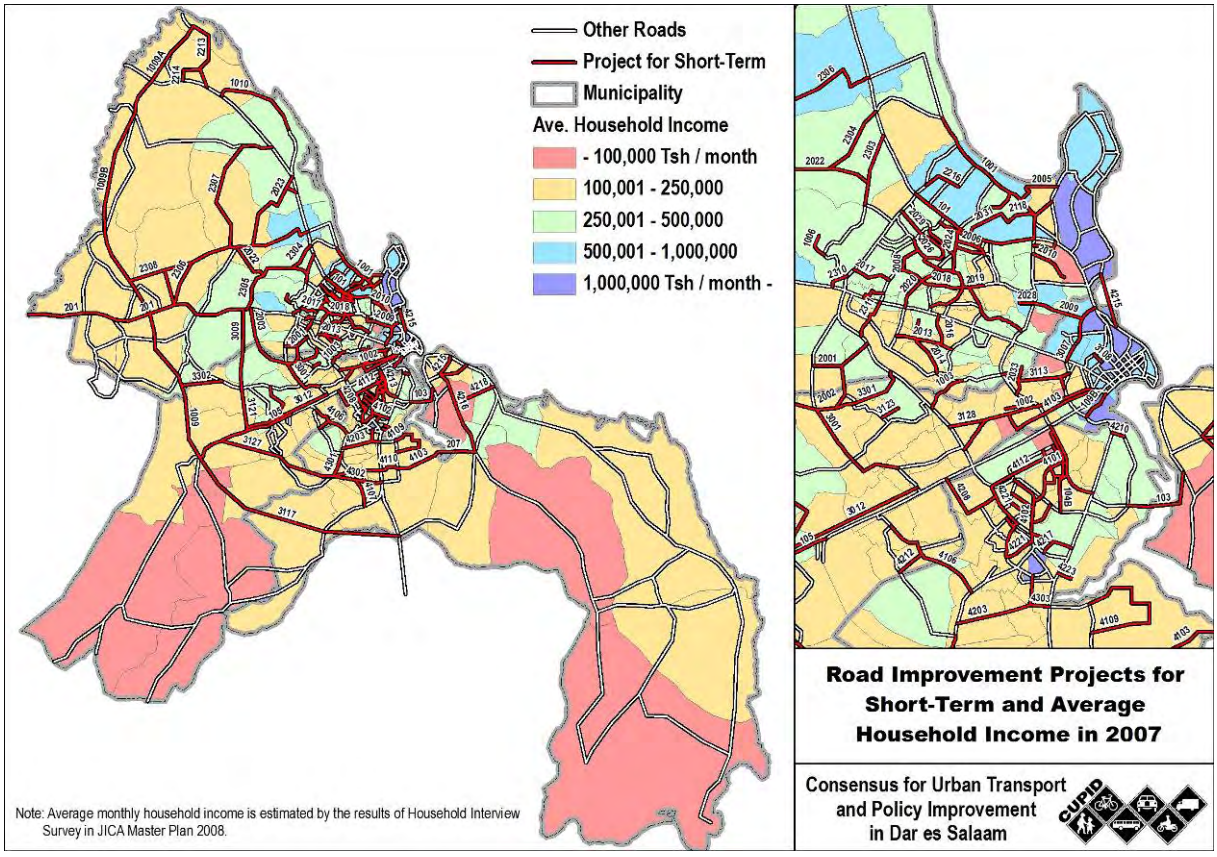


Figure 3-9 Household Income

Road length/households

The availability of roads can be gauged by combination of the road length and the number of households in the affected area. Figure 3-10 shows the result of GIS analysis of the average road density in Dar es Salaam. Based on this figure, the road length/households in project site were scored as follows:

- 5: less than 0.1 km,
- 4: between 0.1 and 0.5 km,
- 3: between 0.5 and 1.0 km,
- 2: between 1.0 and 1.5 km,
- 1: more than 1.5 people/sq.km.

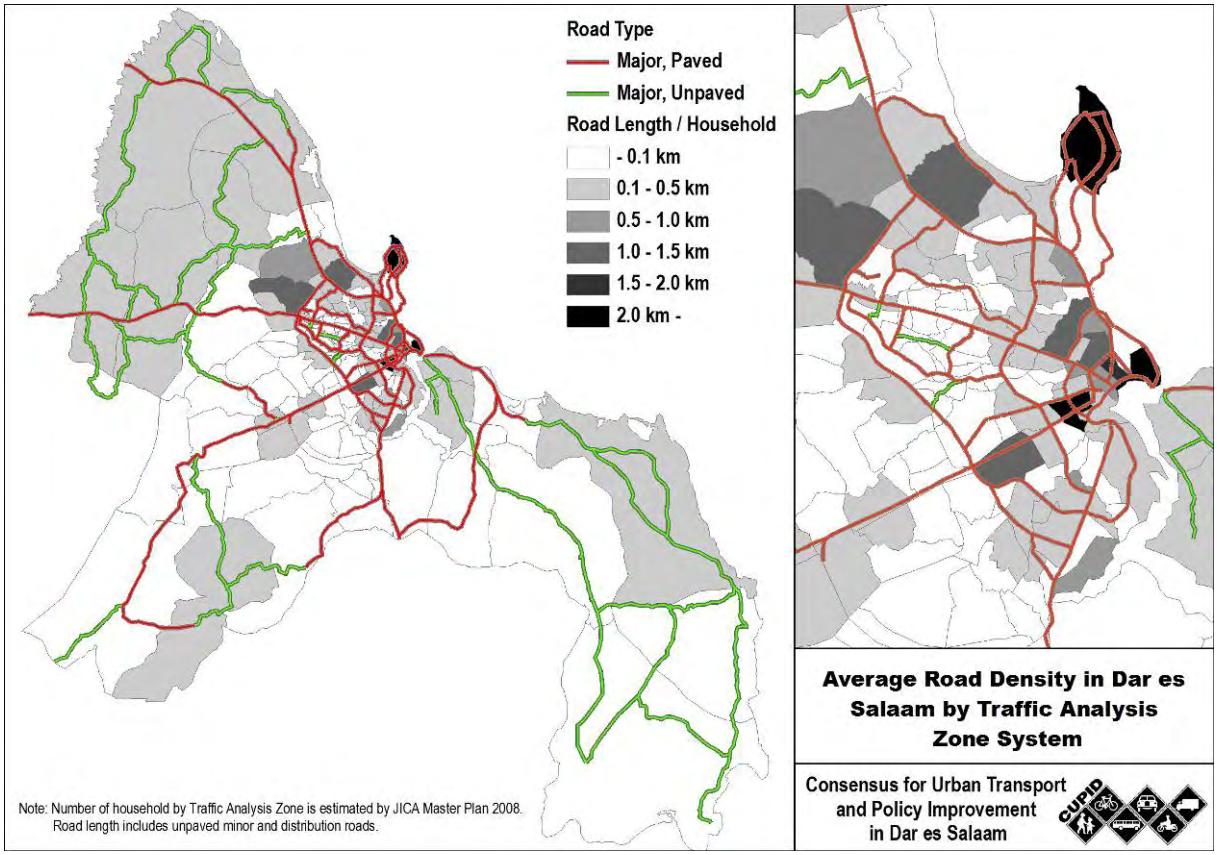


Figure 3-10 Road Density

(4) Evaluation Result

As discussed above, the evaluation criteria were scored for the various projects. The final evaluation results were obtained by weighting the scores of the evaluation criteria. Using the weighting per centage which is shown in Table 3-4, the total scores for each project were derived from the sum of the products of the weight of each decision parameter and its score. The total scores of each project are tabulated in Table 3-5.

Table 3-5 Result of Multi-criteria Analysis

S/N	Project Name	Project cost	All weather traffic	Daily traffic volume	Volume capacity ratio	Cost/traffic volume	Connectivity	Noise and vibration	Air quality	Involuntary resettlement	Population in project site	Population in poverty	Road length/households	**Score (National)**	**Score (Local)**
-	Weight (National)	6.3 %	8.5 %	10.0 %	13.9 %	15.9 %	8.8 %	6.2 %	6.2 %	10.1 %	5.2 %	4.1 %	4.6 %	-	-
-	Weight (Local)	5.7 %	6.1 %	10.9 %	9.1 %	9.3 %	5.9 %	5.2 %	7.7 %	6.9 %	12.9 %	11.1 %	9.2 %	-	-
101	New Bagamoyo Road Widening (Morocco-Mwenge)	N/A	1	5	3	5	5	1	5	N/A	3	4	2	3.03	3.09
103	Kigamboni Bridge (Bridge Length: 800m) and Access Road Improvement	N/A	3	4	2	2	5	5	4	N/A	2	5	4	2.75	3.03
105	Nyerere Road Widening	N/A	1	4	2	3	5	1	5	N/A	2	4	5	2.55	2.85
104B	Inner Ring Road/Chang'ombe Road Widening	N/A	3	4	3	4	5	1	5	N/A	2	4	4	2.98	3.06
109B	Gerezani St./Sokoine Dr. Widening	N/A	1	3	2	5	5	1	5	N/A	1	1	5	2.60	2.47
201	Morogoro Road Widening	N/A	1	5	5	4	5	1	5	N/A	1	4	4	3.13	3.11
207	Mbagala-Kigamboni Access Road/Bridge Development (Bridge Length: 400m)	N/A	3	3	3	3	5	5	3	N/A	1	4	5	2.84	2.88
1001	Old Bagamoyo Road Widening	N/A	1	4	2	3	5	1	5	N/A	2	2	2	2.33	2.35
1002	Uhuru Road Widening	N/A	1	4	3	4	5	2	5	N/A	1	5	5	2.90	3.07
1003	Tabata-Kigogo Road	N/A	1	3	5	5	3	2	1	N/A	4	4	5	2.93	3.09
1005	Rose Garden Road Bypass	N/A	3	1	1	1	1	5	5	N/A	1	4	5	1.81	2.21
1006	Dar es Salaam University Road	N/A	1	1	1	1	1	5	5	N/A	1	3	2	1.46	1.70
1007	External - Kigogo	N/A	3	2	4	4	3	4	3	N/A	2	4	5	2.85	2.92
1009 A	Outer Ring Road (Bunju-Mbweni)	N/A	3	1	1	1	5	5	5	N/A	1	4	4	2.12	2.35
1009 B	Outer Ring Road (Victoria-Bunju)	N/A	3	1	1	1	5	3	5	N/A	1	4	4	1.99	2.25
1009 C	Outer Ring Road (Kiltex-Victoria)	N/A	3	3	3	2	5	2	3	N/A	1	4	5	2.49	2.63
1010	New Bagamoyo Subsidiary Road	N/A	3	1	1	1	3	5	5	N/A	1	4	4	1.94	2.24
2001	External	N/A	3	2	3	4	3	3	3	N/A	2	4	4	2.60	2.68
2002	Kisukuru	N/A	3	3	4	5	1	2	2	N/A	2	4	5	2.74	2.82
2003	Kilungule	N/A	3	1	1	1	3	5	5	N/A	1	4	5	1.99	2.33
2005	Tanesco - Soko la Samaki	N/A	3	1	1	2	3	5	5	N/A	3	4	4	2.20	2.59
2006	Sokoni - Makumbusho	N/A	3	2	2	4	1	5	4	N/A	4	3	4	2.53	2.80
2007	MMK	N/A	3	1	1	3	3	5	5	N/A	1	4	5	2.31	2.52
2008	Mabatini	N/A	3	1	1	3	1	5	5	N/A	3	3	4	2.14	2.45
2009	Hananasif - Upanga	N/A	3	1	1	2	3	4	5	N/A	3	2	2	1.97	2.13
2010	Biafra - Kinondoni Shamba	N/A	3	1	1	1	1	5	5	N/A	1	5	3	1.76	2.14
2011	Best Bite - Dawasco	N/A	3	1	1	1	3	5	5	N/A	1	4	5	1.99	2.33
2012	Best Bite	N/A	3	1	1	1	3	5	5	N/A	1	4	5	1.99	2.33
2013	Mburahati NIT	N/A	3	1	1	3	1	5	5	N/A	4	4	5	2.28	2.79
2014	Binti Kayenga	N/A	3	1	1	3	1	5	5	N/A	4	4	5	2.28	2.79
2015	Tipo Top	N/A	3	1	1	1	3	5	5	N/A	1	4	5	1.99	2.33
2016	Midizini	N/A	3	2	3	5	3	3	3	N/A	4	4	5	2.91	3.12
2017	Simu 2000	N/A	3	1	1	3	3	4	5	N/A	2	4	5	2.29	2.59
2018	Makanya	N/A	1	2	3	3	3	5	5	N/A	4	4	5	2.67	3.07
2019	Tandale Kisiwani	N/A	3	1	1	4	3	5	5	N/A	4	4	4	2.57	2.90

S/N	Project Name	Project cost	All weather traffic	Daily traffic volume	Volume capacity ratio	Cost/traffic volume	Connectivity	Noise and vibration	Air quality	Involuntary resettlement	Population in project site	Population in poverty	Road length/households	**Score (National)**	**Score (Local)**
-	Weight (National)	6.3 %	8.5 %	10.0 %	13.9 %	15.9 %	8.8 %	6.2 %	6.2 %	10.1 %	5.2 %	4.1 %	4.6 %	-	-
-	Weight (Local)	5.7 %	6.1 %	10.9 %	9.1 %	9.3 %	5.9 %	5.2 %	7.7 %	6.9 %	12.9 %	11.1 %	9.2 %	-	-
2020	Kilimani	N/A	3	2	3	5	3	3	3	N/A	4	3	4	2.82	2.92
2021	Alimauwa	N/A	3	1	2	4	3	4	4	N/A	1	4	5	2.48	2.57
2022	Makongo - Goba	N/A	3	2	3	3	1	3	3	N/A	1	3	3	2.13	2.14
2023	Kizudi	N/A	3	1	1	1	3	5	5	N/A	1	4	4	1.94	2.24
2024	Kajenge	N/A	1	2	2	4	3	4	5	N/A	4	3	4	2.54	2.82
2026	Qubba	N/A	3	1	1	2	1	5	5	N/A	3	3	4	1.99	2.36
2027	Sayansi	N/A	3	1	1	4	3	5	5	N/A	1	4	5	2.46	2.61
2028	Mafere	N/A	3	1	1	3	3	5	5	N/A	4	2	3	2.29	2.50
2029	Nzasa	N/A	3	1	1	3	3	4	5	N/A	2	3	4	2.21	2.39
2030	Polisi Kisiwani	N/A	3	1	1	5	3	4	5	N/A	1	4	5	2.56	2.65
2031	Journalism	N/A	3	1	1	3	3	5	5	N/A	2	3	4	2.27	2.44
2032	IPTL - Salasala	N/A	3	1	1	1	3	5	5	N/A	1	4	5	1.99	2.33
2033	Madaba	N/A	3	1	1	1	3	5	5	N/A	3	4	5	2.09	2.59
2034	Ubungo Plaza	N/A	3	1	2	4	3	3	4	N/A	1	4	5	2.42	2.52
2112	Makumbusho P/S - Sayansi	N/A	1	1	1	1	3	5	5	N/A	1	4	5	1.82	2.21
2116	Makanya - Tandale Sokoni - Uzuri	N/A	3	2	2	4	3	4	4	N/A	1	4	5	2.58	2.68
2118	Africana - Goba - Kinzudi	N/A	3	1	1	3	3	5	5	N/A	2	2	4	2.23	2.33
2210	Makabe	N/A	3	1	1	3	3	4	5	N/A	1	4	5	2.24	2.46
2213	Mbweni - Mpiji	N/A	3	1	1	1	3	5	5	N/A	1	4	4	1.94	2.24
2214	Mbweni - Bunju	N/A	3	1	1	1	3	5	5	N/A	1	4	4	1.94	2.24
2215	Maandazi	N/A	3	1	1	4	3	5	5	N/A	1	4	5	2.46	2.61
2216	Keyz	N/A	3	1	1	3	3	4	5	N/A	1	2	2	2.02	1.97
2303	Ring Road (Makongo-Dar es Salaam Univ.)	N/A	3	2	2	4	3	3	4	N/A	1	3	3	2.38	2.33
2304	Ring Road (Kawe-Kimara)-1	N/A	3	1	1	3	3	5	5	N/A	1	3	3	2.17	2.22
2305	Ring Road (Kawe-Kimara)-2	N/A	3	2	3	4	3	3	3	N/A	1	3	2	2.42	2.26
2306	Kawe - Mbezi	N/A	3	2	2	2	3	3	4	N/A	1	4	4	2.15	2.35
2307	Access road for outer ring road	N/A	3	1	1	1	3	5	5	N/A	1	4	4	1.94	2.24
2308	Access road for outer ring road	N/A	3	1	1	2	3	3	5	N/A	1	4	4	1.98	2.23
2310	Ubungo Bypass-1	N/A	3	1	1	5	3	3	5	N/A	1	4	2	2.36	2.32
2311	Ubungo Bypass-2	N/A	3	2	3	5	3	5	3	N/A	2	4	5	2.93	2.97
3001	Vingunguti-Baracuda-kisukuru-Maji Chumvi	N/A	3	3	5	3	3	2	1	N/A	1	4	5	2.63	2.64
3002	Segerea -Majumba Sita	N/A	3	3	4	4	3	2	2	N/A	1	4	5	2.71	2.71
3003	Lindi St.	N/A	1	2	4	5	3	2	3	N/A	1	4	5	2.66	2.65
3007	United Nations Roads	N/A	1	3	2	5	3	3	5	N/A	3	2	2	2.55	2.55
3009	Segerea - Bonyokwa - Kimara Mwisho	N/A	3	2	3	3	3	3	3	N/A	1	3	5	2.39	2.44
3012	Vingunguti - Transit motel (Karakata) - Kiltex	N/A	1	1	1	1	3	5	5	N/A	2	4	5	1.87	2.34
3013	Shingo Feni	N/A	3	2	2	4	3	5	4	N/A	1	4	5	2.64	2.73
3108	Olympio	N/A	3	1	1	1	1	5	5	N/A	2	2	1	1.60	1.75
3113	Jangwani Road	N/A	3	3	4	4	1	1	2	N/A	3	4	5	2.57	2.80
3117	Pugu - Majohe - Mbodole	N/A	3	2	2	3	5	4	4	N/A	1	5	5	2.64	2.81
3121	Ulongoni (Kiltex) - Bangulo - Kinyerezi	N/A	1	1	1	1	3	5	5	N/A	1	4	5	1.82	2.21
3123	Mawenzi - Tabata - Relini	N/A	1	1	1	1	3	5	5	N/A	2	4	4	1.82	2.24
3126	Darajani - Kinyerezi	N/A	1	1	1	1	3	5	5	N/A	1	4	5	1.82	2.21

S/N	Project Name	Project cost	All weather traffic	Daily traffic volume	Volume capacity ratio	Cost/traffic volume	Connectivity	Noise and vibration	Air quality	Involuntary resettlement	Population in project site	Population in poverty	Road length/households	**Score (National)**	**Score (Local)**
-	Weight (National)	6.3 %	8.5 %	10.0 %	13.9 %	15.9 %	8.8 %	6.2 %	6.2 %	10.1 %	5.2 %	4.1 %	4.6 %	-	-
-	Weight (Local)	5.7 %	6.1 %	10.9 %	9.1 %	9.3 %	5.9 %	5.2 %	7.7 %	6.9 %	12.9 %	11.1 %	9.2 %	-	-
	– Zimbili														
3127	Kiltex - Liku - Mazizini - Relini	N/A	1	1	1	1	3	5	5	N/A	1	4	4	1.77	2.12
3128	Rozana - Sukita Tabata Mandela	N/A	1	1	1	1	3	5	5	N/A	3	4	5	1.92	2.47
3301	Makuburi - Mabibo	N/A	1	2	3	4	3	3	3	N/A	3	4	4	2.48	2.69
3302	Accsess road for outer ring road	N/A	3	3	4	4	3	1	2	N/A	1	4	5	2.65	2.66
4101	Chang'ombe Road-2	N/A	1	3	4	5	1	3	5	N/A	4	4	2	2.79	2.96
4102	Temeke - Mbagala	N/A	1	3	1	4	1	2	5	N/A	1	4	4	2.08	2.34
4103	Mbagala kuu - Tuangoma road	N/A	3	3	3	3	3	4	3	N/A	3	5	5	2.74	3.08
4105	Yemen Road	N/A	3	2	2	2	3	2	4	N/A	1	4	5	2.14	2.39
4106	Mwinyi Road	N/A	3	3	4	4	3	1	2	N/A	3	4	5	2.75	2.92
4107	Nzasa-Kilungule - Makangarawe (Buza)	N/A	3	2	2	3	3	3	4	N/A	3	4	5	2.46	2.79
4109	Kijichi - Nasaco Road	N/A	3	3	3	4	3	2	3	N/A	1	4	5	2.63	2.70
4110	Mwanamtoti Road	N/A	3	3	3	4	3	4	3	N/A	1	4	5	2.76	2.80
4111	Zakhem - Kiburugwa - Kingugi Road	N/A	3	1	1	2	3	4	5	N/A	1	4	5	2.08	2.37
4112	Mwakalinga Road	N/A	3	2	2	4	3	3	4	N/A	2	4	2	2.43	2.48
4201	Wailes Road	N/A	3	1	1	1	3	5	5	N/A	1	4	5	1.99	2.33
4202	TCC	N/A	3	2	2	5	3	3	4	N/A	3	4	5	2.78	2.98
4203	Mtoni Mashine ya Maji Road	N/A	3	3	4	4	3	2	2	N/A	4	4	5	2.86	3.10
4206	Mangaya - Kiburugwa Road	N/A	3	2	2	3	3	4	4	N/A	1	4	5	2.42	2.59
4208	Sandali Road (Mchicha)	N/A	3	2	2	4	3	2	4	N/A	3	4	5	2.56	2.83
4209	Chaga Road	N/A	3	2	3	5	3	2	3	N/A	1	4	5	2.69	2.68
4210	Mivinjeni Road	N/A	3	1	1	2	3	5	5	N/A	2	3	4	2.11	2.35
4211	Mahunda 2 Road	N/A	3	3	3	5	3	2	3	N/A	1	4	5	2.79	2.79
4212	Lumo - Kilakala Road	N/A	3	2	2	4	3	2	4	N/A	4	4	5	2.61	2.96
4213	Chuma Road	N/A	3	2	3	5	3	2	3	N/A	1	4	5	2.69	2.68
4214	Uruwila Road	N/A	3	3	5	5	3	1	1	N/A	1	4	5	2.88	2.77
4215	Posta Road	N/A	3	1	1	2	3	5	5	N/A	1	1	4	1.98	2.00
4216	Kibada - Tungi Road	N/A	3	2	3	4	5	5	3	N/A	1	5	4	2.89	2.88
4217	Mkuranga Road	N/A	3	2	2	5	3	3	4	N/A	3	4	4	2.73	2.89
4218	Tungi - Mjimwema Road	N/A	3	1	3	4	3	5	1	N/A	1	4	5	2.49	2.48
4219	Ruvuma Road	N/A	3	1	1	4	3	3	5	N/A	1	4	5	2.34	2.50
4220	Ndalala Road	N/A	3	1	1	1	3	5	5	N/A	1	4	5	1.99	2.33
4221	Dr. Omary Road	N/A	3	3	3	4	3	2	3	N/A	4	4	4	2.74	3.00
4222	TRA Road	N/A	3	2	3	5	3	2	3	N/A	1	4	5	2.69	2.68
4223	Somali Road	N/A	3	1	1	4	3	4	5	N/A	4	4	3	2.47	2.76
4301	Access Road for Ring Road	N/A	3	3	5	5	1	2	1	N/A	3	4	5	2.87	2.96
4302	Ring Road	N/A	3	2	2	3	3	3	4	N/A	1	4	5	2.36	2.53
4303	Mtoni New Road	N/A	3	3	4	3	3	2	2	N/A	4	4	5	2.71	3.01

3.5 SELECTION OF PRIORITY PROJECTS

Based on the multi-criteria analysis, 77 roads with a total of 234.3 km (11 roads under TANROADS, 21 roads under Kinondoni, 9 roads under Ilala and 24 roads under Temeke) were scored as high or middle priority and the total costs for the projects were estimated at US$ 660.6million (US$ 411.9 million for TANROADS, US$ 56.0 million for Kinondoni, US$ 69.6 million for Ilala and US$ 123.1 million for Temeke).

- Priority High: Score is more than 2.70
- Priority Mid: Score is more than 2.40 and less than 2.70

Table 3-6 Short-List of High/Mid Priority Projects under TANROADS

	S/N	Project Name	Road Classifi-cation	No. of Lane	Length (km)	Project Cost (Mil. USD)	Score (National)	High/Mid Priority
1	201	Morogoro Road Widening	1	4	18.0	65.2	**3.13**	High
2	101	New Bagamoyo Road Widening (Morocco-Mwenge)	1	4	4.3	15.6	**3.03**	High
3	104B	Inner Ring Road/Chang'ombe Road Widening	1	4	4.6	16.6	**2.98**	High
4	1003	Tabata-Kigogo Road	2	2	1.6	2.6	**2.93**	High
5	1002	Uhuru Road Widening	2	4	4.8	17.4	**2.90**	High
6	1007	External - Kigogo	2	2	0.6	3.3	**2.85**	High
7	207	Mbagala-Kigamboni Access Road/Bridge Development (Bridge Length: 400m)	2	2	5.0	31.1	**2.84**	High
8	103	Kigamboni Bridge (Bridge Length: 800m) and Access Road Improvement	1	4	4.0	109.0	**2.75**	High
9	109B	Gerezani St./Sokoine Dr. Widening	1	4	1.5	4.9	**2.60**	Mid
10	105	Nyerere Road Widening	1	4	8.7	31.4	**2.55**	Mid
11	1009C	Outer Ring Road (Kiltex-Victoria)	1	4	13.2	60.5	**2.49**	Mid
12	1001	Old Bagamoyo Road Widening	1	4	12.0	54.3	**2.33**	Low
Total				**-**	**78.3**	**411.9**	**-**	-

Note: The number of road classification indicates; 1: Primary Arterial, 2: Secondary Arterial, 3: Tertiary Arterial
Priority High is more than 2.7 score and priority Mid is more than 2.4 and less than 2.7.

Table 3-7 Short-List of High/Mid Priority Projects under Kinondoni Municipality

	S/N	Road Name	Type of Improvement	No. of Lane	Length (km)	Project Cost (Mil. USD)	Score (Local)	High/Mid Priority
1	2016	Midizini	Upgrading	2	1.0	1.6	**3.12**	High
2	2018*	Makanya	Widening and Re-surfacing	2	6.1	9.9	**3.07**	High
3	2311	Ubungo Bypass-2	Upgrading	2	0.9	1.4	**2.97**	High
4	2020	Kilimani	Upgrading	2	1.3	2.1	**2.92**	High
5	2019*	Tandale Kisiwani	Upgrading	2	0.8	1.3	**2.90**	High
6	2024	Kajenge	Widening and Re-surfacing	2	1.9	3.1	**2.82**	High
7	2002*	Kisukuru	Upgrading	2	1.9	3.1	**2.82**	High
8	2006*	Sokoni - Makumbusho	Upgrading	2	1.3	2.1	**2.80**	High
9	2013	Mburahati NIT	Upgrading	2	1.9	3.1	**2.79**	High
10	2014	Binti Kayenga	Upgrading	2	1.3	2.1	**2.79**	High
11	2116	Makanya - Tandale Sokoni - Uzuri	Upgrading	2	1.6	2.6	**2.68**	Mid
12	2001*	External	Upgrading	2	2.6	4.2	**2.68**	Mid
13	2030	Polisi Kisiwani	Upgrading	2	0.7	1.1	**2.65**	Mid
14	2027	Sayansi	Upgrading	2	0.8	1.3	**2.61**	Mid
15	2215	Maandazi	Upgrading	2	0.8	1.4	**2.61**	Mid
16	2017*	Simu 2000	Upgrading	2	1.8	2.9	**2.59**	Mid
17	2005	Tanesco - Soko la Samaki	Upgrading	2	2.4	3.9	**2.59**	Mid
18	2033	Madaba	Upgrading	2	0.6	2.7	**2.59**	Mid
19	2021	Alimauwa	Upgrading	2	1.4	2.3	**2.57**	Mid
20	2034	Ubungo Plaza	Upgrading	2	1.0	1.6	**2.52**	Mid
21	2007	MMK	Upgrading	2	1.2	2.0	**2.52**	Mid
Total				**-**	**33.3**	**56.0**	**-**	**-**

Note: Priority High is more than 2.7 of score and priority Middle is more than 2.4 and less than 2.7 of score.
Projects marked with * are proposed for DMDP

Table 3-8 Short-List of High/Mid Priority Projects under Ilala Municipality

	S/N	Road Name	Type of Improvement	No. of Lane	Length (km)	Project Cost (Mil. USD)	Score (Local)	High/Mid Priority
1	3117	Pugu - Majohe - Mbodole	Upgrading	2	16.0	19.2	**2.81**	High
2	3113	Jangwani Road	Upgrading	2	4.0	6.5	**2.80**	High
3	3013	Shingo Feni	Upgrading	2	1.8	2.9	**2.73**	High
4	3002*	Segerea -Majumba Sita	Upgrading	2	3.0	6.6	**2.71**	High
5	3301	Makuburi - Mabibo	Upgrading	2	2.7	5.9	**2.69**	Mid
6	3302	Accsess road for outer ring road	Upgrading	2	3.6	5.6	**2.66**	Mid
7	3003*	Lindi St.	Rehabilitation	2	1.0	1.6	**2.65**	Mid
8	3001*	Vingunguti-Baracuda-kisuk uru-Maji Chumvi	Upgrading	2	10.0	16.3	**2.64**	Mid
9	3007	United Nations Roads	Widening, overlaying and improvement of drainage system	2	3.0	4.9	**2.55**	Mid
Total				**-**	**45.1**	**69.6**	**-**	**-**

Note: Priority High is more than 2.7 of score and priority Middle is more than 2.4 and less than 2.7 of score.
Projects marked with * are proposed for DMDP

Table 3-9 Short-List of High/Mid Priority Projects under Temeke Municipality

	S/N	Road Name	Type of Improvement	No. of Lane	Length (km)	Project Cost (Mil. USD)	Score (Local)	High/Mid Priority
1	4203*	Mtoni Mashine ya Maji Road	Upgrading	2	3.6	7.3	**3.10**	High
2	4103*	Mbagala kuu - Tuangoma road	Upgrading	2	8.0	12.3	**3.08**	High
3	4303	Mtoni New Road	New Construction	2	6.0	13.3	**3.01**	High
4	4221	Dr. Omary Road	Upgrading	2	4.0	6.5	**3.00**	High
5	4202	TCC	Upgrading	2	0.6	1.0	**2.98**	High
6	4301*	Access Road for Ring Road	Upgrading	2	3.0	4.6	**2.96**	High
7	4212	Lumo - Kilakala Road	Upgrading	2	3.0	4.9	**2.96**	High
8	4101	Chang'ombe Road-2	Widening	2	1.9	3.0	**2.96**	High
9	4106	Mwinyi Road	Upgrading	2	2.6	4.2	**2.92**	High
10	4217	Mkuranga Road	Upgrading	2	0.6	1.0	**2.89**	High
11	4216	Kibada - Tungi Road	Upgrading	2	6.7	8.0	**2.88**	High
12	4208*	Sandali Road (Mchicha)	Upgrading	2	2.6	4.2	**2.83**	High
13	4110	Mwanamtoti Road	Upgrading	2	3.0	4.6	**2.80**	High
14	4107*	Nzasa-Kilungule - Makangarawe (Buza)	Upgrading	2	8.2	12.6	**2.79**	High
15	4211	Mahunda 2 Road	Upgrading	2	1.0	1.6	**2.79**	High
16	4214*	Uruwila Road	Upgrading	2	0.2	0.3	**2.77**	High
17	4223	Somali Road	Upgrading	2	1.0	1.6	**2.76**	High
18	4109	Kijichi - Nasaco Road	Upgrading	2	4.6	7.5	**2.70**	High
19	4209*	Chaga Road	Upgrading	2	0.8	1.3	**2.68**	Mid
20	4213	Chuma Road	Upgrading	2	1.0	1.6	**2.68**	Mid
21	4222	TRA Road	Upgrading	2	1.0	1.6	**2.68**	Mid
22	4206	Mangaya - Kiburugwa Road	Upgrading	2	6.6	10.2	**2.59**	Mid
23	4302	Ring Road	Upgrading	2	6.6	7.9	**2.53**	Mid
24	4219	Ruvuma Road	Upgrading	2	1.0	1.6	**2.50**	Mid
Total				**-**	**77.6**	**123.1**	**-**	-

Note: Priority High is more than 2.7 of score and priority Middle is more than 2.4 and less than 2.7 of score.
Projects marked with * are proposed for DMDP

3.6 VERIFICATION OF PRIORITY PROJECTS

(1) National Road

Looking at the road network in the city and the result of multi-criteria analysis, it is obvious that the both radial trunk roads and ring roads (e.g., Morogoro, New Bagamoyo and Chang'ombe Roads) remain highly important arterial road network and the improvement of these radial roads scores very high and evaluated as high priority projects.

Also, improvement of secondary arterial roads (e.g.: Tabata-Kigogo, Uhuru and External-Kigogo Roads) are very important in order to provide an alternate route to road users. Some roads, listed in the above table, are currently under jurisdiction of Municipalities but are planned to be upgraded as National Roads by TANROADS.

In consideration of possibility of a toll road in Dar es Salaam, a part of the outer ring road between Kiltex and Victoria would be a candidate. Freight transport would divert to the outer ring road and traffic in the city centre be reduced and could greatly contribute to mitigating traffic congestion in

Dar es Salaam. The outer ring road should be improved together with the projects of widening of Morogoro Road and Pugo Road to dual carriageway roads.

Two access roads to Kigamboni are highly scored in multi-criteria analysis. It shows that creation of new road network between city centre and Kigamboni is very important in order to promote development of new city centre in Kigamboni. Early implementation of the construction of Kigamboni Bridge would be highly recommended.

(2) Regional Road

Based on abovementioned priority projects, a total of 27 projects were recommended for the DMDP, which do not have difficulty in land acquisition. The World Bank will hire engineering consultants for feasibility study and detailed design of the DMDP so that the scope of works and selection of projects under DMDP will be decided during the course of the study.

Table 3-10 Longlist of Road Improvement Projects Proposed for DMDP

Municipality	S/N	Road Name	Length (km)	Type of Improvement	Scores	High/Mid Priority
Ilala	3012	Vinguguti - Transit motel (Karakata) - Kiltex	10.0	Upgrading	2.64	High
	3013	Shingo Feni	3.0	Upgrading	2.71	High
	3108	Olympio	1.0	Rehabilitation	2.65	High
	N.A.	Kiungani	0.7	Rehabilitation	N.A.	N.A.
	N.A.	Omari Londo	0.7	Rehabilitation	N.A.	N.A.
	N.A.	Mbaruku	0.7	Rehabilitation	N.A.	N.A.
Temeke	4107	Nzasa-Kilungule - Makangarawe (Buza)	4.6	Widening/Rehabilitation	2.96	High
	4109	Kijichi - Nasaco Road	3.5	Widening/Rehabilitation	2.34	Mid
	4211	Mahunda 2 Road	3.5	Upgrading	3.10	High
	4214	Uruwila Road	0.8	Upgrading	2.68	Mid
	4219	Ruvuma Road	0.2	Upgrading	2.77	High
	4201	Wailes Road	4.0	Upgrading	2.79	High
	4213	Chuma Road	1.0	Upgrading	2.83	High
	4110	Mwanamtoti Road	1.0	Upgrading/Bridge Construction	3.08	High
	N.A.	Mbagala Industrial Road	2.4	Upgrading	N.A.	N.A.
	N.A.	Taifa Road	1.3	Upgrading	N.A.	N.A.
	4203	Mtoni Mashine ya Maji Road	3.0	Upgrading	2.80	High
Kinondoni	2007	MMK	2.6	Upgrading	2.68	High
	2008	Mabatini	1.9	Upgrading	2.82	High
	2009	Hananasif - Upanga	3.0	Upgrading	2.33	Mid
	2010	Biafra - Kinondoni Shamba	1.5	Upgrading	2.59	Mid
	2011	Best Bite - Dawasco	1.3	Upgrading	2.80	High
	2012	Best Bite	1.2	Upgrading	2.52	Mid
	2013	Mburahati NIT	1.1	Upgrading	2.45	Mid
	2022	Makongo - Goba	1.8	Upgrading	2.59	High
	2023	Kizudi	5.1	Widening/Rehabilitation	3.07	High
	2024	Kajenge	0.8	Upgrading	2.90	High

3.7 PROFILES OF PRIORITY NATIONAL ROAD IMPROVEMENT PROJECTS

Project features and aspects of the following important projects are summarized in separate forms, namely project profiles. The project profiles contain; project background, overall goal and project purpose, justification of the project, scope of the project, implementing agency and other

stakeholders, implementation schedule, project cost, possible financial source, related activities and requirement for implementation of the project.

- Morogoro Road Widening
- New Bagamoyo Road Phase-2
- Chang'ombe Road Widening
- Nyerere Road Widening
- Outer Ring Road Construction
- Old Bagamoyo Road Widening

Table 3-11 Project Profile – Morogoro Road Widening

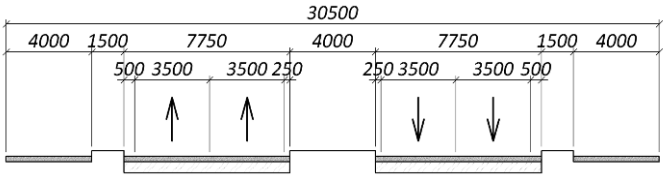
Project Name	Morogoro Road Widening	***Jurisdiction***	TANROADS
Road Length	18.0 km	***ID***	201
Type of Improvement	Widening to be Dual Carriageway Road		
Project Background	Morogoro Road is one of the most important transport corridors which connects Dar es salaam and not only upcountry within Tanzania but also inland countries in the Region (Burundi/ Rwanda/Zambia/Malawi).The road has been named "the Central Corridor" and it is a major freight corridor to the aforementioned inland countries. The urbanization together with residential area development has progressed along the Morogoro Road which has resulted in the proposed road section being congested severely in recent years. It is usual that the traffic moves slower than 10km/hr at peak times in the section which is causing huge economic loss in the country. In order to solve the problems, an Outer Ring Road has been proposed by the TANROADS to remove freight traffic from the Morogoro Road in the city section. Victoria, the ending point of the proposed section, is the junction between the proposed Outer Ring and the Morogoro Road. Therefore, dualing the carriageway is necessary so as to complete forming an effective city road network.		
Overall Goal and Project Purpose	To facilitate favourable economic growth and improve living standards in the City by alleviation of the traffic congestion on the proposed road section.		
Scope of the Project	· Design Condition Asphalt Pavement Standard, Design Speed of 80km/hr, Dual Carriageway. · Proposed Typical Cross Section:  		
Justification of the Project	Consistency with Upstream Plan	The improvement of the road section has been recognized as important under JICA's Master Plan in 2008.	
	Urgency of the Project	High	
	Necessity of the Project	Necessary	
	Adverse Impact of the Project	Resettlement and Relocation of Public Utilities and Private Premises	
	Beneficiaries and Benefits Generated from the Project	Dares Salaam City Citizens (Approximately 3.0 million populations) Travel Time Reduction (from/to CBD), Job Creations, Reduction of Nox and Co_2 Emission	
Implementing Agency	TANROADS		
Other Stakeholders	DCC, DART, Kinondoni Municipality, TANESCO, DAWASCO		
Implementation Schedule	Design Works - F/S - D/D	 (Expected)2014 (Expected) 2015	
	Tendering - E/N - Tender	 (Expected) 2016 (Expected) 2017	
	Construction - Preparation - Works	 (Expected) 2018 (Expected)2020	
	EIA - EIA/EMP/RAP - License - Land Acquisition	 Not yet Not yet Not yet	
Project Cost	US$ 65.2 mil.		
Possible Financial Source			
Related Activities	BRT Phase I, Outer Ring Road Project		
Requirements	Planning Requirements	Minimizing of SocialImpacts (Compensation)	
	Technical Requirements	Nil	
	Environmental Requirements	Environmental License	

Table 3-12 Project Profile – New Bagamoyo Road Phase-2

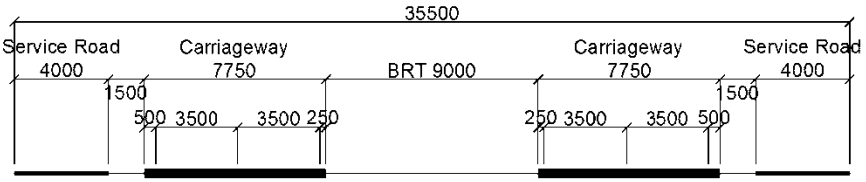
Project Name	New Bagamoyo Road Phase-2	***Jurisdiction***	TANROADS
Road Length	4.3 km	***ID***	101
Type of Improvement	Widening to be Dual Carriageway Road		
Project Background	New Bagamoyo Road is one of the major truck roads forming the strategic road transport network in Dar es Salaam. The proposed road section (Morocco to Mwenge L=4.34km), is the busiest segment in the city road network which has , currently,3-traffic lanes of which the middle lane is being used as reversible depending on traffic movement demands. However, the traffic control for the reversible lane is not well- organized and results in road safety problems. Moreover, the Government of Japan is implementing the road widening work between Mwenge and Tegeta, which is the connecting section on suburban side. This will result in making the proposed section a bottle neck after its completion because the other connecting section on the city centre side is a dual carriageway road. The proposed road section, therefore, needs to be widened so as to facilitate the traffic flow in the network.		
Overall Goal and Project Purpose	To facilitate favourable economic growth and improve living standards in the City by alleviation of the traffic congestion on the proposed road section		
Scope of the Project	· Design Condition Asphalt Pavement Standard, Design Speed of 60km/hr, Dual Carriageway with Access Control · Proposed Typical Cross Section:  		
Justification of the Project	Consistency with Upstream Plan	The improvement of the road section has been listed as a high prioritized project under JICA's Master Plan in 2008.	
	Urgency of the Project	Very High	
	Necessity of the Project	Project feasibility has been confirmed in JICA's FS Study in 2009	
	Adverse Impact of the Project	Resettlement and Relocation of Public Utilities and Private Premises	
	Beneficiaries and Benefits Generated from the Project	Dares Salaam City Citizens (Approximately 3.0 million population) Travel Time Reduction (from/to CBD), Job Creations, Reduction of Nox and Co_2 Emission,	
Implementing Agency	TANROADS		
Other Stakeholders	DCC, DART, Kinondoni Municipality, TANESCO, DAWASCO		
Implementation Schedule	Design Works - F/S - D/D	 Done in 2009 (Expected) 2014	
	Tendering - E/N - Tender	 (Expected) 2015 (Expected) 2016	
	Construction - Preparation - Works	 (Expected) 2017 (Expected)2019	
	EIA - EIA/EMP/RAP - License - Land Acquisition	 Not yet Not yet Not yet	
Project Cost	US$ 15.6 mil.		
Possible Financial Source			
Related Activities	New Bagamoyo Road Construction Project (Mwenge-Tegeta), BRT Phase IV		
Requirements	Planning Requirements	Minimizing of Social Impacts (Compensation)	
	Technical Requirements	Nil	
	Environmental Requirements	Environmental License	

Table 3-13 Project Profile – Chang'ombe Road

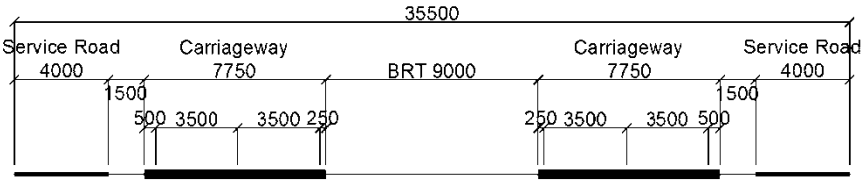
Project Name	Inner Ring Road/Chang'ombe Road Widening	***Jurisdiction***	TANROADS
Road Length	4.6 km	***ID***	104B
Type of Improvement	Widening to be Dual Carriageway Road		
Project Background	Chang'ombe Road is one of the major truck roads forming the strategic road transport network in Dar es Salaam. The proposed road is an extension section of Kawawa Road as an inner ring road connecting Nyerere Road and Kilwa Road. The proposed section is a bottle neck of the major trunk road network due to its low traffic capacity as single carriageway. Many factories locate around the road and it generates incoming/outgoing heavy vehicle traffic. The proposed road section, therefore, needs to be widened so as to facilitate the traffic flow in the network.		
Overall Goal and Project Purpose	To facilitate favourable economic growth and improve living standards in the City by alleviation of the traffic congestion on the proposed road section		
Scope of the Project	· Design Condition Asphalt Pavement Standard, Design Speed of 60km/hr, Dual Carriageway with Access Control · Proposed Typical Cross Section:  		
Justification of the Project	Consistency with Upstream Plan	The improvement of the road section has been listed as a high prioritized project under JICA's Master Plan in 2008.	
	Urgency of the Project	Very High	
	Necessity of the Project	High	
	Adverse Impact of the Project	Resettlement and Relocation of Public Utilities and Private Premises	
	Beneficiaries and Benefits Generated from the Project	Dares Salaam City Citizens (Approximately 3.0 million population) Travel Time Reduction (from/to CBD), Job Creations, Reduction of Nox and Co_2 Emission,	
Implementing Agency	TANROADS		
Other Stakeholders	DCC, DART, Temeke Municipality, TANESCO, DAWASCO		
Implementation Schedule	Design Works - F/S - D/D	 (Expected) 2013 (Expected) 2014	
	Tendering - E/N - Tender	 (Expected) 2015 (Expected) 2016	
	Construction - Preparation - Works	 (Expected) 2017 (Expected)2019	
	EIA - EIA/EMP/RAP - License - Land Acquisition	 Not yet Not yet Not yet	
Project Cost	US$ 16.6 mil.		
Possible Financial Source			
Related Activities	BRT Phase II		
Requirements	Planning Requirements	Minimizing of Social Impacts (Compensation)	
	Technical Requirements	Nil	
	Environmental Requirements	Environmental License	

Table 3-14 Project Profile – Nyerere Road Widening (Airport to Kiltex)

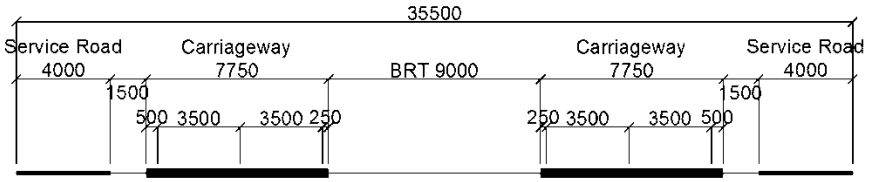
Project Name	Nyerere Road Widening (Airport to Kiltex)	***Jurisdiction***	TANROADS
Road Length	8.7 km	***ID***	105
Type of Improvement	Widening to be Dual Carriageway Road		
Project Background	Nyerere Road is one of major truck roads forming the strategic road transport network in Dar es Salaam. The proposed road section (Airport to Kiltex L=8.66km) so called Pugu Road, is the busy segment in the city road network which has, currently, 3-traffic lanes of which the middle lane is being used as reversible depending on traffic movement demand. However, the traffic control for the reversible lane is not well- organized which results in road safety problems. TANROAD has a proposal of the Outer Ring Road starting from Kiltex, the ending point of the proposed section, to Victoria (Morogoro Road) to divert heavy traffic to the road. The objective of the proposal is to remove heavy traffic from the city road network since the traffic generating/concentrating from Dar es Salaam Port passes the network which results in severe traffic congestion. To complete an effective link between the Port and the Outer Ring Road, the proposed road section needs to be widened to be a dual- carriageway.		
Overall Goal and Project Purpose	To facilitate favourable economic growth and improve living standards in the City by alleviation of the traffic congestion on the proposed road section		
Scope of the Project	· Design Condition Asphalt Pavement Standard, Design Speed of 60km/hr, Dual Carriageway with Access Control · Proposed Typical Cross Section:  		
Justification of the Project	Consistency with Upstream Plan	The plan of the Outer Ring Road has been listed as a high prioritized project under JICA's Master Plan in 2008.	
	Urgency of the Project	Very High	
	Necessity of the Project	Project feasibility to be confirmed in future FS Study	
	Adverse Impact of the Project	Resettlement and Relocation of Public Utilities and Private Premises	
	Beneficiaries and Benefits Generated from the Project	Dares Salaam City Citizens (Approximately 3.0 million populations) and Burundi, Rwanda, Zambia Malawi. Travel Time Reduction (from/to CBD), Job Creations, Reduction of Nox and Co_2 Emission	
Implementing Agency	TANROADS		
Other Stakeholders	DCC, DART, Temeke Municipality, TANESCO, DAWASCO		
Implementation Schedule	Design Works - F/S - D/D	 (Expected)2013 (Expected) 2014	
	Tendering - E/N - Tender	 (Expected) 2015 (Expected) 2016	
	Construction - Preparation - Works	 (Expected) 2017 (Expected)2019	
	EIA - EIA/EMP/RAP - License - Land Acquisition	 Not yet Not yet Not yet	
Project Cost	US$ 31.4 mil.		
Possible Financial Source			
Related Activities	BRT Phase II and III, Outer Ring Road Project		
Requirements	Planning Requirements	Minimizing of social impacts (Compensation)	
	Technical Requirements	Nil	
	Environmental Requirements	Environmental License	

Table 3-15 Project Profile – Outer Ring Road

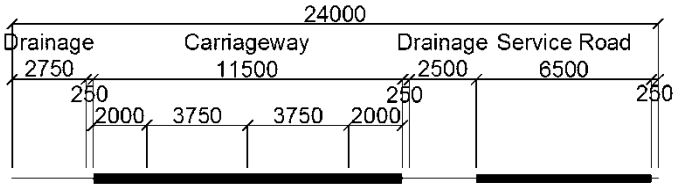
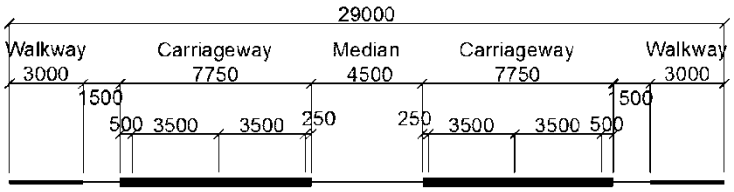
Project Name	Outer Ring Road (Kiltex-Victoria)	***Jurisdiction***	TANROADS
Road Length	13.2 km	***ID***	1009
Type of Improvement	New Construction		
Project Background	The Outer Ring Road is proposed to assign a road to cater for, mainly, heavy (freight) traffic which has been mixed with other traffic in the existing city road network. One of the traffic problems identified in the network caused by the heavy traffic which greatly occupies road's capacity resulting in the network being congested and deteriorates pavements severely due to overloading. As a result, the network has lesser efficiency and certainty. The proposal of the Outer Ring Road is meant to remove the heavy traffic from the network and introduce a bypass route to Bagamoyo where a new satellite industrial centre and port of Dar es Salaam are expected. Despite delay of the development of Bagamoyo, the necessity of the construction is still strongly recognized on the proposed section between Kiltex and Victoria which is expected to contribute towards alleviating the traffic congestion and improve road safety in the network.		
Overall Goal and Project Purpose	To facilitate favourable economic growth and improve living standards in the City by alleviation of the traffic congestion in the City Road Network.		
Scope of the Project	· Design Condition Asphalt Pavement Standard, Design Speed of 80km/hr, Single Carriageway, Staged Construction Plan (Future: Dual Carriageway) · Proposed Typical Cross Section:  		
Justification of the Project	Consistency with Upstream Plan	The improvement of the road section has been listed in high prioritized project at JICA's Mater Plan in 2009.	
	Urgency of the Project	Very High	
	Necessity of the Project	Project feasibility has been confirmed in JICA's FS Study in 2009 and the FS and DD for the road by the TANROADS in 2011.	
	Adverse Impact of the Project	Resettlement and Relocation of Public Utilities and Private Premises	
	Beneficiaries and Benefits Generated from the Project	Dares Salaam City Citizens (Approximately 3.0 million populations) and Burundi, Rwanda, Zambia Malawi. Travel Time Reduction (from/to CBD), Job Creations, Reduction of Nox and Co_2 Emission,	
Implementing Agency	TANROADS		
Other Stakeholders	DCC, Kinondoni Municipality, TANESCO, DAWASCO, SONGAS		
Implementation Schedule	Design Works - F/S - D/D	 Done in 2011 Done in 2011	
	Tendering - E/N - Tender	 Nil (Expected) 2013	
	Construction - Preparation - Works	 (Expected) 2014 (Expected)2017	
	EIA - EIA/EMP/RAP - License - Land Acquisition	 Done but RAP not yet done Not yet Not yet	
Project Cost	US$ 60.5 mil.		
Possible Financial Source			
Related Activities	Nil		
Requirements	Planning Requirements	Minimizing of Social Impacts (Compensation)	
	Technical Requirements	Nil	
	Environmental Requirements	Environmental License	

Table 3-16 Project Profile – Old Bagamoyo Road Widening

Project Name	Old Bagamoyo Road Widening	***Jurisdiction***	TANROADS
Road Length	12.0 km	***ID***	1001
Type of Improvement	Widening to be Dual Carriageway Road		
Project Background	Old Bagamoyo Road is one of the many secondary truck roads forming the local road transport network in Dar es Salaam. The proposed road section (Morocco to Kawe L=5.25km), is the most congested segment in the city road network which has, currently, 2-traffic lanes. There are many public offices (US Embassy, North Korean Embassy, TANESCO etc.) and shopping centers along the road. The urbanization together with residential area developments have progressed which has resulted in an increase of generation of traffic. There are also many DalaDala services on the proposed section; however no bus bays have been provided for which has a negative impacts on road safety. It is, therefore, the proposed section which needs to be improved so as to meet traffic demand and increase road safety.		
Overall Goal and Project Purpose	To facilitate favourable economic growth and improve living standards in the City by alleviation of the traffic congestion and removal of traffic safety problem on the proposed road section		
Scope of the Project	· Design Condition Asphalt Pavement Standard, Design Speed of 60km/hr, Dual Carriageway · Proposed Typical Cross Section:  		
Justification of the Project	Consistency with Upstream Plan	The improvement of the road section has been listed as a high prioritized project under JICA's Master Plan in 2009.	
	Urgency of the Project	Very High	
	Necessity of the Project	The feasibility study by TANROADS which is on-going as of July ,2012 will ensure the necessity	
	Adverse Impact of the Project	Resettlement and Relocation of Public Utilities and Private Premises	
	Beneficiaries and Benefits Generated from the Project	Dares Salaam City Citizens (Approximately 3.0 million population) Travel Time Reduction (from/to CBD), Job Creations, Reduction of Nox and Co_2 Emission,	
Implementing Agency	TANROADS		
Other Stakeholders	DCC, Kinondoni Municipality, TANESCO, DAWASCO,BRT (Phase 6)		
Implementation Schedule	Design Works - F/S - D/D	 On-going (Anticipated completion) Dec. 2012 (Expected) 2014	
	Tendering - E/N - Tender	 (Expected) 2015 (Expected) 2016	
	Construction - Preparation - Works	 (Expected) 2017 (Expected)2019	
	EIA - EIA/EMP/RAP - License - Land Acquisition	 On-going (Anticipated completion) Dec. 2012 Not yet Not yet	
Project Cost	US$ 54.3 mil.		
Possible Financial Source			
Related Activities	New Bagamoyo Road Construction Project (Mwenge-Tegeta)		
Requirements	Planning Requirements	Minimizing of Social Impacts (Compensation), BRT(Phase 6) not considered in the planning	
	Technical Requirements	Nil	
	Environmental Requirements	Environmental License	

Capacity Building Project for the

Improvement of Dar es Salaam

Urban Transport

Discussion Paper (Appendix 1)

Proposal for Northern Busway in Dar es Salaam

This paper has been prepared only for internal discussions
amongst the designated stakeholders for this project.

Secretariat for the Capacity Building Project

and

JICA Expert Team

CONTENTS

EXPLANATIONS:

CUPID – Consensus for Urban Transport and Policy Improvement in in Dar es Salaam is a Capacity building project sponsored by JICA – the Japan Investment Cooperation Agency conducted Yr. 2011-2012.

Dar es Salaam is the Port City of Tanzania with a population of approximately 5million people. Dodoma is the official capital and the seat of Government. Dar es Salaam's population growth is estimated a 3% per year.

Dar es Salaam City Council (DCC) is largely ceremonial and is administratively broken up into municipalities of Ilala, Kinondoni, and Temeke.

DALADALA – refers to the present bus services operating 22 seat buses under private owners with route permits.

DARCOBOA is the body that represents the association of daladala owners.

DART is the agency formed in 2007 to manage the operation of the Dar es Salaam Bus Rapid Transit (BRT) system presently under construction.

PMO RALG is the Prime Minister's Office Regional and Local Government, the ministry overseeing the City and Municipal Councils.

SUMATRA is the regulatory agency that governs the operation of daladala through route permits.

In this document the terms: *Concession Agreement* and *Contract* are interchangeable and C*oncessionaire* is also the referred to as '*The Company*'

Part 1. Project Description

Introduction

Most African cities are experiencing rapid urbanisation and increasingly severe traffic problems. The needs for sustainable traffic and transit solutions are acute, and critically essential to steer these cities to a better future.

This project, based in Dar es Salaam, Tanzania, opens a business opportunity to develop a rapid bus system. Designed for the local situation, it combines system and operational efficiency with a commercial business model to ensure its sustainability.

Under a Public-Private Partnership, the concept is for government to build the priority bus infrastructure and for the private sector, under a concession agreement, to provide the fleet and manages and operates the system. As a sustainable and commercial business model, it may serve as an example for transit development in other African cities.

Tanzania enjoys a stable and fast growing economy with a democratic government. Dar es Salaam as the commercial port city is showing robust growth and increasing prosperity. The government has shown its commitment to sustainable and integrated transport by beginning construction of the DART Bus Rapid Transit (BRT) system due for completion in 2015, and has been working on urban transport policy, short term measures and infrastructure programs with the JICA capacity-building project, captioned as the *CUPID* project under which this project proposal has been developed.

Background and Present Situation

This Northern Busway proposal is a specific 'demand management' measure as proposed under the *CUPID* project to manage Dar es Salaam's traffic congestion. The project has also developed a range of short term measures under a staged traffic management plan for the CBD, including daladala rerouting and the renovation of bus terminus facilities, one-way traffic treatments and intersection improvements. Despite these measures, without a concerted action to manage traffic demand, any gains or improvements in traffic management will be quickly erased as traffic volumes increase.

Traffic growth forecasts in 2007 showed that by 2030 total passenger trips are expected to double; car ownership will triple; and average speed of traffic is expected to slow from 25.8 km/h to 8.5 km/h (gridlock). Decisive steps need to be taken to preserve the low level of car ownership in Dar es Salaam (being presently 13% of mechanised trips).

Clearly inaction is not an option, and the city will either need to invest heavily in road infrastructure (which is unlikely to solve traffic congestion) or invest in more efficient public transport options – the latter being the only realistic option.

Under the *CUPID* Project, short term measures were identified that could be implemented quickly and with relatively low cost. As a traffic demand management measure, the Northern Busway Corridor quickly became apparent as a good short term initiative with potentially a large impact on CBD congestion, as significant car traffic originates in the northern suburbs and these motorists require a good public transport alternative. It also addresses the bottlenecks along Ali Hassan Mwinyi and Selander Bridge, for which there are no solutions presently available. The corridor has available space with a third laneway and median road space, ideally suited for a single exclusive tidal flow bus operation (morning inbound priority and afternoon outbound priority), vastly increasing the capacity and utilisation of this existing corridor. Public transport for existing users will also be greatly improved.

Project Aims, Objectives & Benefits

The project proposes to implement high quality and high frequency bus services from Mwenge to the CBD via a tidal flow priority bus lane.

It aims to provide a more efficient public transport alternative to private travel and also improve the quality of public transport for existing users. For a moderate investment, the busway will greatly enhance corridor performance in one of Dar es Salaam's worst bottlenecks and for which there are no alternative solutions presently available.

As a commercial business model it aims to be commercially viable and will not require operational subsidy support from government.

As a demand management measure

It is widely acknowledged amongst policymakers in Dar es Salaam that increasing use of private cars is a unsustainable and has a high cost to the city economy and quality of life, through wasted time, lost productivity and negative environmental impacts. Large infrastructure cost burdens are also inevitable without efficient public transport options. It is also accepted that traffic management measures have a limited lasting impact without transport demand being managed.

Furthermore, it is also becoming more widely accepted that while restrictive measures such as increasing parking costs and road congestion charging are useful tools to manage demand, a good public transport system is a key component, with the restrictive measures acting as a tool to influence travel behaviour to more efficient means.

It is often assumed that motorists from the affluent northern suburbs choose to drive their cars for convenience and comfort as opposed to less attractive public transport, yet there may be few alternatives as these suburbs are poorly served by public transport. The car option is not a good one, as this area suffers chronic traffic congestion en route to the city and during morning and evening peak hours the trip time can be 1-2 hours for a 5 km northbound trip.

By offering a better public transport alternative, the Northern Busway is likely to reduce traffic demand, however if it fails to sufficiently do so, further restrictive measures can be implemented, such as increased parking charges, reducing parking availability, and even traffic congestion itself will act as an incentive for motorists to choose faster public transport.

As an efficient transport mode

While Dar es Salaam has limited road capacity, increasing and widening the road network will in the end, stimulate greater car use and cannot be proposed as a sustainable solution[1]. It is important for cities to re-invent public transport.

This project delivers on two fronts: it develops the principle of making the best use of existing infrastructure as it greatly increases road capacity, and it also develops a quality public transport option.

The capacity of a tidal flow busway is approximately 7000 passengers per hour per direction (based on one bus/ minute at 120 passengers per bus). Considering the present two traffic lanes carry about 2400 passengers per hour per direction, the priority bus lane will increase the road capacity up to four times (the same as building three more bridges at Selander). **Figure 1** illustrates the alternative options to carry 7000 passengers per hour; 60 long buses can replace 280 daladala or 5800 cars.

[1] While a basic and well-connected roadwork is essential, no city has ever solved a traffic problem by building more road space. See: http://www.rappler.com/thought-leaders/15854-taming-the-traffic-beast-of-metro-manila

Figure1. Capacity and efficiency improvements of a single tidal bus lane

To provide network benefits

Passengers are attracted to public transport through proximity, frequency and network, suggesting that services must be easily accessible; run often to reduce waiting time; and once on the system, passengers should find it easy to connect to a variety of destinations.

This project provides significant and early network benefits to the DART BRT, as the busway provides the BRT with a high frequency feeder/distributor, and extends the public transport system to the North-West along a future proposed BRT line, and delivering it sooner than the BRT expansion program. Fares and ticketing will also be integrated across the network.

To build transport management capacity

The concession agreement and the commercial management model can also serve as a business model for the DART BRT. A commercial approach in engaging with the daladala operators is also proposed.

Developing these contractual relationships is a significant step in management capacity for the city toward engaging the private sector in public service delivery.

To create synergy with DART BRT

Consolidating a wider DART network will help support the DART business case and the concession agreement may serve as a template for the DART management structure. There is a possibility that an interested investor in the Northern Busway may also express interest in a concession to operate the DART BRT.

Analysis of Stakeholders

City/authorities (objectives, needs, constraints)

Clearly, the objective of the city authorities is to find ways to solve the ever-growing traffic problems of Dar es Salaam. Budgets are always constrained and road development lags behind traffic growth. There are no simple solutions and tough decisions need to be made. Authorities have made a bold and visionary decision to improve public transport options with the introduction of DART BRT and

albeit with its delays and uncertainties, have shown that they are a willing and committed partner to solving the transport problems of the city.

The proposed establishment of the Dar es Salaam Transport Authority (DUTA) also demonstrates the seriousness of government in its actions to coordinate urban transport solutions.

Passengers (needs, affordability, service design)

There are two major passenger groups which will benefit from improved public transport, being:

Firstly, residents of Masaki (Msasani Peninsula) who are car dependant and poorly served by public transport (car dependency in turn, being the cause of low public transport offering in the area). Access to the city is becoming a major issue for these residents in terms of wasted time and efficiency. To win these passengers over, the system needs to be able to effectively deliver a 'better than car' service. *Can it do this?* As long as the service is fast (by-passes all traffic jams), clean and comfortable, and offers high frequency services, it is likely to succeed, as passengers can reduce their travel time, avoid car parking problems and enjoy a quality service.

Secondly, the capacity of present Mwenge daladala services is limited, causing lengthy passenger waiting times at bus stops. Some outgoing passengers wait at a prior bus stop for an incoming bus (paying an extra fare) just to secure a seat on the bus for the outgoing trip. A service with sufficient capacity will save much waiting and aggravation for these passengers.

Concessionaire (objectives, selection)

The concessionaire is expected to be a private company engaged with government under a concession agreement which forms the basis of investment. The concessionaire can be international, domestic or a consortium.

The objective of the concessionaire is to secure a viable and commercial business opportunity, and to make a return on its investment. It is this commercial incentive that needs to be harnessed in a concession agreement; where commercial performance delivers service quality and sustainability which aligns to the government's public service delivery objectives.

The role of the concessionaire is to manage the entire busway system, including system planning, management of day to day services and customer service delivery, and system promotion. It also manages the bus operator contracts if it has contracted out bus service delivery.

Operators (economic, social, behavioural factors)

Inherently the project involves managing the issue of existing operators who are displaced by new services. The key to managing this issue is to understand the industry and its participants, and on the basis of this understanding, develop sound strategies.

The participants include amongst others:

- Bona-fide operators operating small business who drive the daladala to support their families, owning one or more vehicles
- Retired civil servants (or their widows) who rely on a daladala for regular or retirement income
- Currently employed civil servants (including Police) who operate daladala as a sideline to their main employment
- A range of other players who for the cost of a bus can operate a business employing day-labour.

Where buses are not driven by their owners, the owner rents the bus to a driver/ conductor team for a set daily fee, who then must make sufficient daily revenue to cover the cost of rent, fuel and wages. The linkage between revenue and number of trips is the cause of much of the misbehaviour in the daladala services; driven by the struggle to survive or in some cases just maximise revenue.

It should also be understood that the daladala industry while containing 'career' operators, also has transient players who last as long as the bus will run and exit the industry when the vehicle is depleted. Many buses are also life –expired, raising the question of whether there is any compensation entitlement if they are displaced. Within the 'operator' group are owners and also driver/ conductors, the former looking for business opportunity, and the latter just needing employment.

Any management strategy to engage displaced operators will need to be cognitive of these issues and also draw on the assistance of DARCOBOA who can facilitate negotiations with operators.

However, given the marginal survival so prevalent in the industry, it can be expected a new and more sustainable business opportunity is an interesting prospect for them to consider.

Project Scope and Responsibility

Physical Infrastructure

The following build items are the responsibility of government, and include:

- Building 11 km of tidal flow bus lane on 7.5 km on existing pavement and 3.5 km of new single lane roadway on the median
- Traffic treatments along 1.5 km road deviation to Kawawa Park and Ride station for the busway route
- Kerbside bus treatments and intersection priority along 3km of roadway (for UN road deviation)
- Physical barriers and traffic marking to prevent ingress of other traffic (along 11km exclusive bus lane)
- 13 median stations with raised pedestrian crossings plus the terminus station at YMCA and the Mwenge terminus station with a bus U-turn facility (west of the Mwenge intersection with Sam Njoma Rd)
- 3 kerbside bus stations along the Route 2 deviation of United Nations Rd and Bibi Titi Mohammed Rd
- Footpath and pedestrian treatments to improve walking access to each bus station
- Bus directional signals to manage one-way flows of buses and bus tracking equipment along the busway.
- Establish the Operational Control Centre (OCC) to track buses and manage signaling
- E-Ticketing equipment (can be on-bus or on-platform)
- Passenger information at stations (next bus arrival)
- Bus/feeder terminus at Mwenge
- Park and Ride facility at Mwenge (space permitting)
- Park and Ride facility at location opposite UN embassy (to be secured)

The concessionaire shall be responsible for the operational equipment and facilities including:

- Acquiring a bus fleet
- Establishing a bus depot fully equipped to manage operational management, fleet parking and maintenance and fuelling
- On-bus communications equipment to integrate with OCC.

Management and Control mechanisms

Setting up the Operational Control Centre (OCC) is part of the infrastructure works in the building program and is the responsibility of government, although given the technical nature of the works, the technology assistance of the concessionaire could be utilised as the equipment is used for operational control for which the concessionaire is responsible.

The overall scope of works for system management and control includes:

Government / Concessionaire

- Design and build the physical facility of the OCC and control equipment, specifying technical design for bus tracking and signal control; securing equipment suppliers for supply, installation, commissioning and maintenance
- All stations monitored by CCTV

Concessionaire:

- Fit on-bus tracking and communications devices, fully integrated to the communications infrastructure of the OCC.
- Design OCC management systems and organizational structure and Standard Operating Procedures, including safety protocols.
- Design the operating plan of the bus services and manage resources.
- Secure and design bus depot facilities for fleet servicing and parking.
- If subcontracting bus operations, develop bus operating contracts, contract management procedures and monitoring and auditing processes.

Selection of a concessionaire

It is the role of the Client Agency (SUMATRA?) to manage the process of securing a management company that has the technological skills to operate the system.

Selection of a concessionaire is likely to be through a tender process to ensure there is no legal challenge to the appointees of the PPP. The concessionaire can be a 100% private entity or be a public /private joint-venture.

Managing industry engagement

All existing daladala services operating in direct competition to the Busway would be removed (i.e. all services crossing Selander Bridge and all services travelling from Mwenge to Morocco). Managing the transition/ resettlement of daladala is primarily the role of the concessionaire; to develop the opportunity for the Daladala operators to be engaged either through a shareholding or as feeders to the system. This will require the assistance of SUMATRA to facilitate and support the program. It is generally acknowledged by the industry association DARCOBOA that bus operators in this project area are adaptive and capable of engaging with a new business opportunity.

It is anticipated that these affected operators can form an operating company to operate trunk line services, or organise themselves into cooperatives under which they can operate their individual daladala to service the Busway stations under a partnering arrangement.

Therefore the scope of works includes assessing the affected operators and designing the contract mechanisms to engage them into the business, and negotiating these agreements into place. Alternatively an investor has the option, and may decide to compensate affected operators out of the business.

Target and Evaluation Indicators

Project sponsors such as government, donor agencies and investors will be observing the performance of the project and its successful implementation. The best measure of performance is whether it is meeting the objectives.

The following list of evaluation indicators will be useful, and are firmly grounded on the commercial business model as opposed to the typical 'minimum service standards' typically employed with subsidy-dependant public transport systems.

Government objectives will include a good standard of service measured by customer satisfaction; compliance with minimum service standards and service quality indicators; as well as system sustainability. Sustainability is a critical issue, as bus projects often start with a fanfare of new buses but then deteriorate over time due to cost-cutting and lack of fleet maintenance. When the buses are 'run into the ground' the business collapses.

Company objectives are not far removed from government objectives as profitable operations and financial viability drive service quality and vice-versa. A 'profit-driven' company has the incentive to win customers; manage fares to target the market; and maintain the reputation as a good service provider. But this is not always guaranteed; some companies if they perceive a captive market will simply reduce costs below revenue to remain profitable.

The overall performance measures could therefore include:

- Patronage growth
- Customer satisfaction (surveys, media reports, complaints and compliments)
- Meeting agreed minimum service levels (which may include providing some non-profitable services)
- Quality and service failure indicators, such as missed trips, poor cleanliness, lack of information, accidents.
- Profitability and the ability to continue providing affordable fare levels (as a measure of efficiency).

Regular performance assessment should be part of the contractual agreements, so that there is an open and transparent performance evaluation.

Part 2. Scope and Design of Infrastructure

The project involves building a tidal flow busway from Mwenge to the CBD with an additional bus priority route operating via United Nations Rd to the YMCA terminus. It involves buses operating on a tidal flow single lane busway operating inbound in the AM and outbound in the PM from Mwenge to YMCA. An Operational Control Centre (OCC) will manage the bus operations in real time to ensure safe and reliable operation.

The option exists for a Park and Ride station at a location close to the US embassy on Old Bagamoyo Rd. Feeder buses from Msasani Peninsula will also expand the system coverage.

Dedicated tidal-flow bus lane

There is space available for the entire length for a single lane busway from Mwenge to YMCA; a route length of 11 km. Of this trunk corridor 3.5 km of new single lane busway construction is required, and the conversion of 7.5 km of existing roadways into a priority bus lane. The full route requires traffic barriers and road markings to identify and secure the busway.

Figure2 shows a map of Busway routes in relation to the DART BRT and also shows station locations.

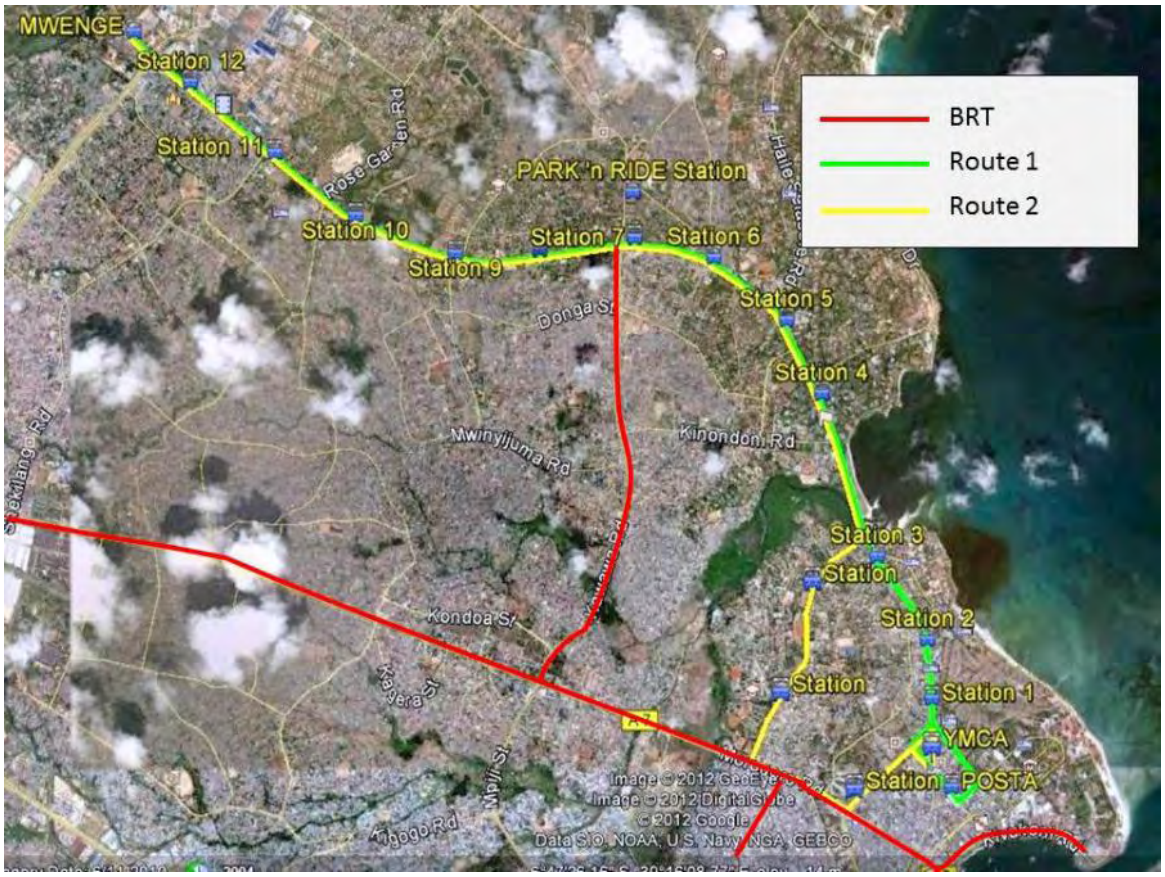


Figure 2. Northern Busway Routes showing connections to the proposed DART BRT system

A further 1.5 km of road improvements is required for the deviation to the Park and Ride station at New Bagamoyo Rd opposite the US Embassy. Modifications to the Selander Bridge are also required to remove the sidewalk and replacing it with a traffic lane.

A Route 2 deviation into United Nations Road, Morogoro Rd (briefly joining he BRT) and then left to Bibi Titi Mohammed, Maktaba to the YMCA terminus will require a 'soft' bus priority on these sections totalling 3km.

The section south of Selander Bridge to the Ohio St intersection currently has an available lane for a single lane busway (see **Figure 3**) while the northern section between Selander Bridge and Kawawa Street has an available median to accommodate construction of a busway (**Figure 4 and 5).** West of Kawawa Rd to Mwenge there is a centre lane presently available for the busway (**Figure 6**).

Figure 3. Section of existing roadway at Ali Hussein Mwinye showing how a busway would be marked.

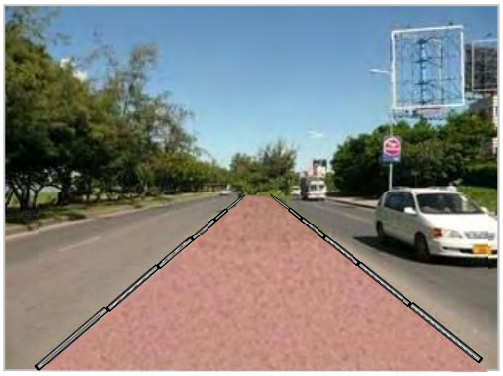


Figure 4. The section north of Selander Bridge (showing area for busway lane construction)

Figure 5. Close to Haile Selassie Rd showing wide median section nature strip requiring a single lane construction

Figure 6. West of Kawawa Rd a third centre lane presently exists for a busway

Selander Bridge

The Selander Bridge has one lane presently used as a pedestrian lane which can be converted to a mixed traffic lane, allowing the centre lane to be dedicated to the bus lane (**Figure 7**). The old bridge alongside presently serves as a cycleway and can also be used for a pedestrian walkway.

While structural engineering confirmation is required, the pylon design as shown in **Figures 8 and 9** indicates that the southbound bridge section (having 3 pylons as opposed to 2 pylons on the northbound section) is capable of carrying 3 lanes of traffic. If engineering approval cannot be obtained, a single deck platform can be built straddling the bridge centre by driving piles between the bridges in the area shown in **Figure 10**.

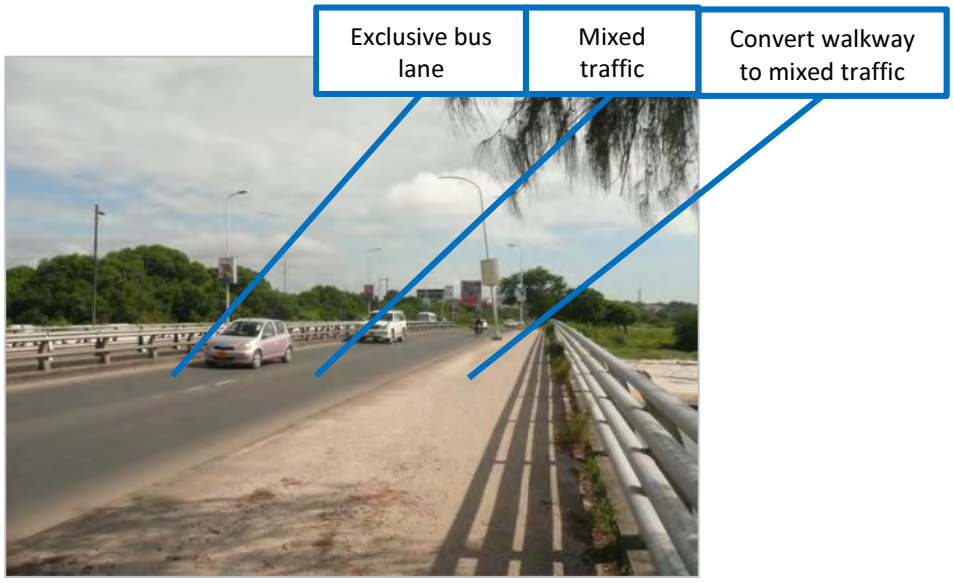


Figure 7. Selander Bridge Southbound Section

Figure 8. Northbound Pylons

Figure 9. Southbound Pylons

Figure 10. Centre of Bridge

Bus stations

Median bus stations are placed at key locations along the busway approximately 750m apart and be a dual platform design, to allow returning buses operating 'contra' to the tidal flow to access the rear of the station platform from the adjoining mixed traffic lane. Buses would be equipped with doors on both sides to be able to access the stations from both directions.

At station locations a total road width of 21 metres is required to accommodate two mixed traffic lanes in each direction as well as the station platforms and bus lane.

Access to stations is via a raised crossing section to alert drivers and slow traffic. Overhead walkways are discouraged for this proposal as they impede access to public transport and do not provide

disabled access. Slowing traffic and respecting all road users equally balances road use and creates a more respectful social environment. In some specific heavy traffic locations pedestrian crossing signals may be preferred, and this can be considered during detailed design.

The station location at YMCA under present development in the CBD Traffic Improvement Plan to accommodate Mwenge daladala services will need to be redeveloped to a raised station platform as the city terminus for the Northern Busway.

Typical Busway station designs are show in the following **Figures 11-15.**

Figure 11. Station showing raised pedestrian crossing and access ramps

Figure 12. Opposite end from pedestrian walkway

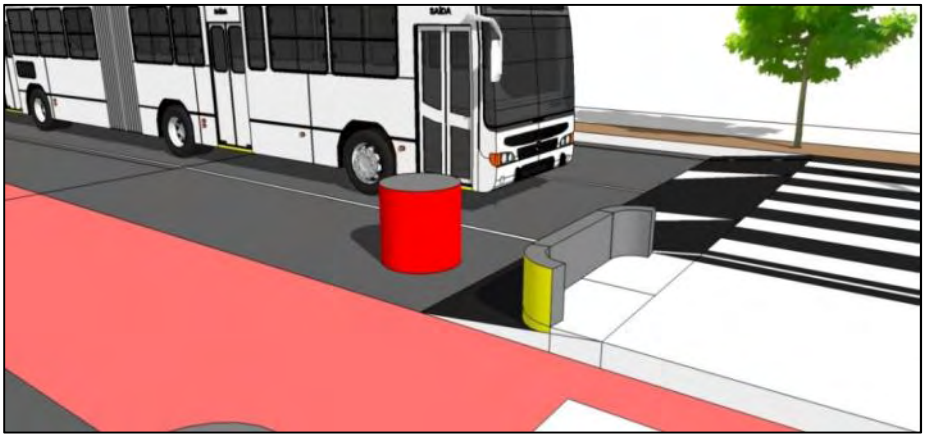


Figure 13. Bollards and barriers for pedestrian safety at crossing refuge area

Figure 14. Aerial view

Figure 15 Plan view showing impact on road width

Fleet and equipment design

An 18 metre long articulated air-conditioned bus fleet is proposed capable of carrying 120 passengers per vehicle in normal conditions but up to 140 passenger peak load.

Modelling has shown this to be the most efficient option, with the additional capital costs of the larger buses offset by reduction in total fleet and drivers, and an improved bus to passenger ratio.

Figure 16 shows a typical Euro-style articulated bus. Typically these buses have 3 wide doors for fast boarding and alighting, and 50-60 seats with open internal access to allow for fast boarding and alighting.

Figure 16 Typical articulated bus design

Diesel engine propulsion is proposed, with Euro built buses being Euro 3 or 4 emission standards requiring low sulphur (clean diesel) which is presently imported and available in Tanzania.

Selecting the cleanest fuel technology possible is recommended to ensure clean emissions and mitigate environmental impacts.

Bus guidance at stations

Bus station platforms that allow level boarding require a system to guide buses accurately into the stations, ensuring predictable and faster docking without the risk of collision with the platform. **Figure 17** shows an example in Bangkok BRT and the fitment of a low-technology guide wheel on a bus in Leeds UK. Note that buses need to be equipped with air suspension so that a constant floor height is maintained to match the platform height regardless of passenger load.

Figure 17 Examples of a bus guidance system

Traffic signal priority

Busway service frequency is not so high as to cause any degree of bus congestion at stations so traffic signal priority is not critical, but nevertheless recommended to assist to keep buses on schedule.

Technically this is not difficult and is best achieved by synchronising the movement of buses to the natural cycle of green light phases. As the OCC tracks the location of each bus, it can adjust bus movements to match with the green light phases to reduce the red light occurrence.

Figure 18. Signal managing the bus separately

Figure 19. Priority 'jump' lanes also can be used at intersections to prioritise buses in the queue

The Operational Control Centre (OCC)

The OCC automatically monitors and controls buses in service to ensure bus schedules are maintained and in the case of the Northern Busway, ensures that the tidal flow system works safely. Monitoring services and station platforms in 'real time' also allows quick response to service incidents and disruptions. While various technology options are available, from simple control and monitoring to high levels of automation, a tidal traffic system will require a level of technology that can track buses accurately and consistently; guarantee the safe bus signalling system, and is integrated with traffic signals.

Bus tracking also allows 'next bus' information to be provided to passengers at stations and keeps record of all bus movements for post operation analysis if required.

Figure 20. Controller Graphic interface showing in-service bus log and real-time location map

Figure 21. Control Centre Brisbane

Figure 22. 'Next-Bus' passenger information

Fare collection and ticketing

As the Busway stations are not manned, passenger tickets will be processed either on-board the bus or at station platforms as passengers board the bus using a card reader. No cash payments will be accepted on buses or at stations.

Ticketing can either be by a prepaid paper ticket which is validated with a time/ date upon boarding, or the use of 'smart-card' readers that read entry and exit as passengers touch-on and touch-off the bus.

Paper tickets sold in book form are inexpensive and easily checked, showing that systems do not necessarily require too much technology. However smart card ticketing is becoming widely used and has multiple benefits such as:

- Providing passenger boarding and alighting data to assist in service planning
- Assisting to manage more complex fare policy, such as time-based and volume discounts
- Being able to target discounts and fare concessions accurately
- Reducing revenue leakage and fraud
- Tracking revenue and improving auditing
- Integrating with the BRT fare system, offering the discount for connection between the BRT and Northern Busway.

Figure 23 shows a paper ticket validating machine and **Figure 24** a swipe card reader.

Figure 23. Paper ticket validator stamps time and date

Figure 24 Smart Card Touch-in/Touch Out

Branding and marketing

The Busway itself needs to be designed as a high quality mass transit system to attract passengers. System branding is also an important element, to build brand recognition as a quality and convenient service and a customer friendly organisation.

Modern technology features are also marketable, as they make services more reliable, and attract passengers who may otherwise avoid using buses due to a perception of inconvenience. Such branding is used by *Smartbus* in Doncaster Victoria. **See Figure 25.**

Figure 25. Smartbus in Doncaster Victoria – High technology image gives assurance of reliability

Park and Ride

Park and Ride facilities actually increase the bus network by creating facilities for car users to access the network. Park and Ride facilities should be integrated with a common ticket to the bus system and be secured with good lighting, safe access and passenger information.

Sites at Mwenge and on Old Bagomoyo road opposite the US embassy need to be secured as Park and Ride stations. Good feeder routes can also provide essential access.

Figure 26. Park and Ride Facilities Nantes France – strong branding and identity with the transit system

Part 3. Operational Design

Passenger Demand Analysis

Vehicle Count Surveys

Passenger demand data has been sourced from the Vehicle Count data obtained from surveys conducted in December 2011 by the *CUPID* project, covering a 16 hour weekday with an hourly breakdown of data both inbound and outbound at six locations along the corridor. The survey results are shown in ***Appendix 1A: Demand Data***

Within the survey data a discrepancy exists between total inbound and total outbound (12% more cars outbound than inbound, and 25% more daladala outbound). While some counting error could responsible, it is more likely that both daladala and motorists are taking alternative return routes to avoid traffic choke points, and also that daladala may alter their AM and PM route patterns to adjust to where they see greater passenger demand.

The data also indicates significant boarding and alighting along the route suggesting that seat turnover could range between 1.5 and 2. The lower figure has been used in the modelling.

The surveys also collected vehicle occupancy data (vehicle load factor by hour) during the survey period, allowing greater accuracy in the passenger estimates.

The demand forecast includes an estimated 10% modal shift from cars and 10% induced travel growth (from new trips) which can be expected once quality and accessibility improves.

Figure 27 shows this graphed over a daily period and **Table 1 and 2** shows the forecasted demand for Inbound and Outbound respectively.

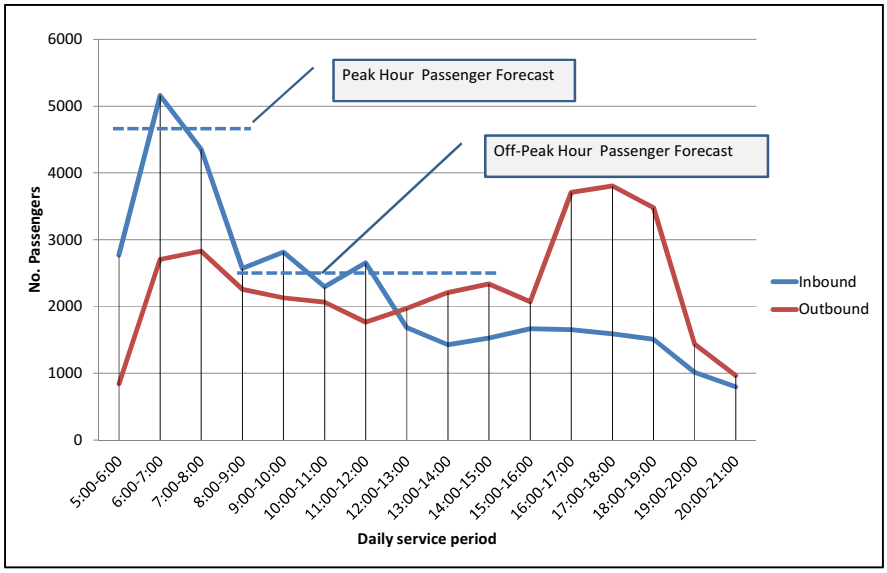


Figure 27. Level of Forecast Demand over a 16 hour day based on Passenger Demand Survey Data

The above graph shows a strong morning peak and a more evenly spread evening peak. The 'early peak' finishing at 8AM may indicate passengers travel early to 'beat the traffic' as demand drops by one-third between 8AM and 9AM with off- peak travel holding at 55% of peak travel until midday.

For outbound travel the PM peak hour is from 4PM to 7PM although this may longer than necessary due to the lack of present capacity (long queues are presently seen past 7PM). Notwithstanding that

some peak travel behaviour may change, the Operational Model has retained the peak/off-peak ratio at 5 and 11 hours respectively.

Forecasted peak hour demand is the average peak hour demand at **4757 passengers ph/pd** based on average peak demand between 6AM to 8AM (see Table 1) with the bus fleet providing a capacity for **5040 passengers ph/pd** (allowing 11% spare capacity).

Off -peak capacity is determined at 55% of peak volume forecasting **2620 passengers ph/pd** with **2770 passengers ph/pd** capacity provided. This off-peak demand has also been applied to Saturday although on Sunday demand is estimated to drop to 30% of peak levels. For revenue estimation, the Operational Model assumes average 80% occupancy to take into account low volume periods.

However, should these estimates be 'off the mark', the company can tailor services to demand to maintain efficient operations and retain 80%+ occupancy levels.

Table 1 Inbound Travel Forecast (with average inbound peak loading marked in red box)

Based on: Assumption Modal Shift from passenger cars : 10% Assumption Growth in bus passengers : 10% Without passenger turnover							Average loadings per period and daily distribution		
Hour	Bagamoyo & Sam Nujoma	Bagamoyo & Shek/go	Bagamoyo & Mwinyijuma	Bagamoyo & Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & UN Rd	Period average	Average (1st 3 sections)	Percentage compared to period average
5:00-6:00	2969	2892	2446	993	921	706		2769	90%
6:00-7:00	5129	6310	4038	2264	3271	2465		5159	107%
7:00-8:00	3533	5689	3839	1551	2870	2868	4757	4354	93%
8:00-9:00	2598	3044	2067	705	1952	1360		2570	97%
9:00-10:00	2922	3177	2339	794	1980	1437		2813	105%
10:00-11:00	2419	2743	1723	1264	1861	1365		2295	94%
11:00-12:00	2140	3773	2047	970	2214	1474	2583	2653	104%
12:00-13:00	1617	1875	1558	735	1489	864		1683	104%
13:00-14:00	1436	1617	1226	850	1535	1165		1426	100%
14:00-15:00	1554	1500	1528	630	1396	988		1527	97%
15:00-16:00	1986	1579	1434	683	1237	845		1667	100%
16:00-17:00	1707	1853	1395	619	1381	1200		1652	105%
17:00-18:00	1743	1626	1398	865	1207	893	1579	1589	99%
18:00-19:00	1784	1341	1398	637	1184	1056		1508	95%
19:00-20:00	1415	281	1336	740	762	630		1011	66%
20:00-21:00	1039	195	1153	553	1193	371		796	58%

Table 2 Outbound Travel Forecast

Based on: Assumption Modal Shift from passenger cars : 10% Assumption Growth in bus passengers : 10% Without passenger turnover							Average loadings per period and daily distribution		
Hour	Bagamoyo & Sam Nujoma	Bagamoyo & Shek/go	Bagamoyo & Mwinyijuma	Bagamoyo &Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & United Nations Rd	Period average	Average (1st 3 sections)	Percentage compared to period average
5:00-6:00	1000	986	542	343	183	155		843	39%
6:00-7:00	3757	2748	1607	1022	1335	996		2704	124%
7:00-8:00	4181	2544	1765	1313	1645	1023		2830	130%
8:00-9:00	3176	2413	1176	931	1481	1086		2255	103%
9:00-10:00	3339	2187	864	1135	1681	1586		2130	98%
10:00-11:00	3067	2142	982	832	1858	882		2064	95%
11:00-12:00	2601	1950	744	982	2268	1086		1765	81%
12:00-13:00	2573	1848	1489	909	2118	857		1970	90%
13:00-14:00	2560	2001	2068	955	1927	1067		2210	101%
14:00-15:00	3332	2570	1105	972	2193	1880	Av. Off-peak	2335	107%
15:00-16:00	2305	2180	1728	1123	2332	1128	2181	2071	95%
16:00-17:00	4430	3780	2912	1490	3780	1686		3707	101%
17:00-18:00	5509	3576	2326	1608	3804	1880	Av. Peak	3803	104%
18:00-19:00	4949	3518	1969	1474	3312	1565	3663	3479	95%
19:00-20:00	2205	1156	940	1053	1835	944		1434	66%
20:00-21:00	1759	162	972	949	1193	684		964	44%

Validating the Passenger Demand

The passenger demand and fleet calculations of the Operational Model have been checked and confirmed against the raw survey data.

The model has included some estimates, growth factors and service adjustments to forecast future demand, as follows:

Demand Forecast

- 100% existing bus passenger demand
- + 10% modal shift (cars to bus)
- + Induced travel (10% of total car travel)

Service adjustments/parameters

- Seat turnover @1.5x
- 80% total bus occupancy
- 5% reduction in total patronage due to school and public holidays
- Off-peak travel @ 55% of Peak level (also for Saturday)
- Sunday travel at 30% of Peak weekday level.

Route Planning and Design

Vehicle count survey data has shown significant demand variations along the corridor as shown in **Figure 28** which takes one peak hour inbound and shows percentages of demand exiting the corridor south at various intersections to other destinations or via alternative routes to the CBD. The reason for this may be to avoid congestion or that Daladala are pursuing more lucrative (but perhaps longer) routes into the city.

While this may cause some uncertainty in the passenger demand estimates it can be expected that with the introduction of a new and faster bus service direct to the city, travel demand on the corridor would consolidate.

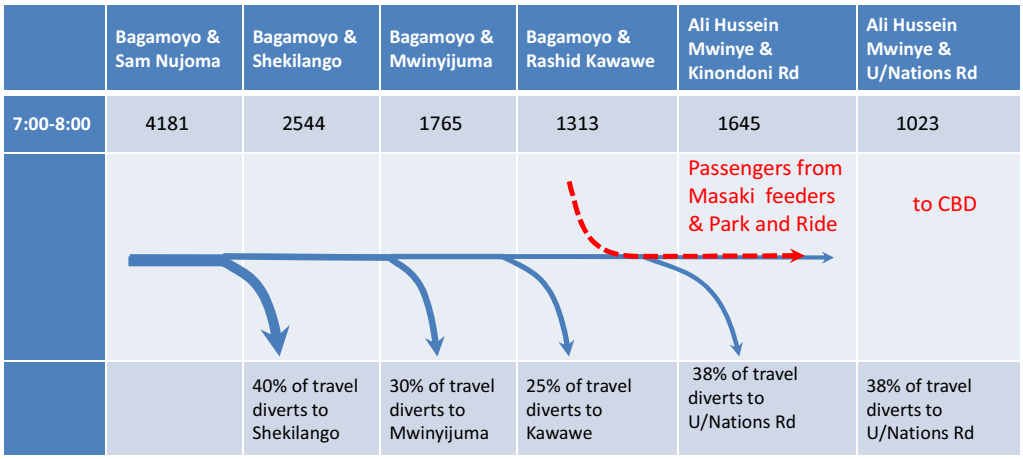


Figure 28 Summary of Passengers Demand by Road Section (7:00-8:00)

To take this into account, planning has included:

- Some travel along the corridor diverting to other routes, requiring some Daladala to be permitted to operate a limited partial route (Mwenge to Shekilango) alongside the busway and would not be regarded as direct competition.
- Once passengers alight at Kawawe, additional passengers from Masaki (Park and Ride and feeder routes) are likely to supplement the passenger numbers along the final section to the city. It is expected that passenger growth from modal switch will benefit this section most.
- Provision of a second route that caters for approximately 40% of travel which diverts to United Nations Rd to the west of the CBD area.

The two bus routes planned for the corridor operate as:

Route 1: Mwenge to YMCA via New Bagamoyo Rd, Ali Hussein Mwinye, and

Route 2: Same as Route 1 but diverting to United Nations Rd, Morogoro Rd BRT, Bibi Titi Mohammed Rd and Maktaba St to YMCA

Both routes follow the one-way northbound traffic circulation at Upanga St (YMCA) to the Ohio St intersection, with Route 1 proceeding north and Route 2 via Bibi Titi Mohammed following the route in reverse.

The detail of the route in the CBD is shown as **Figure 29.**

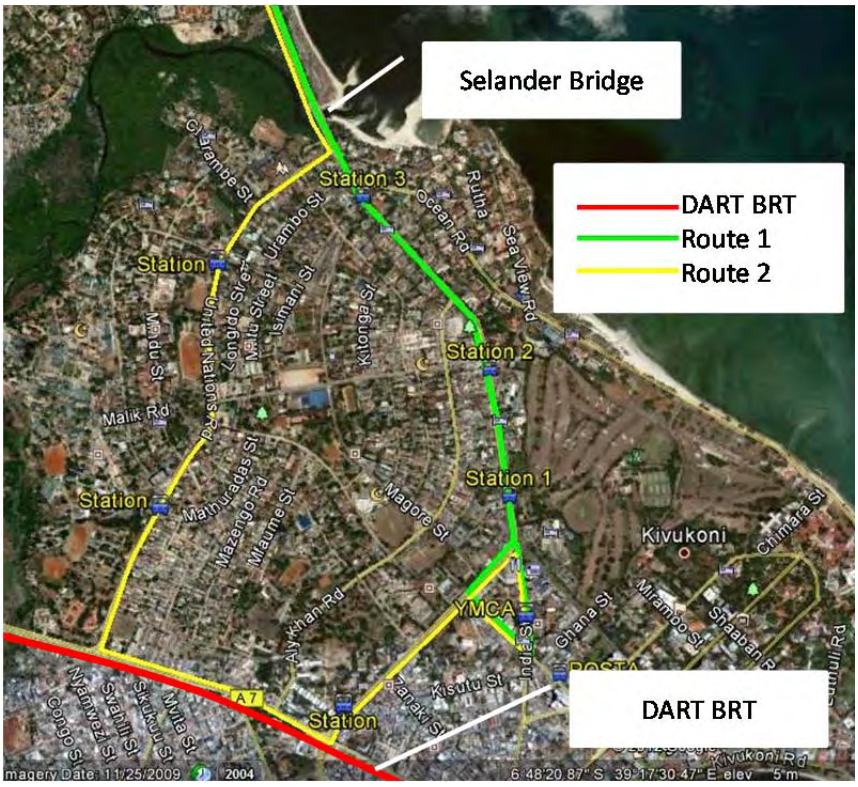


Figure 29. CBD Route Detail

Bus Service Plan

The bus service plan is based on the demand estimates and the operational modelling described in next section.

Table 3 provides a summary of service specifications.

Table 3. Service Plan and Specifications

	Route 1	Route 2
Route Description	**Route 1 : Mwenge to Posta** via New Bagamoyo Rd, Ali Hussein Mwinye Rd, Bibi Titi Mohammed Rd, Maktaba St, YMCA. Return via Garden St Ohio St, via reverse route to Mwenge.	**Route 2 : Mwenge to YMCA** via New Bagamoyo Rd, Ali Hussein Mwinye Rd, right to United Nations Rd, left to Morogoro RD (BRT) left to Bibi Titi Mohammed Rd, right Maktaba St, left Upanga St to YMCA. Return via Upanga St left Bibi Titi Mohammed and reverse route to Mwenge.
Length of route	11km	12.3km
Bus Type	18m articulated air-conditioned. 120 passenger capacity (seating and standing).	18m articulated air-conditioned. 120 passenger capacity (seating and standing).
No. In-service Buses	M-F Peak : 22 M-F Off-peak & Sat : 12 Sunday: 7	M-F Peak : 18 M-F Off-peak & Sat : 10 Sunday: 6
Headway	M-F Peak: Every 2.5 min. M-F Off-peak & Sat: Every 4.5 min. Sunday: Every 8 min.	M-F Peak: Every 3.3 min. M-F Off-peak & Sat: Every 6 min. Sunday: Every 11 min.

Operational Plan and Business Model

Description

The Operational Plan is the initial basis of agreement between government and concessionaire (hereinafter referred to as the Company), where the government sets the agreed Level of Service (LOS) which becomes the minimum service level agreed by the Company. It also determines the 'commercial fare' being the average fare required to cover all operational costs and this commercial fare calculation guides the fare level negotiations between the government and the Company.

Operational modelling allows sensitivity analysis to test varying passenger demand, service levels and costs of operation (change in fuel prices etc.). **Figure 30** outlines the function of the Operational Plan.

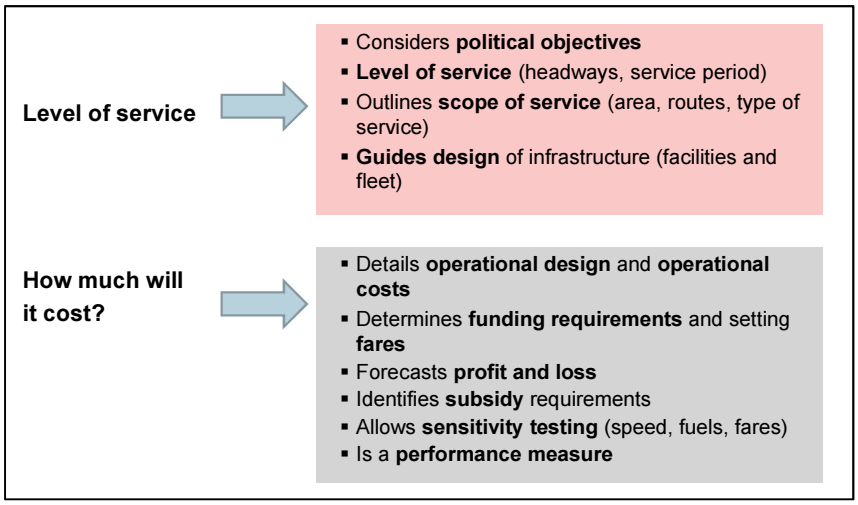


Figure 30 Elements of the Operational Plan

The Operational Plan transposes political objectives into financial reality. However should on-ground conditions prove different, (e.g. efficiencies cannot be achieved, or passenger demand below expectations), the parties can review the LOS, the fare structure, or initiate any mutually agreed action to resolve the situation.

Fleet requirements and service headways

The Operational Model has indicated that a fleet of 43 buses are required. The fleet type selected is 18m articulated buses with 120-140 passenger capacity. This proved to be the most economical vehicle choice as it reduces the fleet size to almost half (compared to 12m city buses) while still retaining service headways at under 2 minutes during peak and under 3 minutes during off-peak. A mixed fleet which includes 12m city buses (70 passengers) was also considered, being more economical to operate during low-volume periods. This option can be evaluated.

Table 4 shows key service operating data.

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Table 4 Bus Operations Service Data

Type of Service		Segregated Busway (BRT)
Routes	1	Mwenge to YMCA
	2	Mwenge to YMCA via UN Rd
Type of Bus		18m Articulated air-conditioned
Fleet Size		43
Interest rate on bus finance		5.5%
Peak Hour Passenger Capacity		5,040
Service Headways *(minutes) along main corridor*		
Mon-Fri Peak Hours		*1.43*
Mon-Fri Off-Peak Hours		*2.50*
Saturday		*2.50*
Sunday		*4.29*
No. Stations		19
Average Bus Speed (kph)		25
Average Bus Loading (occupancy)		80%
Total passengers p.a.		31,225,066
Total kilometres p.a.		3,528,395

Fare levels – setting the commercial fare

The Operational Model calculates profit and loss to determine financial viability. In this instance the model is designed to specifically determine the commercial fare required to cover all costs and this has included in the cost of operation, the *management fee* (Management Company profit) and a Bus Operator's *profit margin.* The commercial fare is therefore calculated to 'break-even' by dividing the cost of operation (including profit margins) by total *No. of Passengers.* The model has calculated the commercial fare to be **TZS 370** (US$0.24) in 2012 values. The cost summary and fare calculation is shown in **Table 5.**

Table 5 Summary of Model Results

Based on: Average Bus fare: TZS 370 Average Bus speed: 25 km/h Average Occupancy: 80%			
System Revenue	**per annum**	**USD**	***% of total Rev***
Fare Revenue	11,553,274,442	7,434,540	*97.92%*
Non Fare Revenue (On-Bus advertising)	106,915,200	68,800	
Non Fare Revenue (Station advertising)	92,352,000	59,429	
Non Fare Revenue (Commercial space)	46,176,000	29,714	*2.08%*
Gross Profit	**11,798,717,642**	**7,592,482**	***100%***
System Costs		**USD**	***Check***
Management Costs (A)	500,380,446	321,995	*4%*
Fleet Cost (B)	3,129,030,353	2,013,533	*27%*
Bus Operations Cost (C)	7,184,120,982	4,622,986	*62%*
Management Fee/ Profit margin (D)	734,240,043	472,484	*6%*
Total Costs	**11,547,771,823**	**7,430,999**	***100%***

Fare levels - Affordability and 'willingness to pay'

Fare levels are a key policy interface between the Company and government, with the investor requiring adequate returns and government being typically concerned with the affordability issue and social impacts.

Usually governments expect to set the fare levels for bus services, taking into account affordability and operator's viability. Shortfalls are usually compensated by subsidy or if no subsidy is available, it is left to the operator to make ends meet, which generally results in cost cutting and degraded quality of service.

When government 'fixes' fares they are usually set to be affordable to the poor (who are more dependent on public transport) but this generally delivers a poor system, with little capacity to attract travellers who have a choice. Modern bus systems should not be regarded as just social services for the poor; to survive they must be able to 'win the market' in competition with cars. Services must be paid for, and travellers should be given a choice: to use a bus service or perhaps to use lower cost options such as safe cycling or walking options. Average walking distances in Dar es Salaam are long.

Furthermore, flat fares (set price regardless of distance travelled) does not allow the system to exploit a passenger's willingness to pay for a longer trip as fares are always set within a reasonable price range for a shorter trip.

Essentially, there are three elements to keeping fares affordable and they are:

1. Good infrastructure to provide operating efficiency to keep fares affordable
2. Fare policy set by the Company, able to exploit willingness to pay and manage discount policy
3. Distance-based fares for equity and to generate higher revenues for distance travelled.

Specifically, the business model for the Northern Busway addresses this through:

- Improved efficiency
  - Bus priority increasing average bus speed to reduce overall fleet requirements and delivering a large saving capital and operating costs.
  - Managing schedules efficiently, improving passenger experience/ occupancy and reducing wasted kilometres.
- The Company will implement its own fare policy, based on the negotiated *AVERAGE FARE* as determined by the commercial fare. The Company can set some individual fares higher (such as single trip fares and premium services), and discount fares for needy groups (students) and volume users (loyalty discounts). Such a policy should aim to create value for the customer as well as value for the company – it is the same principle under which retailers discount products to generate sales.
- Set a distance-based fare scale allowing price equity according to distance travelled, and the ability to generate extra revenue for extra service.

An E-ticketing system makes a more complex fare policy easy to administer and manage discounting more accurately. The BTS Skytrain in Bangkok is a good example of a commercial public transport operation that uses innovative fare policies to build revenues and deliver customer value services and without government support.

Profits and risk

While a profit margin for the Company is accounted for in the 'management fee' it can in fact generate extra profits through a business strategy that increases patronage and grows revenue. This provides scope for additional benefit and is an essential incentive for the Company to deliver quality services and customer value to build market share. It also offsets the business risk.

The Operational Model has separated out the cost of bus operation in the event the Company wishes to contract out bus service provision. In this case, the bus operator, under a performance-based contract is paid by km for services provided, and earns a fixed profit margin on those paid kilometres. The Company may choose to share with the Bus Operators a percentage of revenue growth within their remuneration package as an incentive to good performance.

Opportunities, Risks and Constraints

OPPORTUNITY

Further business for the Company

The commercial business management framework for the Northern Busway may serve as a template for the DART BRT which is due for completion in 2015. An investor, who can successfully negotiate a concession agreement for the Northern Busway, may be well placed to bid for the DART BRT operational contract.

Establish a market presence for a vehicle supplier

A vehicle manufacturer joining a consortium to win the concession, would naturally provide the bus fleet, but could also set up a vehicle dealership in Dar es Salaam, simultaneously maintaining the fleet, providing the necessary local skills and training for bus maintenance, and opening up wider sales opportunities to establish their market presence in Dar es Salaam.

Expanding the network into Masaki and the Msasani Peninsula

While this proposal focusses on the Busway corridor, considerable potential exists to expand the bus network to the Peninsula; not just as feeders, but as large size buses servicing the general road network and then joining the busway priority route to the city.

RISKS AND CONSTRAINTS

There are obviously risks to be considered in this type of project, requiring risk awareness and management controls to mitigate or manage them. This section is not a complete risk assessment, but aims to highlight some of the risk areas from the perspective of the investment proposal.

RISK -Forecasting Travel Demand Accurately

Good survey data is available and has been used as a basis for demand forecasts and the growth estimates used are conservative. Given the critical need for improved public transport and current high passenger numbers, there is no risk of there being a lack of demand.

But there is a risk of under-capacity, as demand can be fluid, and there is limited information on how demand may change once service quality improves. It can be expected that passenger growth will come from:

- Passengers forsaking other routes and joining the busway
- Induced travel (new trip) once accessibility improves
- Car drivers joining the system (modal shift)

The Company needs to devise a strategy to manage this possible eventuality (of having insufficient fleet capacity to meet demand), either by allowing limited daladala to continue so there is scope for overflow, or purchase additional 12 metre city buses as a contingency and if they prove to be surplus, deploy these on feeder services.

Being aware of the eventuality and taking steps to manage it will be sufficient to manage this risk.

RISK -The ability to charge appropriate fare levels

To be successful, the Company needs to be able to charge the appropriate fare levels and avoid the burden of being expected to 'subsidize' a government social policy. The concession agreement will address this issue as it will clearly outline the commercial basis of the business, including the commercial fare level.

Should the government for any reason wish to significantly deviate from the plan, resulting in disadvantage to the Company, it will be required to compensate, or allow a compensatory fare increase.

The risk element of this area is largely managed within the 'shared-risk' and mutual benefit model which must be developed into the concession agreement as described in the Section *Design of the Concession Agreement*.

RISK- Acceptance of fare levels

The Operational Model indicates an average fare close to the present level of daladala flat fares. Yet to reach an 'average' fare level requires some fares to be higher to compensate for discounts and concessions. However there is considerable evidence that passengers have a willingness to pay (and are presently paying) higher fares just to get a seat on the bus.

If it eventuates that the Busway is seen as being too expensive for some sector of the market, some daladala could continue to operate and allow the market to choose. It should also be noted that some trip types (a notable example being small fish vendors sourcing fish from the wholesale market) are not suitable to busway services and will need alternative means such as the daladala.

RISK - Level of Investment

Given the possibility of allowing some existing daladala to operate in parallel to the Northern Busway in consideration of the capacity/affordability issues raised above, it is possible for the Company to consider a staged to implementation, with an investment of 30 buses in Stage 1 and the remainder in stage 2, adjusted to the level of evident passenger demand.

This reduces the investment risk exposure while still implementing a reasonable level of service in Stage 1.

RISK- Reliability of government as a partner

Investors will naturally look to areas in which the business may be vulnerable to government decisions and changing rules. This risk should be largely addressed through a robust and detailed concession agreement (contract) which establishes the basis of the relationship with government and protects both parties from uncertainty.

The concession agreement must ensure that mutual objectives are outlined and that the agreement can facilitate their achievement. It should be a win-win proposal where both parties are committed to a successful and sustainable public transport outcome through a commercially viable business model.

The decision whether to engage as a 100% private entity, or create a joint-venture with government should be carefully evaluated. Trust and relationship are key elements. While there are certain advantage of a 100% private shareholding, a joint shareholding has risk –sharing advantages and may improve the basis cooperation (as long as political interference is avoided).

CONSTRAINTS - Managing displaced daladala operators

Typically present operators (daladala owners and drivers) are seen as the most challenging group of stakeholders to deal with in a change scenario. At their peril, BRT projects often simplify this challenge with the suggestion that *'existing operators can form companies and be contracted to operate buses on the system'* and if this is too difficult, they can be *'compensated out of the system'.*

This approach does not address contextual issues in that: 1) daladala operators mostly find it daunting and uncertain to be part of large company shareholding, and they are accustomed to earning daily cash for their living needs, and 2) the compensation issue distracts negotiations from transition to compensation with expectations of a 'golden handshake' and 3) there is likely to be different expectations between negotiating parties; what exactly is being compensated; who is prepared to fund the compensation?

This project proposes an alternative and more commercial approach, which gives affected operators the choice between forming a company to operate the trunk line or to partner with the system and continue daladala operations as feeders to the BRT.

Methodology and design of private sector engagement

A commercial approach (as opposed to a social approach) to manage displaced operators includes:

- Emphasis is on transition to the new business opportunity (it's not a *'compensation'* issue)
- Transition is treated more like a *'resettlement'*, in that it proposes alternative business opportunities
- Compensation while not being 'off the table' is considered as a last resort where willing operators cannot be accommodated.
- All negotiations are kept on a realistic commercial basis
- Business packages will be commercially sustainable and fully funded
- Business opportunity is balanced with regulatory amendments (withdrawal of route permits from the trunk route).

Unwilling operators always have the opportunity to decline, and leave the industry at their own will, but without compensation[2].

Consequently a management strategy to address these constraints will include:

- Willingness to understand the industry and engage with the bona-fide claims of displacement
- Differentiate between genuine loss of business and the need for employment
- Treat displacement as a resettlement issue not a compensation issue (aim to transition to new business opportunity)
- Work with parties like DARCOBOA and SUMATRA who understand the business
- Treat all negotiations as commercial; mindful of social impact but set in commercial reality and to avoid the role of social benefactor.

Opening up new business opportunities will benefit existing operators, as the present business model is marginal with dismal future prospects. Empirical evidence indicates the daladala operators are

[2] The process of relocating operators is the 'compensatory' action taken to address the displacement/resettlement issue. Unwilling operators should not be rewarded with compensation.

usually compliant with SUMATRA directives, notwithstanding that illegal operators also ply. Formal employment opportunities will also be available.

Dealing with existing operators in an open and transparent way, with the aim of providing 'win-win' outcomes will improve the atmosphere of the negotiations. Generalised promises to placate any disagreements should be avoided, and all dealings must be kept on a commercial footing. The industry representative body, DARCOBOA can facilitate industry engagement and is a respected body in public transport in Dar es Salaam.

Trunk line operation

For the operation of the trunk line, there are essentially two options available, being:

Option A: To contract out the bus operations to a bus operating company (BOC) formed by affected operators, contracted under a performance-based contract (paid by km and penalties for poor performance). Under this scenario the BOC can buy buses, or alternatively be supplied buses and operate on a 'km cost' only. This establishes a clear separation of roles and accountability and is the method used by the Johannesburg Rea Vaya BRT system. Multiple options exist for bus acquisition /ownership to suit the situation.

Option B: Alternatively the Company can manage the system and operate the buses and offer a part shareholding to the company formed by the existing and eligible operators (via a company) part shareholders (as a form of transition/ compensation). The affected operators can nominate their employees/staff as affected persons to be placed on a priority employment register provided that meet recruiting standards.

Option C: To relocate or compensate affected and eligible operators out of the business or off the corridor and create a clear field without complications.

Feeder services

Not all daladala operators feel confident in joining a formal company, and may wish to operate alternative daladala services. Two options exist in this regard:

1. That SUMATRA reassign operators to alternative routes as alternative business opportunity (resettlement)
2. The Company can contract with daladala operators to 'partner with the system' where operators form cooperatives to provide local feeder services to the Busway stations and service the communities on the feeder network, where the Company sets quality standards in return for system branding and affiliation.

   These feeder routes can charge an appropriate fare for a connection to the Busway stations (non-fare integrated for simplicity) and the faster turnaround will prove to be more profitable for operators than the present long route (where there experience more traffic jams).

   This is an alternative option for operators that wish to retain their own small business by owning their own bus and relieves the Company of having to plan and manage feeder routes. Daladala operators know how to be demand responsive and can plan their services accordingly. It represents a win-win situation; where the Busway is served by a feeder network and the daladala are identified with the branding of the Busway in return for meeting certain standards such as vehicle age; proper authorisations and insurance; driver identity etc. to improve customer service levels.

Part 4. The Institutional Plan

Public Private Partnership concessions in Tanzania have a poor record, largely due to badly constructed contracts. A robust and detailed concession agreement is critical for the success of the business, and must ensure that the objectives of both parties can be met. Specifically, risks need to be managed and proper incentives in place to drive a successful outcome.

Government must focus on selecting a Company who can be a dependable partner, with the necessary skills, expertise, experience and attitude to operate the business successfully. A relationship based on trust and mutual agreed objectives is the key.

The basis of such a contract is the Operational Plan which is mutually accepted, with agreement between the parties that services must be paid for; and that sustainability can only be assured through commercial viability. The Operational Plan forms the basis of the Company's Business Plan.

Regulation

The Concession Agreement is the sole regulatory framework under which the Company operates, and is not subject to regulatory changes unless provided for in the contract.

In Dar es Salaam the regulatory agency managing bus transport is SUMATRA, responsible for the management of bus routes and issuance of route permits.

The DART agency has been specifically set up to manage the BRT system, although it has been issued wider powers of traffic management along the route to ensure bus priority is maintained.

Under the planned institutional reform a new Dar es Salaam Urban Transport Authority (DUTA) will be formed as an umbrella body to coordinate all urban transport, and this Authority will be the counterpart for a concession agreement.

DART, being an executing agency under DUTA will be responsible for network integration issues.

If a concession agreement is made prior to DUTA being established, an agreement between the Company and SUMATRA is the next available option, with all agreements and obligations transferred to DUTA on its inauguration.

The Concession Contract

Contractual framework

The concession agreement is the method through which the Company engages with government for the provision of public transport services. This section describes the difference between the concession contract and the management structure proposed for DART.

The proposed arrangement for the DART BRT is that DART is the system manager managing the 'business' of public transport network and taking the business risk. It will contract out the provision of bus services to bus operating companies to be formed by current daladala operators.

This plan however, carries some risk, as DART being a public entity is expected to operate a commercial business (in which it may lack capacity) and bus operators who need to make large investments in the bus fleet, may question the reliability of DART to make payments for services provided. Under this model the Public/Private interface is at bus operation level.

Under the concession model proposed for the Northern Busway, the Company is the system manager, managing the public transport 'business' and taking business risk. It can choose to operate its own fleet or contract bus operating companies as service providers. Under this model the Public /Private interface is at system management level, introducing private sector expertise as professional public transport network managers (see **Figure 31**).

While the Company takes the business risk, it can also largely manage the risk as it controls revenue and can innovate to develop passenger growth and ticketing revenues, and given overall favourable business conditions (good infrastructure, equitable policies and good market demand) has a reasonable prospect of success. By being responsible for system management (rather than just the bus operation) the Company exercises greater control over business outcomes.

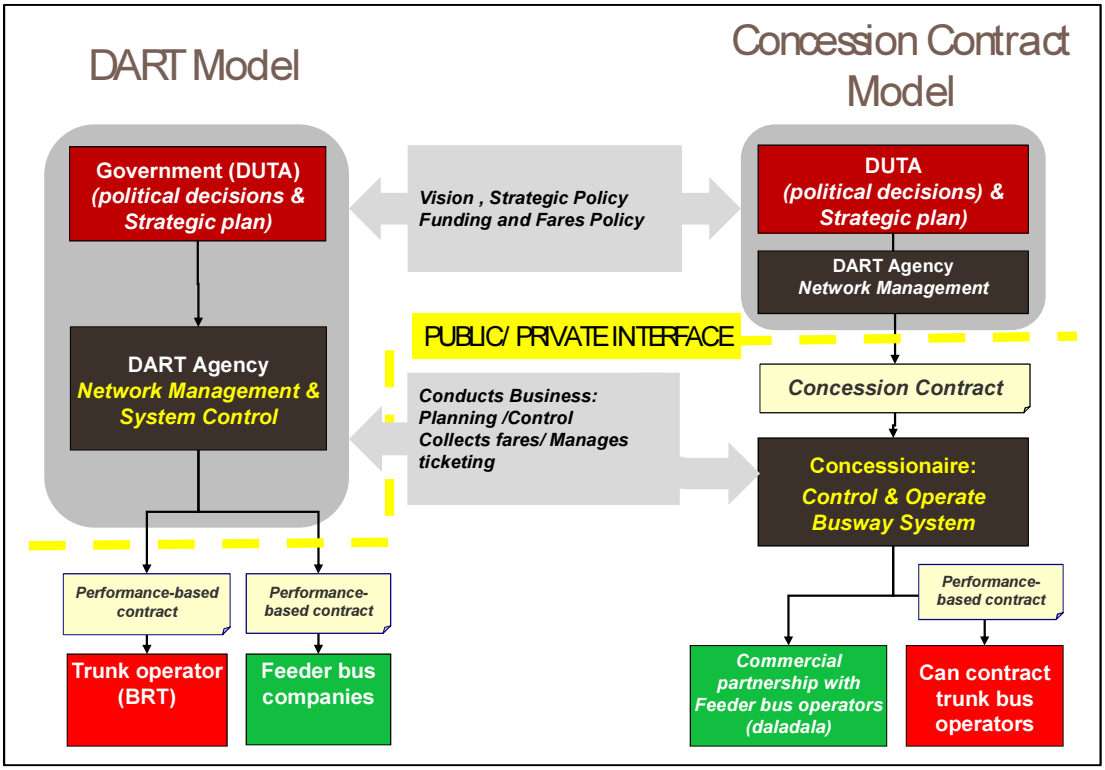


Figure 31 Comparison of Management models DART vs. Concession Contract

Table 6 analyses risk and performance issues between existing operators, DART and the Concession Contract and shows that of the three options the Concession Contract has the best outcome in terms of risk management and sustainability.

Table 6 Comparison of Regulator and Contract Models

Issue	Existing regulated daladala operations	The DART business model	The Concession Contract
Regulatory effectiveness	Highly fragmented / difficult regulate. Economic survival is in conflict with regulation.	Improved with a formal operator.	The concession contract can be contractually enforced, giving the regulator a strong hand.
Service performance	Poor service, based on a cycle of low fares/low quality	Presently no mechanism to guarantee DART performance	Concessionaire has a strong profit incentive to perform and reduce business risk.
Business risk	Operators carry unmanageable RISK (e.g. traffic congestion)	In theory 100% RISK carried by DART, but RISK remains for operators (can DART pay for services provided by them?)	The **concession is only option which SHARES RISK** – and has the tools to manage it.
Business performance	Marginal - little prospect of good vehicle maintenance or vehicle replacement	Untested public agency with no experience in business.	Strong incentive and private sector expertise for good business performance
Political interference	Conflict of interests - civil servants (including Police) with private daladala interests	Is DART autonomous? – it is a government agency and may be prone to interference	The concession contract defines the relationship with government
Sustainability	Not sustainable. Poor service outcomes	Depends on business performance or on government support.	Concession set in commercial reality and shares risk with Govt. and has the **best chance of proving sustainable.**

Selecting a concessionaire

It is the role of government to select a suitable concessionaire to operate the busway. This will require a tendering process to create a transparent selection process (immune from legal challenge) and opens the market to select the best candidate.

Critical to achieving this, is a selection process geared to selecting the right partner, who is capable and motivated to perform. This can involve hard data and also the soft elements, being the sense of cooperation and 'alignment of spirit' that can be developed during the application process.

Typically a tendering process has a price component in the bid process, for example bidding for the lowest fare levels or the lowest subsidy requirement. However, in this proposal, the fare level is determined by Operational Model with a negotiated average fare with the government, so price does not form part of the bidding process. Alternatively a greater emphasis is placed on finding a suitable partner, based on the following selection criteria:

- Previous experience and a demonstrated performance in similar business
- Financial strength and capacity
- Managerial strength and make-up of the management team
- Commitment to industry development, training and social inclusion
- A clear statement of aims by the applicant as to why they seek business opportunities in Dar es Salaam
- How the applicant will approach the issue of existing operator inclusion
- Level of understanding, agreement and commitment to the objectives of the concession contract.

Design of the Concession Agreement (the Contract)

Commerciality is the key

The Business Model is fully commercial, which ensures sustainability, longevity and prosperity and supports and supports innovation, business improvement and reinvestment.

A concession contract has a single clear objective: To engage the private sector business, technological and management skills to provide quality public transport outcomes. This can only occur under an economically sound business model.

A commercial approach starts with the economic reality that all goods and services must be paid for and a commercial contract fully understands the costs and who pays for them. Under a commercial reality bus fares should reflect the cost of providing the service. Any social initiative for free travel or discounted fares must be fully funded (compensated).

Managing risk

Risk is a major area that the contract needs to address; specifically that risk is assigned to the party that can manage it best. While the concession contract can identify and 'builds in' risk control , risk profiles may change over time, requiring a risk sharing approach that builds cooperation; understanding; and creates an atmosphere of problem solving.

This would include:

Transparency – on the basis that 'trust' is built in an open relationship where information is not withheld. While the financial records of the Company should be held 'commercial in-confidence', operating data and financial indicators should be transparent to support a case for possible adjustments to fare benchmarks and various cost indices.

No fault/ no blame culture – failures are often a result of multiple factors, and therefore sharing unanticipated risk can resolve contentious issues, under a broader objective of the wider good.

Commitment to resolve disputes – in line with the previous principle is a commitment to amicably resolve disputes. Contracts are seldom complete in the sense they can predict every eventuality and a sense of partnership must prevail to resolve unforeseen difficulties.

Risk and opportunity sharing – As in any partnership where there is shared risk, there is also shared opportunity. Good contractual relationships and solid partnerships provide a framework where further beneficial opportunities for both sides can be pursued. This opportunity would be totally lost in a distrustful relationship.

Elements within the Contract

A contract, being essentially a legally binding agreement between parties, is also a documented agreement which spells out roles and responsibilities and obligations, around which the relationship develops, and often includes mechanisms that act as incentives for each party to perform as expected. Contracts should also outline a procedure to follow should conflicts or disagreements occur.

The concession contract should be designed around three primary elements, being:

(1) The business

This outlines the responsibilities between the parties for public service delivery, the mechanics of how this works and the obligations of each side.

(2) The metrics

In bus concessions, the private sector is generally unable to carry 100% of the risk; one reason being that governments may wish to have a say in fare pricing. To help resolve this issue, more transparent information is required so that there is a better understanding on both sides what the operational issues/ costs are. The Operational Plan models the bus operation and is thus a basis upon which expectations and costs are mutually understood, improving trust, and allowing parties to objectively seek solutions should conditions change. Importantly, it also sets benchmark for business efficiency, to which the concessionaire and the government can measure performance.

(3) Managed Risk

As stated above, once the metrics are agreed and understood (and settled as a contentious issue) the risk profile moves to passenger volumes and operating efficiency. This also includes fare levels, as revenue and demand also play a critical role in overall operating performance.

While the busway provides a favourable operating environment through bus priority and improved travel speed, the contract must incentivize the Company to maximize its service and passenger efficiency (fine-tuning bus allocation to service the passenger demand effectively) to win passengers with good service and reduce wasted kilometres.

The assignment of risk therefore is as follows:

- The government is responsible for the operating conditions (bus priority and traffic management) and allowing fare policy to reflect cost of providing services
- The operator is responsible for developing patronage and revenues and to ensure business efficiency
- There is a joint responsibility for business development, improving service levels and meeting community needs.

Part 5. Implementation Plan

Design of alliance/partnership for build and operation

The Public-Private Partnership aspects of this proposal are the combination of the busway infrastructure supporting the operational efficiency and the commercial business model that incentivises performance. Through this partnership good public transport outcomes are provided.

Government provides the infrastructure (treating it as a sunk cost) and assigning the operations to the private sector to operate commercial and profitable services at a negotiated fare level.

Such a public/ private alliance creates a commercial business opportunity for the private sector and delivers on the government's public objectives of providing quality public transport, at affordable fares and free of any operating subsidy.

Cost modelling has indicated that recouping the infrastructure costs through fares is not feasible.

Consequently, the build cost for busway, stations, control centre and ITS and traffic management equipment must be met with a government loan, with the investment in fleet and depots and operational development met by the private sector.

Detailed tasks of each agency

To see this project through to implementation will require the cooperation and coordination of multiple players.

The role and function of the parties can be listed as follows:

- PMO-RALG holding the ministerial responsibility and the Regional Commissioner being the coordinator of transport issues in Dar es Salaam (and the future DUTA)
- SUMATRA as the regulatory agency withdrawing and issuing route permits
- DART as the counterpart agency acting as the network manager and the BRT system manager
- Ilala and Kinondoni Municipal councils, being the two municipalities affected by the busway
- DARCOBOA and the affected bus operators on the Mwenge to Posta daladala route working to engage with the new system, as a bus operating company or as feeder services.
- Traffic Police to endorse the Traffic Management Plan and safe operation of the Busway.

Community consultation and public awareness campaign

The major issue impacting the community is the 'resettlement' of daladala operators under the new system. Discussions with SUMATRA and DARCOBOA with the project team in 2011 indicated a positive outlook for cooperation.

Improved bus services are 'self-promoting' but marketing the system to car users will be essential.

Methodology for Project Evaluation

Project Evaluation will be clearly in the domain on the measurement of public transport outcomes and the company performance.

Public service indicators are:

- Customer complaints, compliments and media comment
- Level of service in terms of service frequency, vehicle condition, travel speeds
- Safe operating record for passengers and other road users
- Affordable pricing structure
- Treating customers with dignity
- Service innovation to meet travel needs/ expand the network and improve access
- Engaging with the community and meeting social responsibilities.

Company performance indicators include:

- Profitability/ sustainability
- Ability to resolve issues with the counterpart agency
- Customer service practice
- Sound employment practices and OH&S practices
- Safety management and safety record
- Bus schedule compliance
- Response times to incidents and events
- Sound record keeping

Implementation and evaluation report (after implementation)

Following implementation, an evaluation of the project may be required by the higher authorities such as the financier, the PMO-RALG and DUTA.

Such an evaluation report would contain the following items:

Infrastructure

- Satisfactory construction of the busway, the traffic markings and signalling and guidance systems, to ensure safe operation and good service life. Particular attention should be given to the quality of construction and serviceability.
- A full safety audit will have been conducted at commissioning and this report will be available to any concerned party.
- Traffic Police will have endorsed the traffic management plan and a statement of compliance should be obtained for the evaluation report.
- Operation of the Control Centre; its systems and Standard Operating Procedures including emergency and accident response plans.
- Depot facility and operation, ensuring the facility meets requirements for fuelling, cleaning and maintenance and sufficiently equipped to maintain the fleet and serve operational requirements.

- Depot compliance to environmental safety standards.

Fleet

- Sufficient fleet to meet the bus schedules with a margin for spares/breakdowns
- That buses meet quality standards of a modern transit fleet
- Periodic maintenance schedules for preventative maintenance and regular servicing
- Bus condition and cleanliness.

Management

- A competent management team
- Competent recruitment, induction and driver training programs
- Clear communications of drivers rules for conduct/ operational standards/customer service and OH&S.
- A comprehensive safety management system
- Communication processes for reporting bus faults, accident and incident reporting etc.
- Lost property processes
- Good record keeping for employees and vehicle management.

Customer service

- Good passenger and community information
- Help-line and bus schedule information
- Complaints register and customer response procedure

Cost Estimates

The overall costs of this project are estimated at US$ 33.7 million with (+/-) 20% contingency factor.

Cost breakdowns are shown in ***Appendix 1B***. The cost of widening of New Bagamoyo Road has not been included as this will form part of a road widening program planned under a JICA supported road investment project.

The Way Forward

The planning process commences with an 'in-principle' agreement at government policy level to proceed with the plan for a Northern Busway. This will allow further work to proceed on detailed design, securing funds, and securing a concessionaire.

Figure 32 outlines the overall activity and sets this on an approximate timeline.

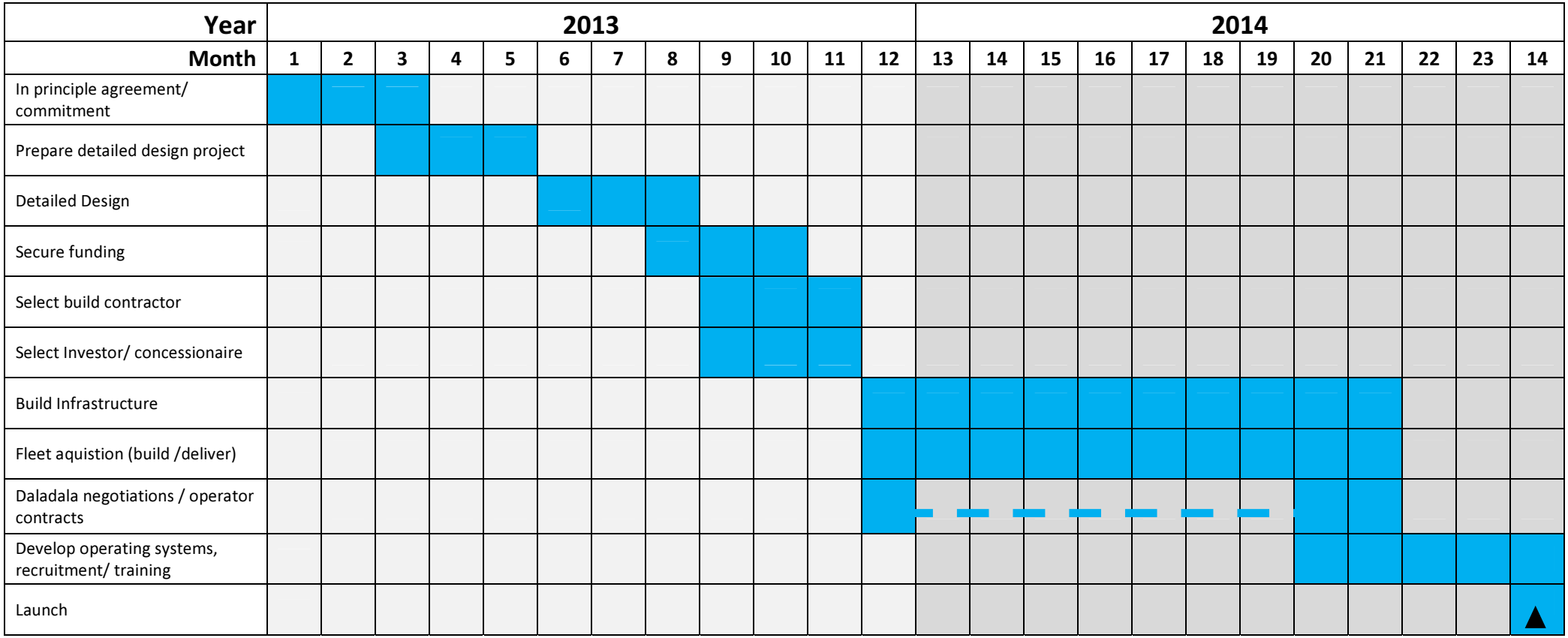


Figure 32. Timeline of Activities

Appendix 1A: Demand Data

Traffic surveys along the corridor was conducted in December 2011 under the JICA Capacity Building Project and managed by the members of the Secretariat Body.

The data of **Table A1** and the graph as **Figure A1** show the survey results for inbound demand for buses and passenger cars at key survey locations along the corridor.

Table A1 Inbound Passenger Car Counts (units)

TIME/ Hr	Bagamoyo & Sam Nujoma	Bagamoyo &Shekilango	Bagamoyo &Mwinyijuma	Bagamoyo &Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & UN Rd
5:00-6:00	327	435	349	510	478	230
6:00-7:00	1225	2176	1794	1712	2222	890
7:00-8:00	1194	2277	1673	1642	2920	1556
8:00-9:00	1220	1361	1094	994	3050	1188
9:00-10:00	969	2135	916	1219	2528	915
10:00-11:00	654	1506	915	1260	2705	997
11:00-12:00	580	1153	883	1440	2598	1099
12:00-13:00	552	948	929	1272	2005	809
13:00-14:00	440	548	800	1159	2090	948
14:00-15:00	568	538	725	903	1825	757
15:00-16:00	373	518	653	706	1425	575
16:00-17:00	377	915	609	604	1615	851
17:00-18:00	402	941	627	709	1335	786
18:00-19:00	341	581	522	614	1515	990
19:00-20:00	301	335	489	467	1020	693
20:00-21:00	215	130	479	417	1035	405

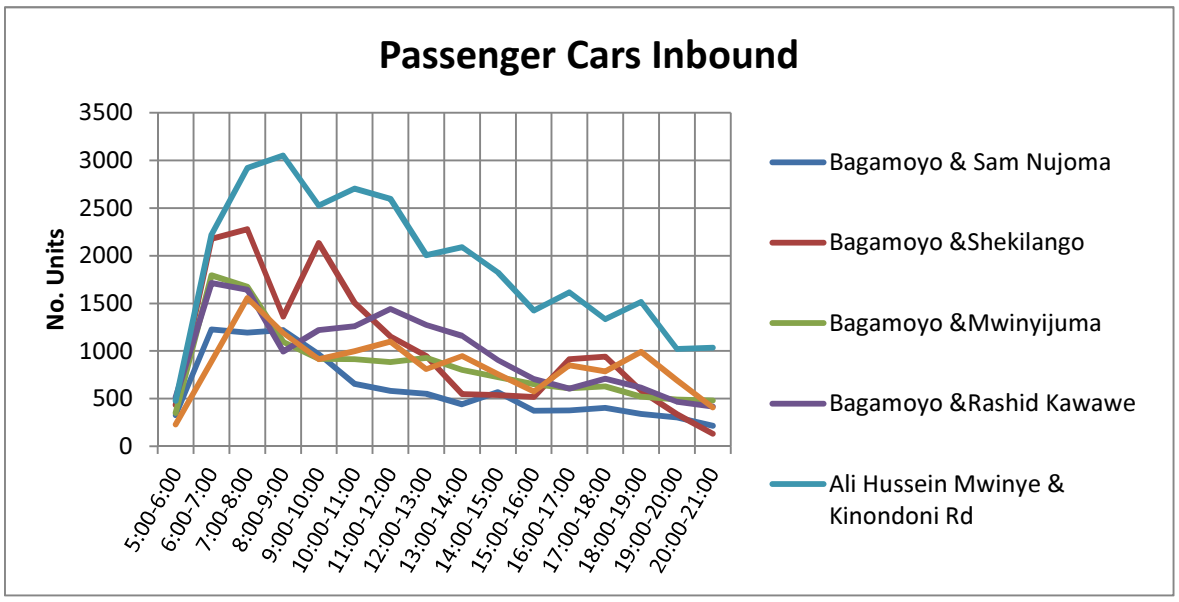


Figure A1 Passenger Car Count - Graphical View

Table A2 Inbound Bus Counts Inbound (units)

TIME	Bagamoyo & Sam Nujoma	Bagamoyo &Shekilango	Bagamoyo &Mwinyijuma	Bagamoyo &Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & United Nations Rd
5:00-6:00	88	85	72	27	25	20
6:00-7:00	117	139	86	43	64	54
7:00-8:00	78	123	82	26	49	59
8:00-9:00	107	126	84	23	61	51
9:00-10:00	124	125	98	25	67	57
10:00-11:00	104	111	70	46	60	53
11:00-12:00	92	161	85	31	77	57
12:00-13:00	93	105	86	33	72	45
13:00-14:00	83	93	67	41	74	62
14:00-15:00	89	86	86	30	68	53
15:00-16:00	117	91	81	35	62	46
16:00-17:00	100	104	79	32	69	65
17:00-18:00	102	90	79	46	61	47
18:00-19:00	105	76	80	33	58	55
19:00-20:00	83	15	78	42	40	34
20:00-21:00	61	11	67	31	66	20

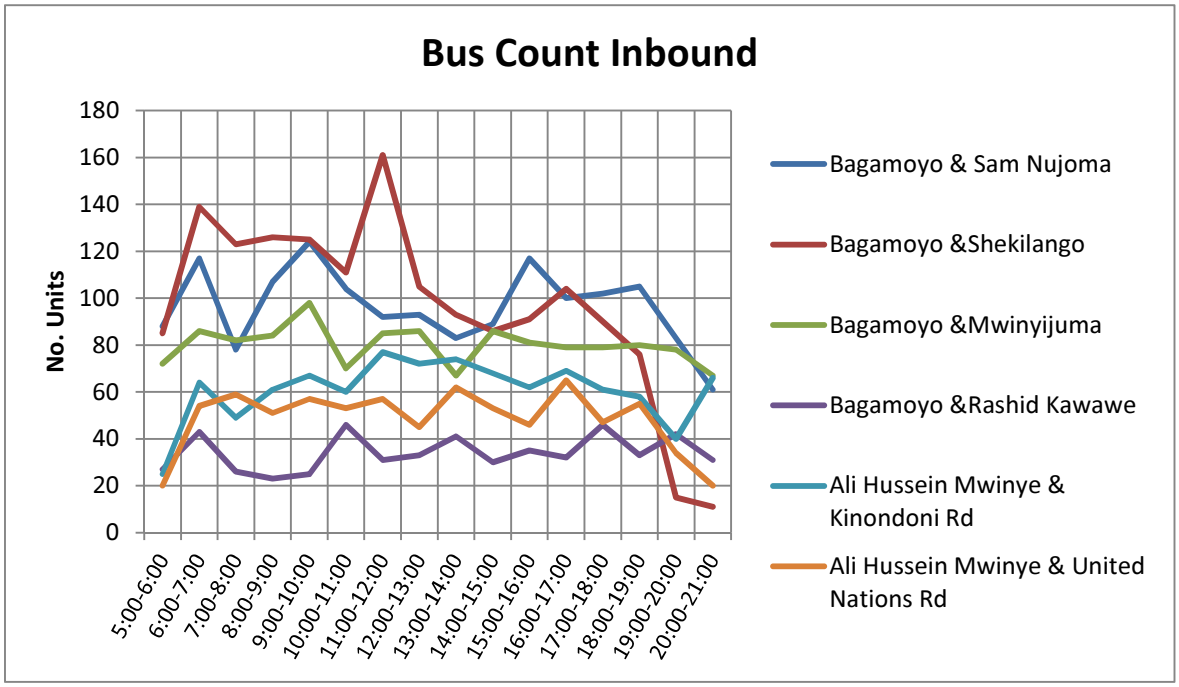


Figure A2 Bus Count – Graphical View

Table A3 Outbound Passenger Car Count (units)

TIME	Bagamoyo & Sam Nujoma	Bagamoyo &Shekilango	Bagamoyo &Mwinyijuma	Bagamoyo &Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & United Nations Rd
5:00-6:00	67	122	95	86	123	83
6:00-7:00	187	277	260	325	541	367
7:00-8:00	374	567	435	722	1287	768
8:00-9:00	380	577	472	816	1513	752
9:00-10:00	371	612	367	858	1418	561
10:00-11:00	426	751	715	924	1495	707
11:00-12:00	398	677	667	828	2137	748
12:00-13:00	436	770	798	999	1689	871
13:00-14:00	459	798	808	975	2067	620
14:00-15:00	541	1070	765	1089	2298	1205
15:00-16:00	635	1083	885	1159	2006	855
16:00-17:00	838	1025	1083	1124	2124	867
17:00-18:00	868	1516	1316	1439	2245	598
18:00-19:00	956	1639	1045	1458	2121	951
19:00-20:00	733	946	868	1505	2515	1439
20:00-21:00	618	427	982	1101	2299	871

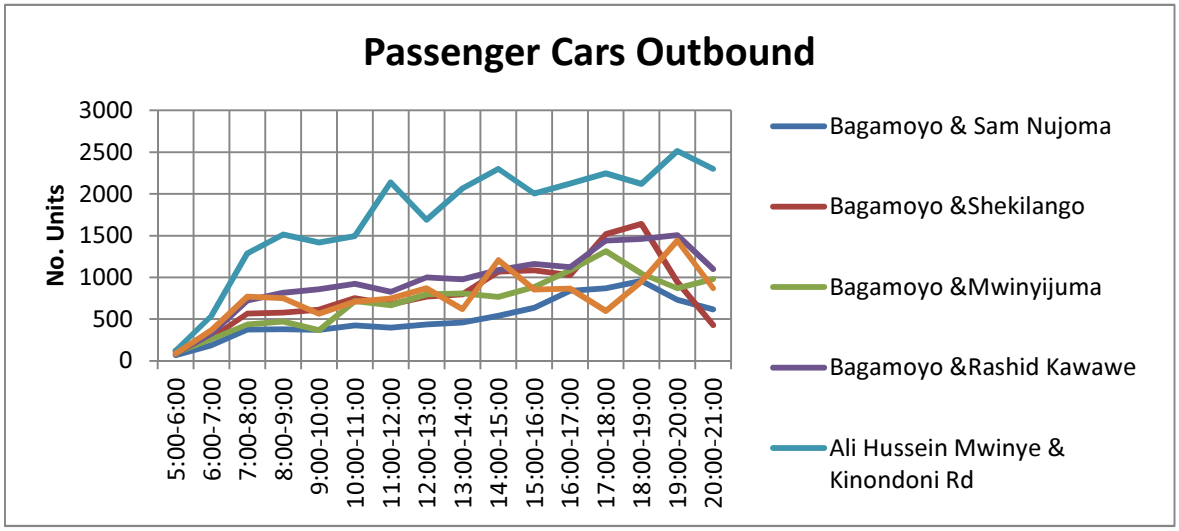


Figure A3

Table A4 Outbound Bus Count (units)

TIME	Bagamoyo & Sam Nujoma	Bagamoyo &Shekilango	Bagamoyo &Mwinyijuma	Bagamoyo &Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & United Nations Rd
5:00-6:00	90	88	48	30	15	13
6:00-7:00	226	164	95	59	76	57
7:00-8:00	250	149	103	73	88	55
8:00-9:00	189	141	67	49	76	59
9:00-10:00	199	127	49	61	89	91
10:00-11:00	182	123	53	42	99	47
11:00-12:00	154	112	39	52	118	59
12:00-13:00	152	105	83	46	113	44
13:00-14:00	151	114	118	49	98	59
14:00-15:00	197	146	60	49	112	103
15:00-16:00	132	119	94	54	117	58
16:00-17:00	155	130	98	46	122	55
17:00-18:00	194	119	75	48	122	64
18:00-19:00	173	116	64	43	105	50
19:00-20:00	127	68	54	61	105	53
20:00-21:00	101	9	56	55	66	39

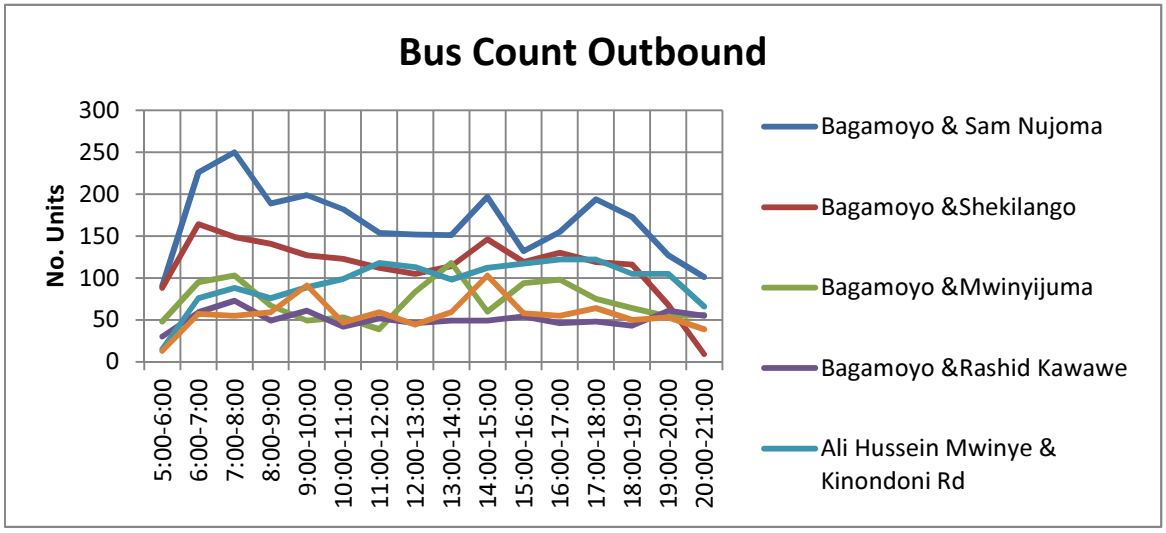


Figure A4

Based on the above vehicle data the potential bus passenger forecasts can be estimated.

The passenger forecasts are based on the existing bus demand, with an added percentage for modal shift from cars and also from induced travel. To estimate passenger demand the number of vehicle units is multiplied by an average load factor as assessed during the traffic count surveys on a per hour basis as shown in **Table A5.**

Table A5 Load Factors per vehicle (input to Table 4)

Vehicle Load Factor Inbound

TIME	Average load factor per passenger car	Average Load factor per bus
5:00-6:00	2	30
6:00-7:00	3	37
7:00-8:00	3	37
8:00-9:00	2	20
9:00-10:00	2	20
10:00-11:00	2	20
11:00-12:00	2	20
12:00-13:00	1.5	15
13:00-14:00	1.5	15
14:00-15:00	1.5	15
15:00-16:00	1.5	15
16:00-17:00	1.5	15
17:00-18:00	1.5	15
18:00-19:00	1.5	15
19:00-20:00	1.5	15
20:00-21:00	1.5	15

Vehicle Load Factor Outbound

TIME	Average load factor per passenger car	Average Load factor per bus
5:00-6:00	1.5	10
6:00-7:00	1.5	15
7:00-8:00	1.5	15
8:00-9:00	1.5	15
9:00-10:00	1.5	15
10:00-11:00	1.5	15
11:00-12:00	1.5	15
12:00-13:00	1.5	15
13:00-14:00	1.5	15
14:00-15:00	1.5	15
15:00-16:00	2.2	15
16:00-17:00	2.2	25
17:00-18:00	2.2	25
18:00-19:00	2.5	25
19:00-20:00	1.5	15
20:00-21:00	1.5	15

The following **Tables A6** to **A7** show total demand forecast per hour for inbound and outbound travel respectively including growth based on modal shift from car travel and induced demand based on a 10% growth scenario.

Table A6. Inbound Passenger Demand Forecast based on 10% modal shift and 10% growth

TIME	Bagamoyo & Sam Nujoma	Bagamoyo &Shekilango	Bagamoyo &Mwinyijuma	Bagamoyo &Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & U/Nations Rd
5:00-6:00	2969	2892	2446	993	921	706
6:00-7:00	5129	6310	4038	2264	3271	2465
7:00-8:00	3533	5689	3839	1551	2870	2868
8:00-9:00	2598	3044	2067	705	1952	1360
9:00-10:00	2922	3177	2339	794	1980	1437
10:00-11:00	2419	2743	1723	1264	1861	1365
11:00-12:00	2140	3773	2047	970	2214	1474
12:00-13:00	1617	1875	1558	735	1489	864
13:00-14:00	1436	1617	1226	850	1535	1165
14:00-15:00	1554	1500	1528	630	1396	988
15:00-16:00	1986	1579	1434	683	1237	845
16:00-17:00	1707	1853	1395	619	1381	1200
17:00-18:00	1743	1626	1398	865	1207	893
18:00-19:00	1784	1341	1398	637	1184	1056
19:00-20:00	1415	281	1336	740	762	630
20:00-21:00	1039	195	1153	553	1193	371
Total	**35990**	**39495**	**30925**	**14853**	**26451**	**19687**

Table A7 Outbound Passenger Demand Forecast based on 10% modal shift and 10% growth

TIME	Bagamoyo & Sam Nujoma	Bagamoyo &Shekilango	Bagamoyo &Mwinyijuma	Bagamoyo &Rashid Kawawe	Ali Hussein Mwinye & Kinondoni Rd	Ali Hussein Mwinye & U/ Nations Rd
5:00-6:00	1000	986	542	343	183	155
6:00-7:00	3757	2748	1607	1022	1335	996
7:00-8:00	4181	2544	1765	1313	1645	1023
8:00-9:00	3176	2413	1176	931	1481	1086
9:00-10:00	3339	2187	864	1135	1681	1586
10:00-11:00	3067	2142	982	832	1858	882
11:00-12:00	2601	1950	744	982	2268	1086
12:00-13:00	2573	1848	1489	909	2118	857
13:00-14:00	2560	2001	2068	955	1927	1067
14:00-15:00	3332	2570	1105	972	2193	1880
15:00-16:00	2305	2180	1728	1123	2332	1128
16:00-17:00	4430	3780	2912	1490	3780	1686
17:00-18:00	5509	3576	2326	1608	3804	1880
18:00-19:00	4949	3518	1969	1474	3312	1565
19:00-20:00	2205	1156	940	1053	1835	944
20:00-21:00	1759	162	972	949	1193	684
Total	**50743**	**35758**	**23187**	**17090**	**32943**	**18503**

Appendix 1B: Station and Busway Layouts and Cost Estimates

The cost estimates of the project totals **US$33.7 million**, with a breakup as follows:

Estimated Busway Infrastructure Costs (see Table B1): …….. US$ 14.5 million

OCC and traffic signalling: …….. US$ 1.5 million

Fleet acquisition: …….. US$ 17.2 million

Set up costs: …….. US$ 0.5 million

An order of magnitude of +/- 20% variation is allowed as this is concept design stage.

Table B1 Bill of Quantities and Costs for Roadway Infrastructure

								Exchange Rate:		US$ 1 = Tshs	1,600
NO.	DESCRIPTION	UNIT	QUANTITY					TOTAL PRICE			
			0+000 - 1+300	1+300 - 3+700	3+700 - 5+100	5+100 - 9+700	TOTAL	UNIT PRICE (TANZANIA SHILLING)	FOREIGN CURRENCY (US DOLLAR)	LOCAL CURRENCY (TANZANIA SHILLING)	TOTAL COST (TANZANIA SHILLING)
	Length		1,300	2,400	1,400	4,600	9,700				
1	Demolishing existing walkway	cu.m	7,245	4,620	6,505	0	18,370	40,000	459,250	0	734,800,000
2	Demolishing existing median	cu.m	1,300	2,400	1,400	4,600	9,700	40,000	242,500	0	388,000,000
3	Relocation of Lightings	Nos	0	60	70	0	130	3,800,000	260,000	78,000,000	494,000,000
4	Selander Bridge Structure Reinforcement	Nos	0	1	0	0	1	64,000,000	40,000	0	64,000,000
5	Pavement	sq.m	0	8,400	4,900	32,200	45,500	137,000	0	6,233,500,000	6,233,500,000
6	Pavement -2	sq.m	7,755	4,620	6,505	0	18,880	116,000	0	2,190,080,000	2,190,080,000
7	Walkway pavement (interlocking), W=3m	sq.m	7,800	14,400	4,200	0	26,400	44,688	506,352	369,600,000	1,179,763,200
8	Road marking: Lane line (white) W=150mm	m	6,240	11,520	6,720	22,080	46,560	450	0	20,952,000	20,952,000
9	Road marking: Bus Lane	m	1,300	2,400	1,400	9,200	14,300	10,500	0	150,150,000	150,150,000
10	Install curb	m	2,600	4,800	5,600	0	13,000	57,590	390,000	124,670,000	748,670,000
11	Install new drainage ditch	m	1,200	1,940	1,700	0	4,840	238,480	721,402	0	1,154,243,200
12	Install new drainage catch basin	Nos	26	48	28	0	102	1,026,816	65,460	0	104,735,232
13	Bus Station	Nos	3	2	2	6	13	40,588,048	274,809	87,949,680	527,644,624
	Total direct cost										13,990,538,256
	Contractor's indirect cost & administrative cost (40%)										5,596,215,302
	VAT (18%)										3,525,615,641
	Total cost										23,112,369,199
										US$ TOTAL	14,445,231
										US$ per km	1,489,199

The following section drawings of the corridor show a conceptual layout of station locations upon which detailed design work can be developed.

Map 1


MARTABA STREET
BIBI TITI MOHAMMED ROAD
YMCA BUS STATION
INDIA STREET
OHIO STREET
STATION 01
ALI HASSAN MWINYI ROAD
ALY KHAN ROAD
UFUKONI ROAD
STATION 02
0 20 40 100 200m
SCALE 1:2,000
NORTHERN BUSWAY PLAN
1/8

Map 2


STATION 03
UNITED NATIONS ROAD
OGLAN ROAD
SELANDER BRIDGE
KINONDONI ROAD
STATION 04
KENYATTA DRIVE
0 20 40 100 200m
SCALE 1:2,000
NORTHERN BUSWAY PLAN
2/8

Map 3


KINONDONI ROAD
KENYATTA DRIVE
STATION 05
ALI HASSAN MWINYI ROAD
HAILE SALASSIE ROAD
0 20 40 100 200m
SCALE 1:2,000
NORTHERN BUSWAY PLAN
3/8

Map 4


BIG TREE
STATION 06
ALI HASSAN MWINYI ROAD
KIMWERI AVENUE
KAWAWA ROAD
NEW BAGAMOYO ROAD
ALI HASSAN MWINYI ROAD
OLD BAGAMOYO ROAD
0 30 40 100 200m
SCALE 1:2,000
NORTHERN BUSWAY PLAN
4/8

Map 5


NEW BAGAMOYO ROAD
STATION 08
NEW BAGAMOYO ROAD
STATION 09
0 20 40 100 200m
SCALE 1:2,000
NORTHERN BUSWAY PLAN
5/8

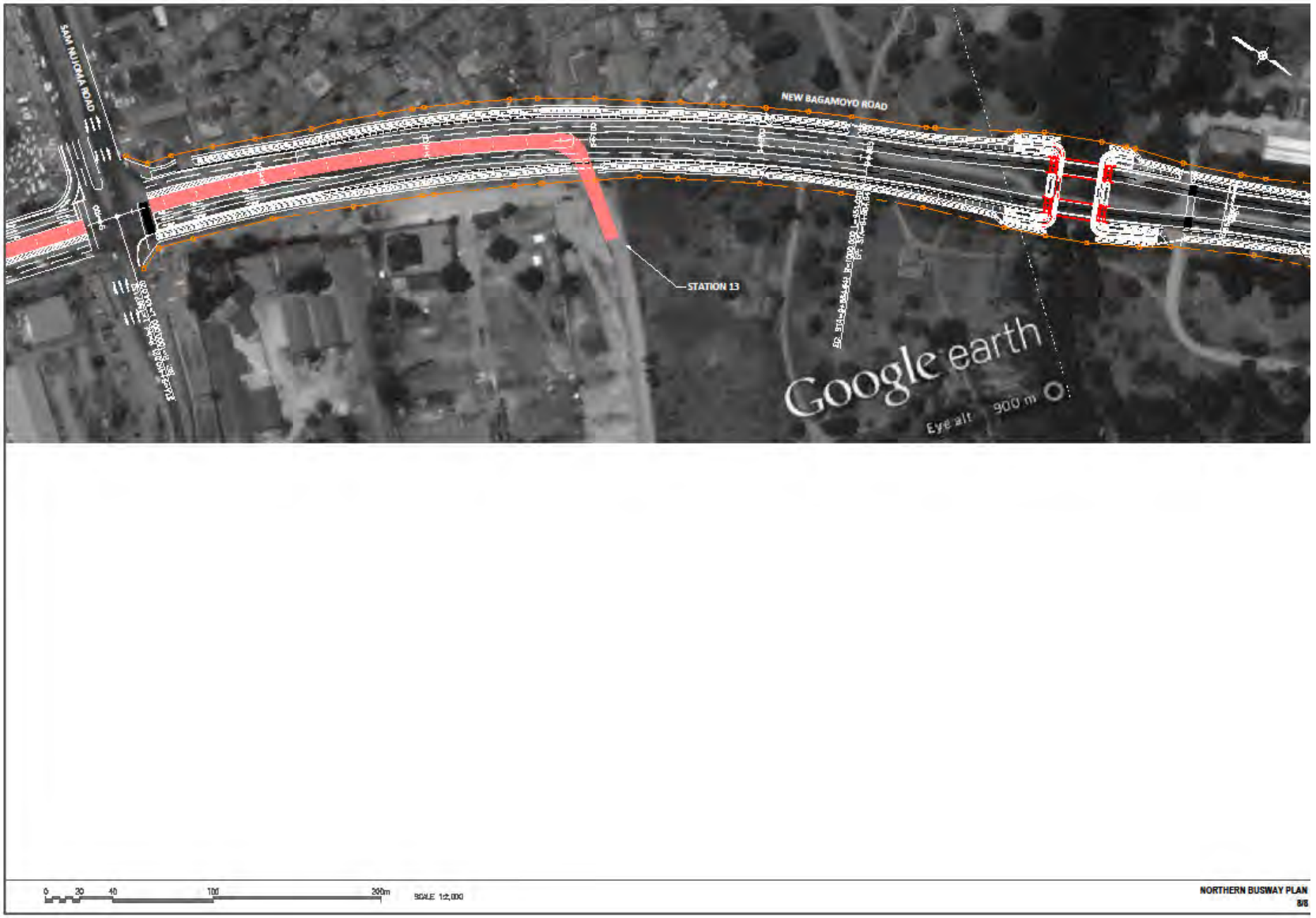
Map 6


STATION 10
NEW BAGAMOYO ROAD
MILLENIUM BUSINESS TOWER
KAENGE ROAD
NEW BAGAMOYO ROAD
ROSE GARDEN ROAD
Google earth
Eye alt 900 m
SCALE 1:2,000
NORTHERN BUSWAY PLAN
6/8

Map 7


SHEKILANGO ROAD
STATION 11
NEW BAGAMOYO ROAD
900 m
SAM NUJOMA ROAD
STATION 12
NEW BAGAMOYO ROAD
SCALE 1:2,000
NORTHERN BUSWAY PLAN
7/8

Map 8


SAM NUJOMA ROAD
NEW BAGAMOYO ROAD
STATION 13
Google earth
Eye alt 900 m
0 20 40 100 200m
SCALE 1:2,000
NORTHERN BUSWAY PLAN
8/8

Capacity Building Project for the

Improvement of Dar es Salaam

Urban Transport

Discussion Paper (Appendix 2)

Developing a PPP Concession for the

Design, Build, Operation and Maintenance of

Bus Terminals in Dar es Salaam

This paper has been prepared only for internal discussions amongst the designated stakeholders for this project.

Secretariat for the Capacity Building Project

and

JICA Expert Team

CONTENTS

BACKGROUND AND PURPOSE

The City plans the relocation, renovation and new construction of major bus stops and terminus facilities in central Dar es Salaam. Private sector involvement is sought under a Concession Agreement to Design; Build; Operate and Maintain (DBOM) these facilities with the private sector being given the opportunity to exploit the revenue generating potential of such a facility through selling of advertising space and rent of space to formal and informal traders, in return for developing, managing and maintaining the facility.

The concession agreement is therefore designed to create a mutually beneficial arrangement where the private sector 'partners' with the City to deliver public services, and at the same time creating a profitable business opportunity. To achieve a win-win outcome it must ensure the business case is viable with the application of rules and incentives to ensure obligations and responsibilities are met.

DESCRIPTION AND LOCATIONS

The four nominated locations are:

1. Stationi
2. Old Posta (new location)
3. New Posta
4. YMCA (new location).

STATIONI

This area comprises a total of approximately 36m X 64m with three 'island type' bays; one bordering the east perimeter with a nature garden and two centre islands. The area to the west is designated as future taxi parking. Existing old shelters are in place with some minor advertising boards. **Figure 1** shows a pictorial overview and **Figure 2** shows the future layout and circulation plan.

FIGURE 1 SNAPSHOT OF STATIONI

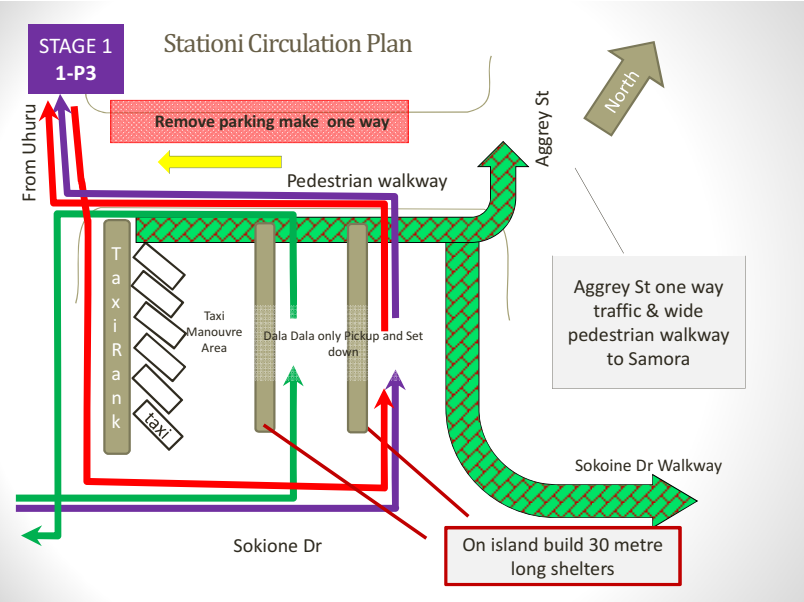


FIGURE 2 LAYOUT AND CIRCULATION PLAN

DESIGN PARAMETERS

All existing structures are to be removed and the garden area is to be maintained. Driveway areas are to be repaired and footpath/waiting areas are to be tiled, with raised pedestrian crossings to be constructed across bus driveways (paved and without steps).

The opportunity exists to build on the two centre islands a 30 metre shelter on each island which creates approximately 200 sq. m of advertising space on the back wall of the shelter (using both sides) as well as 8 sq.m of kiosk space per island. The island at the east (backing the garden) can also accommodate further kiosk and advertising space. A public toilet (small fee for use), constantly maintained, is also planned for this space. The designated area of the taxi rank is also under the site management.

In this location, the contract shall allow the Operator to collect a parking fee from the taxi operators, at a negotiated fee arranged with the City.

Advertising signs can be static or LED/LCD screen and the construction of a freestanding LED screen advertising board is permitted. All facilities must be of a quality construction in order to attract advertising revenue and represent a high quality standard of passenger facility.

TABLE 1 STATIONI GROUND WORKS

SITE LOCATION	TYPE OF GROUND-WORKS REQUIRED	DESIGN FEATURES/ BOQ	ESTIMATED COSTS
STATIONI Total area: Approx: **36m X 64m** Shelter structures include: 2 shelters @ 30m long each + space for kiosks	Some minimal repairs to the concrete driveway area.		Tshs 1,000,000-
	Build new bus stop islands (over existing islands) and extend to 4 metres wide.	Islands and passenger waiting areas to be tiled in easy to maintain/ clean granite stone tiles.	Tshs 40,000,000-
	Build raised pedestrian crossings and walkways	Level to Islands ramped for buses. Paved and marked to identify the crossing as a 'shared zone'	Tshs 25,000,000-
	Build toilet block on Northern side	Ladies and Gents (2 each)	Tshs 30,000,000
	Renovate and beautify garden area.	Existing garden requires some improvement	Tshs 4,000,000

ISSUES AND CONSTRAINTS WITH STATIONI

There are possible issues with existing ownership/use of the site and any such rights and existing advertising rights need to be annulled. If this cannot be achieved, the current owner must redevelop the site under a DBOM concession, and only within the terms of the Contract.

OLD POSTA

This area comprises the footpath area opposite the NBC bank at the west side of the park. The existing daladala stop at the harbour side of Kivukoni Front will be closed.

DESIGN PARAMETERS

The area comprised the footpath are approximately 130m long and 4m wide. Three park entrances must be kept clear for park access. Shelter construction shall be between the existing grown trees. The allowable space therefore permits the building of three 12m long shelters in the available spaces. This will provide approximately 144sq.m of advertising space on the back and front wall of the shelter, and space for 3 X 8sqm of kiosk space. **Figure 3** shows a pictorial overview and **Figure 4** shows the daladala circulation plan.

FIGURE 3 SNAPSHOT OF OLD POSTA

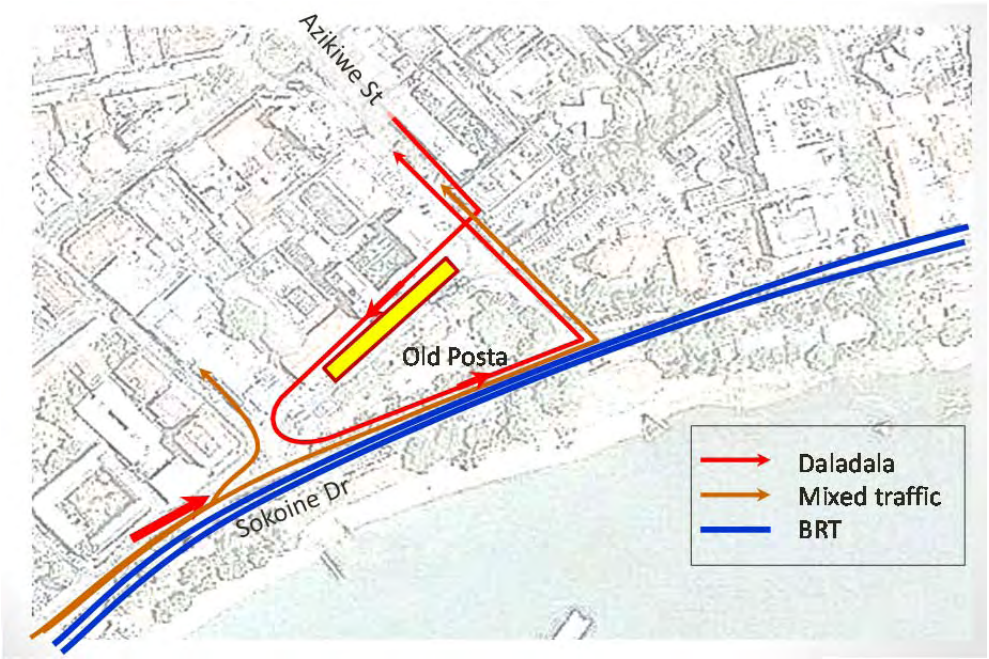


FIGURE 4 LOCATIONS OF BUS STOP AND CIRCULATION LAYOUT

TABLE 2 OLD POSTA GROUND WORKS

SITE LOCATION	TYPE OF GROUND-WORKS REQUIRED	DESIGN FEATURES/ BOQ	ESTIMATED COSTS
OLD POSTA Total Area Approx. **130m X 4m** 3 shelters @ 12m long each + space for kiosks	Minimal works such as removal of old signage posts, repairs to the rear boundary fence and minor repairs to the paving,		Tshs 8,000,000

ISSUES AND CONSTRAINTS WITH OLD POSTA

Presently it appears that the park area is under the maintenance of NBC bank who may have some agreement or it is done for public service with an allowance to place their corporate image as sponsor.

Any pre-existing agreement should be cleared to allow the new location to be developed under a DBOM concession.

NEW POSTA

This bus stop is in front of the General Post Office on Maktaba St. The area comprises a total length of approximately 135m long X 4m wide. The area includes walkway access to the footpath behind. The new bus stop at YMCA will reduce some of the activity at New Posta, helping to manage its orderly operation.

DESIGN PARAMETERS

Within the west of the new LED advertising tower is space to build up to four shelters, ranging from 8 to 22m long depending on passenger requirements. Four shelters of 16m length are sufficient, given the volume of passengers using this bus stop. This will provide approximately 100sq. m of advertising space (one side only) on the back wall of the shelter. Some space at the back of shelters may be available also. Within the site area, there is space for 6 kiosks of 4sq.m each.

The footpath space requires full re-tiling and walkway access to the footpaths cleared. The total width of the bus stop waiting area shall be extended to 4 metres (of which 2 m shall be shelter area with seating).

TABLE 3 NEW POSTA GROUND WORKS

SITE LOCATION	TYPE OF GROUND-WORKS REQUIRED	DESIGN FEATURES/ BOQ	ESTIMATED COSTS
NEW POSTA Total Area Between Ghana St and Driveway of Posta. Approx. **135m X 4m** 4 shelters @ 16m long each + space for kiosks	Remove all old structures and rebuild the waiting areas 15cm high from road level, 4m wide from the garden boundary to the kerbside. Granite tiling to be used for the waiting area.	The main waiting area (to house the 4 shelters is 80m X 4m. The remaining area for footpath renovations is 54m	Tshs 70,000,000-
	Remove old island structures on roadway.		N/A (city will do)
	Renovate surrounding areas both sides of the main bus stop area including footpath improvements from Ghana St to the Posta.	54 m long area for footpath renovations / paving	Included in main cost

ISSUES AND CONSTRAINTS

All existing structures and advertising rights for New Posta must be removed. Should the concessionaire require any modifications to the garden construction, this may have to be negotiated with the entity that has built and maintained the garden. The Client can assist in this regard.

YMCA

This area comprises a location on the west of Upanga St as shown on **Figure 5**. Rerouting of buses will commence prior to end of 2014 and the footpath/waiting area shall be constructed at this time under the city budget in order for the function of the bus stop to begin.

FIGURE 5 SHOWING LOCATION OF PROPOSED YMCA BUS STOP

DESIGN PARAMETERS

It is expected that this location shall require parking places of up to 6 daladala, requiring a total bus stop length of 60 metres. It is expected that four 12 metre shelters will be sufficient, which will provide seating for up to 100 passengers and 100 sq.m advertising space and space for two 8sq.m kiosks.

The footpath waiting area shall be widened to 3 metres allowing 6.5 metres of road width which provides a one-lane traffic flow and a bus waiting area.

TABLE 4 YMCA GROUND WORKS

SITE LOCATION	TYPE OF GROUND-WORKS REQUIRED	DESIGN FEATURES/ BOQ	ESTIMATED COSTS
YMCA 60m X 3m 4 shelters @ 12m long each + space for kiosks	The city will complete the groundwork prior to the rerouting of the daladala by end 2012	N/A	N/A

ISSUES AND CONSTRAINTS

The City is expected to build the ground works for this site as it may come into operation at the time of daladala rerouting.

CONCESSION CONTRACT ISSUES

THE OBJECTIVES FOR SECURING THE PRIVATE SECTOR

The objective to engage the private sector in this business is to create a business opportunity for the private sector that also delivers on public objectives, namely the construction, operation and maintenance of the city's bus stop /terminus facilities. Advertising rights and the ability to raise other revenues from the site will support the business case and the provision of services to the public.

PPP concessions have a poor record in Dar es Salaam, typically due to either an uncertain business case, or the readiness of the private sector to exploit the revenue opportunity yet underperform in its obligations, or due to poor contract agreements that lack incentives, rules and the mechanisms of enforcement.

The concession agreement is therefore designed to allow a viable business, and also ensures that the concessionaire has the built-in incentive to perform in their obligations and responsibilities.

The investor should have the natural incentive to maintain a good quality facility to attract advertisers and command greater advertising revenue, yet often, once revenue is collected the Operator can lose interest in the facility operation.

To solve this issue, and to ensure the facility provides the good service delivery to users, the client will monitor service performance through the use of an Evaluation Scorecard. Should the concessionaire fail in its obligations in O&M, financial penalties shall apply. Continual service failure or non-payment of fines would result in the cancellation of the concession contract.

PERFORMANCE MEASURES

Suggested service standard measures for the concession are as follows:

- Cleanliness, including daily cleaning, sweeping, emptying litter bins and maintain clean glass and advertising boards and clean seating. Pressure wash cleaning shall be conducted weekly.
- Management, including the control of illegal hawkers and the removal of non-authorised activities and illegal parking on-site. On site management (one person shall be provided through all hours of operation as set by the contract) and casual security surveillance after hours.
- Illegal use, being non-authorized activity by the concessionaire or outside parties.
- Malfunction of facilities e.g. power, lighting failure, or damage or disrepair.
- Maintaining rules of operation as specified in the contract.

REGULAR FEE PAYMENTS TO THE AGENCY

The option exists in the bidding process for the bidder to propose a period of no fee payment to allow the investor time to recoup the investment. Service failures however shall incur extra financial penalties.

Following such a fee-free period the Operators shall pay monthly fees to the City as stipulated in the contract, and based on the offer made in the bid process.

EXTERNAL MANAGEMENT ISSUES

Some external factors may impact on the operation of the facility, and these will require a management strategy that includes:

- To acknowledge the role of SUMATRA in governing the operation of daladala and coordinating bus operators. This will be accessed in the case of irregular action or non-compliance by daladala of bus stop rules.

- To concept of daladala paying access fees to use the bus stop facility is considered, but not included in the concessionaire. Free use of the facility is preferable, in order to maintain a fast turnaround of vehicles and ensure daladala do not overstay with long dwell times (waiting for passengers and getting their money's worth) and also do not evade the stop to avoid paying fees.

CONTRACT PERIOD AND CONTRACT TERMS AND CONDITIONS

The concession agreement must be for a suitable term, commensurate with a fair return on the investment on one hand, and protect the interests of the City on the other hand. Too long a term may cause a situation where the City cannot readjust the contracts to suit changing conditions and too short a term will disadvantage the interests of the investor.

Therefore, ideally a 5 year contract could be considered, with a 5 year automatic extension for good performance.

The contract can be cancelled at any time for the following:

- Violation of the terms of the contract or failure to properly fulfil the obligations of the contract.
- Continual failure to address the performance issues of the contract with due process of warnings followed.
- Non-payment of liquidated damages (fines) for service failures.
- Failure to advise the client on the sale of the business.

CONCESSIONAIRE/OPERATOR PERFORMANCE

A draft version of the Concession Contract is attached as Appendix 2-1.

The Operator will be held to account to meet performance standards of the contract. It is the responsibility of the Operator to ensure contract conditions are followed and that the facility delivers in good standard of service to the public. The public can expect the bus stop facility to be clean, in a good state of repair, be a safe environment free of harassment by vendors and hawkers. The operation of the bus stop area shall be orderly.

Poor performance could result in:

- Loss of advertising revenue
- Financial penalties for service failures
- Poor record of performance as a concessionaire
- Accidents and injuries
- Poor customer service
- Contract penalties

CONTRACT MANAGEMENT AND THE PENALTY REGIME

Serious contract breaches leave the option of with legal recourse / cancellation of contract. The 'performance' of service delivery managed through a demerit points system and operational fines.

APPENDIX 2-2 outlines the Penalty Register showing the financial penalty for each item of performance failure, and a Performance Scale that grades performance levels according to demerit point accrual. The purpose of the Penalty and Demerit Points system is to focus the Operator to provide a good standard of service delivery and will:

- Be exercised by the client in good faith to meet quality performance objectives
- Inform the Operator when failures occur, and who has right of reply or explanation
- Use a monthly performance evaluation scorecard to evaluate performance.

The Penalty Regime and Demerit Points will:

- Monitor performance over time to fairly judge overall performance
- Provide a financial incentive for the Operator to comply
- Rate the performance of the operator to determine eligibility for Contract extension/ renewal.

In practice the accrual of Demerit Points will rated according to the Performance Scale, with the accrual of 20 demerit points or more in a 3 month period will require a meeting with the client to establish action steps to resolve the performance issues. The accrual of 30 demerit points or more in a 3 month period will result in a 'show cause' notice why the contract should not be terminated. Failure to resolve will result in cancellation of contract.

SELECTING A CONCESSIONAIRE

SHORT LISTING BY PREQUALIFICATION

The process will begin by advertising for 'Expressions of Interest' to secure interested parties to lodge a submission. These interested parties can be pre-qualified in order to streamline the process with only the qualified players. Prequalification on to a 'short list' shall include the following requirements with a suggested scoring for each item:

Criteria	**Scoring** A. Fully meets requirement to a high standard B. Meets requirement to an average level C. Shows some evidence of requirements being met D. Does not meet requirements
All bidding entities to be a registered company with tax records in Tanzania and be able to submit financial statements for the past 2 years as evidence of financial capability.	5 points
Demonstrate Management and Staffing capability, and local office facilities.	5 points
Demonstrated experience in the field of on-site display advertising with an established client base.	20 points if A 15 points if B 10 points if C 0 points if D
Can provide evidence of quality advertising structures and successful in-field advertising displays.	20 points if A 15 points if B 10 points if C 0 points if D
References from existing clients showing satisfaction with the conduct of existing accounts.	20 points if A 15 points if B 10 points if C 0 points if D

A minimum score of 50 would be required to be short-listed.

THE BIDDING PROCESS INVOLVING SHORT LISTED QUALIFIERS

The bidding process shall include all sites with only one concessionaire selected to manage all four sites. This is to develop scale of economy into the operation. The criterion for the bid will include the following statement of requirements:

1. FACILITY DESIGN

A key selection criterion is the best design for the facility. Bidders shall as part of the bid provide a design for the facility that includes PLAN layouts, side elevation drawings and a computer generate

perspective view to provide a true to life image of the structure, appearance and design of the structures and advertising spaces.

Bidders should engage architects to develop outstanding designs that contribute positively to the quality and attractiveness of the cityscape.

Evaluation: These designs shall be judged by an independent panel to arrive at a consensus opinion on the most attractive, sustainable design that portrays a modern and efficient design worthy of a key public infrastructure and amenity.

2. MANAGEMENT

The bidder shall outline a management plan that demonstrates how the quality of the facility shall be maintained, and the staffing plan for security/ marshaling as per requirements.

Evaluation: Evident in such a plan is the competence of the planning to ensure quality service is maintained.

3. FEES AND CHARGES

The bidder has the option to include in the proposal a 'fee-free' period according to what they consider necessary to recoup the investment, and for the remaining period, nominate a monthly fee payable to the City.

Evaluation: Scoring shall not necessarily accept the highest fee, as this must be balanced against the quality and design of the facility and the management plan. However the fee scale can be considered as a supporting factor in the selection process.

4. VALUE-ADD ITEMS

The bidder has the opportunity to provide any further detail, which can support the bid, for example any value-added inclusion or special site treatments that enhance to operation of the facility or provide added benefits to the public or the city.

Evaluation: These items are beyond the minimum stipulated requirements and may differentiate bids from other contenders by delivering additional benefits.

APPENDIX 2-1. DRAFT CONCESSION CONTRACT

SECTION 1 PARTIES TO THE CONTRACT

The Client: The Ilala Municipality

Represented by: _____ (hereinafter called the Client)

and,

The Concessionaire: _____ (hereinafter called the Operator)

Represented by: _____

SECTION 2 PURPOSE OF THE AGREEMENT

The purpose of the agreement is to develop a business relationship between the City and Private Concessionaire for the Design, Build and the Operation and Maintenance of the City bus stops and termini.

This agreement will outline the basis of the relationship outlining expectations, obligations and responsibilities of each party and describe the terms and conditions of upon which the business will operate.

SECTION 3 GENERAL TERMS AND CONDITIONS

This contract specifically makes the distinction that during the currency of this agreement the Operator is a contractor to the client and is not an employee or agent of the City and does not have the authority to bind the City contractually to any other party.

Should the function of the facility significantly change throughout the period of the contract, causing material loss of earnings to the Client, the parties may mutually agree to terminate the contract, or may settle the matter with mutual consent with alternative business opportunity secured through negotiation.

The financial and trading records of the Client shall remain 'Commercial-in-Confidence', but should the Client make application to vary the terms of the contract due to financial hardship, a full financial disclosure shall be made to support the claim and establish the bona-fides of the request.

The Operator may not cede or delegate obligations or subcontract services without prior Client approval. Should the Client approve intended subcontracting of services, the Operator remains responsible for quality of service rendered by subcontractor and the insurance required in terms of this agreement. The Client may withdraw consent with 30 day notice due to solvency issues or poor service performance and the Operator shall take over services again.

The Client may terminate this contract should the Client become insolvent. Fail to pay monies due.

The Operator is to advise the Client within 7 days any change in company ownership or control. Failure to do so will result in cancellation of the contract, without any redress to any party concerned.

This contract is for a specific contract period and the Client has no claim, rights or grounds for action against the client beyond the contract termination date.

The client is not permitted to sell any advertising for the period past the contract termination date and upon termination the facility must be handed over to the client in good condition.

All formal correspondence between parties shall be by written correspondence either letter or email.

SECTION 3 DEFINITION OF LOCATIONS

The site detail for the Bus stop/terminus locations are made available as part of the Bid Documents available to pre-qualified bidders.

(Insert detailed description here showing boundaries -inclusions and exclusions)

SECTION 4 DESIGN OF FACILITIES

The proposed design and specifications of the facilities as contained in the Operators Bidding proposal shall be annexed to this contract as Attachment 1.

Signing of this contract shall indicate that the city accepts the design proposal as shown.

At the completion of construction the City Engineer shall sign off on the completed works and issue a letter of satisfactory completion.

SECTION 5 DESCRIPTION OF SERVICES

The Operator shall undertake to Design, Build, Operate and Maintain (DBOM) the facility described in Section 3 above. The design and build of the facility shall be fully representative of the design and approved plans provided to the Client and upon which the Contract has been awarded.

The Operator shall supply a Security Marshall to assist passengers and ensure the smooth operation of the facility for a period of sixteen hours per day from Monday to Saturday (6 days per week, excluding public holidays.

The Operators shall maintain the facility in good condition, including daily attendance to cleanliness and regular thorough cleaning, such as weekly pressure washing.

All advertising signage shall be kept in good condition and vacant advertising space shall be neatly presented with alternative decoration or vacant colour panel.

No stickers, political banners, free advertisements, posters shall be allowed, and the Operator shall immediately remove illegal or informal notices.

SECTION 6 OBLIGATIONS AND RESPONSIBILITY OF THE OPERATOR

The Operator is obliged to arrange comprehensive insurance cover public liability covering all risks, civil commotion etc. Proof of cover and premiums paid to be supplied by Client on request. If not in place, the client may take out insurance and charge the Operator for the premium costs.

The Operator shall indemnify the Client from all action, legal or otherwise by any party using the facility, public, advertiser, tenant etc.

The Operator may request assistance from the Client, to manage any aspect of the facility beyond its control or scope (such as behaviour of daladala etc.).

The Operator shall advertise at each location a call number that will respond to service complaints.

The operator shall keep the Client updated on a contact person responsible for management of the site including an after hours phone contact telephone number.

The Operator shall maintain the facility at own expense in a clean and serviceable condition and to ensure public safety. The operator shall pay the cost of electricity and utilities at the site.

SECTION 7 FEES AND PAYMENTS

The rights to occupy the site and develop the facility and sell advertising and collect rents for limited commercial use, is subject to the payment of a fee to the Client .

However, the contract shall have a 'fee free' period of _____ *(as proposed in the bid)* years to allow the Operator to recoup the cost of the investment in the facility. In the remaining period of the contract, a monthly fee of TZS _____per month will be paid to the Client.

SECTION 8 INCENTIVES AND PENALTIES

The Operator will be held to account to meet performance standards of the contract. It is the responsibility of the Operator to ensure contract conditions are followed and that the facility delivers good standard of service to the public.

It is expected that the Operator has the incentive to keep the facility in good condition to attract advertisers to a quality advertising opportunity with a high level of public exposure. However, the Client will monitor operations and use a monthly evaluation scorecard to grade performance and public service delivery.

Breaches of Contract Terms and Conditions will have legal recourse and may result in cancellation of the contract.

For service performance, a penalty system will operate through a demerit points system and operational fines for incidents of service failure according to the Penalty Table attached to this Contract.

Overall performance during the course of the contract and successive months will be graded according to the Performance Scale as shown. Accrual of demerit points over successive month will result in action being taken to improve performance including the option to terminate the contract due to continual poor performance.

The accrual of **20 demerit points** or more over a 3 month period will require a meeting with the client to establish action steps to resolve the performance issues. Failure to improve performance will result in a 'show cause' notice why the contract should not be terminated.

The accrual of **30 demerit points** or more over a 3 month period will result in a 'show cause' notice why the contract should not be terminated. Failure to resolve will result in cancellation of contract.

SECTION 9 DURATION & CONTRACT RENEWAL

The contract is made for 5 years subject to good performance and compliance.

Provided the Operator has provided good performance during the contract shall have an extension of a further 5 years at the conclusion of which the contract shall be put to competitive open tender.

The incumbent Operator shall have the benefits of incumbency and a supporting record of business during the tender process, which may provide a competitive advantage, however the Client is not obliged in any way to provide advantage in an open tender process.

SECTION 10 COMMENCEMENT DATE AND START OF OPERATION

At the completion of works the city engineer shall inspect the facilities and if satisfied, will issue a letter of satisfactory completion stating the completion date and that works have been satisfactorily completed according to the stated requirements of the bid proposal and the contract.

The agreed completion date shall be no later than _____ upon which construction shall be completed and operations of all the facilities shall begin.

Failure to compete works prior to the completion date shall incur a penalty of TZS 150,000 per day paid to the city until the date when works are completed. Incomplete or unsatisfactory compliance to the design proposal will cause the penalty period to extend until the construction has been approved.

SECTION 11 SETTLEMENT OF DISPUTES

Mediation in non-urgent matters

- The Operator may appeal to Client against the imposition of a penalty within 14 days of imposition
- The Client must give decision within 14 days of receipt of notice
- The Operator may declare dispute if not satisfied
- Parties must attempt to resolve in 21 days. If not resolved – mediation or arbitration will be sought by an independent mediator as agreed by the parties.
- The Mediator does not have the power to impose a binding decision, and the matter must be resolved by written agreement
- If mediation not successful in 60 days, parties may revert to court for settlement of the dispute

Arbitration in urgent matters and unresolved disputes

- If dispute arises from non-agreement after mediation, the Client may refer the matter to arbitration
- Arbitration proceeding must be informal to speed up process and save costs to reach a decision within 30 days
- Arbitrator decision is final and binding and should be made within 30 days. May also make ruling on cost
- Decision may be made by an order of the court should one party not comply

If proceedings agreed to here are deemed to be inappropriate by any of the parties nothing in the contract prevents the party from seeking urgent relief in court.

The Operator must continue providing services despite the fact that a dispute procedure being in process.

SECTION 12 SPECIAL CONDITIONS

Confidentiality and Public Announcements

- Content of contract and information disclosures for contract purposes by parties remain confidential
- The Client will advise the Operator of all public announcements made regarding the operations of the bus stop/ terminus facility, with sufficient notice for the Operators to respond and manage the situation.

Standards of Advertising

All advertising shall comply with the Standards of Advertising outlined in the *Code of Ethics for Advertising and Sponsorships for the Advertising and Broadcast Media* of the Tanzania Communications Regulatory Authority.

Specifically, in the interests of public health, no advertising for tobacco products are allowed.

Any audio or TV advertising shall be in accordance with proper standards and without public disturbance, as to noise levels.

APPENDIX 2-2. PERFORMANCE REGIME

TABLE 1 PENALTY TABLE

Item	**Explanation**	**Action/ Penalty**	
Breach of Contract conditions		Legal Recourse or Cancellation of Contract	
Service failures		**Penalty per incidence (TZS)**	**Demerit Points**
Facility in state of uncleanliness	Where the facility is dirty, such as excessive litter, sand, and advertising boards, glass that has not been regularly cleaned.	100,000	2
Facility/ equipment in disrepair, or malfunction of equipment	Broken lighting, structures, glass, broken signage/seating, where safety markings are no longer visible.	400,000	4
Facility damage or disrepair that threatens public safety	Where damages can cause injury or cause accidents.	600,000	6
Facility subject to illegal use, by contractor or others	Illegal hawkers, vendors or illegal parking, or any other prohibited activity within the bus stop/terminus area within the control of the Operator	400,000	4
Lack of security attendance in peak periods as specified in the contract.	Manned presence by Security Marshall 20 during peak periods to assist passengers and maintain order in boarding and alighting.	200,000	2

TABLE 2 PERFORMANCE SCALE

0 points per month	Excellent performance
2 points per month	Acceptable performance
4 points per month	Needs Improvement
6 points per month	Urgent management attention
10 points per month	Poor/ Unacceptable

TABLE 3 POINTS ACCRUAL

Accrual of 20 points over a 3 month period	Meeting with client to resolve issues. Failure to resolve will result 'show cause' notice.
Accrual of 30 points over a 3 month period	Show cause why contract should not be terminated. Failure to resolve will cause cancellation of Contract.

APPENDIX 2-3. ADVERTISEMENT FOR BIDDERS

The following is a draft advertisement for interested bidders.

EXPRESSIONS of INTEREST

The Ilala Municipal Council plans the relocation, renovation and new construction of major bus stops and terminus facilities in central Dar es Salaam. Private sector involvement is sought under a Concession Agreement to **Design; Build; Operate and Maintain** (DBOM) these bus terminal facilities with the private sector being given the opportunity to exploit the revenue generating potential of such a facility through the selling of advertising space and the rent of space to informal traders, in return for developing, managing and maintaining the facility.

The concession agreement is therefore designed to create a mutually beneficial arrangement where the private sector 'partners' with the City to deliver public services, and at the same time creating a profitable business opportunity. The concession contract shall include performance conditions to ensure obligations and responsibilities are met.

The locations are:

1. Stationi - renovation and construction of new infrastructure
2. Old Posta – relocated site and construction of new infrastructure
3. New Posta - Refurbishment and construction of new infrastructure
4. YMCA – New location and construction of new infrastructure

The bidding process will begin by pre-qualifying interested parties to complete a formal bid process. Prequalification on to a 'short list' shall include the following requirements:

- All bidders are to be a registered company with tax records in Tanzania and be able to submit financial statements for the past 2 years as evidence of financial capability.
- Demonstrated Management and Staffing capability, and local office facilities.
- Demonstrated experience in the field of on-site display advertising with an established client base.
- Can provide evidence of quality advertising structures and successful in-field advertising displays.
- References from existing clients showing satisfaction with the conduct of existing accounts.
- Name of Company Representative
- Address and contact details.

Expressions of Interest shall be lodged at _____ no later than ___pm on (date).

Further enquiries:

Illala Municipal Council Address & Phone Number