Inclusive
Urban Development
In the Greater Suva Area

RETA: 6293-Fiji

Medium Term Infrastructure Investment Program
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Foreword

The Greater Suva Area (GSA) is the major urban area for Fiji and is home to nearly 260,000 residents, the seat of Government and a substantial proportion of the economic activity of Fiji. It is however coming under increasing pressure as urban infrastructure has not kept pace with urbanisation.

The Government, in accordance with its ***Peoples Charter for Change, Peace and Progress*** has a vision for rebuilding Fiji that includes amongst other objectives, "uplifting of the disadvantaged in all communities". In this context, assistance has been sought from CDIA to develop a program of investment which will assist Fiji in realising its vision.

This Report documents the findings of the CDIA project team during Phase 1 of the Technical Assistance (TA) process. Phase 1 involved assessing urban infrastructure investment needs of the GSA for presentation to and consideration in a stakeholder workshop. This workshop will review and confirm the project components for a Medium Term Infrastructure Investment Plan (MTIIP) along with specific priorities to be considered in the Phase 2 (PFS). The infrastructure sectors in this TA are (i) waste water, (ii) urban transport, (iii) drainage and flood protection and, (iv) solid waste management.

Overall, Phase 1 has confirmed earlier advice in the Terms of Reference of a declining standard of infrastructure generally and in particular infrastructure to informal settlements. This decline is caused by a combination of inadequate capital investment, ongoing operations and maintenance. In relation to informal settlements the issue of land tenure is central to much of the problem. Moreover the inability of Government to recover adequate service fees and charges for the infrastructure provided further compounds this problem and has contributed to significant environmental degradation.

Due to delays in identifying and recruiting suitably qualified local project staff, this Report has been prepared by a reduced project team. At the time of writing, only four of the seven team members had been contracted. As a result, there will be gaps in this report.

The CDIA team expresses its sincere appreciation to the Minister of Local Government for his support; Senior staff and teams of the Departments consulted; and especially to the SAs, CEOs and support staff of counterpart Councils for which this TA has been commissioned. Without their assistance, this document would not exist.

Disclaimer

The views expressed in this report are those of the CDIA consultant team, unless otherwise indicated. They are not necessarily the views of the Cities Development Initiative for Asia or the Government stakeholders in Fiji.

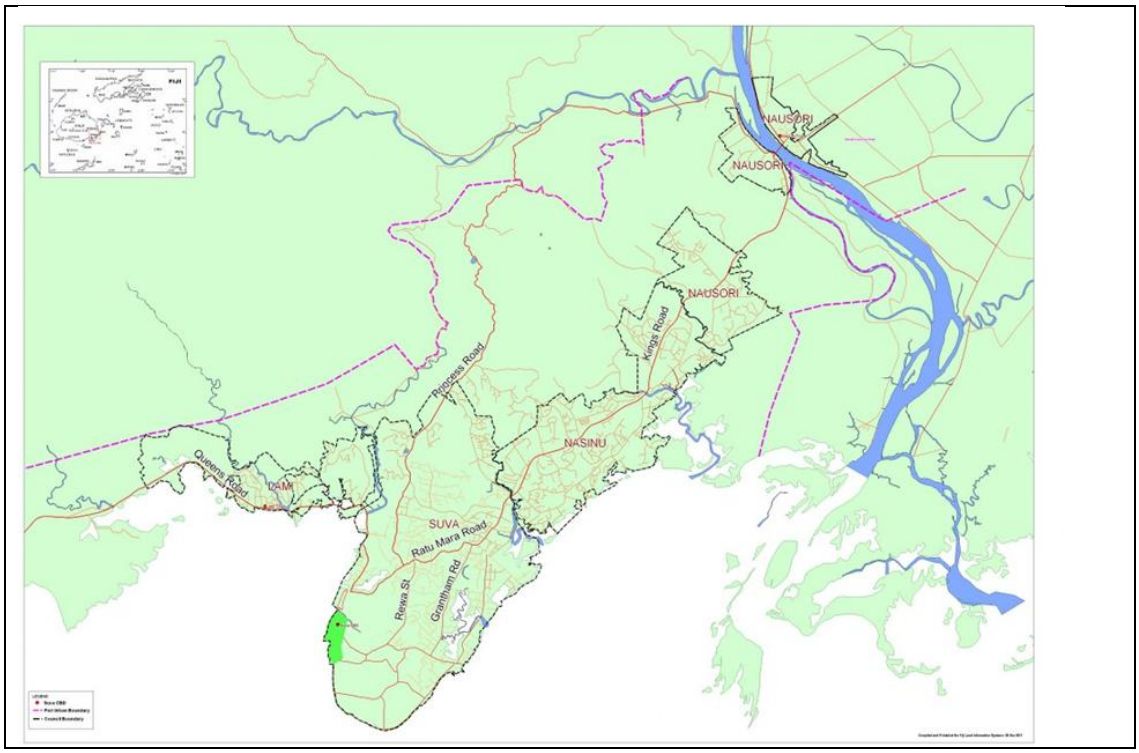
Executive Summary

1. Introduction

The four councils of Suva, Lami, Nasinu and Nausori have a shared goal of developing the GSA into a well-serviced and economically vibrant urban area. However for a number of reasons, inadequate urban infrastructure is hindering local economic growth and compromising the quality of life for urban residents. This was the catalyst for the Councils in preparing and submitting an application for Technical Assistance to the CDIA.

This report summarizes the findings of the two-month interim phase of the Technical Assistance (TA) to develop a Medium Term Infrastructure Investment Program (MTIIP) for the Greater Suva Area (GSA). The report documents the challenges facing the four sectors of (i) wastewater, (ii) urban transport, (iii) drainage and flood protection and (iv) solid waste management. A Medium Term Infrastructure Investment Program (MTIIP) has been prepared which is based upon this assessment, draws from inputs of stakeholder priorities and from the principles of inclusive urban development. The Study area comprises the GSA which is shown in Figure ES1. It contains the four council city/town areas as well as their peri urban areas.

Figure ES1: Study Area



2. Population

The GSA is both the nation's commercial and administrative capital. Urban infrastructure in the GSA has not kept pace with urban growth during the past two decades, and acts a constraint on social

and economic development. The population of the GSA is currently estimated to be approximately 256,300 and is forecast to grow to 297,300 within the ten year period of this MTIIP.

3. Economy

The relatively weak economic performance over the past two decades has led to structural problems within the broader economy which in turn has hampered growth in employment. Previously relatively robust sectors of the economy such as the sugar and garment industries have suffered a decline and the relative level of poverty has risen as a result. The non-renewal of many farming leases has had a severe financial and social impact on farming families affected as they often move to informal settlements in the GSA.

Following a serious decline of 9% in 2009, the national economy grew by a modest 0.1% in 2010. GDP is expected to rise by 2.1% in 2011 and forecast to continue to grow by around 2% per year for the next three years. However the IMF (2011) has observed that recent economic growth "compares unfavourably with other island economies in the region" and while the Fiji economy is showing promising signs of recovery, it "risks continued low growth, greater vulnerability from the concentration of economic activity in tourism, and reduced fiscal space to deal with shocks".

4. Housing

The recent growth in informal settlements has been an integral part of recent urban development. The 2007 Census estimated 16% of all GSA households are informal. Furthermore, projections prepared by the CDIA consultant team suggest the population in informal settlements is likely to increase from approximately 40,500 in 2007 to approximately 53,000 by 2021.

As is the case with many countries, rural urban migration in Fiji is continuing as (often poor) families from rural communities move to urban areas in search of improved economic, social and education opportunities. Typically, these families establish informal settlements on land which is generally undeveloped and without title. However in Fiji, the growth in informal settlements is being encouraged by the non-renewal of farming leases which has the effect of leaving rural based families homeless. Since the 1997, 9,023 leases have expired and have not been renewed. An additional 2,169 expire within the next five years and a further 1,957 by 2028. These displaced families move to cities/towns and peri-urban areas in search of improved economic and social opportunities. Many migrate to informal settlements.

Land tenure is central to many of the challenges facing these informal settlements. In Fiji land is one of three categories. As Figure ES2 illustrates, the majority is native title. This has an impact on the choice of settlement for those farming households moving to urban areas and urban areas with limited resources. In many cases and for reasons including cost and availability many informal settlements have developed on either native or state land. With relatively high development costs for private land, much of this remains outside the reach of the urban poor.

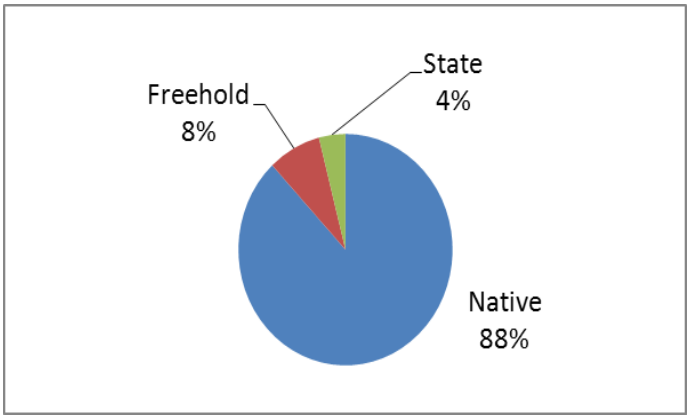


Figure ES2: Distribution of Land Ownership in Fiji

As a result, many families have established home sites on land where, (i) local Council regulations are not enforceable, (ii) a small payment to the native land owner as rent will suffice to establish a

home, and (iii) Council rates are not applicable. Combined, these factors minimise costs and bring the cost of establishing a home site to within the limited financial capacity of the occupants.

With limited revenue to be gained from informal settlements, Government and in particular, Councils are unable to fund infrastructure and provide services without revenue from rates and service charges. This often results in substandard urban infrastructure for informal settlements and further contributes to their overall poor living conditions. Largely for these reasons informal settlements are often synonymous with poverty and or the urban disadvantaged.

The Department of Housing has recognized this as a significant economic and social problem and has recently established a National Housing Policy to deal specifically with the issue. The MTIIP from this TA complements the Department's efforts in regard to this emerging housing crisis.

5. Institutional Arrangements

Five Ministries and two statutory corporations are involved in planning, financing and management of urban development in the GSA Within each Ministry, a number of Departments operate and manage the processes of governance on a daily basis. The concerned ministries and statutory authorities and their roles are summarized as follows:

Ministry of Finance (MOF)
In the context of this TA, the MOF is responsible for the compilation of official statistics through the Fiji Bureau of Statistics (FBOS) and the conduct of the Census These statistics were collected from the numerous Censuses and Surveys conducted by FBOS as well as from the data sets provided by other Departments. In the context of this TA, the FBOS is working closely with the Peoples Community Network (PCN) in the social profiling of informal settlements across Fiji.

Another key area of the Ministry with direct relevance to this TA is the Department of Strategic Planning Section. The role played by this agency is one of budgetary oversight of relevant Departmental programs across Ministries. In this role, it undertakes reviews of program expenditures to ensure outcomes are delivered as per the budgetary submissions supplied by the relevant Departments.

The Ministry has overall responsibility for the Central Coordinating Agency for Roads (CAAR). This Agency is responsible for the resealing roads across Fiji (as distinct from incidental pothole repairs undertaken by Munciipal Councils or the Department of National Roads).

Ministry of Local Government Urban Development Housing and Environment (MLGUDHE)
The MLGUDHE plays a central role in urban development, housing and informal settlement. The Ministry has four departments under its responsibility; (i) Department of Local Government (DLG), (ii) Department of Town and Country Planning (DTCP), (iii) Department of Housing and Informal Settlement (DOH), and (iv) Department of Environment (DOE).

Ministry of Works Transport and Public Utility (MOWTPU)
The MOWTPU has a direct and indirect influence in three of the four sectors being addressed in this TA. The core functions and responsibilities of this Ministry include policy formulation, planning, design, regulatory, co-ordination and implementation of programs, projects, and services relating to public works, roads, shipping, meteorology, transportation and utilities which are part of the Government infrastructure in Fiji. Road maintenance is undertaken (predominately on a reactive

basis) by the Department of National Roads, The Ministry of Finance through the Central Coordinating Agency for Roads (CCAR) and by Local Municipalities. The MOWTPU also regulates the water and sewerage sector. Drainage maintenance is undertaken (again largely on a reactive basis) by the MOWTPU and Local Municipalities.

The three departments that form part of this Ministry are the Department of National Roads, Department of Planning and Design, and Department of Transport and Energy.

Ministry of Health (MOH)

The MOH plays a significant role in urban development through the administration of the Public Health Act (PHA). In the main the PHA has two parts. One deals with general health issues and the other with building regulations and building codes. The Central Board of Health (CBH) constituted under Ministry of Health, administers the PHA. The Central Board of health within the MOH is charged with an oversight role for the Rural Local Authorities(RLAs). RLAs are key players in the peri-urban area. Constituted under the Ministry of Health, they are responsible for the ongoing management of sanitary districts. They can arrange solid waste collection through the relevant adjacent Municipal Council, manage minor public works and undertake public health and building inspections on an as required basis.

Ministry of Primary Industries (MPI)

The MPI is responsible for flood alleviation below the high water level in rivers or streams. Its activities include dredging and restoration of river/stream waterway areas. It also undertakes flood studies when requested to do so by local councils. It is also responsible for managing dog nuisance which is a problem for urban solid waste management. The Ministry has the three separate Departments of Agriculture, Forestry, and Fisheries under its responsibility. For the purposes of this TA, the most relevant Division within the Department of Agriculture which deals with flooding and drainage is Land and Water Resource Management Division (LAWREM).

Ministry of Lands and Mineral Resources (MLMR)

In the context of this TA, the relevant role of the Department of Lands within the Ministry is to undertake and keep on register, all land surveys and to maintain this and other GIS based infrastructure networks on the Fiji Land Information System (FLIS) for use by relevant Agencies. The Department also plays a key role in the endorsement of approvals of land for development which are then ratified by the Attorney General Department.

Ministry of iTaukei Affairs.

The Native Land Trust Board (NLTB) is a statutory body established under the Ministry of iTaukei Affairs and is the custodian of all native land in Fiji. This means that all formal transactions involving native land are mediated by the NLTB. The role of NLTB is quite significant as it has a direct influence on the bulk of land that can be released for urban development and housing, and the conditions attached to the release.

Water Authority of Fiji (WAF)

From 1 January 2010, WAF took over the responsibilities, functions and operations previously carried out by the Water & Sewerage Section of the Public Works Department. WAF operates as a Commercial Statutory Authority under the ambit of the Public Enterprise Act. The entity was established by the Government of Fiji to provide efficient and effective water and wastewater services in an environmentally sound and sustainable manner.

Land Transport Authority (LTA)

The LTA is a licensing and regulatory agency responsible for the licensing of all vehicles and the issuing of all permits for public service vehicles. In the context of this TA, it maintains regulatory control over all bus and taxi ;licenses, approves the locations of bus stands, taxi bases and stands throughout municipal local government areas.. It does not however undertake forward planning for the ongoing development of the public transport (bus and taxi) systems. It is responsible for the roadworthiness inspections of vehicles and all matters of road safety.

Municipal Councils

The municipal councils are responsible for managing the city/town area within their jurisdictions and for delivering municipal services to local residents. The range of services they provide include solid waste management, street lighting, roads and drainage maintenance, public markets, bus stand , taxi stand and taxi base infrastructure. They manage parking within their jurisdictions and provide funds for parks and gardens maintenance and landscaping. The councils also promote social and economic development within their areas. They are responsible for implementing functions assigned to them by various acts (e.g. Town Planning and Public Health Acts) including limited urban planning, approving urban development and buildings, protecting public health through health inspections under the requirements of the Public Health Act and approve relevant aspects of town planning applications and regulating onsite sanitation systems. The councils decide which services are most urgently needed and where to allocate their limited resources. The councils have financial and management systems to collect revenue from rates, taxes and service charges to pay for the costs of providing services.

Suva City Council is the only one with its own bye laws and with the resources to prepare its town plan. From the perspective of the four sectors included in this TA, much of the responsibility lies with the National Government Agencies.

Although the MLGUDHE is the line Ministry of the four Municipal Councils of Suva, Lami, Nasinu, and Nausori, all Councils operate independently from the MLGUDHE, generate their own revenue (through levies, fees and borrowings) and prioritize their expenditures through the annual budget process. No funds are provided to the Municipal Councils from the national level on an annual or regular basis. The operations of Councils are monitored by the Director of the Department of Local Government only at the policy level.

Sector Programs

In this context, a GSA sector program is regarded as a program which is being delivered under the oversight of a Ministry or a department within a Ministry. In the context of this TA, Government has no specific GSA urban sector program. It does have a national housing program which is managed through the Department of Housing. This program provides residential development through the Housing Authority, rental assistance through the Public Housing Rental Assistance Board and through a recently developed program in conjunction with PCN for the task of upgrading informal settlements.

The WAF has plans and programs for the ongoing upgrading and extension of the sewerage network within the GSA and elsewhere. These are specific to the perceived needs and capacities of the WAF and despite being in response to overall Government priorities. These are outlined below. Other than these, no other specific GSA sector programs exist.

6. Waste Water

The existing Suva-Nausori Sewerage System services parts of Suva City, Lami, Nasinu, and Nausori towns and Nasinu peri-urban area. The sewerage system includes three sewage treatment plants (STPs), 82 sewage pumping stations, about 20km of trunk mains 300mm dia. or larger and over 300km of sewerage reticulation. Kinoya STP serves about 98% of the sewered areas. .

In 2011, an estimated 108,000 people or 42% of the GSA population were connected to the Suva-Nausori sewerage system. Sewerage coverage in the four Council areas varies widely. Nasinu has the highest coverage at 77% while Lami only has sewerage connections to the Wailada industrial estate. Under the ongoing ADB Suva-Nausori Water and Sewerage Project, coverage is expected to increase to about 47% by 2013.

About 58% of households are unsewered; 53% are connected to septic tanks, 4% have pit latrines and 1% lack any toilet facilities. The municipal councils approve and monitor septic tanks in formal urban areas. Septic tanks and pit latrines in informal settlements are unregulated and are generally of lower standards. Sewerage network expansion to unserved areas is needed to enable higher population densities, encourage investment and provide more efficient utilization of land and infrastructure.

Frequent overflows and seepage from sewage pumping stations, sewers and septic tanks pollute waterways and pose health risks from exposure to pathogen-infected wastewater. Levels of contamination in many streams and coastal waters in the GSA make them unsuitable for human contact. As these waters are used for fishing or shellfish gathering, they are a potential health risk.

WAF does not set coverage targets for future sewerage investments, but prepares 5-year capital investment plans based on customers' needs and operational necessities. Its planning is based on the 1999 Sewerage Masterplans prepared under ADB technical assistance. The Councils consider that they are not consulted adequately in WAF's planning process.

WAF's 5-year plan for the GSA in 2012-2016 involves investment of $11.4 million, including $4 million in 2012 and $5.5 million in 2013-2016. Projects scheduled for 2012 include: (a) completion of the ADB-supported SNWSSP with backlog sewerage, trunk main extensions, inlet works and digester at Kinoya STP, and; (b) rehabilitation of Kinoya STP at an estimated cost of $0.5 million. Replacing old sewers in central Suva at an estimated cost of $5 million is scheduled for 2014-18.

A 10-year target sewerage investment program for GSA has been prepared under this TA. It addresses the forecast sewerage needs of existing unsewered areas and of government and private sector housing/land developers. Under the proposed program, sewerage connections are forecast to increase from 23,000 to 44,000 over the next decade, raising coverage from 42% to 70%. The target program supports the Government's existing informal settlement upgrading program and a supplementary upgrading program which together aim to address Government's policy objective (NHP) of providing "within the next 10 years tenure rights and basic service improvements of all squatter settlements, integrating them in the mainstream housing process"

The target program in existing developed areas will prioritize sewerage in areas that have poor onsite sanitation systems, including informal settlements, and areas where existing septic tank systems perform poorly.

As part of the proposed program, Kinoya STP, sewer trunk mains, pumping stations, rising mains and sewerage reticulation will be augmented and expanded. Kinoya STP requires immediate augmentation by rehabilitating the 90,000 EP Stage II SBR plant and sludge dewatering facilities. Based on the 1999 Sewerage Masterplan, a second 90,000 EP plant activated sludge plant, including clarifiers, digesters and dewatering facilities is required by 2013. Further studies in collaboration with WAF wastewater specialists will be necessary to confirm the most appropriate treatment processes and the optimum development program for Kinoya STP.

7. Urban Transport

The GSA road network, while generally comprehensive is dominated by a few key arterials. A GSA transportation study was undertaken in 2001 for the Ministry of Works and Energy. A number of network improvements for the short, medium and long term were recommended and these formed the basis of the current investment program of the Department of National Roads (DNR). A number of the recommendations have been implemented while the upgrading of the Kings Road and the Ratu Dovi Road arterial closer to the coastline represent the major components of the current GSA program of works. Other investments recommended in the 2001 Study are awaiting funding.

Suva central business district (CBD) is experiencing increasing levels of congestion as private vehicle registrations continue to grow between 2% and 3% per year and no additional lanes can be created in this highly developed precinct. Previous studies have proposed a number of improvements including a grade separated overpass adjacent to the current Suva bus stand. To date, little change has been made and with the limited scope for additional lane space and the high cost of grade separation, improved traffic management is the most cost effective option for the short and medium term.

Medium term investments proposed in this area include developing a comprehensive traffic and mobility management plan for the CBD. From the initial assessment undertaken to date, this should include upgrading the existing one way traffic couplet involving Rodwell/Scott Street (southbound) and Stinson/Harris Street (northbound), together with intersection improvements, two bridge replacements, improved pedestrian arrangements and coordinated signaling. This is in addition to the benefits to be gained by increasing the mode share of the existing public transport system (as part of the policy of improving network efficiency).

The private sector operates public transport system while the Land Transport Authority is responsible for all licensing matters. Private operators receive limited fiscal assistance from Government through tax and duty concessions on fleet and operating consumables but do not receive any direct ongoing operating subsidy. Government is responsible for the provision of supporting infrastructure including bus stops and stands (terminals) as well as taxi stands and bases. For these facilities (other than bus stops), operators pay access fees to the local Councils.

The Suva bus acts as a key terminus for all urban bus services within the GSA. It caters for 2,891 bus arrivals during the day with 40 bus bays. As there is up to a 10 minute layover at the site, considerable congestion occurs. Clearly current of bus bays are inadequate and bus queuing and poor passenger conditions are a feature of the stand. The facility requires an urgent upgrade to retain the support of the travelling public.

Transport infrastructure for informal settlements is typically of a lower standard than that for the formal urban area. As has been noted above, with Council rates unable to be collected from informal settlements there is little incentive for Councils to allocate their already limited budgets to this infrastructure. As a consequence, unsealed roads are the norm and in the absence of formal footpaths, residents share roads with vehicles and use minimal walking trails within settlements.These facilities require investment to improve conditions for both general walkability and vehicle access, particularly taxis for whom many rely on as am essential service.

Taxi services often operate from taxi stands or bases. These bases are provided by Councils as a means of providing formal coverage across the urban area. For Nasinu, through either a lack of facilities or poor conditions at existing sites, many communities, including informal settlements lack basic taxi facilities. Nasinu Town Council, with its limited capital works budget has requested this TA develop a taxi base and stand investment package for inclusion in the MTIIP

8. Drainage and Flood Protection

The GSA is subject to frequent heavy rainfall, particularly in the wet season. Municipal drainage systems are mainly roadside drains with cross culverts. Inadequate hydraulic capacity and poor maintenance of drains result in frequent flooding, particularly in low-lying areas when high tides coincide with heavy rain. Tropical cyclones, which occur every 1.5 years on average, are the main cause of extreme flood events. Storm surges exacerbate flood levels in the coastal zones. Lami and Nausori towns are subject to riverine flooding when the rivers rise above the top of bank level in extreme flood events. None of the councils has complete drainage inventories or plans.

Drainage infrastructure in informal settlements, native villages and peri-urban areas is generally of much lower standards than in formal town areas, leading to poor environmental and sanitation conditions. Many informal settlements are located on reclaimed land or in flood prone areas where they vulnerable to tsunamis, storm surge or river flooding.

Municipal councils are primarily responsible for developing, managing and maintaining drainage and flood protection facilities in their urban areas. However, in practice they do not have sufficient funds to develop new drainage and protection works, and rely on Government subsidies which are very limited. A summary of municipal concerns is as follows:

Drainage and Flooding in Lami Town

The drainage outlets in Lami town center are below mean sea level, and flooding occurs when heavy rains coincide with high tide. Open drains in Lami which are prone to erosion and cross culverts have inadequate capacity. Drainage in informal settlements is poor, leading to minor flooding, ponding, waterlogged ground and erosion.

Riverine flooding and riverbank erosion occur in the lower 3 km of the Lami River between the river mouth and Quaia settlement. Severe erosion of bridge abutments require protection. Siltation of the Lami River causes upstream flooding of urban areas and the Wailada industrial estate where there is a risk of toxic chemicals mixing with floodwaters. A road bridge near Quaia settlement obstructs river flows resulting in flooding of upstream areas. An integrated approach to flood alleviation is necessary, addressing structural and non-structural measures.

Drainage and Flooding in Suva City

The main problems with flooding in Suva City occur in poorly drained low-lying, reclaimed areas, particularly when high tides coincide with heavy rain. The flood-prone low lying areas include Suva center, and several areas on the eastern side of Suva Peninsula.

Suva City's central business area experiences frequent flooding. In Greig Street high tides rise above Nabukalou Creek bank level about 80 times each year, flooding roads, footpaths and shops. Solutions may include raising Nabukalou Creek retaining wall, roads and footpaths, and flood proofing buildings. Regular dredging of the creek is also required. Flooding of roads and footpaths occurs in other parts of central Suva due to blockages, inadequate hydraulic capacity and poor condition of drainage pipes. Many gully pit gratings are broken and require replacement. Ponding affects the longevity of road pavements in many areas. Flooding occurs in low-lying reclaimed areas on the east side of Suva Peninsula, at Vatawaqa, Muanivatu and Muanikau. Local flooding occurs in other locations throughout the city such as the outbound lane from the city in Harris Road adjacent to Suva Port.

Drainage and Flooding in Nasinu Town

Nasinu Town has favorable topography and only a few areas are prone to flooding. The main problems occur in low-lying coastal areas with poor drainage, including Nadawa, Nadera and Laucala Beach residential areas and Veisari informal settlement. Flooding of these areas is most severe when high tide coincides with heavy rain. Possible solutions may include excavation of large open drains and provision of flap gates to prevent tidal backup. Other problem areas include: (a)

Makoi, where a creek requires realignment, and; (b) bank erosion and siltation of a creek near the junction of Khalsa and Kings Road where bank protection is needed.

Drainage and Flooding in Nausori Town

Nausori town is located on both sides of the Rewa River, about 1-2 km upstream of the river mouth. Flooding of the town center, market, shops and roads on the east bank occurs in heavy rain due to the inadequate drainage system and lack of maintenance, causing disruption to businesses, loss of income and property damage. All of the stormwater from the town center and adjoining areas on the east bank drains to one outlet in the town center. Multiple outlets are needed to convey stormwater directly to the Rewa River by the shortest routes.

The town center is prone to riverine flooding. A flood levee, flap gates and flood pumps are required to protect the downtown area. Flood proofing of existing and new buildings is also necessary. Parts of the town center below 3.7m ASL need filling to avoid frequent flooding.

On the west side of the Rewa River, drainage systems in Waila, Davuilevu and Wainibuku housing areas are generally in good condition. Drains in Naulu/Nakasi do not function because of inadequate development controls prior to inclusion of these areas within the Nausori town boundary. The Naulu/Nakasi drainage system requires a major upgrade.

A medium term investment program has been prepared based on limited information available in Phase 1 of the TA. The proposed investments focus on: (a) high and medium density development in flood prone areas where returns on investment are highest, and; (b) other flood prone areas such as informal settlements where people's lives, property and health are at risk.

9. Solid Waste Management

The existing solid waste management (SWM) system in GSA is unable to cope with urban growth, and overall collection coverage is about 76%. Solid waste collection coverage is about 90% in the city/town areas and 23% in peri-urban areas. The waste is transported to Naboro landfill, 22 km west of Suva. Naboro is the country's first sanitary landfill and was constructed in 2005 with EU support.

Illegal dumping of waste and littering are commonplace in peri-urban areas and in informal settlements where solid waste is often thrown into waterways, discarded to open spaces, burned or left alongside waste skips. A large quantity of solid waste is discarded to drains, where it causes blockages, overflows and unhealthy conditions.

The main problems in solid waste management in the GSA relate to low cost recovery for solid waste services and the high cost of transporting waste to the landfill from Suva, Nasinu and Nausori (44-80km round trip). Cost recovery for solid waste services is low because of low revenue collection efficiency and cumbersome recovery processes. Other problems include lack of resources for policy formulation and enforcement of SWM laws/regulations and low environmental awareness by the public. Additional capacity development is required in these areas to improve matters.

A waste transfer station is needed at Nasinu to reduce excessively high transport costs, make solid waste charges more affordable, improve sustainability of solid waste services and reduce greenhouse gas emissions arising from inefficient waste transport activities. A transfer station also provides the opportunity for developing an integrated resource recovery center at the same site.

To meet the forecast increase in solid waste collection coverage, each of the Councils will need to purchase or hire additional compactor trucks to replace their old and inefficient trucks and to meet the growth in solid waste services. Twelve new compactor trucks would be required by 2020 if a transfer station is not developed to service Suva, Nasinu and Nausori. If the transfer station is developed, only about six new compactor trucks would be required.

The Naboro sanitary landfill is operated by a private waste management company and is monitored by the DOE. The Government relies on revenue generated from gate fees to make payments to the operator. The original lump sum contract (2005 – 2010) was based on a waste input of 100,000 tonnes/year. However, waste received in the first five years of operation has averaged about 57,000 tonnes/year so the Government has subsidized landfill operation. A new contract based on a lower annual input was negotiated in 2011. The quantity of GSA collected waste is forecast to increase by 20% over the next decade, from about 61,000 to 73,000 tonnes/year in 2020. The existing landfill cells at Naboro are expected to be completely filled within two years. Construction of the Stage 1 Phase 2 landfill cells and associated infrastructure is required urgently.

Although expansion of the Naboro landfill is the only feasible, sustainable option for GSA waste disposal, the development of a transfer station (with a recycling facility) and waste reduction initiatives may affect the volume of waste to be disposed. This may result in lower capital costs for new cells at Naboro and reduce the overall cost of solid waste disposal services under the current contract arrangements.

10. Financial Issues

A preliminary and limited analysis of financial issues and the financing capacity of agencies involved in developing urban infrastructure and services covered by this MTIIP was undertaken.

Under current arrangements responsibility for provision and maintenance of urban infrastructure and services predominantly lies with national or local government agencies. In the context of this TA, responsibilities for the four sectors are:- (i) Waste Water – is funded and managed by WAF, (ii) urban transport is managed by a number of agencies. In the case of national Roads, the Department of National Roads is responsible for the construction and maintenance of national roads, Councils are responsible for the construction and maintenance of local roads, the Central Coordination Agency for Roads is responsible for wholesale resealing of local and national roads and provate developers are responsible for the construction of roads as part of the development process; (iii) Urban drainage and flood protection is addressed by a mix of agencies. For urban areas, the Department of Public Works, the city and town Councils and the Land and Resource Management (LAWREM) section within the Ministry of Primary Industries; (iv) solid waste is collected by the Minicipal councils for transporting to the Naboro Landfill however it is the Department of Environment which has overall legislative responsibility for this sector.

The following sections provide an overview of the current financial status of government agencies involved in urban infrastructure covered by this TA. The analysis is based on the Republic of Fiji 2012 Budget; latest available corporate plans/budgets for government agencies and city/town councils; and various reports including the 2011 International Monetary Fund (IMF) review of the Fiji economy[1].

National Government

Based on a review of the Fiji 2012 Budget and supporting information (Economic and Fiscal Update), and IMF analysis (IMF 2011), the current national fiscal position can be summarised as follows:

i) The Fiji economy contracted in 2009 and 2010, but has bounced back with real GDP expected to rise by 2.1% in 2011 and forecast to continue to grow by around 2% per year for the next three years. However as noted above the IMF (2011) has observed that Fiji ”risks continued low growth, greater vulnerability from the concentration of economic activity in tourism, and reduced fiscal space to deal with shocks”.

[1] IMF (2011) *Republic of Fiji: 2010 Article IV Consultation—Staff Report and Public Information Notice on the Executive Board Discussion*, April 2011.

ii) S&P recently upgraded Fiji's credit rating to B from B- (August 2011), in a period when many other countries have received downgrades. The current rating indicates that Fiji is "more vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments" (S&P definition).

Iii) Fiji has had a budget deficit in recent years and this is expected to continue to at least 2014. As a percentage of GDP, the budget deficit is forecast to be 1.9% for 2012 and then reduce to around 1.5%.

iv) According to IMF figures, Fiji's level of external debt is low (around 17% of GDP), but overall central government debt is around 55% of GDP and is one of the highest in the region (IMF 2011). When combined with State guarantees on loans to Government enterprises and other contingent liabilities, total public debt is over 80% of GDP (Budget Supplement 2012). These levels limit the capacity of government to sustainably absorb significant further borrowings.

According to the 2012 Budget, key elements of Government's medium-term fiscal strategy include achieving net deficits below 2.0 percent of GDP; reducing debt as a share of GDP to a sustainable level; prioritising investment in infrastructure to support the delivery of Government services and foster economic & industry development; and improving the quality and effectiveness of expenditure.

In summary, while external debt levels are relatively low, the overall picture is of slow economic recovery; limited capacity to fund major new investment programs from internal sources without reducing funding for other programs; and limited scope for additional borrowings. This assessment will be updated on the basis of further analysis during the PFS stage of the project.

Water Authority of Fiji (WAF)
In the longer term, the target is for WAF to become financially independent, but for at least the medium term it is likely to be dependent on government subsidies. WAF has increased revenue collection efficiency from receipts of around $1.1m per month in 2009 to over $2m per month in 2010 (ADB Finding Balance Report 2011), but payments are still only around 50% of billings and cover around 50% of operating expenses. WAF operating and capital investment activities are subsidised by Government grants which totalled around $80 million in 2010 and a similar level in 2011.

Department of National Roads
All funding for DNR programs is from national Budget allocation, based on a road upgrading/maintenance program developed by DNR with Ministerial guidance on high-level priorities. The option of establishing an earmarked road fund was proposed as part of road sector reforms, but the option has not been implemented.

Department of Housing (DOH)
Financial aspects of opportunities for coordinating the MTIIP with housing development programs of the Department of Housing, Housing Authority, Public Rental Board (PRB), HART, NGOs, etc have not been assessed in detail as part of this preliminary analysis. These opportunities will be followed up during the PFS stage. However it is noted that in the Fiji 2012 Budget, $10 million of funds from the recent EXIM Bank of China loan to Fiji has been allocated to the Housing Authority for a low cost housing project and a further $6 million to PRB for public rental housing.

Municipal Councils

Suva City Council (SCC)
SCC has relatively large financial resources. Annual revenue is around $22-25 million, including residential and commercial rates of around $15 million (equivalent to $175 per resident). SCC is budgeting for a small but growing surplus after loan repayments and capital program. Capital expenditure has historically been around $1-2 million per year, but this is projected to rise to around $3-4 million per year over financial years 2010 to 2013. This capital budget covers a wide range of items relevant to municipal activities, including community facilities, roads, footpaths, drains, parks,

street lights, markets, bus/taxi terminals, plant/equipment, etc. Capital expenditure is financed by loans (generally from commercial banks) with repayments made from operating surplus. This approach appears sustainable, but in the longer term may lead to accumulating debt liability and vulnerability to financial shocks.

By comparison, Lami, Nasinu, and Nausori Town Councils have modest financial resources.

Lami Town Council
Lami has a small population and rate base, and very limited financial resources. Current revenue is around $1.6 million (2010 figures), of which $1.14 million is from residential/commercial rates (equivalent to $55 per resident). In 2010, Lami had a small capital investment program of around $460,000, funded from combination of loans ($270,000), grants and public/private partnership for a new market complex.

Nasinu Town Council
Nasinu has the largest and fastest growing population of all GSA councils, but relative to its population, it currently has limited financial resources. Revenue is around $4-4.5 million per year, of which residential/commercial rates contribute around $2.5 million (equivalent to $25-30 per resident). Nasinu has a medium-sized but lumpy capital investment program. Capital expenditure rose to around $2.5 million in 2010 and to around $3.3 million in 2011, but is then projected to reduce around $1.3 million for 2012,13,14. The investment program is funded by combination of Government grants, operating surplus, and loans for major projects. Like other councils, the capital program covers a wide range of community facilities and urban infrastructure.

Nausori Town Council
Nausori has a smaller but rapidly growing population, and like other councils, has limited financial resources. Revenue for 2011 is budgeted to be some $2.2 million, of which only around $460,000 is from residential/commercial rates (equivalent to $10 per resident). Nausori Town Council is highly dependent on revenue from market fees and commercial stands, and has a large amount of rate arrears. In the short term, the budgeted capital investment program (some $750,000) is expected to be financed predominantly from recovered rate arrears.

In summary, the preliminary assessment indicates that the four Councils have modest but stable financial resources, and very limited capacity to increase investment in areas covered by this MTIIP, without (a) reducing investment in other community facilities and infrastructure, and/or (b) increasing revenue, for instance by addressing issues of rates arrears and coverage.

Conclusion

A range of issues affecting the financial performance of both levels of government were identified during the preliminary financial assessment. In particular, three major issues are revenue collection efficiency; inflexibility in some local government financial arrangements; and gaps/overlaps in the legal framework defining responsibility for urban infrastructure.

Overall, the preliminary financial assessment indicates that under current conditions, Government and Councils have limited capacity to fund major new investment programs from internal sources without reducing funding for other programs; and limited scope for additional borrowings. It also identified the need for attention to issues such as revenue collection efficiency, and the potential for beneficial reforms to the legal and financial management framework for urban infrastructure in GSA.

11. Summary of Investment Needs

Based on the results of stakeholder discussions and relevant assessments, a draft list of investment needs was compiled. This is listed in Table ES1 below and will form part of the input material for the stakeholder workshop from which a MTIIP will be agreed.

Table ES1: Draft MTIIP Cost[(i)] by Sector, 2014-18

Sector	Indicative Cost (F$million)	Indicative Cost (US$million)
Waste Water	87.7	50.0
Urban Transport	60.5[(ii)]	34.5[(ii)]
Drainage and Flood Management	14.6	8.3
Solid Waste	5.5	3.1
Capacity Development	15.5	8.8
Total	**183.8**	**104.7**

Note: (i) Costs rounded to one decimal point. (ii) subject to updating following further discussions with DNR.
Source: CDIA consultant estimates and Strategic Planning Office.

12. Medium Term Infrastructure Investment Program

A stakeholder workshop will be held to consider the proposed investments

As a result of the number of sectors being considered together with the range of Government Agencies involved in project delivery, it has been determined that a program is best structured around three separate but complementary parts. These parts and the logic for their inclusion are:

PART 1 – Upgrade Informal Settlements (GSA wide)

These will include investments which address the task of upgrading informal settlements either on a GSA wide basis or on an individual settlement basis. This includes provision of infrastructure covered by the four sectors under this TA. It does not include securing land tenure or providing for housing structure improvements..

The rationale for this part is multifaceted and profound. At its heart is the vision for rebuilding Fiji in relation to the key principle of "uplifting the disadvantaged in all communities2". Informal settlements have been the subject of much research and discussion regarding poverty, disadvantage and vulnerability. It is time to put into action, measures to address this aspect of urban society. In addition, such a program has the potential to generate a revenue stream for Councils who are currently struggling to cope with limited revenues.

PART 2 – Improve Trunk Urban Infrastructure[3]

This includes investments which target essential trunk elements of urban infrastructure within the nominated sectors and which have a broader application across the GSA.

Rationale
Due to a combination of inadequate ongoing maintenance and management, poor operating standards and limited capacity to recover service charges and fees has relegated elements of the trunk infrastructure to a standard which requires investment – even without the additional of demands from Part 1 investments.

[2] See Foreword in Peoples Charter for Change Peace and Progress, 2008.
[3] For the purposes of this TA, "trunk infrastructure" is defined as higher order development infrastructure supplied by the government and primarily intended to provide network distribution and collection functions or provide services shared by a number of developments or users. In addition to sewage trunk mains and trunk roads, trunk infrastructure includes sewage treatment plants, solid waste transfer stations and solid waste landfills. In the context of this TA, it does not include infrastructure within informal settlements.

Thus the logic for investment in these trunk elements is that certain infrastructure has a broad benefit from an economic and environmental perspective and is required in order that all residents (including the poor and vulnerable) have access to the services and opportunities available in the urban area. In the context of this MTIIP, without ensuring adequate capacity in the trunk infrastructure components, the viability of linking additional demands into the network via the Part 1 investments is absent. That is, in order to achieve beneficial outcomes in Part 1 projects, specific investments must be made in Part 2 projects.

PART 3 – Capacity Development

Description

Investments which develop the capacity of existing policy makers and practitioners within Government, to plan and manage investment budgets, recover service fees and charges, and ensure timely delivery of outcomes on the basis of quantifiable and measureable outcomes within an inclusive operating framework.

Rationale

The capacity of Government is limited in a number of areas and has been well documented in this and previous reports. This phase focuses on projects dealing with capacity development tasks so that (i) programs and projects can be planned and designed properly, (ii) the necessary policy and regulatory conditions are created and implemented, (iii) sufficient human and financial capacity is available to implement and manage the project infrastructure into the future and (iv) adequate capacity is developed for improvements in the program planning, financing, delivery and management aspects going forward.

It is time to improve this situation so that Government can improve conditions in accordance with the Key Pillars in the Peoples Charter for Change, Peace and Progress.

13. Financial Analysis

The assessment undertaken indicates that the four Councils in the GSA have modest but stable financial resources, and very limited capacity to increase investment in areas covered by this MTIIP, without (a) reducing investment in other community facilities and infrastructure, and/or (b) increasing revenue, for instance by addressing issues of rates arrears and coverage.

Two GSA Councils (Lami and Nausori Town Councils) facing an estimated shortfall in internal revenue to fund their with-project operating cost have recourse to introducing and levying a special rate for the specific purpose[4]. For each Council the required special rate will fall within the aggregate special rates legal cap of 5 cents in the dollar. Having an estimated cumulative operating deficit, these Councils will have no other means of financing their PFS investment except through a grant from the Government. A third Council (Nasinu Town Council) with sufficient self-generated funds to cover its operating cost, but which does not stretch to debt servicing of any prospective authorized borrowing, will also require a Government grant to finance its PFS investment. This leaves just one Council (Suva City Council) which is estimated to have the internal resources to assume full responsibility for its PFS investment and the subsequent expanded operating cost, on the condition that it can access a Government or a special Government-approved loan at market interest rate.

A Government grant of a combined F$35.8 million will enable needed investment in urban infrastructure support the GSA (the country's capital region and economic prime mover), and can be designed to serve as a local government pilot for the People's Charter Fourth Pillar - Enhancing Public Sector Efficiency, Performance, Effectiveness and Service Delivery.

[4] Local Government Act Cap 125, Section 59

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Abbreviations

ACHR	Asian Coalition of Housing Rights
ADB	Asian Development Bank
ASWF	Association of South East Asian Nations
BOD	Biochemical Oxygen Demand
BOS	Bureau of Statistics
CBD	Central Business District
CBH	Central Board of Health
CCAR	Central Coordinating Agency for Roads
CCTV	Closed Circuit Television
CDIA	Cities Development Initiative for Asia
CDM	Clean Development Mechanism
CEO	Chief Executive Officer
CSA	Commercial Statutory Authorities
DEWATS	Decentralised Wastewater Treatment System
DLG	Department of Local Government
DNR	Department of National Roads
DOE	Department of Environment
DOH	Department of Housing
DPD	Department of Planning and Design
DTCP	Department of Town and Country Planning
DTE	Department of Transport and Energy
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EP	Equivalent Population
EU	European Union
FEA	Fiji Electricity Authority
FLIS	Fiji Land Information System
FMS	Fiji Meteorological Service
FNU	Fiji National University
GDP	Gross Domestic Product
HART	Housing Assistance Rental Board
IMF	International Monetary Fund
IRRC	Integrated Resource Recovery Center
JICA	Japan International Cooperation Agency
LAWREM	Land and Water Resource Management
LOS	Level of Service
LTA	Land Transport Authority
MAPI	Ministry of Agriculture and Primary Industries
MLGUDHE	Ministry of Local Government, Urban Development , Housing and Environment
MLMR	Ministry of Lands and Mineral Resources
MOU	Memorandum of Understanding
MOWTPU	Ministry of Works Transport and Public Utility
MPI	Ministry of Primary Industries
MTIIP	Medium Term Infrastructure Investment Program
NDMC	National Disaster Management Council
NDMO	National Disaster Management Office
NGO	Non Government Organisation
NLMWS	National Liquid Waste Strategy
NLTB	Native Land Trust Board
NWQL	National Water Quality Labouratory
O&M	Operations and Maintenance
PCN	People's Community Network
PFS	Pre-Feasibility Study
PHA	Public Health Act
PLC	Programmable Logic Controller
PPP	Public Private Partnership
PRB	Public Rental Board
PSC	Public Service Commission
PSV	Passenger Service Vehicles
PWD	Public Works Department
RETA	Regional Technical Assistance
RLA	Rural Local Authority

SA	Special Administrator
SBR	Sequencing Batch Reactor
SCC	Suva City Council
SNWSSP	Suva- Nausori Water Supply and Sewerage Project
SPCA	Society for the Prevention of Cruelty to Animals
STP	Sewage treatment plant
SWM	Solid Waste management
SWOT	Strengths Weaknesses Opportunities Threats
TA	Technical Assistance
TOR	Terms of Reference
UGMAP	Urban Growth Management Plan (for the Greater Suva Area)
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UPAP	Urban Policy Action Plan
USP	University of South Pacific
VEP	VAT Exclusive Price
WAF	Water Authority of Fiji
WSD	Water & Sewerage Section of the Public Works Department
WSS	Water Supply and Sanitation

1 Introduction and Background

1.1 Purpose and Scope of the Report

This report summarises the findings of the two-month interim phase of the Technical Assistance (TA) to develop a Medium Term Infrastructure Investment Program (MTIIP)[5] for the Greater Suva Area (GSA). The TA is a joint initiative of the four Councils of Suva, Lami, Nasinu and Nausori and the Cities Development Initiative for Asia (CDIA). Due to shortages of technical staff on the team, this report is a *Draft* Interim Report. A stakeholder workshop to confirm projects and priorities for the MTIIP has yet to be held. Once this has occurred, an Interim Report will be submitted.

In the context of the GSA, the four Councils have a shared goal of developing the area into a well-serviced and economically vibrant urban area. However for a range of reasons, the deteriorating standards in urban infrastructure is hindering local economic growth and compromising the quality of life for residents in the urban area. This was the catalyst for the Councils preparing and submitting an application for assistance to the CDIA.

The scope of this report therefore is to report on the review and analysis of the GSA urban development challenges facing the four sectors[6] of (i) waste water, (ii) urban transport, (iii) drainage and flood protection and (iv) solid waste. Then, based upon this assessment, develop an innovative MTIIP which draws from inputs of stakeholder priorities and from the principles of inclusive urban development.

1.2 The CDIA Approach

CDIA is a regional initiative established in 2007 by the Asian Development Bank and the Government of Germany, with additional core funding support of the governments of Sweden, Austria and Spain and the Shanghai Municipal Government. The Initiative provides assistance to medium-sized Asian cities to bridge the gap between their development plans and the implementation of their infrastructure investments.

CDIA uses a demand driven approach to support the identification and development of urban investment projects in the framework of existing city development plans that emphasize environmental sustainability, pro-poor development, good governance, and climate change mitigation and adaptation.

CDIA support is primarily provided by CDIA-sponsored teams of international and national professionals, who work alongside local counterparts to provide expert advice on how to progress from City master plans to the achievement of sustainable and practical outcomes through the formulation of high priority investment projects and programs. This involves developing clear yet simple sector strategies with sound policy positions, measureable targets associated with these policies, and action plans to achieve the targets. Following this, viable projects required to support these policy positions are identified. The process then concludes with the completion of necessary pre-feasibility assessments of recommended investments, alongside the capacity strengthening of relevant institutions so that the planning, delivery, maintenance and regulatory elements reflect best practice within the realistic capacities of the institutions. This process is being followed in this project.

[5] For the purpose of this TA, the term Medium refers to ten years. Therefore the MTIIP covers the 2011-2021 period.
[6] The Application for Assistance to CDIA listed these four sectors as the priority areas.

In the context of this TA and in accordance with the original concerns expressed in the GSA Support Application, the needs and priorities of the low income groups as well as the capacity of Government to address them, are the key priorities in any MTIIP arising out of this effort.

1.3 Terms of Reference and Scope

The Terms of Reference is contained in Appendix 1. The TA is being undertaken in two separate Phases.

Phase 1: - concerns itself with assisting the Counterpart Councils produce an integrated medium term prioritized urban infrastructure investment program.

Phase 2: - concerns itself with the preparation of the Pre-Feasibility Studies of agreed prioritized urban infrastructure projects based on the confirmation of the project priority recommendations in Phase 1.

In summary, the key study objectives are:

i. Based on the available urban development strategies and plans for the Greater Suva Area assist the city region to produce an integrated medium term infrastructure investment program (MTIIP) for urban infrastructure contributing to urban environmental sustainability, climate change adaptation and mitigation and pro-poor development through informal settlement[7] upgrading. The MTIIP shall adopt an integrated approach to investment needs in wastewater management, urban transport, drainage, flood protection and solid waste management.

ii. To prepare pre-feasibility studies (PFSs) for prioritized infrastructure investment projects based on the priorities emerging from the MTIIP. Likely priorities are in the areas of urban transport and wastewater management, including drainage;

iii. To pursue potential infrastructure financing through domestic, international or private sector institutions for investment projects;

iv. To strengthen the involved stakeholders' capacity for urban infrastructure investment planning, programming and implementation.

Through the actions arising out of the recommendations of this TA, the proposed investments are expected to lead to significant urban environmental improvements as well as benefits for informal settlements who would gain access to improved infrastructure services. The study process requires that the projects be developed in a participatory manner, also taking the needs and priorities of low-income groups and informal settlements into account. This is essential if the benefits of the investment projects are to be shared by all.

In summary, this TA is outcome focused. It will develop a MTIIP with investment prioritization and supporting PFS in order to realize measureable improvements in the targeted sectors to help the four counterpart Councils realize their goal for the GSA.

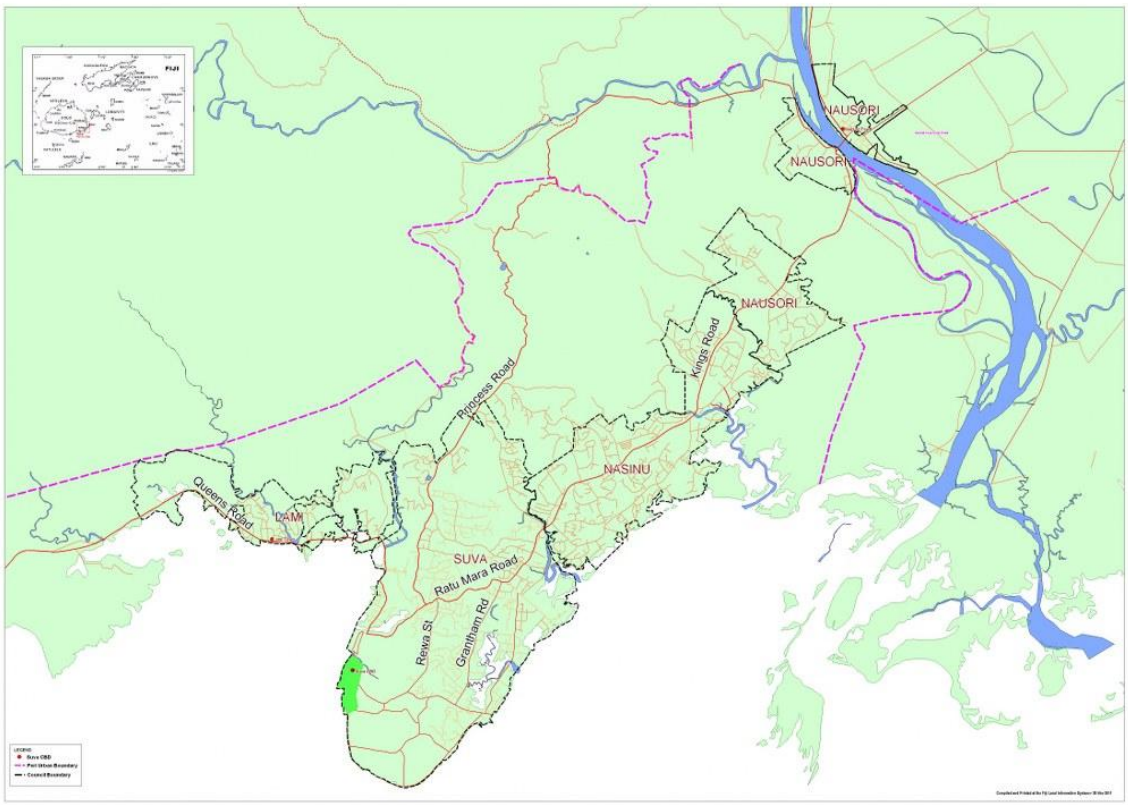
[7] Also known locally as "squatter settlement".

1.4 Study Area

The study area contains the Suva City Council area, the Town Council areas of Lami, Nasinu and Nausori and the adjoining areas where ongoing urban development has seen a reclassification from rural to peri-urban. In time, as pressure increases to provide services for these settlements, Town Council boundaries are extended to cover this expanding urban footprint[8].

The term Greater Suva area (GSA) used in this report contains these four Council jurisdictions and the adjacent peri-urban areas described above and as defined by the Fiji Bureau of Statistics (BOS). The GSA is the study area and is shown in Figure 1.1.

Figure 1.1 Greater Suva Area



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[8] See Section 2.2 for further details.

2 Analysis of Development Issues

2.1 Urban Development Issues

The four Council areas and contiguous peri-urban areas contain the largest urban population in Fiji. Within this area the rural-urban migration phenomenon has continued to create communities of low income housing on vacant land at a pace which is often beyond the capacity of Government to deal with. As this process is continuing in an economy which is predicted to experience soft domestic growth prospects in the short term,[9] there is a view that an urban housing crisis is looming[10]. Consequently, there has developed an increasing awareness of the need to intervene in the housing sector so that these communities are able to access the services and economic opportunities in the broader urban area.

The national agencies and municipal councils responsible for providing urban infrastructure and services are unable to keep pace with the demands arising from rapid urban growth. Growing pressures to develop well planned, well serviced urban housing and land places an increasingly heavy management and financial burden on the Government, municipal councils, businesses and urban residents who recognize the need for improved, more efficient and sustainable city wide services. Poor urban infrastructure and services is causing environmental degradation, poses substantial health risks, and limits socio-economic development and investment in the GSA. Well planned urban areas and the enforcement of development planning controls are needed to ensure that negative environmental impacts of urbanization are minimized.

Over the past two decades, capital works have focused largely on extensions or new systems, with less attention given to rehabilitation. The poor condition of infrastructure has also been exacerbated by inadequate maintenance. The major constraints in all infrastructure sectors include: lack of finance for infrastructure upgrading and maintenance, low levels of cost recovery and lack of professional management and technical staff.

In addition, limited financial and organizational capacity has continued to limit the extent to which Government is able to provide essential infrastructure and services to a number of areas within the urban area.

This chapter discusses these and associated urban development issues briefly to provide a background setting for the development of an inclusive MTIIP for the Study Area. Additional information is provided in Appendix 2.

2.1.1 Existing Population and Population Growth

(a) National Population

The 2007 Population Census[11] suggests that Fiji's total population in 2007 was about 837,000, including 425,000 in the urban sector. Fiji's ongoing urbanization, driven largely by rural to urban migration, increased from about 46% in 1996 to 51% in 2007. During the 1996–2007 intercensus period the increase in total population was only about 62,000 persons corresponding to an average annual growth rate of about 0.7%. During this period, the rural population decreased by about 0.1% per year, while the urban population grew at about 1.5% per year. Given the continuation of present trends, the total population of Fiji is forecast to reach the 1 million mark by 2030, with 61% urbanization. (Source: 2007 Census)

[9] Reserve Bank of Fiji. Presentation to 10th Fiji National Transport Consultative Forum at Lami. November 2011.
[10] Perceived Security of Tenure and Housing Consolidation in Informal Settlements: Case Studies from Urban Fiji. G.L Kiddle, 2010.
[11] Fiji Population Census 2007. Fiji Bureau of Statistics. The official results of the 2007 population census have not yet been released. The census figures quoted in this report are preliminary.

(b) Greater Suva Area

The Greater Suva Area[12] (GSA) comprises Suva City, Lami, Nasinu and Nausori Towns and their adjacent peri-urban areas. The peri-urban areas are defined by the Bureau of Statistics following each census based on five main criteria, namely: (i) urban attributes (commerce, industry, administration services, and utility services); (ii) economic activity; (iii) population size; (iv) association and continuity with the adjoining city/town center, and; (v) population density. The term "urban" includes both the city/town areas and the peri-urban areas.

The total population of the GSA in 2007 was about 241,000, with 186,000 people (77%) in the city/town areas and 55,000 (23%) in the peri-urban areas. Over the past 10 years, Nasinu and its peri-urban area have overtaken Suva City and its (Suva) peri-urban as the largest urban population center within the GSA. Census population growth rates for towns in the GSA are distorted by substantial changes in city/town boundaries. For example, in 2000, Nasinu town was incorporated and absorbed much of what was formerly classified as the peri-urban area of Suva City. In addition, the extension of Nausori's urban boundary during this intercensus period also distorts the formal claim of a population growth rate of about 7% in the intercensus period (the highest in the GSA). Lami Town's growth rate was only about 0.7%. The population tables in Appendix 2 provide details of current and forecast population levels for the GSA on a municipal and peri-urban area basis.

The 2007 Census suggests the overall urban population growth in the GSA was about 1.3% p.a.[13] based on urban growth rates in Tailevu, Naitasiri and Rewa provinces[14]. The highest urban growth in GSA of 2.4% p.a. occurred in Naitasiri Province (which contains Nasinu Town), followed by 1.9% urban growth in Tailevu Province (which contains Nausori Town). Urban population in Rewa Province (which contains Suva City and Lami Town) declined by around 0.2%.

(c) Informal Settlements in GSA

The 2007 Census did not record the number of informal households[15], but the land tenure data collected by the census provides a guide to determining the number of households in the relevant categories. Land tenure data in Table 2.2 suggests that 84% of households in the GSA have secure tenure, in the form of freehold (31%), leased state land (26%), leased TLTB land (19%), and proclaimed village land (9%). The remaining 7,724 households (16% of total households) are deemed to be mainly informal households, with estimated population about 42,500[16]. The Census data also suggests that for these informal households, 30,200 occupants (71%) resided within city/town boundaries and a further 12,300 (29%) within the peri-urban areas in 2007.

In addition to the above estimates based on the Census, the GSA health officers in association with the Ministry of Health and Councils undertake periodic surveys of informal settlements. Surveys undertaken in 2007 and 2011 suggest that there were approximately 27,700 residents living within informal settlements in Council incorporated areas, compared to 30,200 based on the land tenure approach outlined above. While this may be the result of the assumed 5.5 persons per household (which may be a little high), the conclusion reached suggests the informal settlement population in the GSA in 2007 was about 40,000-42,500.

For a number of reasons, detailed GSA wide data on informal settlements is considered to be lacking in accuracy compared with data available on the formal sector. This is a fact of life. To help obtain up to date information for a sustainable informal housing upgrading program the Peoples Community Network (PCN) NGO is currently undertaking socio-economic surveys of all informal settlements. Approximately 4,000 households have been completed to date. This

[12] This is the Greater Suva Area as defined by the Fiji Bureau of statistics
[13] Population growth rates quoted in this report are compound average annual growth rates (AAGR) unless noted otherwise.
[14] Collectively, the three provinces contain the GSA.
[15] Referred to as informal households in the Census data.
[16] Based on an average household occupancy of 5.5 persons.

information may be available for this TA in 2012 and may provide more accurate information on informal settlement household sizes.

Apart from this, there is little information available on growth rates of informal settlements. It is possible that the Census 2007 may yield some useful information when official results are published (possibly in 2012. However, at the time of preparation of this report, preliminary results are all that are available.

The growth of informal households depends on natural growth, in-migration and many other factors including the availability of vacant land. Surveys by Suva City Council (1986-2007) and Nasinu Town Council (2007-2011) show flat growth in informal households within the Council boundaries. In fact, both sets of surveys show a decline in the informal populations and a reduction in persons per informal household between surveys. The reasons for this are unknown. On the other hand, anecdotal evidence suggests a rapid increase in the population of some informal settlements in Suva City over the past few years.

McKinnon, 2007[17] reports that "the population in informal settlements is now broadly estimated at about 90,000 in the Suva metropolitan area". (Note: Apparently this estimate was based on a 2003 survey by the Housing and Informal Resettlement Unit). Compared to the above estimates, and based on land tenure data and Council informal surveys, it appears that 90,000 overestimates the actual number of informal population by a factor of 2-3 times. This overestimate is understandable because of the lack of reliable data on informal settlements and the fact that the McKinnon-led Scoping Mission was conducted prior to the 2007 Census, and therefore did not have access to the Census information.

McKinnon, 2007 also reported that "incorporated urban areas are growing relatively slowly at a rate of from 2.0 to 2.6%". This growth rate is substantially higher than the overall urban growth rate of 1.5% determined from the 2007 Census. The McKinnon scoping team considered that settlements outside town boundaries are growing much more rapidly, and decided to use a range between 3.7% and 7% for projecting overall average growth of informal settlements taking place largely in the peri-urban areas.

In conclusion, despite a general lack of confidence regarding the accuracy of population and household growth trends, there is a general consensus that informal settlements are growing at a faster rate than formal settlements and that left unattended, such a trend will grow into a housing crisis which will affect the overall economy of the urban area and become an increasingly difficult challenge to be addressed by Government. Based on past trends and by using informed estimates of what can be anticipated during the next decade, a picture of the population growth within the GSA during the next decade has been compiled as a basis on which to develop an MTIIP.

2.1.2 Population Projections for GSA

Population projections for the GSA were made for the period 2011 to 2021, based on the 2007 Census population figures, and assumed growth rates based on previous studies (as referenced above) and our best assessment on future trends. Included in this is the proposed Waila new town development[18]. Separate projections were made for formal and informal populations within each council area and each peri-urban area. Different growth rates were adopted for the formal areas and for the informal settlement areas, based on analysis of Census data and discussions with the four GSA councils.

The population projections show that the overall GSA population is expected to grow from 241,300 in 2007 to about 297,300 in 2021. Over the same period the informal population is forecast to grow from about 40,500 in 2007 to 53,000 if no informal settlement upgrading is

[17] McKinnon, Whitehead, Chung and Taylor. Report of the Fiji Informal Settlements Scoping Mission. May 2007."
[18] Being developed as a Joint Venture between the Housing Authority and Malaysian interests.

carried out. The projected number of informal households is likely to be lower than that forecast by McKinnon because of the lower initial 2007 estimate of informal households in GSA (40,000-42,500 vs 90,000) and the lower adopted urban growth rate (1.3 - 1.7% compared to 2.5 - 2.6%). Additional population forecast details are contained in Appendix 2.

Assuming 5 persons per household, about 11,500 informal households will need to be upgraded in the GSA prior to 2020, to meet the stated goal of the National Housing Policy, namely:

"to harness the resources and initiatives of the state, private sector and the communities to address within the next 10 years tenure rights and basic service improvements of all informal settlements, integrating them in the mainstream housing process".

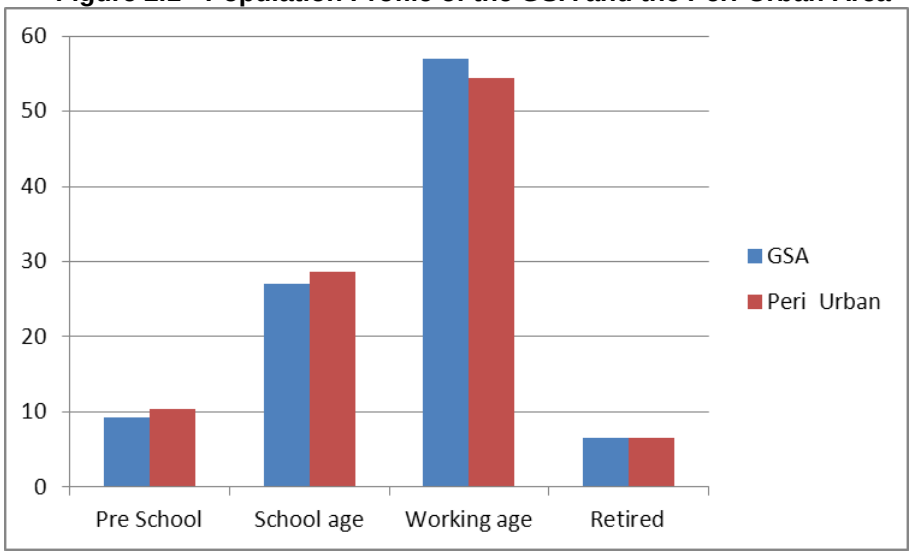
This all suggests a substantial and coordinated effort will be required to achieve results.

2.1.3 Demographic Profile

On the basis of 2007 data supplied by the Fiji Bureau of Statistics, the population age profiles of the four Council areas do not vary widely. Pre-schoolers make up 7.2% of the population with a range between 7.2% and 11.5%. School age students (5-19 years) make up 27.1% of the population. This age cohort sees a reasonable variation across the GSA with Lami Council having the highest proportion (29.1%) in this age group. For this age group, both Nasinu and Nausori Council areas have approximately 27% each with Suva Council having a slightly lower proportion at 25%. Working population (age between 20 and 59) ranges between 30.3% in Lami Council area to a high of 35% in Suva Council area. Retirees make up 6.6% of the population with the range between wards of 5.3 in Nasinu and 8.5% in Suva City.

The point of this discussion is to highlight that there is not a great variation across the Council and peri-urban areas of the GSA on a ward by ward basis upon which to guide (or influence) infrastructure investment in a MTIIP on a specific age cohort basis. Figure 2.1 broadly supports this view. There may be however variations at the smaller level as the household size and age demographics of informal settlements may vary to that of formal settlements. As noted above, social profiling being undertaken by organizations such as People's Community Network (PCN) may be available in early 2012 and if required, elements of this may prove to be useful in any further analysis required by the MTIIP.

Figure 2.1 - Population Profile of the GSA and the Peri-Urban Area



Source: 2007 Census

2.1.4 Employment, Commerce and Industry

The GSA is both the nation's commercial and legislative capital of Fiji. The area has undergone significant urban growth during the past two decades. As a result, there is a significant daily increase in population as workers and market venders enter the GSA for a range of employment and commercial reasons. This is particularly noticeable in Suva City with long lines of queuing traffic in the Kings Road, Fletcher Road, Grantham Road and Rewa Road corridors and across the Tamavua River from Lami.

The relatively weak economic performance over the past two decades has led to structural problems within the broader economy which in turn has hampered growth in employment. Previously relatively robust sectors of the economy such as sugar and garment have suffered a decline and the relative level of poverty has risen as a result. The non-renewal of many farming leases has had a severe financial and social impact on farming families affected as they often move to informal settlements in the GSA.

Previous assessments[19] have defined Fiji's economy as being predominately resource based. Following a serious decline of 9% in 2009, the economy of Fiji grew by a modest 0.1% in 2010[20]. At the national level, recent years has seen a continuation of a decline in sugar and clothing industry as the impacts of removal of preferential status, free trade policies and the general world financial situation take effect. Compensating these is the continued (but modest) growth in tourism and gold production. Plans for copper production are also helping to compensate the effects of the broader economic malaise affecting many countries across the world and being felt in Fiji. However, the overall narrowing of the economy is placing increased emphasis on local consumption and tourism to maintain strength in the economy.

Within the GSA, there is a mix of industrial processing, commercial and the normal service sector associated with a substantial urban area. Suva City dominates the GSA in terms of retailing, commerce, local employment and a growing tourist market[21]. It houses many National Government Departments and Authorities and is served by a vibrant central business district. The Suva port and container terminal together with the Walu Bay industrial estate provides a significant economic base for not just the GSA but for Fiji as a whole.

At the eastern edge of the GSA, Nausori Town Council has traditionally provided a range of employment opportunities for the rural and urban sectors. Proclaimed as a town in 1973, it contains a formal town center where retailing and a limited amount of commerce and industry exists. At the broader level, the town provides a number of essential social and commercial facilities for surrounding villages and rural communities to the north and south to Wainibokasi in the Rewa River delta area. In this respect, it serves as an important hub for communities in this eastern area of the island.

Nasinu Town Council, formally a large part of the Suva City Council peri-urban area is predominately a residential area where residents commute to either Suva or Nausori for employment purposes. Declared a Town Council in 2000, the Council administration has yet to form a central business district as an ongoing focal point for commerce and local employment. Much of the existing housing was provided by the Housing Authority during the past decade and with continuing rural-urban migration continuing, there are a number of informal settlements within the council boundary.

At the western edge of the GSA, Lami Town Council enjoys a mix of residential and industrial activity along the foreshore route between Suva and Nadi to the west. Prior to proclamation as a Town in 2007, Lami was regarded as a Suva peri-urban area. It is currently experiencing

[19] For example, Urban Growth Management Plan, ADB 2004.
[20] Asian Development Outlook 2011. ADB 2011.
[21] Tourist numbers grew 7.1% year on year to 72,000 in July 2011. Source, The Fiji Times 24 November 2011

foreshore development for a new shopping center and an industrial park in the Eastern Ward. Additional industrial development is occurring in the Western Ward.

The current tight economic conditions are expected to impact on revenues of Government (particularly Local Government) as it limits what can be achieved in taxes, rates and user charges for the supply of infrastructure and services. In the context of this TA, it may have an influence on the bundling and potential financing modalities of priority projects within the MTIIP. This will be addressed once the outcome of the Stakeholder Workshop is known.

While economic indicators are not readily available for the GSA or individual Council areas, the national trends provide an insight into the situation most likely to be reflected in the GSA for the present and immediate future. Recent advice provided by the Reserve Bank[22] shows the dominance of the primary and industry sectors in their contribution to overall GDP. In line with the current global financial concerns, the Bank's estimate is that GDP growth is anticipated to ease during the next 2-3 years. Appendix 2 contains additional details of these forecasts. This will remain an on-going challenge for Government as it seeks to manage the investment needs in the urban infrastructure being considered in this TA. Funds from China and Malaysia are being sourced to assist in this task[23].

From the perspective of the current and future urban area, the key areas of significant future economic activity and employment are likely to remain limited to Suva CBD, the Walu Industrial estate and Vatuwaga. Lesser centers such as the Lami industrial estate and the Nausori Town Center will provide additional centers of activity. Councils are actively seeking additional development to enhance their overall contribution to the National GDP and to secure much needed rate revenues to ease their current financial limitations regarding the provision of infrastructure and services to communities within their jurisdictions. With these limitations, urban development and industry is expected to be driven by market forces rather than by the influence of strategic and targeted urban planning and management initiatives by Government in the foreseeable future.

2.2 Housing

A number of recent assessments have highlighted the growing concern over inadequate housing for sections of the community and in particular, the poor and informal settlements[24]. As this issue is considered to (potentially) exert a defining influence over the MTIIP output from this TA, a separate discussion on the background to this aspect is warranted. This discussion follows.

2.2.1 From Farming Leases to Informal Settlements

Often linked with this assessment is the issue of the rural-urban migration partly as a result of the non-renewal of rural leases. Since the 1997 decision by the Native Land Trust Board (NLTB) to not renew agricultural land leases, 9,023 leases have expired up until the end of 2011. Without any changes to the existing policy on this matter, over the next five years another 2,169 are expected to expire and by 2028, a further 1,957 will expire[25]. This has been a major cause for the rural-urban migration in the past and will continue to be into the future.

According to Naidu (2009) typically, holders of these agricultural leases are sugar cane farmers on 10 acre allotments. For these, the average farmer has a family of 5. However, many households are reported to have up to 3 generations living in the households. This raises the household size and with limited revenues from farming, this underscores the poor economic conditions in rural areas. Combined with the impact of non-renewal of agricultural leases, these families are forced to move to urban areas where the perception of improved

[22] Presentation to the 10th Fiji National Transport Consultative Forum at Lami, November 2011.
[23] FJ$47 million is being provided for non-rural road upgrading in the 2011 budget. Source - see reference 7.
[24] See for example, Kiddle 2010 and Naidu 2009;
[25] McKinnon, 2007.

education facilities, social amenities and economic advancement is available. In addition, families of agricultural labourers are also displaced. As skill levels for these labourer families are low and low earning capacity among families is intergenerational, the capacity to earn a living from alternative sources is also minimal.

In this respect, when leases are not renewed, both farmer families and the landless agricultural workforce are forced to migrate to urban areas to survive. They settled on land without title and without adequate infrastructure services. This has been a major reason in the rise of the informal settlement phenomenon which has occurred in many urban areas, and has dominated much of urban expansion in the GSA study area over the past decade.

2.2.2 Informal Settlements

The term informal settlement is applied in this report to signify a settlement which is established on land over which settlement tenure rights are informal and insecure. This is irrespective of whether or not rents are paid to the land owner for occupancy.

The growth of informal settlements is a major issue for the urban areas of Fiji. While the formal housing sector appears to have done well in providing adequate shelter, the growth of informal settlements in contrast, has been described as a bleak aspect of the housing status in Fiji. Current estimates suggest up to 16% of the urban population are living in households in these conditions and without legal tenure. The locations of these informal settlements within the GSA study area are shown in Figures 2.2, 2.3, 2.4 and 2.5. An estimate of the size of each informal settlement is given in Appendix 2. It shows the dominance of Nasinu and Suva Councils in this respect.

The significance of informal settlements in the context of this TA is that informal settlements are often synonymous with poverty and or the urban disadvantaged. The discussion above on rural urban migration outlines the background to part of this condition from an income earning potential perspective. Furthermore, on the basis of a quality of life assessment McKinnon (2007) that the insecurity of land tenure was widely considered in Fiji to indicate an unacceptable standard of living. That survey also found “a strong consensus on what are unacceptable living conditions such as having to share a toilet between households, lack of piped water, lack of electricity or pressure pump lighting, having no alternative to cooking over an open fire; having no proper garbage disposal; and lacking basic household appliances”. While the representativeness of that survey is not known, the data does indicate areas of specific need and to an extent, confirms impressions gained by the CDIA team during the interim phase. It also indicates where investment in general infrastructure may be most effective in improving the living conditions for the poor. These areas are listed in Table 2.1.

Table 2.1: Unacceptable Living Conditions in Informal Urban Settlements.

Features of House	Unacceptable Characteristics	Households living in these conditions.
Toilet	Shared with other households, or none.	17%
Water Supply	River or creek, community tap, borrowed or bought from neighbours, no regular supply.	30%
Electricity Supply	None	44%
Household Waste	Burnt, disposed in backyard, or in river or sea.	83%
Household Tenure	Occupied without legal agreement (informal) or with informal agreement (vakavanua)	79%*-100%
Household possessions	No refrigerator, telephone, stove and television or radio.	15%

Source: Report of the Fiji Informal Settlements Scoping Mission. McKinnon et al, 2007.

Figure 2.2: Informal Settlements Lami Town Council

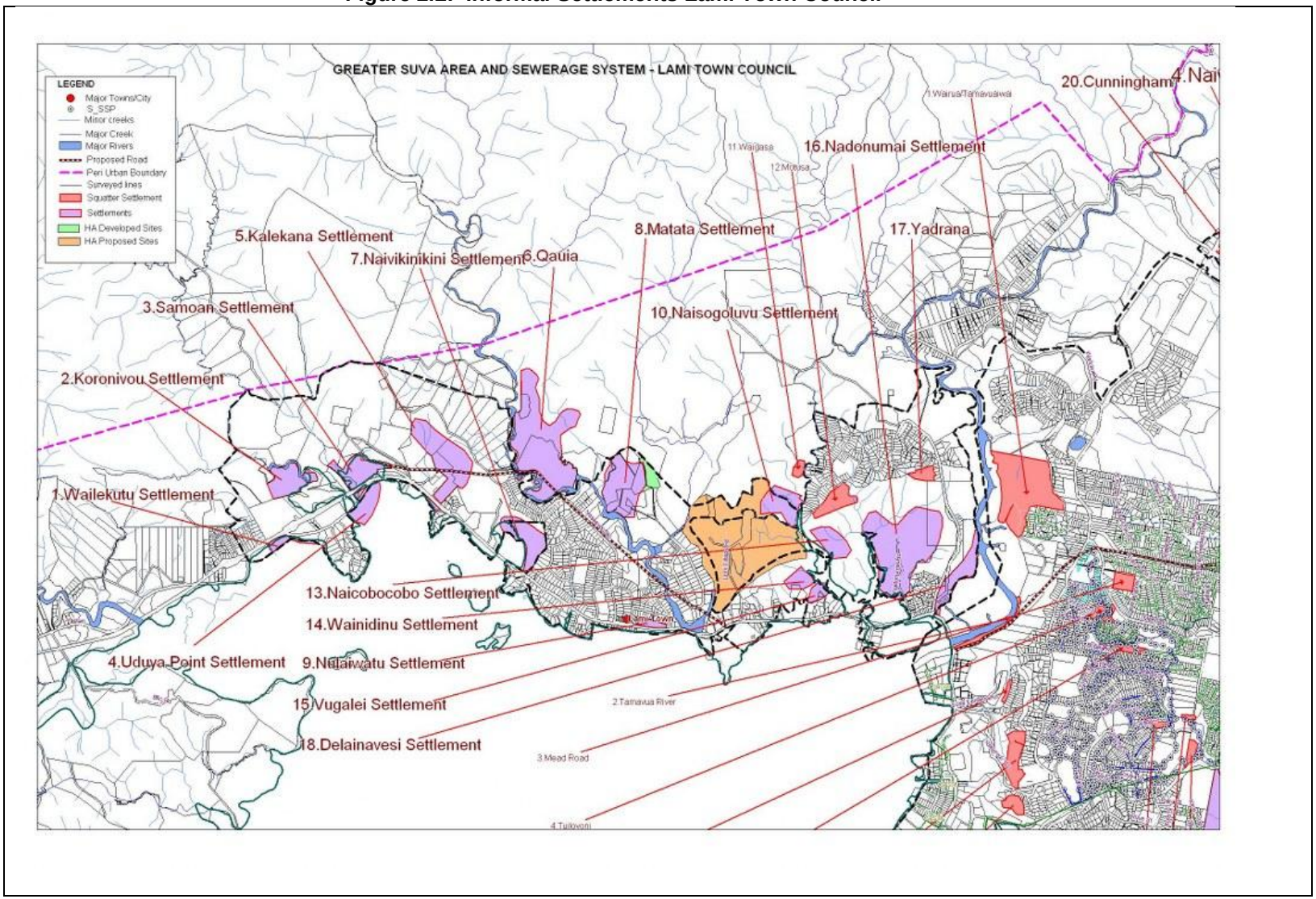


Figure 2.3: Informal Settlements Suva City Council

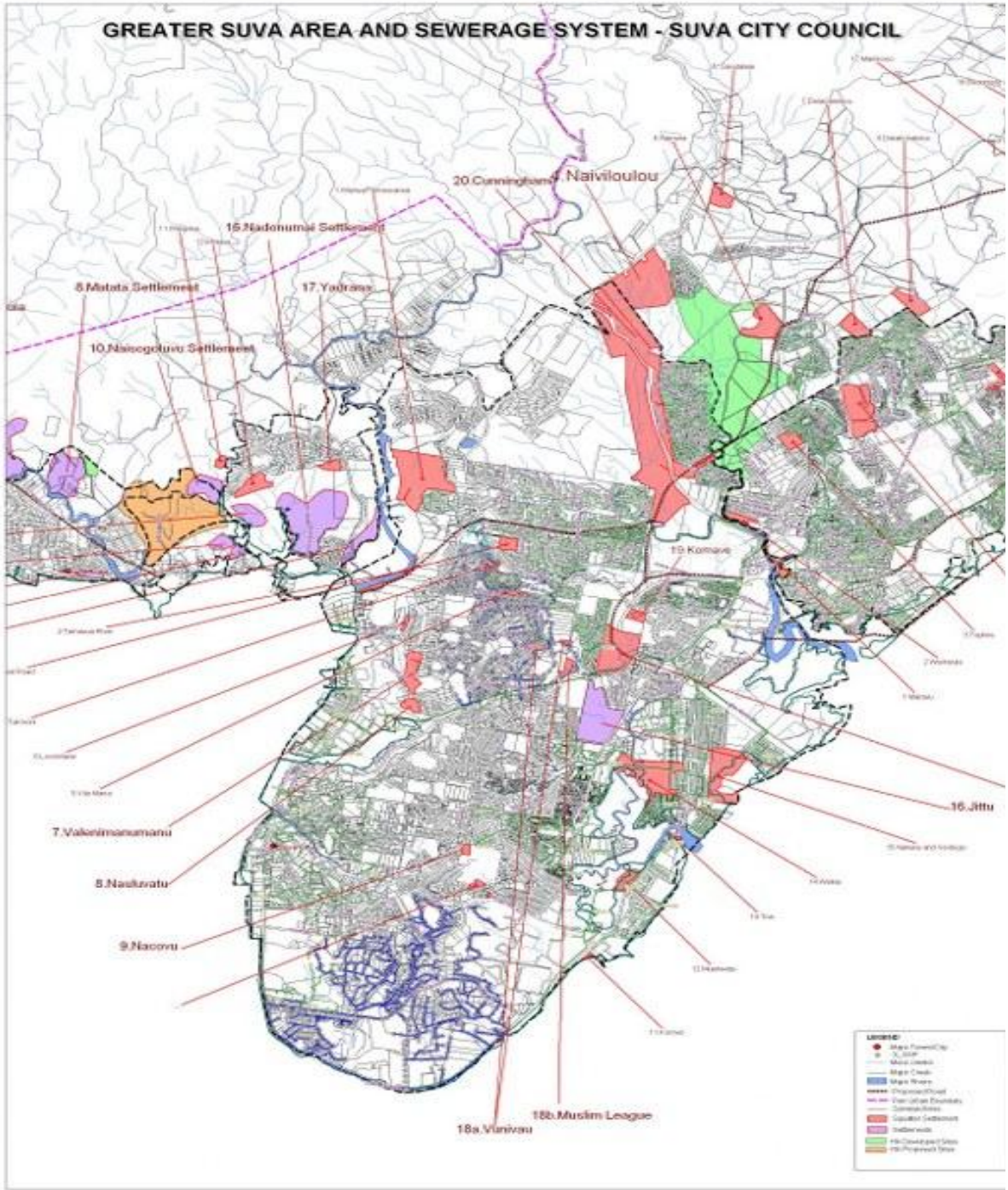


Figure 2.4: Informal Settlements Nasinu Town Council

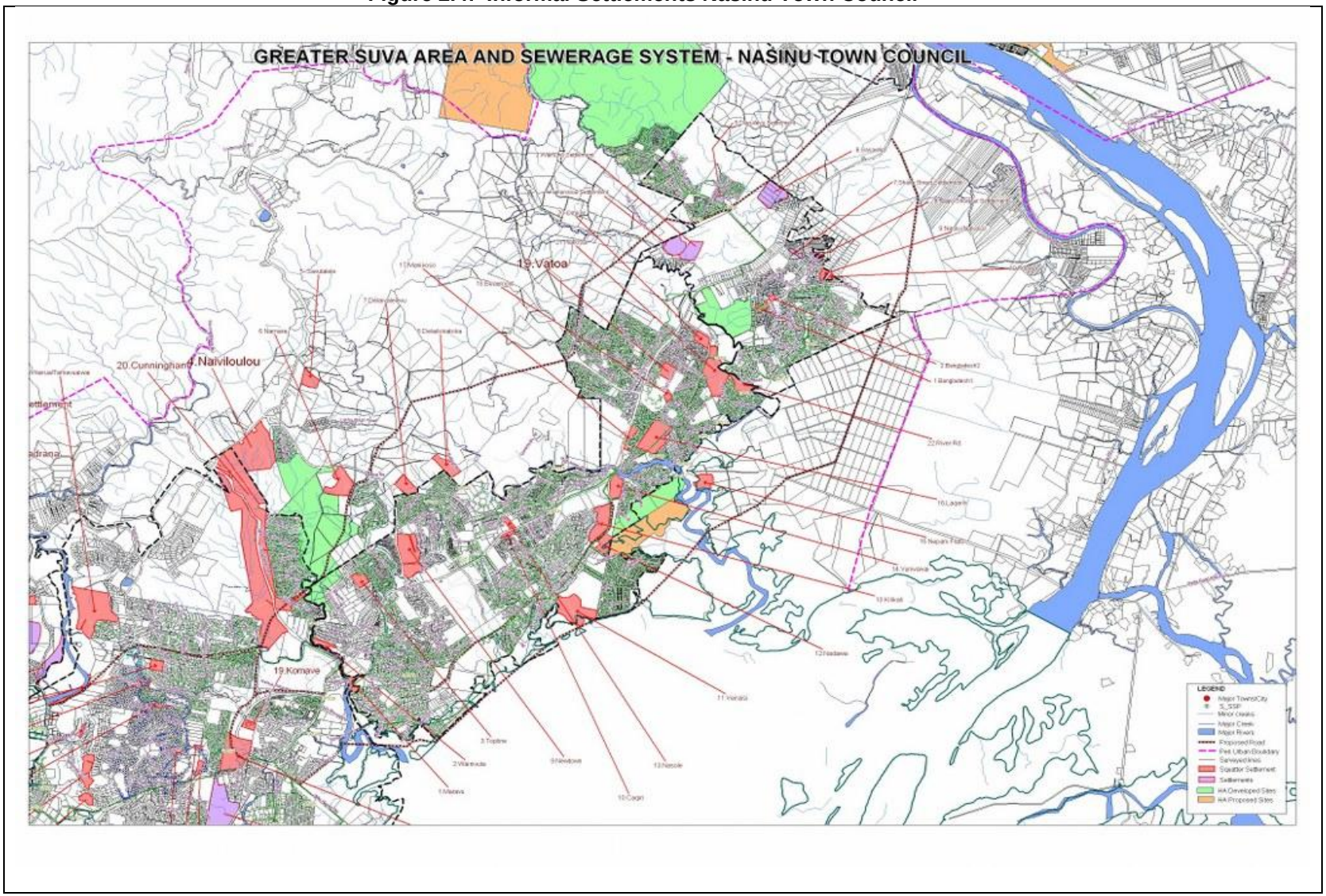
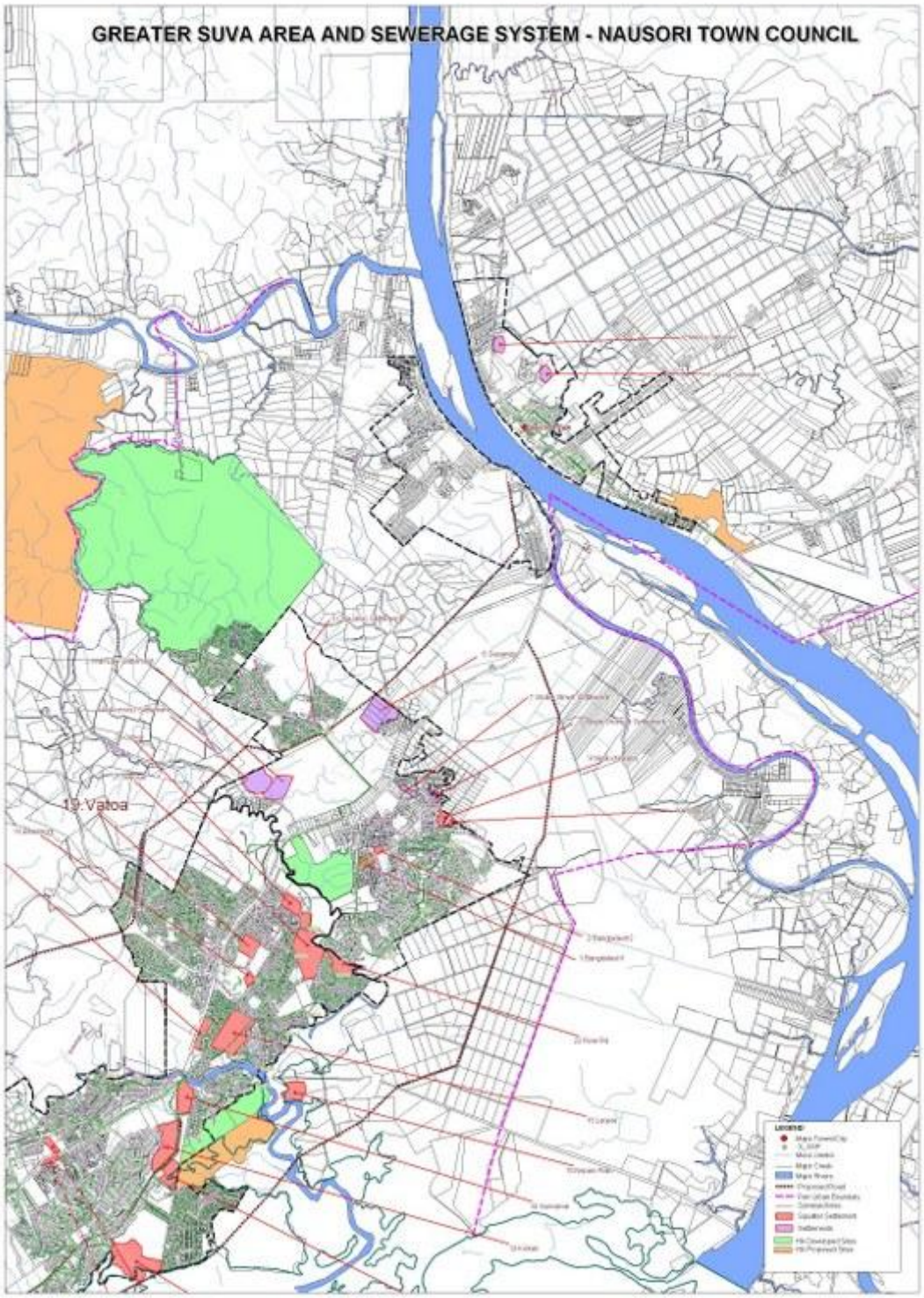


Figure 2.5: Informal Settlements Nausori Town Council



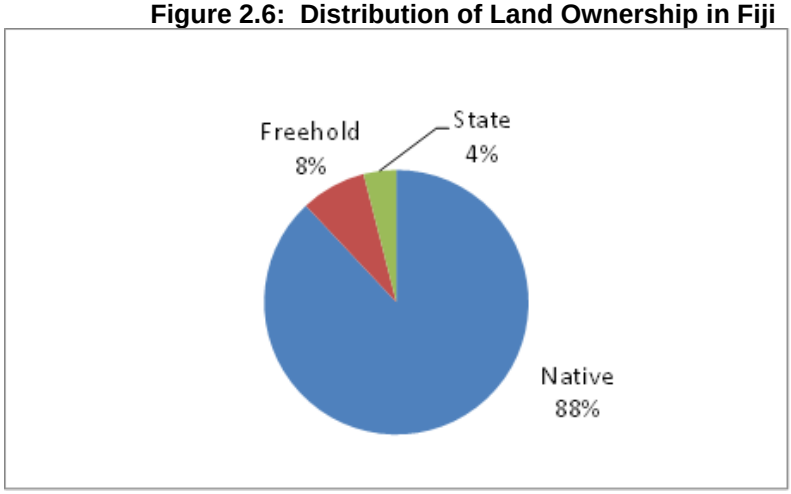
The identity and number of households in informal settlements across the GSA have been compiled by the CDIA consultant team and are contained in Appendix 2. In total 86 settlements have been identified. Of these 68 settlements are known to house a total of 6,298 households. The remaining 18 have no record of households. Nasinu Town Council and Suva City Council contain the bulk (66%) of all informal settlements within the GSA.

The CDIA team's estimate of future population growth in informal settlement households is contained in Table A2.3 in Appendix 2. It shows that if not addressed, the population in informal households will swell to nearly 53,000 in the decade to 2021 from a current estimate of 43,650 and that by this time, the effects of urban poverty will impact more on the overall economic conditions of the GSA than they do at the moment. Remedial action and investment intervention is urgently required. This TA provides an opportunity for this to occur.

2.2.3 Land Tenure

Land tenure is a critical aspect of any informal settlement investment intervention program being contemplated. In Fiji, there are three categories of land ownership. As Figure 2.6 shows, the bulk of all land in Fiji is in the category of native title.

Figure 2.6: Distribution of Land Ownership in Fiji



Source: Fiji Islands Country Profile on Excluded Groups. Naidu, 2009.

This has an impact on the choice of settlement for those farming households moving to urban and peri-urban areas with limited resources. Furthermore, with limited freehold land available and with the costs of urban development, much of this land remains outside the reach of ordinary citizens and especially the urban poor.

With the ongoing rural-urban migration, families (predominately the poor), establish home sites on vacant (often native) land where (i) local Council regulations are not enforceable, (ii) a small payment to the native land owner as rent will suffice to establish a home, and (iii) Council rates are not applicable. Combined, these factors minimise costs and bring the cost of establishing a home site to within the limited financial capacity of the occupants. In the case where the land is outside the Council Jurisdiction it is classed as being in the jurisdiction of a Rural Local Authority (RLA) and in these instances, local laws are even more lax. As a result, these sites have attracted significant informal settlements as the supply of available vacant sites within the Council jurisdictions reduces. Ongoing settlement in these areas has created the peri-urban phenomenon.

In cases where individual rental agreements are made between the traditional owner and the household, this is referred to as vakavanua. These arrangements are individually negotiated so for an informal settlement of (say) 200 families, there could be 200 individual vakavanua

agreements. Payments are cash and in the amount mutually agreed. Vakavanua arrangement generally circumvents tax obligations and city/town rates payments. This minimal financial obligation by households is a key reason for initially establishing in the informal settlement. The downside is that there is no security of tenure and families can be evicted with a minimum of notice. Furthermore, in the absence of title rights, Councils are unable to levy rates and service charges, and therefore are often reluctant to provide infrastructure and services.

As a result, there is hardly any incentive for households to invest in service infrastructure beyond that which is considered essential for daily life. While connections to potable water supply are generally paid for, household connections to the sewerage network are generally not done. In addition, and due to topography and/or the density and unstructured patterns of housing sites, road and drainage is generally inadequate. This generally results in substandard urban infrastructure as is illustrated in Figure 2.7.

Figure 2.7: Inadequate Infrastructure in Selected Informal Settlements

Minimal road and access paths	Drainage & walk path	Road and pedestrian conditions

Resolving land title issues has been a central ingredient of settlement upgrading in the past and will continue to be so in the future. In the case where settlements are on crown land, any Department of Housing supported upgrading program should have little difficulty in this regard. Where Native title exists, there is a requirement to negotiate an agreement with the owners through the Native Land Trust Board. In the case of private sector ownership, commercial considerations are likely to be the prime determinant in securing ownership. In the case of the former two categories, long term (99 year) leasehold is likely to be the basis of tenure certainty. In the case of the latter, title can be transferred as part of the commercial transaction.

2.3 Government Responses to Housing

The 2004 Urban Growth Management Plan (UGMAP) for the Greater Suva Area[26] was the first strategic assessment of the housing situation in the GSA. The UGMAP found that the continuing rapid growth the peri-urban areas will emerge as a major challenge for Government both at the National and Local level. Furthermore, it estimated that the GSA housed 46.8% of Fiji's informal settlements. As a result, the UGMAP concluded that the issue of informal settlements was a major challenge to be addressed by Government. Following this, the Policy Action Plan (UPAP) 2004-2006, prepared in association with the UGMAP was driven by five overarching sector issues of paramount importance. Four relate directly to the issue of the emerging chaotic conditions by continuing lack of intervention to address the needs of informal settlements. The fifth one was (indirectly related to this issue) regarding the limited capacity of Councils to deal with their urban management mandates.

[26] ADB TA project Number 32532 for the Ministry of Finance and Ministry of Local Government, Housing and Environment.

From these studies, the current 5 year National Housing Plan was formed to address the growing need for this sector.[27] This represents a welcome mainstreaming of housing upgrading within the Fijian Government. However, with limited resources (both financially and institutionally), together with the continuing rapid growth in informal settlements, the challenge ahead remains a daunting task. As a result, this represents an opportunity for a MTIIP involvement to help ease this burden over the next decade.

The recently (2011) endorsed National Housing Policy (NHP) recognised the increasing incidence of housing being out of the reach (unaffordable) of large sections of the population. This unaffordability has given rise to a growing number of informal settlements where both the densities of housing stock, the absence of formal lot layout configurations and poor infrastructure (potentially) leads to declining standards of health, and other social norms. The recently developed NHP recognises the limitations of past practices of Government in assuming the role of developer/producer of housing with the limited funds available against the significant and ever growing demand for housing. As a result, this situation has in part prompted the announcement of the new policy shift where families can access serviced land, apply for housing finance assistance and receive basic services, building materials and relevant planning and development advice at a level *"commensurate with their affordability and need"*[28]

2.3.1 Housing Authority

While it may be summarised that housing for the middle and upper income levels are being accommodated for through general market forces and Government, the needs of the lower income and urban poor remain largely unmet. The Housing Authority is responsible for acquiring and developing land for sale to families able to purchase the land and house packages developed. Advice from the Housing Authority suggests that developments are prepared on the basis of a 70%-80% focus for the low income households. Development costs generally range from $90-$95/m2 and as a result, the amount of $15,000-$18,000 is used for initial assessment of eligibility. This places a large proportion of the properties out of the reach of urban families whose income levels fall below the average of $5,879[29] per year.

The present view of Government is that Fiji's population as a whole will become 70% urbanised by 2016 and this will create a shortfall of urban housing stock. Under this scenario, informal settlements are set to proliferate. With an estimated 60,000 living in some 200 informal settlements across Fiji[30] this situation, without effective intervention is likely to be unsustainable in the medium to long term.

Within the GSA, the Housing Authority is currently developing 5 sites with another 3 sites due to coming on stream when funds are available for development. The current development sites are listed in Appendix 2 and shown in Figures 2.2 – 2.5. The total land development and infrastructure cost for these sites is $116.9 million for a total lot yield of 4,100. This suggests a lot development cost of $26,135. Without additional support in the form of subsidised housing and lower than commercial interest rates, anecdotal advice is that for the most part, these developments will remain outside the reach of the urban poor and that informal settlements will continue to grow as a result of there being no alternative more affordable program in place.

In addition, and in accordance with the development arrangement struck between the Housing Authority and developer (Top Symphony from Malaysia), the Housing Authority's contribution is the land at the Waila site while the private developer is responsible for developing the lots (over half of all lots in the total program). As such, the Housing Authority has little impact on when these sites will be available and at what cost, despite their being listed for 2016.

[27] Department of Housing within the Ministry of Local Government, Urban Development, Housing and Environment (MLGUDHE)
[28] The National Housing Policy, Ministry for Local Government, Urban Development Housing and Environment 2011.
[29] See reference 8.
[30] The majority are in the GSA.

2.3.2 Housing Assistance Rental Trust

The Government sponsored Housing Assistance Rental Trust (HART) provides rental assistance to families renting Government supplied accommodation. As the data in Appendix 2 shows, this assistance is likely to be available to 23% of the total market during the next five years.

2.3.3 Department of Housing - Engagement Model

The Department of Housing within the Ministry of Local Government, Urban Development, Housing and Environment is responsible for the Government effort in informal settlement upgrading. The current Policy[31] has been guided by the UGMAP and is based on the following principles:

i. Engage and encourage upgrading in areas containing concentrated informal settlements (ie existing problem areas),

ii. Within existing informal settlements, identify (with the cooperation of the land owner) land to be used for relocation of households as part of the general settlement upgrading program.

iii. Ensuring flexibility in plot size so that households to be upgraded can still be accommodated within the existing settlement area even after the new settlement layout has been developed. This requires concessions to the Town Planning requirements in relation to side, rear and front yard space.

iv. Infrastructure improvements should maximise the use of existing service access ways so that unnecessary household disruption is minimised.

v. Road and footpath standards to be made relevant to the needs and capacity of the site while ensuring access for emergency vehicles when required. Reduce cross section to 6 metres if necessary.

vi. Sewerage connections/reticulation standards should be in keeping with regulations regarding health environment and should be determined by the site limitations.

vii. Water and electricity is to be made available to each homesite.

No provision has been made for solid waste collection in these principles. This is because Councils assume responsibility for collection once properties become eligible for rates and householders pay for service.

Furthermore, the Department of Housing initiative in upgrading informal settlements is confined to land formalization and development. The housing component is left to the individuals, private sector and NGOs.

2.3.4 Peoples Community Network

This NGO has commenced the process of informal settlement upgrading in accordance with the above Government policy framework and has an ongoing working relationship with the Department of Housing in the Jittu informal settlement project. Through this working relationship, it is a signatory to a MOU between the Asian Coalition of Housing Rights (ACHR), Thailand and the Ministry of Local Government, Urban Development, Housing and Environment of Fiji (MLGUDHE) for the ongoing funding and collaboration efforts in the area of informal settlement upgrading.

[31] As at June 2010.

As part of the requirements of this MOU, the PCN is currently working with 29 settlements throughout the GSA[32]. These are proposed to act as a catalyst "*for a community-led upgrading with the development of a financial system of the people, for the people, through the establishment of community savings groups*"[33]. Accordingly, it has a credible influence on the direction of settlement upgrading within the housing policy framework through its inclusive model of settlement upgrading.

The PCN model of informal settlement upgrading includes a series of steps aimed at preparing communities to (i) engage, (ii) contribute financially to the process, (iii) accept an ongoing responsibility to pay relevant Council rates and service charges for infrastructure, and, (iv) become responsible for selected community based maintenance tasks. In return, land tenure is stabilised with a long term (up to 99 years) lease on native and crown land.

The MOU provides for the management of the program at three levels. First the local communities link together into a network within an urban area to provide support to each other. Secondly, a joint city committee comprising nominated members from Government, PCN and the local community network to oversee and manage the city wide upgrading process. Finally, a national joint committee monitors and oversees the entire process across Fiji.

The MOU also provides for financial support from ACHR of up to US$610,000 for a three year term and covers items such as informal settlement social surveying, mapping, establishing community based savings schemes, small scale upgrading and improvements to housing for selected settlements. In addition, communities are required to establish savings (for housing upgrades) to become eligible for inclusion into the program. This is provided on the basis of matching funds from the MLGUDHE as part of a general program of informal settlement upgrading. The funding model for this arrangement and additional discussion is contained in Appendix 2.

2.4 Review of Council Strategic and Corporate Plans

Council Plans have provided an insight into the overall direction and the recurring issues of Council concerns being encountered. These plans are typically policy documents encompassing the Corporate Plan with supporting objectives, capital projects and budget estimates. In response to a directive from the National Government and in accordance with the broad principles and sentiments in the 2007 national initiative[34] , they have been prepared on a relatively uniform template. They form a good basis for understanding the opportunities being targeted by each Local Council. A summary of the scan of items of particular relevance to this TA follows.

2.4.1 Lami Town Council

The current 2010-2014 Strategic Plan provides for a $13.345 million expenditure program over the next 5-6 years. Located on the coast immediately to the west of Suva City, Lami provides a source of employment and can be considered, (in part) a dormitory suburb for the employment needs of Suva. The key concern highlighted in the current Corporate Plan is the relatively modest revenue stream of Council[35], (given the projected capital works program) with half of this annual revenue being sourced from town rates. As is typical with many Local Governments, rates arrears are a constant cause for concern and for Lami, the current Strategic Plan has a target of ensuring that 50% of the rates arrears is collected by the end of 2011[36]. This then poses an ongoing financial risk to Council.

[32] 15 in Suva 15, 8 in Lami and 6 in Nasinu .
[33] See MOU signed October 2010
[34] Peoples Charter for Change, Peace & Progress. National Council for Building a Better Fiji. December 2008.
[35] Current level is slightly in excess of $1.0million per year.
[36] According to the 2011 Annual Corporate Plan, the 2010 collection success rate was 40%.

To help develop the town center as a destination in itself, Council is proposing to develop the existing Council building into a three story structure to generate rental income from future tenants. In addition, the local markets are to be redeveloped to also provide additional opportunities for tenant rentals and to improve the condition for current and future market stall holders.

Environmental issues rank highly in the corporate plan. The Plan's environmental scan has highlighted the risk of disasters due to its coastal location and has established a dedicated fund for cash reserves to deal with unforeseen disasters such earthquakes and industrial fires. Council is dependent on the Queens Road to access other areas of the GSA and for travel west to Nadi and Lautoka. Destruction of these bridges would isolate the community and access to Suva for substantial employment and commercial opportunities would be halted. Therefore this coastal road is both a significant asset and a potential weakness for the Town.

Economic development is a key objective of the Council. With the limited size of the town center and with all land surrounding the town center zoned as residential, business is being turned away through lack of available land. In response to this Council is currently negotiating with the Department of Lands for the acquisition of 50 acres of reclamation of the foreshore adjacent to the current Council building as a development lease. Without this development, Council is of the view that the economy of the town will stagnate. Given the limited financial resources of Council, this development opportunity will require a Public Private Partnership (PPP) and will be zoned commercial.

There is a plan to establish a number of public service vehicle (PSV) bases in the town to serve the growing demand for travel as the population grows and to provide a revenue stream for Council. A feasibility assessment of this need is proposed for 2011. A formalized car parking strategy with pay and display meters and relevant supporting by-laws is also being planned for 2011.

Climate change is an issue of growing concern. The Corporate Plan records the incidence of rising sea levels and erosion of the foreshore line having caused serious damage along Queens Road. Council has taken steps to discourage residents from extracting sand at Tikaram Park. Additional mitigation measures are required on this issue.

Finally, there is recognition for the need for additional capacity within Council to plan and manage the challenges that lie ahead. The Corporate plan provides for this additional capacity as and when required. However as noted in the Corporate plan's SWOT analysis, there is a lingering threat of inadequate funds for capacity development training.

2.4.2 Suva City Council

The current Strategic Plan 2010-2014 provides for a capital works program of some $14.0 million. For reference, the annual revenue base is anticipated to grow from $22.9 million in 2010 to $24.1 million in 2014. Projects earmarked for funding and within the key sectors being addressed by this TA (ie waste water, urban transport, drainage/flood protection and solid waste) are limited to urban transport. In total, this amounts to $4.4395 million. The breakdown is, (i) Roads rehabilitation and sealing - $1.3425 million, (ii) drainage - $0.6285 million, (iii) pedestrian facilities (including kerb and channeling)- $0.8085 million, (iv) traffic management [lights and parking] - $0.8 million, (v) market and bus stand upgrading - $0.280 million, (vi) land acquisition for road widening - $0.58 million.

The key items in the transport sector considered to be relevant for this TA include the upgrading of the Suva Bus stand and associated market stalls as well as developing a complementary traffic management plan for the CBD area to (amongst other matters) provide improved conditions and priority for pedestrian and public transport flows.

As far as the informal settlements within the city are concerned there is little public expenditure allocated in this regard.

2.4.3 Nasinu Town Council

The current Strategic Plan 2010-2014 draws from many of the sentiments expressed in the People's Charter. Its key focus on infrastructure is to ensure the Council continues to develop and broaden its economic base. In particular, there is reference to establishing industrial and commercial sites and CBD to attract foreign and local investors.

In terms of a specific investment pipeline in public infrastructure of relevance to this TA, there are references to road rehabilitation, improved drainage, taxi stands, a new bus stand and a new solid waste transfer station. Although it recognizes the presence of 13,000 informal households in 20 different locations, there is little in the Strategic Plan which addresses the waste water and transport elements that have been highlighted in the Council's submission for CDIA assistance under this TA.

A key constraint to maintaining a substantial investment pipeline is the inability of Council to collect property rates due from many of the 120,000 residents. The Corporate Plan suggests a number of strategies are being pursued to recover outstanding rates. These include (i) arrangements with employees for direct deductions, (ii) arrangements with financial institutions holding mortgages, (iii) a more direct approach to debtors to secure direct deductions from their bank accounts, and (iv) naming defaulters in the media. This range of options suggests it is an ongoing issue with a viable solution continuing to elude the Council. As a result, the Strategic plan continues to provide for an ongoing annual deficit which is only slightly in excess of the arrears in property rates. Elsewhere, for the life of the current plan, the annual budget provides for an annual road and footpath upgrading program of $290,900-$324,100, an annual repair and renovation of street lighting of $300,000 -$334,300 and a parking meter installation program of $50,000 per year for the remainder of the plan.

In relation to the many informal settlements, there is no specific provision for a program of improvement of infrastructure, despite the need for improved transport and waste water to these communities. In addition, there is no specific reference within the Corporate Plan to ongoing consultation and cooperation with the relevant National Agency to secure funds for the improvements needed.

2.4.4 Nausori Town Council

The current 5 year Strategic Plan (2010-2014) attempts to capture the advantages of its geographic position as being close to Suva, the Nausori Airport and the rural hinterland. However it recognizes its principal limitations as having only limited employment opportunities and commercial development. As a result, it is currently addressing what it can in terms of providing infrastructure for the declining level of activity in the town center and the rapidly developing Naulu/Nakasi and Davuilevu housing areas which have occurred largely as a consequence of Suva's continuing urban sprawl and rural to urban migration due to expiry of farming leases.

With the economic base of Nausori largely dependent on retailing and limited services, it has developed the role as a relative slow growing dormitory area for employment areas closer to and within Suva. Where growth has occurred, it has been the result of the transfer of the Naulu/Nakasi/Davuilevu housing areas and Wainibuku from Nasinu in 2004 and from rural areas in response to the expiration of cane leases and the Government's policy of relocating informal settlers from Suva into Nausori's peri-urban areas.

The Strategic Plan notes that growth in the population is comprised largely of the working class and the unemployed. As a result, the socioeconomic characteristics of the population in

general are likely to be falling. The capacity of Nausori Council to raise revenues from land rates and from declining commercial activities is limited.

The Plan has also highlighted the worsening traffic problem in the city. In particular, the trend is caused not by increasing economic activity but by additional vehicles seeking to use the outdated and inadequate road network of the town center. A traffic management plan has been proposed as a spinoff of the current plan to relocate the CBD bus stand within the city center. Combined with an upgrade of the town center's waste water network, Council has suggested that this could deliver real benefits to a struggling urban area.

Elsewhere, the reference in the Strategic Plan of the large extent of land belonging to native and private owners suggests Council has little influence on planned urban commercial development. For this reason, Council is currently negotiating for approximately 100ha of the proposed Lakena industrial site to be incorporated into the council area. As the Department of Primary Industries is also seeking approximately 50% of this site for its own purposes, the Council is expecting to be successful with about 50ha of land. Nevertheless, this will provide a much needed economic boost for the Council and one that is supported by the CDIA team.

The total operating income for the Council is approximately $2.0million per year. Expenditures for capital works for significant infrastructure is comparatively minimal with average annual expenditures for key program items generally $30,000 or less. In the five year plan, a total of $257,000 from the Department of National Roads (DNR) grant has been earmarked for road upgrades. From its locally generated budget, $140,000 has been allocated to upgrading drainage, $120,000 for drainage upgrading, $40,000 for the carrier and mini bus stand upgrade. However no provision has been made for the bus stand redevelopment. This is despite this being listed as high on the list of priorities of Council. In summary, the five year capital works program has approximately $1.43 million allocated for small capital works investment projects and $127.0 million in potential major capital works projects during the same period. Significantly, as far as this TA is concerned, a total of $10 million is proposed to be sourced from the private sector to fund the relocation of the town bus stand, $2.0million for a central town car parking terminal under a PPP modality and $10.0 million in public funds for the review and overhaul of the CBD water and sewerage infrastructure.

With limited resources and uncertainty where the public funds will come from, the proposals in the Strategic Plan that fall within the sectors being addressed in this study will require financial support if they are to be included in the MTIIP. This will be a matter for stakeholders to consider at the stakeholder workshop.

3 Institutional Assessment

3.1 Introduction

A number of institutions are involved both at the national and local levels in the planning, financing and management of urban development in the GSA. This chapter lists these institutional arrangements, their roles and responsibilities and the legal framework within which they operate. A brief outline of the land development process is also provided to highlight the level of complexity of the urban development process[37]. Additional information is contained in Appendix 3.

The chapter then provides a brief assessment of the gaps and challenges facing the current Government institutions in the context of implementing and managing projects within a GSA wide infrastructure investment program.

3.2 Existing Institutional Arrangements

In the main six ministries are involved in the urban development process to a greater or lesser extent. Within each Ministry, a number of Departments operate and manage the processes of governance on a daily basis. A summary of ministries and their functions follows.

3.2.1 Ministry of Local Government Urban Development Housing and Environment (MLGUDHE)

The key agency that plays a central role in urban development, housing, and informal settlement is the MLGUDHE. The Ministry has four departments under its responsibility; (i) Department of Local Government (DLG), (ii) Department of Town and Country Planning (DTCP), (iii) Department of Housing and Informal Settlement (DOH), and (iv) Department of Environment (DOE).

Department of Local Government (DLG)

The DLG provides policy direction and monitors the performance of local government and National Fire Authority in terms of the Local Government Act Cap 125 and National Fire Services Act, respectively.

Department of Town and Country Planning (DTCP)

The DTCP is responsible for overall administration, planning and regulation of land use in Fiji through the Town Planning Act Cap 139 and Subdivision of Land Act Cap 140. It is responsible for the preparation of Town Plans for the great majority of Local Councils who do not have the in house technical resources or the relevant bye-laws to manage Local Council town planning matters[38].

Department of Housing (DOH)

The DOH administers the provision of grants to social housing providers (Housing Authority, Public Rental Board and HART) and the development of national housing policy programs. It also administers and manages the government program of upgrading informal settlements.

Department of Environment (DOE)

[37] For additional sector specific governance matters, refer to Chapters 4 to 7 respectively.
[38] Only the cities of Suva and Lautoka have separate Town Planning bye-laws. All others are maintained by DLG.

The DOE is responsible for formulating, coordinating, and monitoring the implementation of Fiji's national environment related policies, programs and legislation in compliance with international agreements and instruments. This is to help ensure sustainable environment in accordance with the Ozone Depletion Substances Act 1998, Endangered and Protected Species Act 2002, Environment Management Act 2005, and Litter Decree 2010.

Housing Assistance Providers

Functioning under the MLGUDHE as housing assistance providers are two commercial statutory authorities (CSA), namely, Housing Authority (HA) and Public Rental Board PRB). While the former develops land, provides housing finance and home ownership schemes, the latter provides subsidies for low budget rental flats for low income earners

Non Government Organizations (NGO)

The Peoples Community Network (PCN) is an NGO which is active in the GSA in providing housing assistance and upgrading informal settlements. It works in partnership with DOH under MLGUDHE. PCN has developed its own brand or model of housing assistance and informal settlement upgrading by piloting the Lagilagi Project in Jittu Estate Informal Settlement in Suva. A second NGO, known as the Housing Assistance Relief Trust (HART) also receives funding from MLGUDHE to help the destitute and urban poor with housing.

3.2.2 Ministry of Works Transport and Public Utility (MOWTPU)

The MOWTPU has a direct and indirect influence in the four sectors being addressed in this TA. The core functions and responsibilities of this Ministry include policy formulation, planning, co-ordination and implementation of programs and projects. The three departments that form part of this Ministry are the Department of National Roads, Department of Planning and Design, and Department of Transport and Energy.

Department of National Roads (DNR)

The DNR is involved in the planning, construction and maintenance of national roads, bridges and jetties. The major trunk routes in the GSA are national roads including a few roads that are being planned for the future. These are discussed more fully in Section 5.3.

Department of Planning and Design (DPD)

The Department of Planning and Design undertakes strategic planning of the transport sector involving land, water, and outer islands transportation system. It also contributes to transport planning and interventions in the four municipal councils in the GSA. In addition to national focus and inter-island connections it also contributes to planning and design of GSA transport system[39]. DPD also works closely with DNR in upgrading, realigning, and rehabilitating existing roads.

Department of Transport and Energy (DTE)

The Department of Transport and Energy is primarily concerned with energy efficiency in the transport sector. It regulates and monitors fuel standards and specifications and trials fuel formulations to reduce the consumption of fossil fuels which is 31 percent of average imports between 2006 – 2010[40]. It sets standards and specifications for these while enforcement and compliance is the responsibility of Land Transport Authority.

[39] For example the by – pass road for the transportation of copper ore from Namosi to Suva harbour.
[40] Source: Economic Overview of Transport Sector, Presentation at Transport Consultative Forum, Lami, 2011

Commercial Statutory Authorities (CSA)

The three CSAs which operate under the wing of MOWTPU are Land Transport Authority (LTA), Water Authority of Fiji (WAF), and Fiji Electricity Authority (FEA).

Land Transport Authority (LTA)

The LTA is responsible for the licensing of all motor vehicles (including buses and taxis) under the Land Transport Act, and for the promotion and delivery of road safety programs aimed at reducing road trauma through improving driver awareness of improved driving behavior.

Water Authority of Fiji (WAF)

The WAF is responsible for production and supply of potable water, waste water management, trade and industrial waste management. Established as a CSA in 2010, the current policy of Government is to have the WAF operating as a commercial entity within three years. Current capacity limitations are creating significant shortcomings in this sector, particularly in relation to the financial and operational management of the waste water system. This aspect is discussed in more detail below in Section 3.5.2 below.

Fiji Electricity Authority (FEA)

The FEA is responsible for power generation and supply, promoting renewable and green energy sources and reducing dependence on fossil fuels. As is the case with WAF, this statutory authority is required to operate as a commercial entity. It has limited direct relevance to this TA.

3.2.2 Ministry of Health (MOH)

In addition to its core functions (curative, preventive, and promotive) MOH plays a significant role in urban development through the administration of the Public Health Act (PHA). In the main the PHA has two parts. One deals with general health issues and the other with building regulations and building codes. The Central Board of Health (CBH) constituted under Ministry of Health, administers the PHA. All buiding constructions in the formal, informal settlements including those in the peri-urban areas have to comply with buiding regulations, codes and specifications in the PHA. Housing developments in peri urban areas is administered by the Rural Local Authorities (RLA) under the aegis of CBH. .

3.2.3 Ministry of Primary Industries

The Ministry of Primary Industries (MPI) is included because it has a bearing on drainage and flooding in urban areas, and dog nuisance in the management of solid waste. The Ministry has the three separate Departments; Agriculture, Forestry, and Fisheries. For this TA, the relevant Division within the Department of Agriculture which deals with flooding and drainage is Land and Water Resource Management Division (LAWREM) and the division which has the responsibility of managing stray dogs and their impact on solid waste under the provisions of the Dog Act is the Animal Health and Production Division.

3.2.4 Ministry of Lands and Mineral Resources

The Ministry of Lands and Mineral Resources is responsible for the oversight of all State Land development under the provisions of the State Lands Act Cap 132. It regulates all land surveys undertaken and is responsible for the maintenance of survey controls across the country. Within the Ministry, and in the context of this TA, the Department of Lands and Survey looks after the interest of all State Lands, provides land for resettlements, and

approves all survey plans. It is also the custodian of Rivers and Streams Act which deals with usage of water resources and disputes that may arise due to conflicting claims.

3.2.5 Ministry of iTaukei Affairs

The Native Land Trust Board (NLTB) is a statutory body established under the Ministry of iTaukei Affairs and is the custodian of all native land in Fiji. This means that all formal transactions involving native land are mediated by the NLTB. Historically, the ownership of native land is communal and not individual. The land owning unit (kinship group) is called *mataqali* in Fijian. In other words *mataqali* can be defined as the land owning unit. By ownership, land in Fiji can be divided into three categories; native (*mataqali*) land - 88 %, State owned land -4%, and freehold land - 8%[41]. The role of NLTB is quite significant as it has a direct influence on the bulk of land that can be released for urban development and housing, and the conditions attached to the release.

3.2.6 Municipal Councils

The MLGUDHE is the line Ministry of the four Municipal Councils of Suva, Lami, Nasinu, and Nausori. The working relationship of the Councils with the Ministry is through the DLG. A Special Administrator (SA) appointed by the Minister of Local Government overseas the affairs and operation of a council assisted by a CEO.

The Councils operate independently from the MLGUDHE, generate their own revenue (through levies, fees and borrowings) and prioritise their expenditures through the annual budget. Amongst the four Councils the lead role is taken by Suva City Council because of its amenities, facilities, and being the Council of the capital city of Fiji. The working relationship amongst the Councils is cordial and healthy.

In an attempt to achieve movement on a number of matters of concern, the Fiji Local Government Association presented in 2008, a submission to reform a number of aspects of Legislation in relation to urban development matters. The essence of these is contained in extracts of that Submission in Appendix 4.

The role of other ministries such as Finance, Public Enterprise, Justice, and Commerce which play an important role now and then are grouped under 'special function' ministries. Their role and responsibility are summarized in Appendix 2. The functions and responsibilities of urban development institutions described above are also tabulated in Appendix 2.

3.3 Legal Framework for Urban Development and Infrastructure

There are 15 principal Acts and 36 separate pieces of legislation with regulations and by laws that regulate urban development and housing sector and guide the operations of Municipal Councils. Table 3.1 lists these Acts according to each particular phase of development.

Table 3.1: Legislation Governing Land Tenure and Land Supply for Urban Development

Supply of Land	Land Development for Housing	Housing Operations and Management
(i) Crown Lands Act- Cap 132 (ii) Native Lands Act- Cap 133 (iii) Land Transfer Act- Cap 131 (iv) Property Law Act- Cap 130	(i) Town Planning Act- 139 (ii) Subdivision of Land Act- Cap 140 (iii) Public Health Act- Cap 111 (iv) Local Government Act Cap 125 (v) Water Act Cap 144 (vi) Roads Act Cap 175 (vii) Environment Management Act Cap 141	(i) Housing Act Cap 267 (ii) Fair Rents Act Cap 269 (iii) Fijian Affairs Act Cap 120 and (iv) Public Enterprise Act No. 35 of 1996

[41] Source: Fiji Islands Country Profile on Excluded Groups, V. Naidu, 2009.

As is apparent from the list of legislations above, the institutional framework for urban governance is complex. For a small island nation, this should not be the case. A number of reviews of the legislation have been undertaken in the past in order to provide a base for improved institutional arrangements (including updating legislation) to reflect changing conditions within the urban development sector. The UGMAP in 2004 and the more recent submission by the Fiji Local Government Association in 2008 have sought to simplify and streamline processes. To date, little has been achieved. A number of suggestions in the 2008 submission appear logical and warranted, given the limitations of Municipal Council resources.

A summary of outstanding legislative inadequacies previously identified is contained in Appendix 3.

3.4 Sector Issues

It is important to recognize the institutional and capacity limitations of the sectors so that when the program is being formed, the relevant safeguards can be addressed. As land development and land title are both relevant to a number of sectors, it is addressed first in this section. Then each of the four sectors of relevance in this TA is covered.

3.4.1 Land Development

In any activity involving urban development, it is important to understand the land development process as this can (and often does) have an important influence on what can be achieved in any proposed infrastructure investment program.

In Fiji, the land development process can be complex and time consuming. This is due to the number of agencies involved in the process as well as the complexity of the process. From inception to completion the process involves five phases and several steps within each phase and can take from 2.5 to 3.5 years to complete. This process is outlined in detail along with approximate timelines applicable for each step of each phase in Appendix 3.

1.4.2 Waste Water

WAF places more emphasis on capital works and less attention to ongoing management, operation and maintenance. This is evidenced by the numerous overflows of raw sewage and the fact that the Kinoya Sewage Treatment Plant (STP) does not meet the National Liquid Waste Standards or international best practice. The existing Sequencing Batch Reactor units at Kinoya, which represent about 60% of the STP's secondary treatment capacity have not operated for about seven years due lack of funds, inadequate spare parts policy, weak procurement systems, loss of key staff, low management and technical capacity.

WAF does not have specific targets for future sewerage investments, but prepares 5-year capital investment plans based on specific customer needs, operational necessities and increasing coverage. Planning is short term and reactive rather than strategic in nature.

Along with poor customer registration is the complementary issue of poor collection efficiency. This leads to a cost recovery rate of approximately 50% and puts into serious question, the capacity of the Authority to be commercially independent of ongoing government funding as originally intended when the WAF was established in 2010.

3.4.2 Urban Transport

The principal shortcoming in this area is that there is no single whole of Government view on what the future holds for urban development in the GSA. Although a number of agencies are involved with urban development matters, the number of Acts and Regulations and through the silo approach there lacks a consolidated view by Government on what urban development trends are to be expected in the GSA and (as a consequence) where future demands on current and future infrastructure are likely to occur.

As a result, future investment programming in the sector is largely reactive and heavily influenced by the limited technical and financial resources of Government to address emerging trends on a proactive basis. This is likely to see an increase in congestion levels, a declining market share for passenger vehicles and a general decline in the infrastructure serving this sector.

In the case of informal settlements, the condition of roads and drainage is often substandard. Access to these communities is often an issue as public service vehicle access (if available) is generally limited to taxis. As a result, access to the urban bus network can be limited with poor road access and (often) no footpaths being the standard. This is an aspect requiring attention in any MTIIP.

In summary, the challenges facing the urban transport sector are principally institutional and financial. There is a good network of roads for the majority of the urban area and the overall basis of the passenger service and freight carriage is sound. The previous studies have highlighted a continuing lack of individual capacity, un-coordinated approach to the sector and limited financial/budgeting conditions as being the main drawbacks. These continue today.

3.4.3 Solid Waste Management

The principal shortcoming of the solid waste sector is the apparent conflict of interest between DOE as both regulator and manager of the Naboro Land Fill contract. In this case, the contract and financial arrangements for management of Naboro Landfill is not transparent. The facility is required to operate on a commercial basis and daily tonnage throughput has become the key driver of the solid waste management (SWM) strategy. This has led government to instruct Councils to supply as much solid waste to Naboro Landfill facility as possible and imposes a significant financial cost on Councils[42] .On the other hand Government has handed down the 3R Policy (Reduce, Recycle and Reuse) to all the Councils to implement in the management of solid waste. Obviously there is a policy conflict that need to be resolved.

At the local level, Councils are not permitted to issue fines and prosecute individuals or Companies for throwing rubbish into waterways, using residential lots for unauthorized activities (such as the slaughtering of animals, mechanical repairs and the disposal of waste created by these activities), keeping livestock in urban areas and other activities. Amendments are required to the EMA and PHA to address these matters.

Finally, with stray dogs posing a risk to the spread of disease through the spreading of solid waste, the matter requires attention. Dog licensing remains centralized and enforced by the Ministry of Primary Industries under the Dogs Act Cap168. This arrangement is ineffective in an urban setting and needs to be revisited.

3.4.4 Drainage and Flood Protection

Drainage and flooding is a local phenomenon but often its causes are varied and at a distance from its urban consequences. It is a repetitive phenomenon and one which is best addressed through a formal strategy to prepare for and to manage on an annual (or as required) basis.

[42] Nasori Town Council reports up to 27% of its annual budget is taken by the Naboro land fill fees.

In the case of flooding, drainage and dredging activities are currently concentrating only in rural areas and waterways whereas the Drainage Act Cap 143 stipulates responsibility of all public drains to the Ministry of Primary Industries (MPI) except for a few vested with local Councils via Local Government Act. Consequently for the most part, drainage and flooding issues in the GSA remain out of reach of Government and unattended.

In the case of flooding, regular maintenance dredging is required for Nabukalou Creek, Lami River and Rewa River downstream from Nausori. To deal with this, the MPI has technical skills and dredging equipment and is willing to share it. However it has no budgetary allocation for urban drainage and flood protection.

There is scarcity of baseline data for drainage and flood protection in the GSA. The councils lack the capacity to develop master drainage plans and there is hardly any budgetary allocation for drainage and flood protection. The MPI concerns itself primarily with dredging in the rural areas and the MLGUDHE, though responsible for urban development, considers urban drainage as part of council responsibility. Obviously there need to rationalize and streamline policy, plans, and budgets for drainage and flood protection.

3.5 General and Collateral Issues

A number of institutions, agencies and authorities at local and national level have responsibilities to deal with urban and peri-urban development. Often the jurisdictions are overlapping and cross cutting creating cumbersome procedures and delay in processing. There is need for rationalization.

3.5 Capacity Gaps and Governance Issues

In the context of this TA, the key capacity gaps and governance shortcomings are the result of (i) lack of sufficient manpower, (ii) inadequate technical capacity of current Government, (iii) inadequate finance, and (iv) the piecemeal and silo approach used by Government.

The details of inadequate manpower, inadequate technical capacity and short term silo approach are given in Appendix 3. A summary of these issues are presented below.

3.5.1 Inadequate Manpower:

From 1987 there has been a constant and steady out migration of professionals, skilled technicians, trade apprentices and handypersons to Australia, New Zealand, Canada, United States, and United Kingdom. The trend is continuing.

As a result there is a serious dearth of professional and technical expertise in the areas of urban development and town and country planning. The four councils in the GSA and relevant ministries are facing serious shortage of town planners, civil engineers, and surveyors. Within the WAF, there is a critical shortage of key managerial, technical and financial staff which adversely impacts most operational areas. In many agencies, the lack of continuity of staff appointments contributes to a general lack of corporate memory on urban development issues within the agency.

Water Authority of Fiji

Under the previous setup with PWD the water and sewerage division had 3000 staff working full time. Under the new arrangement the staffing level has been reduced to 1295. Of this number (1295), 75 percent are ‘old’ staffs who have crossed over from PWD. The balance 25 percent fall into the category of freshly recruited staff under the present management. Of this latter category, about 32 positions (10 percent) are still vacant.

There is a serious technical gap in the operation and maintenance of STPs especially the Kinoya treatment plant. The operation of the plant requires a PLC technician remotely controlling all the operations from a console. But due to lack of this skill, the plant at Kinoya lies idle.

Department of Environment

The DOE, responsible for EMA, has three main operational units, namely, Resource Management Unit, Environment Impact Assessment Unit, and Project Unit. There are only 10 regular established staff who are involved in the activities of the Department on daily basis. The project staff, funded by external agencies, vary from 5 – 10 at any one time.

Department of Housing

The DOH formulates housing policy and has a regulatory role in housing sector. The Department is also directly involved in implementing the Governments Informal Resettlement Program. It has a small complement of staff comprising 5 admin officers and 4 technical staff.

There is a feeling that the Department will be more efficient and effective if it concentrates on the policy, planning and regulatory role. The actual on the ground implementation can be left to housing providers such as HA, PRB, PCN, etc.

Department of Local Government

The DLG has 7 staff in total; Director, Principal Admin Officer, Senior Account, Admin Officer, Executive Officer, Secretary and Messenger. The Department's capacity is limited and primarily plays policy monitoring role with the municipal councils Fiji-wide.

Department of Town and Country Planning

The DTCP is also under capacity stress. Of the total of 32 staff, 16 are professional/technical positions and the remaining 16 are administrative. In the professional/technical category, 12 are town planning positions of which only one is filled. The Department manages by in-house training of non-professional staff.

Summary

The Government policy, implemented through Public Service Commission (PSC), is right sizing the public sector which is mainly downsizing. It is near impossible to get a new position or vacant position filled because of budgetary constraints. There is no intervention in place except that senior staff, who themselves may be partly professionally exposed, are required to train the lower cadre staff through in house training, counseling, and in-service training.

3.5.2 Inadequate Technical Capacity

Lami, Nasinu and Nausori Town Councils do not have the services of either a town planner or an engineer. Because of this lack of professional expertise, the Councils do not have their own town scheme plans and therefore they cannot adopt the Regulations of Town and Country Planning Act as their own council by laws. So for all developments and subdivisions within town council jurisdiction, they have to depend upon and seek approval from Director of Town and Country Planning within the Ministry. This 'hands on and top down approach' from the Ministry is creating problems for Councils as they have no option but to accept what is given to them[43].

[43] For example, a shopping center is being constructed on the foreshore in Lami Council area. This is despite the council's concern over the low lying area and its vulnerability in the case of climate change and tsunami risk.

The shortage of town planners is serious. SCC has one consultant part time city planner and one acting city planner. The Department of Town and Country Planning has 12 town planning positions of which 11 are vacant. The one position that is filled is occupied by the Director TCP. In practical terms the DTCP has only 0.5 town planner in the person of Director whose time is shared between professional work and administration.

Registered Surveyors, critical for land development, subdivision and housing are also in short supply. The MPI, responsible for dog nuisance with regards to SWM in urban areas, does not have even one veterinarian on its pay roll.

3.5.3 Short term and Silo Approach

There is an obvious lack of forward planning to match the need of the growing urban population in the GSA. Most policy and planning is piece meal, short term and reactive in nature, based to some extent, on previous studies.

Muti - agency coordination and inter related planning based on a set of national data and projection is weak. For example in the GSA planning for roads (MOWTPU, municipal councils), water and sewerage (WAF), and solid waste management (municipal councils, WAF, DOE), are all primarily carried out by each agency in 'isolation' without any reference to national data set and projections.

The Ministry of Strategic Planning National Development and Statistics does not involve per se in long term national planning and projections. Instead it coordinates and receives budget submissions from all ministries/ agencies and, based on the nominated priorities in the submissions received, decides which programs and projects will receive funding from the Ministry of Finance.

The Bureau of Statistics is the primary and official provider of national statistics on population and social and economic activities. The Bureau seems to be constrained by capacity issues. The 2007 Census of Population data is still to be fully analyzed and reported except for two technical papers.

4 Waste Water Infrastructure

4.1 Introduction

The Suva-Nausori sewerage system was well developed in the 1970s and 1980s, but has not kept pace with urbanization. Despite US$45 million of capital investment with support from the ADB and EU over the past decade, the sewerage system and sewerage services have many deficiencies. However, since its formation in 2010, WAF has intensified its efforts to improve the performance of the wastewater sector and is making steady progress.

4.2 Recent Developments

4.2.1 Suva-Nausori Water Supply and Sewerage Project, 2003-12

In 2003, the ADB agreed to assist Government of Fiji to implement the Suva-Nausori Water Supply and Sewerage Project (SNWSSP)[44]. The original ADB loan became effective in 2004 and a supplementary loan was required in 2009. The revised project cost is US$100 million, including water supply infrastructure (48%), sewerage infrastructure (44%) and management improvements (7%). The Project helped to progress reform of the Fiji water and sewerage sector through an action plan to corporatize water supply and sewerage (WSS) services, leading to establishment of WAF.

4.2.2 WAF's Activities Regarding STP Waste Permits and Trade Waste Policy

In 2010, DOE issued wastewater discharge permits to WAF for its sewerage treatment plants (STPs) throughout Fiji, including Kinoya, Wailada and Nausori STPs within the GSA. In December 2011, WAF was undertaking a final review of its Trade Waste Policy and a related Customer Management Plan. The policy will be phased in over the next few years. WAF expects that the revenue generated will substantially improve its financial position.

4.3 Existing Sewerage System

4.3.1 Existing Sewerage Facilities

The Suva-Nausori sewerage system covers parts of Suva City, Lami, Nasinu, and Nausori towns and Nasinu peri-urban area. It comprises three separate sub-systems, each having its own STP. Kinoya STP serves about 98% of the sewered areas. Nausori STP serves Nausori town and Wailada STP serves the Wailada industrial area in Lami. The sewerage network includes five major and 77 minor pumping stations, about 20km of trunk mains and over 300km of sewerage reticulation.

4.3.2 Existing Sewerage Coverage

In 2011, an estimated 108,000 persons in the GSA were connected to the Suva-Nausori sewerage system, with 42% coverage[45]. Coverage in the four Council areas varies 0-77% with an average of 53%. Nasinu has the highest coverage of 77%. The unsewered population includes about 86,000 in formal subdivisions, 40,500 in informal settlements and 22,000 in traditional Fijian villages. Coverage in the GSA is expected to increase to about 47% following completion of SNWSSP in 2013. An estimated 58% of households are not sewered.

About 53% of GSA households have onsite septic tanks, 4% use pit latrines and 1% lack toilet facilities. (Source 2007 Census). The municipal councils approve and monitor septic tanks in formal urban areas. Septic tanks and pit latrines in informal settlements are unregulated and are generally of lower standards. Unfavorable soil conditions, high groundwater table, high

[44] Asian Development Bank. Report and Recommendation of the President. Proposed Supplementary Loan Republic of the Fiji Islands: Suva-Nausori Water Supply and Sewerage Project. Project No 32200-02. November 2009.
[45] Consultant's estimates. WAF underestimates its connections. An estimated 11,000 connections are not registered.

rainfall and low evaporation make septic tanks and pit latrines unsuitable in many areas. Overflows or seepage of wastewater from septic tank systems pose health risks as people and domestic animals are exposed to pathogen-infected wastewater.

According to local government regulations, lot sizes of 800-1000m^2 can be unsewered, while smaller lots must be connected to the sewerage system. Minimum lot sizes of 200m^2 are allowed if a property is connected to sewer. Opportunities to increase population densities are constrained by the limited extent of the sewerage system.

4.3.3 Trunk Mains, Pumping Stations and Sewerage Reticulation

Suva has an extensive network of trunk sewers and pumping stations. Many of the old sewers in Central Suva are broken. The pipes are located below sea level, leading to seawater infiltration, corrosion of pumps and pipes, high pumping costs and reduced treatment efficiency. Exfiltration of raw sewage at low tide pollutes groundwater and coastal waterways.

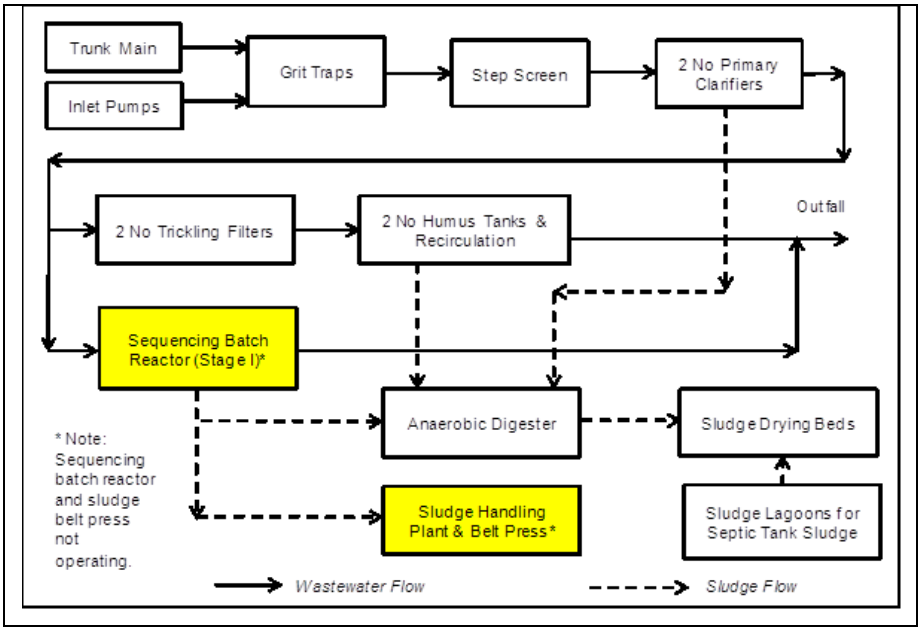
The Suva sewerage system contains 82 sewage pumping stations. Overflows and breakdowns are commonplace, leading to sewerage contamination of creeks, drains and waterways and posing a significant public health hazard. The number of pump station overflows reduced significantly since WAF implemented preventative maintenance and regular plant checks. Sewerage costs vary widely, depending on lot sizes, terrain, geological conditions, depth to groundwater and other factors. Sewerage of large lots in the GSA's difficult terrain is very costly.

4.3.4 Kinoya Sewage Treatment Plant

Existing Treatment Processes:

The Kinoya STP includes primary and secondary processes that have been developed since the 1970's. A schematic diagram of the existing plant is shown below.

Figure 4.1: Kinoya STP Schematic Diagram



The existing STP consists of grit traps, step screen, two primary clarifiers, two trickling filters, a sequencing batch reactor, an anaerobic digester and sludge drying beds. Digester sludge is discharged to drying beds and used for soil conditioning by farmers. The STP discharges treated effluent to Laucala Bay through a 2.1km long 1400 mm dia polyethylene pipe. WAF

plans to capture and flare or generate electricity from digester gas. This is the first sewerage treatment initiative in Fiji to be registered as a Clean Development Mechanism (CDM) project.

Kinoya Wastewater Flows and Loadings:

In 2011, average dry weather inflow and BOD loading at Kinoya were about 24.5 ML/day and 295 mg/L respectively. The actual plant inflows are not known accurately because of lack of metering equipment. Estimated existing loadings are 144,000 equivalent population (EP)[46] on a BOD basis and 153,000 EP on a hydraulic basis, compared to the estimated served population of 106,000. The balance of 38,000-47,000 EP may be attributable to commercial and industrial loading. Detailed information on commercial/industrial wastewater is lacking. The existing plant appears to be overloaded because only the original trickling filters with nominal capacity of 60,000 EP are working. (Source: WAF)

The SBR plant Stage II comprising 2x45,000 EP units was commissioned in 2001, and operated efficiently for about 2-3 years before failure of key mechanical and electrical components. One half of the plant continued to operate in manual mode for a time, but eventually was abandoned. The plant has been dormant for the past 6-7 years.

Water quality testing indicates that Laucala Bay has high coliform, nutrient and sediment concentrations. In 2011, WAF upgraded Trickling Filter No 1, restored Primary Clarifier No 1 and Secondary Clarifier No 2 and upgraded sludge pumps. These works substantially improved plant performance which has seen a downward trend in average effluent BOD levels during 2011 from about 125mg/L to 40 mg/L. The improved plant performance is encouraging. Further rehabilitation works are scheduled for 2012. (Source: WAF)

Kinoya Sludge Handling

Sludge handling and disposal at Kinoya is poorly monitored and controlled. Vacuum tankers and industries discharge sludge to lagoons. Some sludge from the digester is discharged to drying beds and is removed periodically by farmers. The sludge lagoons and drying beds are inadequate to handle all sludge from the plant. Sludge dewatering facilities and belt presses installed some 7-8 year ago have never operated. An inspection of the site in December 2011 indicated that some sludge from the digester may overflow to the ground adjacent to Kinoya Creek. The sludge handling facilities are scheduled for upgrade in 2012. (Source: WAF)

4.3.5 Nausori and Wailada STPs

The 6,000EP capacity Nausori plant was constructed in 1991 and comprises an extended aeration activated sludge plant, with a sludge lagoon and two maturation ponds. The plant is only lightly loaded at present. Treated effluent is discharged to Rewa River. A 500EP extended aeration plant serves Wailada Industrial Estate near Lami and discharges effluent to the Lami River. The plant is not adequate for the 400 industries at Wailada.

4.4 Problems and Constraints

Cost Recovery: WAF is making steady progress towards becoming a more commercial entity, however cost recovery is low and customer registration is inadequate. WAF's revenues are insufficient to meet even cash operating costs and it relies on Government subsidies to cover capital investments and its operating budget. Collections efficiency is about 50%. Regulations requiring mandatory connection to sewers and Implementation and enforcement of the trade waste program are needed urgently to increase WAF's revenue base.

Human Resources: WAF has a shortage of personnel with appropriate managerial, financial, and technical qualifications and experience. Experienced, qualified staff are not readily

[46] Equivalent population is used to express wastewater flows and loadings from commercial and industrial premises in terms of population. The basis of the calculation is one EP equals 160 Lpcd on a hydraulic basis and 50gpcd on a BOD basis.

available in country. In future WAF may need to make greater use of management contracts to manage critical parts of its operations.

Sewerage System Operations and Maintenance: Frequent overflows from sewage pump stations and sewer mains, has resulted in serious pollution of the urban water environment. These problems are due to low customer awareness, poor practices of sewerage system use and discharge of untreated trade waste into sewers, limited maintenance capacity for pumping stations and long breakdown response times. However, WAF is making steady progress to improve this aspect of its operations.

Kinoya Sewage Treatment Plant: The SBR at Kinoya STP has been out of service for about seven years due lack of funds, inadequate spare parts policy, weak procurement systems, loss of key staff, low management and technical capacity, and apparently low priority given to wastewater quality improvement. The STP is heavily loaded and test results indicate that the quality of effluent falls short of the National Liquid Waste Standards. (Refer to Appendix 6). The discharge of poor quality effluent to Laucala Bay: (a) poses health risks to people who use the bay for recreation, fishing and shellfish gathering; (b) degrades the aquatic environment and; (c) has potential to cause eutrophication.

Community Awareness: The need for community education on proper sewerage system practices is evident in: (a) the high incidence of blockages caused by disposal of non-sewage waste such as rags; (b) harvest of marine resources such as shellfish from wastewater contaminated lagoons and bays, and; (c) recreational activities in sewerage outfall areas.

Low Sewerage Coverage: While the number of sewerage connections has increased by about 50% over the past 10 years, coverage remains around 42%, due to lack of funds for system expansion and sewerage infill, and the high cost of providing sewerage infrastructure. Expansion of the sewerage system to unserved areas is a priority to increase coverage, and enable higher population densities and more efficient utilization of land and infrastructure.

Informal Settlements: The majority of septic tanks in informal settlements are not properly constructed and maintained and pose significant health risks. The problem is compounded by high population density and low sanitation awareness. Piped sewerage services in rapidly growing informal settlements have high priority for development.

4.5 Sewerage Forecasts and Capacity Assessment

4.5.1 Sewerage Forecasts

A target sewerage program for GSA has been prepared based on the TA consultant's population projections, Government housing programs for 2012-2016 and a Supplementary Program for informal settlement upgrading proposed by the TA consultant. Under the target program summarized in Table 4-1, sewerage connections are forecast to increase from 23,000 to 44,000 over the next decade, with coverage increasing from 42% to 67%. These forecasts may need to be refined in Phase 2 of the TA.

4.5.1 System Capacity Assessment and Gaps

The existing sewerage trunk mains, pumping stations, rising mains and sewer reticulation will require progressive upgrading to meet the target sewerage program and raise coverage. Detailed studies of forecast housing and other developments will be necessary in Phase 2 of the TA to identify gaps in the existing trunk sewerage infrastructure and the necessary investments. Based on the target sewerage program rehabilitation of the existing Kinoya 90,000 EP SBR plant and sludge dewatering facilities are urgently required to raise treatment capacity from 60,000 EP to 150,000EP. Two additional augmentation stages of 90,000 EP capacity each are required to raise Kinoya STP capacity to 240,000 EP by 2013 and 330.000 EP by 2018.

Table 4.1 – Target Sewerage Program

Description	Units	2011	2015	2020	2021
Population					
GSA Population	No	256,310	274,350	293,620	297,310
Town/City Population	No	196,990	211,070	223,480	225,970
Peri-urban Population	No	59,320	64,040	70,100	71,340
Squatter Population (without upgrading)	No	43,650	47,250	51,990	52,970
Sewered Squatter Population	No	-	10,100	32,100	36,500
Forecast Sewered Population for GSA	No	108,000	149,350	197,850	207,150
Forecast Unsewered Population for GSA	No	148,310	125,000	95,770	90,160
Sewerage Coverage for GSA	**%**	**42**	**54**	**67**	**70**
Total Sewerage Connections	**No**	**22,874**	**31,679**	**41,794**	**43,729**
New Sewerage Connections					
Housing Authority	No/year		900	500	500
PRB, HART	No/year		80	80	80
Existing Formal Subdivisions	No/year		250	250	250
Private Land Developments			150	150	150
Informal Settlements (Gov Program)	No/year		280	280	280
Informal Settlements (Supplementary Program)	No/year		600	600	600
Industrial/Commercial	No/year		115	75	75
New Sewerage Connections	**No/year**		**2,375**	**1,935**	**1,935**

4.6 Medium Term Investment Strategy and Options

4.6.1 Existing Investment Plans

Government's policy objective is to provide access to safe sewerage systems by: (a) expanding sewerage systems and promoting environmental protection; (b) encouraging private sector participation through outsourcing or management contracts, and; (c) reorganizing the water sector by establishing WAF. (NDP, 2007).

WAF does not have specific targets for future sewerage investments, but prepares 5-year capital investment plans based on customer needs and operational necessities. Its planning is based on the 1999 Sewerage Masterplans prepared under ADB technical assistance. The Councils consider that they are not consulted adequately in WAF's planning process..

WAF's 5-year plan for the GSA in 2012-2016 involves investment of $11.4 million, including $4 million in 2012 and $7.4 million in 2013-2016. Projects scheduled for 2012 include: (a) completion of the ADB-supported SNWSSP with backlog sewerage, trunk main extensions, inlet works and digester at Kinoya STP, and; (b) rehabilitation of the Stage II SBR plant at Kinoya at an estimated cost of $0.5 million. Replacement of old sewers in Central Suva at an estimated cost of $5 million is scheduled for 2014-'16. The investment program for 2012-2016 also includes: (a) expansion of sewer reticulation; (b) upgrading sewer mains; (c) upgrading sewage pump stations, and: treatment plant rehabilitation at an overall costs of $0.55 million/year.

4.6.2 Strategic Approach to Wastewater and Sanitation Planning

The CDIA TA supports the strategic approach to sanitation set out in the "Urban Policy Action Plan (UPAP) which sees the "provision of appropriate and affordable sanitation as the key to improved urban environment and increased housing densities" in the GSA. "To ensure that expensive sewerage is extended only into those areas which require and can afford to pay for it, the UPAP supports the adoption of strategic sanitation planning approach in unserved areas which considers alternative appropriate environmentally acceptable sanitation technologies to conventional sewerage and sewerage treatment".

Alternative sanitation technologies may include (a) simplified sewerage, using relaxed design standards; (b) small bore or settled sewerage; (c) decentralized wastewater treatment systems

(DEWATS) for unserved areas, and; (d) waste stabilization tanks or ponds for individual households or groups of households.

4.6.3 Sewage Treatment Plant Augmentation

Kinoya STP:

The existing augmentation strategy for Kinoya STP is to develop four new 90,000 EP capacity SBR plants in the period 1999-2020. With the addition of clarifiers, digesters and sludge dewatering facilities, treatment capacity could be readily upgraded to 360,000 EP on the existing site. (Source: 1999 Masterplan, GHD)[47]. Effective O&M of the SBR plant will require additional staff, including a wastewater treatment plant manager with extensive experience in running SBR and similar plants, a PLC technician (part time) and a mechanical/electrical engineer (part time) to complement the capacity of WAF's existing staff. The most effective and sustainable means of rehabilitating and operating the SBR plant may be through a management contract with a regional water/wastewater utility.

WAF's planning and engineering capacity has been boosted recently by the recruitment of three wastewater engineers, who are undertaking studies of wastewater treatment options at Kinoya. The options may include simpler activated sludge processes or expansion of the trickling filter plant and extension of the Kinoya outfall. As the Kinoya plant is already heavily loaded, it is recommended that the existing SBR plant is rehabilitated as the first step. This would enable the plant's performance to be assessed under actual operating conditions. Process changes to the existing SBR plant would still be possible in future.

Nausori STP and Wailada STP Augmentation

The 6,000 EP capacity Nausori plant is only lightly loaded at present. The 1999 Masterplan allows for upgrading of the plant from 6,000 to 12,000 EP to provide for growth of Nausori east bank. The Wailada STP would be decommissioned following construction of the Lami sewerage scheme whereby sewage from Lami and Wailada would be pumped to the Kinoya Plant, via Walu Bay. (Source: 1999 Masterplan, GHD)

4.7 Summary of Investment Needs

4.7.1 Sewerage Reticulation and Trunk Infrastructure

The target program provides sewerage for an additional 106,000 people throughout the GSA. The total number of sewerage connections are forecast to increase from about 23,000 to 44,000, covering new HA and private land developments (33%), informal settlement upgrading (39%), backlog sewerage 19%) and PRB/HART developments (9%).

In existing developed areas, the target sewerage program prioritizes areas that have poor onsite sanitation systems, including informal settlements and areas where existing septic tank systems perform poorly such as Lami Town, parts of Suva City and Nasinu and the east bank of Nausori town. The proposed investments in the period 2013-2021 are summarized in Table 4.5 below. Costs are very preliminary and require more detailed study.

4.7.2 Sewage Treatment Plants

Kinoya STP requires immediate augmentation by rehabilitating the 90,000 EP Stage II SBR plant and sludge dewatering facilities. A second 90,000 EP plant activated sludge plant, including clarifiers, digesters and dewatering facilities is required by 2013 and a third 90,000 EP plant by 2018. Further studies in collaboration with WAF wastewater specialists will be necessary to confirm the most appropriate treatment processes and the optimum development program. The proposed investments for STPs in the period 2012-2020 are summarized in

[47] Suva-Nausori Water Supply & Sewerage Masterplans, prepared by Gutteridge Haskins & Davey Pty Ltd for Asian Development Bank and Government of Fiji. August 1999

Table 4.3 below. The required investment and costs are based on preliminary studies and will require more detailed investigations.

Table 4.2: Investment Needs for Sewer Reticulation and Trunk Infrastructure 2014-18

Location or Category	Estimated No of New Connections	Year	Estimated Cost of Sewerage Reticulation (F$)	Estimated Cost of Trunk Infrastructure (F$)	Total Estimated Cost (F$)	Total Estimated Cost (US$)
Rehabilitate and reline old sewers in central Suva	0	2014-18	-	5,000,000	5,000,000	2,850,000
Housing Authority	3,700	2014-18	Met by land purchaser	5,828,000	5,828,000	3,321,960
PRB/HART	400	2014-18	1,200,000	630,000	1,830,000	1,043,100
Existing Formal Subdivisions	1,250	2014-18	15,000,000	1,969,000	16,969,000	9,672,330
Private land developments	750	2014-18	Met by land purchaser	1,181,000	1,181,000	673,170
Squatter Settlements (Government)	1,400	2014-18	4,200,000	2,205,000	6,405,000	3,650,850
Squatter Settlements (Supplementary)	2,700	2014-18	8,100,000	4,253,000	12,353,000	7,041,210
Industrial Commercial	495	2014-18	5,940,000	780,000	6,720,000	3,830,400
Totals	**18,275**		**34,440,000**	**21,846,000**	**56,286,000**	**32,083,020**

Table 4.3: Investment Needs for Sewage Treatment, 2012-2020

Location or Category	Added Capacity EP	Proposed New Treatment Units	Year	Estimated Cost (F$)	Estimated Cost (US$)
Kinoya	90,000	Rehabilitate Stage I SBR Plant and Sludge Dewatering Facilities	2012-13	900,000	513,000
		Augment Main Inlet Pumping Station	2013	3,780,000	2,154,600
Nausori	0	Rehabilitate existing STP	2012-13	100,000	57,000
Wailada	0	Rehabilitate existing plant	2013	30,000	17,100
Kinoya	90,000	Construct new activated sludge plant Stage II	2014-18	9,380,000	5,346,600
	90000	Construct new activated sludge plant Stage III, clarifier, digester and dewatering facilitirs	2014-18	16,000,000	9,120,000
Wailada	-500	Decommission existing plant following completion of Lami Sewerage Scheme	2014-18	30,000	17,100
Nausori	6,000	Duplicate existing STP	2020	1,000,000	570,000
Totals	**18,275**	**-**		**31,220,000**	**17,795,400**

4.8 Beneficiaries and Indicative Impacts

The proposed sewerage investments will benefit all GSA residents and visitors by improving the environment, reducing health risks and improving quality of life. The investments will help to maintain Fiji's environmental standing which is essential for fostering investment, particularly in the country's tourism market. Greater population densities will be possible in areas where new sewers are provided, thereby increasing land values, Council rate revenues and making infrastructure investment and services more efficient. The reduction in contamination of surface and coastal waters will particularly benefit the poorest people who often live in swampy, low-lying, poorly draining areas near the coast. Residents of these communities use the waterways for fishing and shell fish gathering to supplement their food sources.

Figure 4.2: Kinoya Treatment Plant

Photos: Clockwise from top left: 1. Kinoya STP clarifiers and trickling filters with digesters in background. One clarifier and one digester are under construction; 2. Dormant Stage I SBR Plant with site for Stage II-IV in background; 3. Kinoya Creek showing signs of sludge or sewerage discharge; 4. Kinoya STP showing workshop, inlet works and primary treatment facilities.

5 Urban Transport Infrastructure

5.1 Introduction

The current linear grid pattern of development was first confirmed as the preferred form of development as a basis for reducing overall travel costs. In reality, with the limited influence on urban development direction and form, development has been driven by market forces rather than any direct and overarching Government planning control process.

In response to on-going development pressures, plans have been prepared to provide additional lane capacity on both existing roads and through the construction of additional bypasses.

5.2 Road Network

The GSA road network, while generally comprehensive is dominated by a few key arterials.The connection between Nausori Airport and Suva has been Kings Road and this has acted as the magnet for the initial ribbon development that has since expanded into a wider band of development for the 20km trip between Nausori and Suva. To serve this broadening band of development, Princes Road has been established as a northern bypass. To the south, Ratu Dovy Road is currently being upgraded to a four lane arterial.

To the north, Princes Road offers a bypass opportunity however due to topographic and alignment limitations, it is a much longer trip and as a result is underused. To the east, a Nausori Town center bypass road has recently been completed to help address a growing traffic problem in response to increasing vehicle ownership.To the west, Queens Road along the foreshore at Lami Town Council is also undergoing a similar set of pressures with a single arterial connecting with Nadi, Lautoka and other centers in the Western Division.

Within the Suva City area, the key urban arterials of Kings, Edinburgh, Fletcher, Grantham and Rewa Roads carry the bulk of the peak hour traffic. Due to development constraints and topography, little additional opportunity exists for additional lane capacity on these roads. Traffic counts for selected intersections have been obtained from an earlier study and are contained in Appendix 5 along with previous trends in levels of service on the above network. This information confirms the common problem of increasing levels of congestion and suggests where on these arterials this congestion is of most concern.

While the condition of the national road network and key arterials within Suva City are in a reasonable condition, a number of collector and distributor roads within council areas are in a chronic state of decay. This is the result of climatic conditions and inadequate financial resources to adequately maintain them.

5.2.1 Previous Plans

To help address this problem, a transportation master plan was developed for the GSA in 2001. This plan developed a pipeline of investments to address the then shortfall in the road network. The pipeline value was in excess of FJ$120 million with the annual road maintenance program increased from the then FD$15 million to FJ$40 million per year. This list now forms the basis of the medium term infrastructure program for the Department of National Roads

The Transportation Study of the Greater Suva Area is the most recent and comprehensive document driving current and future investment priorities in the area. The Department of National Roads (DNR) has adopted the recommendations of the 2001 study and represent the basis of the current urban network investment plan.

The current plan is to have Fletcher Road as an outer ring road with Grantham Road as the inner ring road for traffic access to the Suva City center[48]. A number of intersection upgrades have also been included in the program. Current works in progress include the upgrading of Kings Road and Ratu Dovi Road arterials to four lane carriageways. The 2001 study recommended an upgrading of Kings Road to a six lane arterial between Nasinu River and Grantham Road to provide "bus or Transit lanes" in the longer term. While this has not been given any attention to-date, there is an emerging need for buses to be given priority in order to retain market and to minimise costs. Early planning should be made for the introduction of such facilities and should include the Samabula section in the plans. Failure to future proof this section of the corridor in the short term will lead to much harder and more costly decisions in the future. A more recent study in 2004 highlighted the effects of growing traffic flows on the limited capacity of the road network. This review and the list of recommended projects for investment from the 2001 study as well as additional discussion on relevant issues of significance to this TA are contained in Appendix 5.

Discussions to date have revealed that a northern Kings Road two lane bypass from the vicinity of the Koronivia Research Station in the Nasouri Rural Council area to Mead Road and to Queens Road (between Delainavesi Road and Lami Village Road is proposed. The timing for this is approximately 10-15 years into the future. The purpose of this linkage is to provide a release bypass for through traffic travelling between Lami and Nausori. The need for this bypass linkage was highlighted in the 2001 Transportation Study of the GSA. There is a proposal to provide a pedestrian overbridge across Rodwell Road to improve the safety of pedestrians and the flow of vehicular traffic past the bus stand. However, doe to site constraints, no agreement on the form or location on this overpass has been reached between the DNR and Suva City Council. It therefore remains a project without a defined timeline.

There is a program of pavement maintenance being instituted by the DNR. It involves a number of local contracts and is being program managed by a consultancy from Dunedin, New Zealand. The program has been drawn from the earlier asset management plan developed in 2002[49] for Suva City and is being extended to the GSA road network as required.

5.3 Current Challenges and Future Plans

5.3.1 Arterial

Urban growth has extended to the north of Kings Road in recent years and there is a growing recognition of the need to provide an additional northern bypass between Princes Road and Kings Road. This alignment is also looking at providing the function of bypassing the increasingly congested Samabula section of Kings Road with a twin tunnel to Walu Bay and onto Queens Road through Lami Town Council Center.

To the west, Queens Road along the foreshore at Lami Council is the link between Suva and the Western Province. Traffic in this corridor is growing to the extent that the traffic conditions in the Lami Town Center and the approach to Walu Bay is becoming overly congested. With the introduction of the new northern bypass to Walu Bay, additional traffic will cause section failure. In recognition of this, a northern bypass route has been identified. This will help return the Lami Town Council streetscape to a more pedestrian friendly environment.

At present, the major committed investment on road capacity upgrading is focussed on Kings Road and Ratu Dovi Road. Grantham Road upgrading and the widening of Fosters Road at Walu Bay industrial precinct have been completed. Works scheduled for the 2012 year include a continuation of the upgrading of Kings Road and Ratu Dovi Road trunk route alignments.

[48] Source, DNR advice.
[49] Road Asset Management Plan, Suva City Council, 2002. Meritec.

5.3.2 Suva Central Business District

Within the inner Suva CBD area, the road network is coming under increasing levels of congestion as the limited number of lanes struggle to accommodate private vehicle registrations which is growing at a rate of between 2% and 3% per year[50]. Suva City Council feels strongly that a CBD traffic management plan is urgently required. Current development within the CBD essentially precludes any additional traffic lanes being provided. In order to improve traffic flows, improvements to the capacity of the one way couplet (Rodwell/Stinson) will be required. This will require intersection redesigns for a number of intersections and the (potential) removal of on street parking in a number of inner city streets. Furthermore, and in conjunction with the upgrading of the couplet, the Stinson and Scott Street bridges will require upgrading. In the case of the former bridge, a three lane capacity is likely to be required while in the case of the latter advice from Suva City Council is that this bridge requires structural works. Advice received from Suva City Council suggests that Thomson Street bridge will also require replacing.

Within the inner CBD area, 15 streets have been converted to one way in an attempt to improve traffic flows. Despite this the inner CBD area is highly congested during the day with substantial queuing evident on a number of occasions during this initial TA effort. Five of the intersections are signalized and seven intersections have formalized pedestrian crossings. Due to the volume of pedestrians footpaths quickly become congested and jaywalking occurs out of frustration. Table 5.1 and Figure 5.1 present this information. Observations during this phase of the TA suggest that there are inadequate formalised pedestrian crossing facilities and for some of those that do exist, improvements better integration with traffic signals and reduced cycle times[51] are warranted. These will need to be examined in detail in to determine a realistic CBD traffic management plan.

Table 5.1: Pedestrian Volumes at CBD Signalised Pedestrian Crossings.

Pedestrian Crossing	Daily Pedestrian Crossings
Central Street : – Air Pacific - Westpac Bank	5,554
Thompson Street :– Westpac Bank - Triangle	3,714
Renwick Street: – Retail Store - Triangle (before Pratt Street)	6,484
Renwick Street: – Prouds –Triangle	4,778
Pratt Street: – Prouds - retail store	4,792

Source: Suva City Council survey November 2011.

The narrow footpaths (relative to the number of pedestrians) contribute to significant congestion at shop entrances. During peak periods when access to the bus and taxi stand is on the minds of most commuters, the approaching footpaths are unable to cope with the demand generated. Observations and timings by the CDIA consultant team confirms that footpath widening is required and at (for example) Rodwell Road and Robertson Road. Others may also be required after further examination as part of a detailed assessment of the entire CBD area.

[50] Source. LTA, 2011
[51] For example, the cycle waiting time at Renwick Street is 3.5 minutes.

Figure 5.1: Footpath Congestion in Rodwell and Robertson Streets

The increasing level of congestion within Suva City CBD has been a concern for Council for some time. There is an urgent need to develop a traffic management plan for the CBD which provides for improved traffic flows as well as catering for the growing pedestrian traffic in the area.

5.3.3 Road Network for Informal Settlements

The road network in many informal settlements consists of a single access road from the public road network with (often) smaller pathways leading to individual households. For a number of these settlements (such as Lovonilase and Muslim League in Suva), the local topography requires substantial expenditure to provide effective linkages. In others, it is simply lack of expenditure on basic infrastructure. Figure 5.2 shows examples of conditions of informal settlement roads. It shows that in addition to poor surface, drainage and safe pedestrian facilities are also lacking. As is the case with formal housing estates, road and associated infrastructure is an integral part of the supporting infrastructure expected. Due to the basic need and the widespread social benefits accruing to these communities, it has a significant relevance in any MTIIP.

Figure 5.2: Existing Road Infrastructure Conditions in Informal Settlements

Qauia settlement in Lami	Wailea settlement in Suva

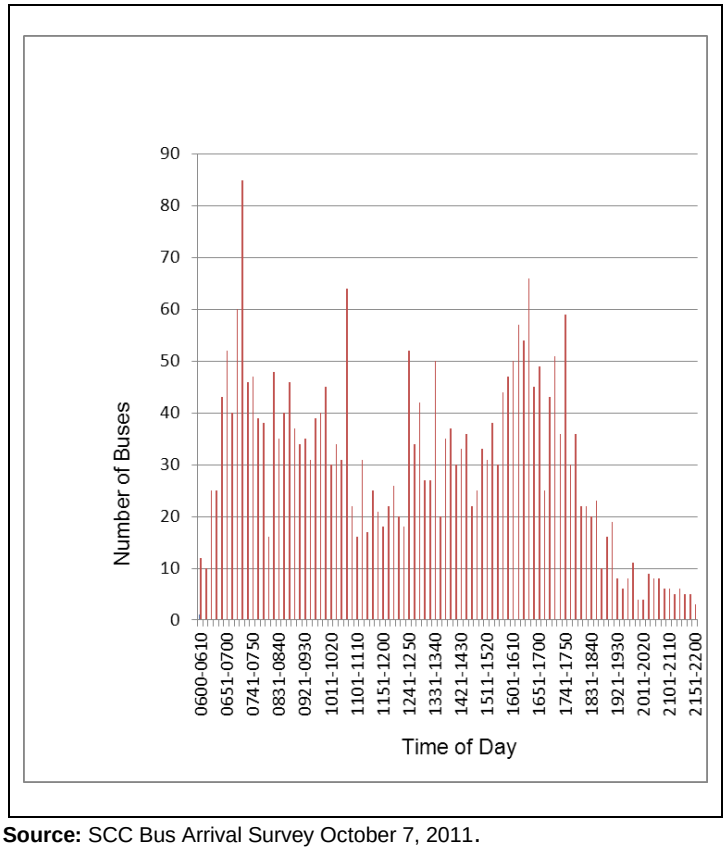
5.4 Passenger Transport

Passenger services are licensed by the Land Transport Authority (LTA). Since 2010, with the merger of the then National Road Safety Council into the LTA, all licensing, vehicle compliance standards and road safety matters are the responsibility of this Authority. The relevant passenger service license conditions and associated development issues relevant to this TA are discussed in Appendix 3. Infrastructure investment needs seen as being required under an MTIIP from this TA are as follows.

5.4.1 Suva Bus Stand

The Suva Bus stand serves 2891 bus movements per day from the 26 operators authorised to enter the facility. Passenger facilities within the site require improvements as does the arrangements for bus access to and from the site. On-site inspections undertaken as part of the preparation of this report confirmed the widespread spillage of oil on the bus stand pavement, the unhealthy practice of leaving the engines running whilst waiting at the bus stand and the practice of reversing out of bays to continue en route. The existing design has 40 bays and as Figure 5.3 shows, the demand for buses exceeds this for much of the day. As the data reflects arrivals and as buses are parked in the bus stand for up to 10 minutes at a time, there is a substantial line up for bus bays during peak times.

Figure 5.3: Daily Bus Arrivals at Suva Bus Stand, 2011.



Source: SCC Bus Arrival Survey October 7, 2011.

The end result is a scene of chaos as drivers shuffle and juggle buses into bays for loading. With a number of operators serving the same sections on corridors to the east, aggressive driver behaviour and unwarranted noise is a feature of operations at the stand. Figure 5.4 shows aspects of this.

Figure 5.4: Suva Bus Stand

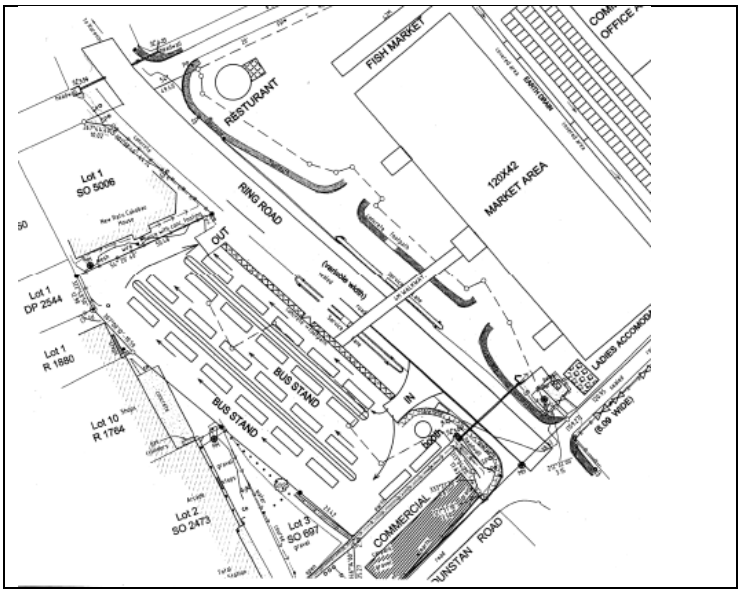
Bus queuing to enter the Suva Bus Stand

Passenger facilities at the Suva Bus Stand

A redesigned bus stand to incorporate the adjacent carrier stand/bus layup area is long overdue. Previous designs have suggested a multi-level facility as part of a FJ$27.6million comprehensive redevelopment of the markets area. That design has not been accepted by Government.

A more modest design incorporating the adjacent carrier and bus layup site is considered sufficient for such a design. A drive through arrangement with independent bus operation similar to that proposed for the Nausori Town Bus Stand is the preferred overall arrangement as it reduces the need for reversing and provides for a more orderly operation of buses whilst in the facility. For reference purposes, the general layout of the Nausori stand is shown below in Figure 5.5.

Figure 5.5: Nausori Town Center Proposed Bus Stand Bay Layout.



5.4.2 Nausori Bus Stand.

Nausori bus stand provides an important destination for bus services covering the surrounding rural district. It also serves as the key western terminus for urban buses serving the entire corridor from Suva. The current conditions of the hard stand area as well as the passenger

waiting areas are substandard and require investment. In addition, the regular flooding of areas of the town center supports the Town Council's relocation of this and the adjacent taxi stand to a more suitable site within the town center area.

Substantial work has already been done on this project (including financial feasibility) and, subject to confirmation of the adequacy of some functional design criteria, the project is considered ready for a detailed design. Information received during the study suggests that FD$3 million has been set aside by the national Government to assist with delivering this and a new municipal market. The concept layout for this project is shown in Figure 5.5.

5.4.3 Nasinu Bus Stand

Although a major dormitory area for the GSA in general, Nasinu Town Council area does not yet have a Town Center. Current negotiations regarding land issues for the proposed site are nearing finalisation. In view of the highly significant need for a well-designed facility to serve the overall network, provision for this investment should be made within the MTIIP. When the land issue is resolved and town center master planning commences, the bus stand design should be included. During this process, the current problems associated with passenger access to the Suva Bus Stand and the current conditions for passengers while waiting to board should be fully understood so that lessons are learned and improved conditions are provided in Nasinu.

5.4.4 Urban Bus Network Review

A separate investigation is currently being carried out by a consultant for the LTA. This study, is broadly targeting the question of whether current bus network capacity meets demand at the national and provincial level to help establish a basis for ongoing planning and network development for the GSA, this study should ensure a detailed network review is undertaken for the GSA. Such a review should collect baseline levels of route demand, service levels, origins and destinations and key loading/unloading stops. This way, a better appreciation of the needs of the industry and of the passenger market can be made for future network development purposes.

5.4.5 Taxi Stands

Taxis operate from bases and stands established across the urban area (see Figure 5.6). These sites are determined and provided by the relevant Council in return for a fee paid by the taxi users. This provides an on-going revenue stream to Councils which suffer from an on-going lack of funds. Any improvement to an existing taxi stand or additional facilities to be provided as part of a potential infrastructure program is therefore highly relevant.

Figure 5.6: Taxi Bases

Discussions with Nasinu Town Council has revealed a need for investment in taxi bases for both upgrading and additional bases. In the case of upgrading, investments could be required for improvements to the hard stand, footpath access, taxi base structure, lighting and amenities. A total of 76 bases/sites have been identified by Council as requiring funding.

5.4.6 Pedestrian Facilities

For much of the urban area, footpath conditions are adequate and reasonably well maintained however, as is often the case, there are sites where the need for improvements have been identified. As a general rule, pedestrian facilities within informal settlements are substandard or in extreme cases, absent. During inclement weather, these conditions are particularly poor. Figure 5.8 shows this.

With low vehicle ownership levels informal settlement communities must often rely on passenger transport services for access to the broader urban area. This means walking to mainline bus routes and to taxi stands and bases are part of the normal activities of daily life. In many cases (such as Qauia settlement in Lami), this walk can be up to one km in length. Investment in improved roadways, footpaths and associated drainage works would assist this aspect of informal settlement living.

Elsewhere, residential communities, while located close to main arterials and bus routes, suffer from a lack of direct footpath access. As a consequence, pedestrian access is often via a convoluted route in order to access basic bus and taxi services. Nasinu Town Council has recognised this problem and has provided advice on the location of a number of these instances within the municipal area.

Figure 5.8: Examples of Inadequate Pedestrian Facilities in GSA

		
Poor quality road and no footpath leads to unsafe mixing of pedestrians and vehicles.	Narrow footpath conditions leading to School from Khalsa Road. This site also lacks pedestrian crossings from bus stop.	Crowded conditions and topography often lead to inadequate footpaths.

5.4.7 Investment Rationale

In any investment in transport infrastructure, there should be a focus on improving the conditions for the user. In the case of public transport and pedestrian facilities, this will have a flow on beneficial effect for those who depend on the facilities (the poor and non-car owners) by ensuring a guaranteed level of urban mobility for access to commercial, health, education and social opportunities within the GSA. For those thousands who are employed in the sector (drivers, mechanics, managers, office staff etc), this will provide an ongoing level of stability for employment.

Finally, as there is little reliable information concerning future demands for the passenger transport network, any investment in infrastructure will need to be based on existing known demand with (potentially) an allowance for future growth in anticipation of sustainable intervention measures being taken by LTA as suggested in the 2009 Bus Industry Review and any recommendations emanating from the current industry review being undertaken for LTA. It is within this context and in accordance with the above four points, that investments in a MTIIP should be framed.

5.5 Summary of Investment Needs

From the above assessment and from discussions with stakeholders, investment needs can be broadly categorised into two streams. The first stream includes those investments in what can be broadly termed "trunk" urban transport sector items. These include road network improvements, improvements to passenger transport facilities and items covering improved management of limited lane capacity at key locations across the broader network. The second stream includes those "localised" network improvements which are synonymous with the upgrading of informal settlements.

Table 5.2 lists the identified urban transport investment needs for an MTIIP. This list has been compiled on the basis of discussions with a range of stakeholders, site visits and a review of available data from previous studies and plans. Costs are indicative and will be confirmed after stakeholder workshop and review by a cost engineer/quantity surveyor.

Table 5.2: Investment Needs for Urban Transport 2014-2018

Council	Description	Quantity	Indicative Cost F$m	Proposed Timing
Lami	Queens Road realignment and widening to four lanes between Navesi Bridge and Lami	1	9.0	2014-2018
	Intersection treatments/turning slots on Queens Road	3	0.2	2014
	Road and walkway upgrading in informal settlements.	TBC	4.1	TBC
Suva	Road intersection upgrades (Grantham & Fletcher)	2	0.2	2014
	CBD traffic management plan	1	0.2	2014
	CBD one way couplet (Rodwell/Scott/Edward and Stinson/Usher/Harris upgrade	2	4.0	2015 -2016
	Edward and Central Street intersection redesigns	4	0.3	2015-2016
	New Stinson Street Bridge	1	3.0	2018
	Scott Street and Thompson Street bridge upgrades	2	5.0	2016-2018
	Suva Bus Stand redevelopment	1	3.0	2014-2015
	Suva Bus layover development.	1	0.25	2014
	Pedestrian footpath widening	300 m	0.3	2014-2015
	Road and walkway upgrading in informal settlements.	TBC	10.8	TBC
Nasinu	Taxi Stand/Base upgrades	76	1.9	2014-2015
	Pedestrian footpaths	800m	0.75	2014
	Pedestrian crossings	8-10	0.1	2014
	Road and walkway upgrading in informal settlements.	TBC	7.9	TBC
Nausori	Nausori Bus Stand Relocation	1	3.0	2014-2016
	Town Center Traffic Management Plan	1	0.1	2014
	Road and walkway upgrading in informal settlements.	TBC	2.7	TBC
Total excluding informal settlement investments		**See note (iii)**	**56.8**	**2014-2018**

Notes:
(i) DNR advises the GSA Transport Master Plan 2004 is being used as the investment strategy for the medium term. The full project list from the Master Plan Report is contained in Appendix 4. Currently awaiting advice from DNR regarding the status of projects listed in Appendix 4. When this is known, relevant projects will be included into this table along with indicative cost estimates in readiness for consideration at the Stakeholder Workshop.
(ii) TBC- to be confirmed. (iii) A total nominal budget for road and walkway upgrading in informal settlements has been set at F$25.5million. The distribution across Council areas has been made (for the purposes of this Report) solely on the basis of household distribution in Table 2.5. Topography and drainage will impact on this distribution and may require amendments with further review. (iii) All cost estimates are preliminary and will require validation prior to project budgeting.

5.6 Beneficiaries and Indicative Impacts

The proposed investments will benefit a wide range of community interests. In summary, these are:

i. Road improvements on Queens Road, Fletcher and Grantham road will improve travel times for commuters and business in general. With the economy experiencing only modest growth, any improvement in road network efficiency will be of benefit.

ii. In relation to the improvements proposed for Queens Road, Council limited budgets will benefit through reduced cost in transporting solid waste to the Naboro landfill site. This saving can then be reallocated across other community service or infrastructure related programs provided by Councils.

iii. Improvements to the Bus stands (both Suva and Nausori) will benefit both passengers and the sector in general. For the passenger, many of who have no access to a car, this is one of the few cost effective travel options available. It will also assist in maintaining a viable bus sector. With private vehicle trips increasing at 3% per annum, this sector will soon be feeling the effects of a relative decline in market share. When this happens, bus companies, their employees and the passengers who rely on the services will suffer. The flow on effect will be increased pressure to build and maintain more traffic lanes to cater for the increased traffic. From this perspective, scarce public funds will be stretched further.

iv. In a similar manner, upgrading the taxi stands and bases in Nasinu will benefit those who do not have access to a private vehicle and rely on this mode. For many, taxis provide a point to point service and in this respect, often complement the bus mode. The standard of the current fleet suggests the sector is under financial stress at present and investment in the mode to stabilise demand is required for ongoing viability for those employed in the sector.

v. Suva's CBD (and to a lesser extent, Nausori Town center) are coming under pressure from increased traffic flows. Compounding this is the limited space for additional traffic lanes. In time, increased traffic congestion will adversely affect the attractiveness of the CBD/Town Center for commercial and retailing activities. The flow on effect of this will be a downturn in business as customers seek locations elsewhere where access is more convenient. Informed cities across the world have recognised the widespread community benefits of a vibrant CBD/Town Center area and have invested substantial funds in traffic management and pedestrian improvement programs to ensure this vibrancy is maintained. The road and pedestrian access improvements proposed by this program reflect this approach. These benefits cross a wide range of socioeconomic groups from retailing to market vendors at the Suva and Nausori Bus Stands.

vi. Every community member is a pedestrian at some time during the day. The pedestrian improvements proposed for Nausinu are specifically targeting communities which are relatively isolated from major arterials, many of which contain licensed bus services. When combined with pedestrian crossings at key locations, improvements in safety are provided. This is particularly relevant for school students.

vii. The lack of quality road and pedestrian infrastructure in informal settlements has been well documented both in this report and in a myriad of previous assessments. With these communities recognised as among the poorest in society, there is an obvious benefit in providing improved facilities. When combined with general informal settlement upgrading, Councils will benefit through increased revenue streams as the land on which these settlements lie become formalised and rateable. With increased revenues, Councils can fund additional urban social and infrastructure programs for additional benefits in the future.

6 Urban Drainage and Flood Protection

6.1 Introduction

The GSA has separate systems for drainage52 and wastewater. Drainage systems in the city and towns are mainly roadside drains with cross culverts. Inadequate hydraulic capacity and poor maintenance of drains result in frequent flooding.. When river and sea levels are high, the drains that convey water from the urban areas back up, causing severe internal flooding problems.

Frequent tropical cyclones are the main cause of extreme flood events in the GSA. Storm surges exacerbate flood levels in the coastal zones. Lami and Nausori towns are subject to riverine flooding when the rivers rise above the top of bank level in extreme flood events.

Peri-urban areas outside town boundaries and informal areas generally have poor drainage, resulting in flooding and poor sanitation conditions. Some informal settlements are at high risk of flooding because houses are located in flood-prone areas. Relocation of settlements that lie in disaster prone areas such as foreshores, landslide areas and flood prone areas may be necessary but only after careful consideration and social intermediation.

6.2 Climate, Rainfall and Flooding

The GSA is located on flat and hilly terrain at the edge of the southeastern slopes of the main island of Viti Levu. Fiji has an oceanic tropical climate with dry season from May to October and rainy season from November to April. The GSA has average rainfall of about 3,000mm/year; thunderstorms are common and often bring 50mm/hour of rain.[53].

Floods due to heavy rain occur in the GSA throughout the year. Major or extreme floods are associated with tropical cyclones and tropical depressions, characterized by high intensity rainfall. On average, 15 tropical cyclones with high intensity rainfall affect Fiji each decade. Storm surges exacerbate flood levels on the coastal zone. (Source: Strengthening the Capacity of Developing Member Countries to Respond to Climate Change. Draft Baseline Report Part 1. TA No7394-REG. Kellog Brown & Root (KBR) for ADB, 2011).

Apart from the Rewa River which is one of the largest rivers in Fiji, most rivers and streams in GSA are relatively small in size and flow from steep mountainous terrain to the coast. The combination of small, steep watercourses and high intensity rainfall lead to swiftly rising and falling water levels. Flash flooding is common.

6.3 Surface Water Quality

Stormwater and surface water in many places in GSA is contaminated by pollution from the urban areas (oil. dust, organic matter etc) and overflows/leakage of sewage from sewers and septic tanks. Water quality data for Suva Lagoon show coliform values (FC/100mL) ranging from nil to more than 70,000. Of 17 sites tested in 2005, three had coliform levels exceeding 10,000 and 16 sites had levels exceeding bathing water standards. Tests on seafood taken from Suva Lagoon show indicator values many times higher than recommended by health authorities. (Source: J Morrison et al. Contamination of Suva Lagoon, 2006).

[52] Stormwater Drainage is the system of kerbs, gratings, open drains, pipes, channels and canals that collect stormwater runoff and convey it to discharge points in waterways, rivers or the sea. In this report Flood Protection is defined as: (a) protection of urban areas by flood embankments, dredging or other means to limit flooding caused by the rise of floodwaters in creeks and rivers, and; (b) protection of riverbanks to minimize erosion, damage to property or infrastructure and loss of land. Flood protection does not include coastal or foreshore protection.

[53] Environment Impact Assessment (EIA). New Bus Stand, Market and Commercial Development for Nausori Town. E-Care Environment Consultants for Nausori Town Council. 2011

6.4 Climate Change

The GSA is already affected by human-impacts on the coastal zone. High population growth rates, intensive urban development, deforestation of catchments, pollution and increased exploitation of biological and physical coastal resources have exposed large areas of coast to erosion and increased flooding[54]. Accordingly: (a) coastal systems have reduced resilience to cope with climate variability or to adapt to climate change, sea-level rise and human activities, and; (b) coastal populations and their assets are exposed to higher vulnerability to extreme events such as storm surges, tsunamis, and high tides, apart from sea level rise.

Extreme weather events, such as stronger and/or more frequent storms, will affect the capacity of drainage and overflow systems to deal with stronger or faster velocity of water[55]. Adaptation options for drainage to address climate change can generally be divided into: (a) engineering (structural) options and; (b) non-engineering options.

Climate change dictates that increased attention be given to standard engineering designs for drainage systems, open channels, pipes, and culverts to reflect changes in future expected runoff or water flow. Non-engineering options can also mitigate the impacts of climate change, including: (a) maintenance contracting, increased maintenance contingency budgets and early warning systems; (b) road alignment, master planning, and land use planning to avoid hazard prone areas; (c) environmental management including preserving vegetative land cover and mangroves to help minimize the severity of floods. In some cases, the nature of the changes are too uncertain or minimal, or the consequences of climate change are too severe to justify in situ adaptation. In the latter circumstance, a best course of action may to be to allow the infrastructure to deteriorate and be decommissioned. In some cases, not investing in adaptation may be the best course of action considering technical and economic aspects.

6.5 Existing Drainage and Flood Protection Systems

6.5.1 General

The GSA is subject to heavy rainfall events throughout the year. Within the municipal council areas, the drainage systems consist of: (a) underground concrete drains in central business areas, along main roads and in some formal subdivided areas; (b) open concrete or stone-lined drains along roads, and; (c) unimproved natural channels. In general the drains in incorporated areas are in good condition. However, old pipes in the Suva central area are thought to be cracked or broken and the drainage system in Naulu/Nakasi is dysfunctional due to poor development control.

While the drainage system in incorporated areas is generally in good condition, some areas flood during heavy downpours because: (a) large areas of the city/towns adjacent to the coast are relatively flat and low-lying; (b) many drains have inadequate hydraulic capacity; (c) some areas are below high tide level; (d) inadequate development planning and controls lead to blockages and increased runoff, and; (d) drains are silted or blocked. Peri-urban areas and most of the (unimproved) informal settlements are generally characterized by poor drainage and lower levels of service.

6.5.2 Drainage and Flooding in Lami Town

The drainage outlets in Lami town center are below mean sea level, and flooding occurs when heavy rains coincide with high tide. Recent housing subdivisions have properly designed drainage systems, but other areas have open drains which are prone to erosion. Many cross culverts in the town have inadequate capacity resulting in flooding during heavy downpours.

[54] Source: Climate Change The Fiji Islands Response Fiji's First National Communication Under the Framework Convention on Climate Change, 2005.
[55] Asian Development Bank. Guidelines for Climate Proofing Investment in the Transport Sector Road Infrastructure Projects. August 2011.

Drainage in informal settlements is poor, leading to minor flooding, ponding, waterlogged ground and erosion. Some settlements e.g. Samoan and Kalekana are located on low-lying ground below adjacent road level and flood frequently due to inadequate drainage.

Flooding and riverbank erosion occur in the 3 km stretch of the Lami River between the river mouth and upstream of Quaia settlement[56]. Severe erosion of abutment or banks of four bridges require erosion protection. Siltation of the Lami River causes flooding in upstream residential areas and the Wailada industrial estate where there is a risk of toxic chemicals mixing with floodwaters. Upstream farming and deforestation/logging contributes to river siltation. A road bridge near Quaia settlement obstructs flood flows resulting in flooding of upstream areas. An integrated approach to flood alleviation is necessary, addressing structural and non-structural measures.

6.5.3 Drainage and Flooding in Suva City

The main problems with flooding in Suva City occur in poorly drained low-lying, reclaimed areas, particularly when high tides coincide with heavy rain. The flood-prone low lying areas include Suva center, and several areas on the eastern side of Suva Peninsula.

Suva City's central business area experiences frequent flooding. In Greig Street high tides exceeding 1.9-2.0 MASL rise above Nabukalou Creek bank level, and flood the road and footpaths adjoining eight shops. This phenomenon occurs about 80 times each year, causing disruption to traffic and business, damage to property and infrastructure. When heavy rain coincides with high tides, the shops are often flooded. Possible solutions include raising Nabukalou Creek retaining wall, roads and footpaths, and flood proofing of buildings. Regular dredging of the creek is also required.

Flooding of roads and footpaths also occurs in central Suva due to blockages, inadequate hydraulic capacity and possibly poor condition of drainage pipes. Many gully pits are broken and require replacement and ponding occurs on several roads, affecting longevity of the road pavement.

Flooding occurs in low-lying reclaimed areas on the east side of Suva Peninsula, at Vatawaqa, Muanivatu and Muanikau when heavy rain coincides with high tides. The main problems are inadequate hydraulic capacity of the drainage system. Further investigations are necessary to determine the most appropriate solutions. Local flooding occurs in other locations throughout the city such as the outbound lane from the city in Harris Road adjacent to Suva Port.

6.5.4 Drainage and Flooding in Nasinu Town

Nasinu has about 180km of roadside drains with crossroad culverts. The majority of drains are open drains with rock pitching and there are few underground pipe drains. Most of Nasinu Town has favorable topography and only a few areas are prone to flooding.

The main problems with flooding occur in low-lying coastal areas with poor drainage, including Nadawa, Nadera and Laucala Beach residential areas and Veisari informal settlement. Flooding of these areas is most severe when high tide coincides with heavy rain. The flooding problems are compounded by runoff from higher areas to the north. Possible solutions may include excavation of large open drains and provision of flap gates to prevent tidal backup. Other problem areas include: (a) Makoi where Aurora Creek floods because of a creek meander downstream which requires realignment, and; (b) bank erosion and siltation of a creek near the junction of Khalsa and Kings Road where stone pitching is required.

[56] The Lami River upstream of Quaia bridge forms the town boundary. The incorporated area lies on the western side of the river and peri-urban area, including Quaia Settlement lies on the western side.

6.5.5 Drainage and Flooding in Nausori Town[57]

Flooding Due to Heavy Rainfall

Nausori town is located on both sides of the Rewa River about 1-2 km upstream of the river mouth. The Nausori drainage network comprises about 39km of drains in the downtown area on the east bank and in housing areas on the western side of the Rewa River. A condition assessment found that the downtown area has 16.6 km of open and pipe drains, about 50% of which are in poor condition. (Source: Strengthening the Capacity of Developing Member Countries to Respond to Climate Change Baseline Report – Fiji Islands. Kellog Brown & Root for The Asian Development Bank, 2011).

Most of the town center, adjacent residential and industrial areas lie at 3.2-5.2m ASL. Frequent flooding of the town center, market, shops and roads, occurs in heavy rain, due to inadequate hydraulic capacity of the drainage system and lack of maintenance. The central area is flooded about twice each month, causing disruption, loss of income and property damage. (Source: Special Administrator, Nausori).

Drains in the town center are often contaminated by wastewater overflows and leaks from sewers and septic tanks. Small rises in Rewa River due to high flow or tides causes flood water to back up the main creek, leading to even more severe flooding. All of the stormwater from the town center and adjoining areas on the east bank drains to Waikavakava and Waicuku Creeks which discharge to Rewa River through one outlet in the town center. Multiple outlets are needed to convey stormwater directly to the Rewa River by the shortest routes.

In recent years, residential drift has taken place from the town center towards the west bank areas of Waila, Davuilevu, Wainibuku, Naulu and Nakasi housing areas, which are located at higher elevations and offer protection against flooding. (Source: KBR, 2011). Drainage systems in Waila, Davuilevu and Wainibuku housing areas are generally in good condition.

Naula/Nakasi was developed by the RLA and was handed over to the Nausori Council following extension of the town boundary. Some drains have been filled and are now 2- 3 m below the ground. Stormwater seeps from under roads and buildings, and residents are concerned that there may be collapses. Drains in Naulu/Nakasi require a major upgrade. Other areas with flooding problems include the low-lying alluvial flats on the western side of the Rewa River, where several new developments (residential and resort hotel) are planned.

Riverine Flooding

The existing embankment crest level of Nausori town center is 5.0 m ASL. Since regular dredging of Rewa River started in 1986/87 overtopping of the embankment has occurred only twice. The maximum recorded flood at Nausori was 5.5m ASL during Cyclone Kina. Extreme floods over 4m ASL are likely to inundate low-lying areas of Nausori town and most of peri-urban Nausori. A flood levee, flap gates and flood pumps are required to protect the downtown area from flooding. Flood proofing of existing and proposed buildings may also be necessary. The ground levels in parts of Nausori town center (such as the proposed new market/bus stand) are below 3.7m ASL and need to be filled to avoid frequent flooding by floodwater backup in Waicuku Creek. Flooding of low-lying roads and bridges during extreme rainfall, causes road blocks and disrupts traffic.

6.6 Issues, Problems and Constraints

Drainage Master Plans: While planning of drainage networks is undertaken for new housing estates and markets, the approach is often piecemeal and limited in scope. Drainage

[57] The Final KBR Baseline Report on Climate Change (KBR, 2011) which may contain project proposals, designs and cost estimates for drainage and flood management in Nausori was not available to the CDIA TA consulting team because the report was under review by ADB at the time of the CDIA TA study.

Masterplans are required for all four council areas and their peri-urban areas towns to provide an overall framework for drainage development.

Lack of Funding: The legal and policy framework for urban drainage and flood protection in urban areas is fragmented and unclear. Funding for development, operation and maintenance of drains and flood protection is inadequate. Lack of drainage inventories and plans also limit councils' abilities to plan, manage and maintain the drainage systems.

Informal Settlements: Drainage infrastructure in informal settlements and native villages are generally of much lower standards than in formal town areas partly because municipal councils do not have responsibility for services in those areas. Many informal settlements are located on reclaimed land or in flood prone areas where they vulnerable to tsunamis, storm surge or river flooding.

Drainage Services in Peri-urban Areas: Peri-urban areas have lower standards of drainage and poor environmental conditions compared to council areas. The present government policy is that services should be provided before incorporation of the peri-urban areas because it is unfair to ask existing ratepayers to provide the funds for services used by people who do not pay rates. However, central government, has not set up the institutions or the finance to provide the other services which incorporated towns would have to provide after incorporating an area, such as paved roads, drainage, footpaths and street lighting. (Source: UPAP)

Stronger Development Controls and Enforcement: Without adequate mitigation measures, urbanization will lead to worse flooding and environmental conditions. Problem areas include: (a) squatting on sensitive areas and uncontrolled filling of mangrove and wetlands, (b) indiscriminate solid waste dumping which contributes to blockage of drains, unhealthy conditions and increased flooding, and; (c) overloading of drainage systems due to increased storm runoff from increased impermeable areas. Properly planned urban areas, and the enforcement of development planning controls are needed to ensure that negative environmental impacts of urbanization are minimized.

6.7 Existing Investment Plans

While the four councils recognize the need to improve drainage infrastructure and flood protection, none of them has investment plans for city or town wide drainage investments.

6.8 Summary of Investment Needs

6.8.1 Investment Needs and Costs

Potential drainage investments have been identified based on limited information available in Phase 1 of the TA. The proposed focus of the investments is: (a) the high and medium density development in flood prone areas where returns on investment are highest, and; (b) other flood prone areas such as informal settlements where people's lives, property and health are at risk. The proposed investments in drainage and flood protection 2013-2020 are summarized in Table 6.1. The drainage and flood management investments were identified by the four GSA councils and concept designs were prepared by the consultants and council staff in the field. All cost estimates are very preliminary.

Table 6.1 - Medium Term Drainage and Flood Protection Investment Program 2014-18

No	Project Description	Potential Benefits	Estimated Costs F$million	Estimated Costs US$million
	ALL GSA URBAN AREAS			
1	Prepare Drainage Master Plans	Improved drainage planning; Framework for drainage improvements; Flood zoning; Basis for development approvals; Basis for submission for funding of drainage infrastructure.	0.50	0.28
2	Improve development planning and control and catchment management	Retention of green areas and flood storage; Improved catchment management; Reduced siltation and debris; Reduced flooding and less drain maintenance.	0.30	0.17
	SUBTOTAL		**0.80**	**0.45**
	LAMI TOWN			
1	Lami Riverbank Erosion Protection, comprising 1,000m of reno mattress protection at eroding sections of Lami River, mainly at outer bends.	Reduced riverbank erosion, reduced loss of riverside land, less risk of landslips and damage to riverside property	0.80	0.45
2	Qauia Bridge Raising. Demolish existing road and pedestrian bridges and construct new 1-lane elevated road bridge with walkway and road approach spans.	Reduced flooding and ponding in Quaia Settlement; Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	1.50	0.85
3	Lami Town Center Drainage Improvements in Queens Road, Fenton Street, Solomoni Street. Upgrade road culverts, open drains and sea and river outfalls.	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	1.28	0.72
4	Central Ward Drainage Improvements in Nasevou Street, Quaia Road, Latui Road. Upgrade road culverts and open drains	Reduced flooding and ponding;Improved sanitation; Less disruption to industry and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses; Reduced land erosion.	0.10	0.06
5	Delainavesi Drainage Improvements in Nakauvadra Road, Yasi Road and Kauntoni Road	Reduced flooding and ponding;Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses; Reduced land erosion.	0.11	0.06
6	Kalekana Settlement Drainage Improvements. Upgrade road culverts, drains and walkways through community participatory approach.	Reduced flooding and ponding; Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses; Reduced land erosion.	0.04	0.02
7	Koronivono Settlement Drainage Improvements. Upgrade road culvert and open drain.	Reduced flooding and ponding; Improved sanitation; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.02	0.01
	SUBTOTAL		**3.84**	**2.17**
	SUVA CITY			
1	Nabukalou Creek Flood Management in Greig Street. Raise 130m length of Nabukalou Creek seawall by 1.0-1.2m, upgrade stormwater pipes, raise road and footpaths.	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	1.01	0.57
2	Lower Laucala Bay Drainage Improvements. Extend and realign box drain, install new drain pipe in parallel, and construct new sea outfall.	Reduced flooding and ponding; improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	1.17	0.66
3	Mukta Ben Place Drainage Improvements. Construct new road culvert across Jerusalem Road and upgrade open drain	Reduced flooding and ponding; Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical	0.18	0.10

No	Project Description	Potential Benefits	Estimated Costs F$million	Estimated Costs US$million
		expenses.		
4	Vatuwaqa River (Wailea Settlement) Flood Management. Dredge 4.5km of lower reaches of Vatuwaqa River	Reduced flooding and ponding; Improved sanitation; Less disruption to business, industry and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	1.26	0.71
	SUBTOTAL		**3.63**	**2.05**
	NASINU TOWN			
1	Wainibuku Creek Flood Management (River Road Settlement). Dredge or excavate 2.0km of Wainibuku Creek and relocate10 houses from flood prone land	Reduced flooding and ponding;Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.57	0.32
2	Narere Drainage Improvements (Kelland Road). Upgrade road culverts and open drains	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.05	0.03
3	Balgovinda Main Drain Improvements. Upgrade main open drain and construct 3.0km long maintenance access road alongside drain	Reduced flooding and ponding; Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.80	0.45
4	Nadawa Drainage Improvements (Nadawa Rd). Upgrade 2.0km of open drain and create drainage maintenance roads and easements.	Reduced flooding and ponding; Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.44	0.25
5	Makoi Drainage Improvements in Aurora Avenue. Upgrade 400m of open drain and create drainage maintenance road and easement	Reduced flooding and ponding; Improved sanitation; Less disruption to industry and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.05	0.03
6	Nadera Drainage Improvements in Sagali Road and Nawanawa Roads. Upgrade road culverts and open drains	Reduced flooding and ponding; Improved sanitation; Less disruption to traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.08	0.05
	SUBTOTAL		**1.99**	**1.12**
	NAUSORI TOWN			
1	CBD North to Manoca Drainage Improvements in Manoca Industrial Area, Mistry Lane Industrial Area, Ram Daur Chaudry Road and Vunivuni Road. Upgrade road culverts, open drains and river outfall	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.16	0.09
2	Waicuku Creek Flood Management. Dredge or excavate 1.0km of Waicuku Creek and 450m of Waikavakanva Creek. Reno mattress line lower 700m of Waicuku Creek. Construct weir with flap gates, upgrade road culverts. Create drainage maintenance easements.	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	1.52	0.86

No	Project Description	Potential Benefits	Estimated Costs F$million	Estimated Costs US$million
3	CBD South to Naiyala Drainage Improvements in Vuci Road, Nausori Village, Ratu Cakobau Park, Nadali Village and Naiyala Subdivision. Construct road culvert across Wainibokasi Road, upgrade open drains and create drainage easement for open drain to Rewa River.	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.89	0.50
4	Town Riverbank Protection from Mistry Lane to new Rewa Bridge, comprising 1,300m of reno mattress protection along Rewa riverbank.	Reduced riverbank erosion, reduced loss of riverside land, less risk of landslips and damage to riverside property	1.43	0.81
5	Davuilevu Drainage Improvements in Lal Singh, RC Sharma, Waila, Jag Lal Singh Roads; Witherow and Hancock Streets; Dalip Street, and; Mataika Road to Bulu Street. Upgrade road culverts and open drains.	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.20	0.12
6	West Area Drainage Improvements in Wainibuku, Naulu and Nakasi, covering Wainibuku Road, Nakasi/Waila Road, Buksh Place and Bangladesh 1. Upgrade road culverts and open drains. Implement drainage improvements in Salim Street and Bangladesh Settlements using community participatory approach.	Reduced flooding and ponding; Improved sanitation; Less disruption to business and traffic; Less damage to property and infrastructure; Reduced loss of income and medical expenses.	0.18	0.10
	SUBTOTAL		**4.38**	**2.47**
	SUBTOTAL PHYSICAL WORKS		**13.83**	**7.81**
	TOTALS		**14.63**	**8.27**

Note: Estimated costs are base costs, excluding contingencies, consultants and incremental administration.

6.9 Beneficiaries and Indicative Impacts

The proposed investments in drainage and flood protection will benefit all GSA residents by improving the environment, reducing health risks, enhancing economic development and improving quality of life.

The expected impacts of the drainage and flood protection investments include: (a) reduced property and infrastructure damage due to flooding; (b) fewer lost working days and travel delays due to flooding; (b) reduced erosion and loss of public and private land, and lower risk of damage to buildings and infrastructure located alongside rivers and creeks; (c) improved sanitary conditions around households, streets, market places and other public areas, due to removal of stormwater and improved performance of septic tanks, with associated positive impacts on public health, living conditions and savings on medical expenses, and; (d) increased investment by businesses and industry as a result of more attractive environmental conditions. (e.g. public markets)

Reduced flooding and ponding in informal areas and low-income urban areas will have a positive impact on health and living conditions of mainly poor communities outside the municipal drainage service areas.

Improvements in management, operation and maintenance of the drainage and flood protection works will also be needed to protect the value of the investment in urban infrastructure and ensure the sustainability of urban drainage services.

Figure 6.1: Nabukalou Creek, Suva CBD


Photo1: At high tide Nabukalou Creek backs up and inundates the road and footpath adjacent to 8 shops in Greig Street at right of photo; **Photo 2:** Shops have steps to prevent entry of creek and flood water due to high tide and heavy rain.

7 Solid Waste Management

7.1 Introduction

Overall household waste collection coverage in the GSA is about 76%. The four GSA councils collect solid waste from about 90% of households, while Rural Local Authorities (RLAs) collect around 23% of waste from the peri-urban areas. Uncollected waste remains in the urban areas where it is burned, dumped indiscriminately, buried or discarded to drains, where it causes blockages, overflows and unhealthy conditions. Solid waste collected by the councils and private operators is delivered to the Naboro sanitary landfill located 22 km west of Suva City.

7.2 Recent Developments

The DOE has established a permit system for industrial/trade waste. So far, over 600 facilities have applied for a permit Fiji wide. A Hazardous Waste endorsement has been incorporated in the regulations. (Source: DOE Country Report, 2009). A three year Western Region Waste Minimization and Recycling Promotion Project funded by JICA was conducted over 2008-11, resulting in 5% increase in recycling in Lautoka and Nadi Town areas. (Source: NSWMS)

7.3 Existing Solid Waste Management System

7.3.1 Solid Waste Generation and Characteristics

Waste produced by households in Fiji consists mainly of biodegradables (more than 65% by weight), paper (10-15%), plastic (less than 10%), textiles and glass. (Source: Fiji SWM Strategy and Action Plan, 2008-10). Overall municipal waste generation rates are about 0.45-1.30 kg/person/day (including households, commerce and industry).[58]

7.3.2 Existing Solid Waste Management Facilities

(a) Collection Coverage

The four municipal councils and RLAs collect solid waste from about 76% of GSA households. Collection coverage by the four councils is around 90%, ranging from 83% in Lami to 92% in Nasinu. RLAs collect solid waste from about 23% of peri-urban households. Informal settlements do not pay council rates and receive only basic solid waste services. About 20-22% of households bury or burn their waste, and 7-11% of households discard waste to rivers, sea or vacant land. (Source: Census 2007). Dumping and littering are commonplace in informal settlements.

b) Waste Collection and Transport

In the municipal areas, most customers leave their waste for collection in small plastic bins or bags at the curbside or on raised stands. The council collectors load the bins/bags directly into collection trucks. The frequency of collection varies from two or three per week in urban areas, once per week for informal settlements served by skips and infrequently in rural areas. The councils use a total of 18 trucks (mainly 5-7t capacity) including nine compactor trucks and nine open dump trucks to transport the majority of solid waste to the landfill. Some of the trucks are in poor condition, inefficient, expensive to operate and need to be replaced.

The Suva and Nasinu Councils engage private contractors to collect waste from informal settlements using skips. Residents place waste in skips at any time of day. The contractor's skip-lift truck picks up the skips periodically. The skips are not covered, resulting in smells, flies and unhygienic conditions. Waste is often dumped alongside the skip when it is full.

[58] A Feasibility Study of a transfer station in the Suva area. Hydea. December 2009.

Commercial premises and industries make their own arrangements to transport their solid waste to the disposal site. Solid waste from institutions such as schools, hospitals, and government ministries are collected by the municipal councils or by private operators.

(c) Medical and Hazardous Waste

Councils collect general waste from hospitals and clinics. Medical wastes from the main hospitals and quarantine wastes from airports and ports are incinerated. The ash from the Suva hospital is disposed in Naboro landfill. Hazardous and special wastes are disposed in special cells at the Naboro Landfill. Customers are required to pre-notify the site operator of the intended delivery of so that the landfill site operator can ensure that the disposal location is prepared in advance. (Source: NSWMS)

(e) Solid Waste Disposal

Naboro is Fiji's first sanitary landfill. It was developed with EU support and was commissioned in 2005. The landfill receives waste from the four GSA councils (which account for the majority of waste), together with the Navua and Korovou RLAs. In 2007, the four GSA councils delivered about 39,400 tonnes of waste to Naboro, while private contractors delivered about 13,000 tonnes from commercial and industrial premises. The total quantity of waste to the landfill in 2007 was about 53,000 tonnes[59].

Naboro sanitary landfill is operated by a private waste management company and is monitored by the DOE. The Government relies on revenue generated from gate fees to pay the operator. Landfill operation is reported to be very good, and waste is covered with soil on most days. The existing landfill cells at Naboro are expected to be full by 2013. The original lump sum contract (2005 – 2010) was based on disposal of 100,000 tonnes/year of waste. However, the actual amount of waste received in the first five years of operation averaged 57,000 tonnes/year> As a result, Government has subsidized the landfill operation. A new contract based on a lower annual input was negotiated in 2011.

7.4 Problems and Constraints in SWM

Transportation of Waste to Naboro Landfill: Lami is 16km from Naboro, but the other three councils are 22-40 km from the landfill site. Transport of solid waste from Suva, Nasinu, and Nausori councils is very costly because of the long haul distances, unreliable and inefficient trucks. A transfer station is needed to reduce haulage costs and overall costs of SWM in GSA.

Low Cost Recovery: The four GSA councils charge for solid waste management services through general rates or specific garbage collection rates. The small customer base, low collection efficiency (around 30-70%) and high transport costs limit councils' ability to fund solid waste services or to develop new facilities such as recycling or transfer stations. The RLAs have insufficient funds for waste management services in peri-urban and rural areas.

Legislation: The EMA and its supporting regulations substantially improved the legal framework for solid waste management. However, legislative, policy and capacity gaps still remain as follows: (a) Councils are not empowered to set fees at levels necessary to cover the full cost of solid waste services, and; (b) enforcement of the laws by the relevant authorities is poor due to limited resources and mechanisms to monitor, prosecute and fine offenders.

Human Resources: The agencies (DOE, CBH and councils) responsible for regulating and enforcing SWM laws lack the necessary resources to perform their functions efficiently and effectively. Environmental law and policy development capacity is limited, and there is a lack of an effective environmental monitoring or reporting program in place. Environmental testing equipment is not available with the DOE.

[59]National Policy and Divisional Waste Management Operational Strategy, Hydea. December 2010

Community and Industry Awareness: Awareness activities on waste management through the mass media are ad hoc. The draft Integrated Communications Plan for the National Waste Management Strategy prepared in 2009 with SPREP assistance is yet to be finalized. There is a shortage of trained waste managers in Fiji, and a lack of awareness at all levels.

Institutional Arrangements: Waste management is poorly coordinated. The roles and responsibilities of CBH and DOE are unclear and overlap with regard to enforcement. The DOE is responsible for monitoring, and enforcement of the solid waste sector. DOE also supervises Naboro landfill, which leads to self-regulation and potential conflict of interest.

Informal Waste Sector: Informal waste workers operate under health and safety risks, but they provide a valuable service in recycling and reducing waste. Greater recognition, awareness and regulation is needed to protect the livelihoods and safety of the waste pickers.

Lack of Innovation: In general, SWM policies are not effective in encouraging innovation and efficiency. Several of the GSA councils say that Government requires them to deliver as much solid waste as possible to the landfill because of the contractual arrangements with the private contractor. This requirement restricts the councils from pursuing the 3Rs (reduce, recycle, reuse) approach which aims to minimize the amount of waste to be landfilled.

Informal Settlements: Solid waste services in informal communities are limited in coverage and pose a high risk to public health. Dumping and littering is commonplace. Informal households do not pay rates, but represent a high proportion of total HH in the GSA. The lack of any cost recovery limits the council's ability to service them.

Illegal Dumping and Littering: Dumping and littering in the councils areas, and especially in informal settlements, is unsightly, attracts rodents, vermin and mosquitoes and poses risks to public health and economic development. Discarded waste is often washed into drains by stormwater where it causes blockages and exacerbates flooding. Stray dogs disturb bins and bags left for collection. Collection coverage is only 76% and needs to be increased.

7.5 Solid Waste Forecasts and Capacity Assessment

7.5.1 Solid Waste Forecasts

Solid waste projections for GSA were prepared based on the TA consultant's population projections together with waste generation rates and collection coverage projections in previous studies (Hydea, 2009). The quantity of waste generated in GSA is forecast to increase from about 68,000 to 92,000 t/year in the period 2007-2020. The quantity of waste collected and delivered to Naboro landfill is forecast to grow from 56,000 to 73,000 t/year, with coverage increasing from 76% to 79% in 2007-2020. The quantity of solid waste disposed to landfill would be much less if an effective waste reduction program is implemented.

7.5.2 System Capacity Assessment and Gaps

(a) Naboro Landfill

The landfill design concept is based on five development stages, with four stages working progressively up the valley and the fifth stage capping stages 1, 2, 3, and 4. The initial Stage 1 consists of three phases. To date, only Stage 1 Phase 1 has been completed with liner and leachate system, while 75% of Stage 1 Phase 2 has been cleared and excavated. The remaining life of Stage 1 Phases 1 and 2 is 10-14 years. (Source: Hydea 2011)[60]

Based on current waste volumes delivered to landfill, Stage 1 Phase 1 of the landfill is expected to be completely filled with waste within two years and Stage 1 Phase 2 will need to be ready to receive waste in 2013. While a conceptual plan has been prepared for Phase 2,

[60] Review of Naboro Design and Conceptual Development Plan for Stage 1.Hydea. August 2011

detailed survey, site investigations and designs have stalled for lack of funding. Construction of the Stage 1 Phase 2 landfill cells and associated infrastructure is required urgently.

(b) Waste Collection Vehicles

Altogether the four GSA Councils use 18 trucks to transport about 40,000 tonnes/year of solid waste to Naboro Landfill. Some of the trucks are old, inefficient and unreliable. Many of them are small and are unsuited to the long transport distances (32-80km round trip) from the collection areas to Naboro landfill.

The quantity of collected waste is forecast to increase by 20% over the next decade. To meet future growth, the Councils will need to purchase or lease nine new trucks to replace old and inefficient trucks and open dump trucks with compactor trucks. A further three new compactor trucks would be required to meet the growth in collection services. i.e. a total of 12 new compactor trucks would be required by 2020 if a transfer station is not constructed to service Suva, Nasinu and Nausori.

7.6 Medium Term Investment Strategy and Options

7.6.1 Existing Investment Plans

The DLG's medium term capital investment plans for solid waste management were not available. The DLG's budget for 2012 shows an amount of $500,000 for survey works at the Naboro landfill in preparation for Stage 1 Phase 2.

7.6.2 SWM Options

(a) Naboro Landfill

While expansion of the Naboro landfill is the most feasible, sustainable option for the GSA's future waste disposal, waste reduction initiatives described below may reduce the volume of waste to be disposed at Naboro and hence the size of the Stage 1 Phase 2 landfill cells.

(b) Waste Transfer Station

Recent feasibility studies (Hydea, 2009 and 2011) have demonstrated the feasibility of developing a 55,000-60,00t/day waste transfer station near Nasinu to service the Suva, Nasinu and Nausori councils. Since the costs of waste collection and transport to Naboro are twice the landfill operation costs, reduction in waste transport costs offers the greatest scope for savings and efficiency in the overall SWM system.

The transfer station would enable small collection vehicles to discharge their waste to a more efficient large capacity truck/trailer combination for haulage to the landfill. Benefits of using large transfer vehicles include substantially lower transport costs, fewer trips, less traffic congestion, lower labor costs, less wear and tear on roads and lower greenhouse gas emissions. Private trucks, vans and cars can deliver waste to a transfer station more efficiently and safely than to a landfill. Construction of a transfer station provides the opportunity to develop a materials recycling facility on the same site, which could further reduce the quantity of waste to be transported to the landfill.

If a transfer station is developed, fewer collection vehicles would be required by the Suva, Nasinu and Nausori Councils over the next decade, as the collection trucks would not have to spend time travelling to and from Naboro Landfill. Alternatively, the collection trucks would be able to collect additional waste and increase collection coverage.

(c) Source Separation and Integrated Resource Recovery Centers

In December 2011, UNESCAP indicated that it may be interested in funding a pilot project involving source segregation and an Integrated Resource Recovery Center (IRRC) in the GSA. If successful, the pilot could be expanded progressively to cover most of the GSA.

The methodology involves source separation, door to door collection by waste collectors, and transport of waste by small carts or vehicles to a local IRCC. Implementation would involve a public-private partnership between councils, an NGO or private entrepreneur, waste workers and the communities, with UNESCAP providing awareness raising, social intermediation, technical knowhow, training, and capacity building. The proposed project would generate revenue from sale of compost, sale of recyclables, collection fees, and possibly carbon credits. Features of the project design include: low operations and transportation costs; job creation; reduced green house gas emissions; reduced costs for haulage to landfill; reduced landfill area and costs; increased crop production, and; reduced use of chemical fertilizers.

(c) Waste Collection from Informal Settlements

Generally, curbside collection is not feasible for informal settlements because of lack of suitable internal roads or inability of councils to recover SWM costs from residents. In such cases, skip bins may continue to provide the most appropriate form of waste collection. Potential problems with skips include: (a) long distances from houses to the skips encourages indiscriminate disposal; (b) skips are uncovered, resulting in unhealthy conditions, and; (c) skip removal is irregular and often waste is dumped when the skip becomes full. Community based solid waste collection services could improve the management of skip bins, ensure higher collection coverage and more hygienic services.

7.7 Summary of Investment Needs

7.7.1 Naboro Landfill

Development of the Stage 1 Phase 2 Naboro landfill is required in 2012-13. The proposed works will include: leachate system improvements; concrete diversion culvert extension; earthworks; liner installation; leachate collection, drainage and access road construction, at an overall cost of F$2.4-3.6 million.

7.7.2 Transfer Station at Nasinu

Construction of a waste transfer station near Nasinu would provide potential savings in waste transport for the three GSA councils in the order of $25/tonne or $1.6 million per year over the next ten years. The estimated cost of a 60,000 tonne/day transfer station is F$4.00 million, including $1.00 million for land and general items; $0.97 million for civil works and engineering; $0.21 million for static plant and equipment and $1.81million for rolling plant and equipment. The latter includes three haul trucks and trailers ($0.30 million each) which could be phased in as waste volumes increase. The payback period for the transfer station is about 3-4 years. (Source: Hydea, 2011)

7.7.3 Waste CollectionTrucks

Twelve new compactor trucks would be required over the next decade to replace old trucks and open dump trucks and to cater for growth in collection services, if a transfer station is not constructed. The estimated cost of these trucks at F$200,000 each is $2.4 million. If a transfer station is constructed, the life of existing trucks could be extended and the number of new trucks could be reduced to about six, at a total cost of F$1.2 million.

7.7.4 Pilot for Source Segregation and IRRC

UNESCAP is considering a possible pilot project for source separation and development of an IRRC. The pilot would involve: (a) social mapping to select and design the most appropriate

and economic system; (b) engagement of an NGO or private entrepreneur to manage the pilot; (c) development of the pilot IRRC including separation, recycling and composting facilities; (d) provision of two bins to each household involved in the pilot - one for kitchen waste and the other for dry waste; (e) engagement of waste collectors to undertake door to door collection of the waste and transport the waste to the IRRC. Organic waste would be collected every day and recyclables collected one-time per week by a team of two or three people. All of recyclables would be sold to recycling companies.

The pilot would develop a 5 t/day processing plant at estimated cost of F$150,000 to test the concept in GSA. The initial plant would have 2 t/day capacity, with expansion in modules to 3 t/day and ultimately to 5 t/day capacity The preferred location for the initial plant would be the site of an existing council waste processing facility or possibly the transfer station site. Initially, the pilot plant would process market waste and then step out to other areas.

The pilot would need to be operated and tested for at least 2-3 years before scaling up. A further period of at least 5 years would be required to implement the scheme on a GSA wide basis. If the pilot is successful, only 20 to 25% of the collected solid waste (mainly inorganic waste) would need to be landfilled. The proposed approach is expected to save at least half the cost of solid waste collection, transport and disposal.

7.7.5 Summary of SWM Investments

The proposed SWM investments for 2011-2020 are summarized in Table 7.1.

Table 7.1: Solid Waste Management Investments 2012-2020

Description	Years	Total Estimated Cost F$million
Naboro Landfill Stage 1 Phase 1	2012-13	$2.4-3.6 m
Waste Transfer Station at Nasinu	2014-18	$4.0 m
Waste Collection Trucks	2014-18	$1.20 m
3Rs Pilot Project	2014-18	$0.25 m
Scaling up 3Rs Project	2018-20	$3.00 m
Total Investments		**$10.85-12.05m**

7.8 Beneficiaries and Indicative Impacts

The proposed solid waste management investments will benefit all GSA residents and visitors by improving the environment, reducing health risks, improving quality of life and enhancing tourism and trade. Greater coverage and more effective solid water services will also reduce the amounts of discarded waste and potential for blockages of drains and resultant flooding. The reduction in waste contamination of surface and coastal waters will particularly benefit the poorest people who often live in swampy, low-lying, poorly draining areas near the coast.

Development of a transfer station and the UNESCAP pilot project are expected to reduce solid waste management costs for the GSA councils, allowing them to improve their overall services and relieve some of the burden of high solid waste costs currently borne by ratepayers. The two investments will also substantially reduce Fiji's greenhouse gas emissions and offer the potential for carbon financing

The UNESCAP 3Rs project also has good potential for job creation, with an estimated one new job for every tonne of waste recycled. The project also offers the prospect of improved working conditions and status for informal waste workers.

Figure 7.1: Naboro Land Fill and Solid Waste Collection Vehicle

Photos: Clockwise from top left: 1. Leachate pond at Naboro landfill. 2. Compactor/pusher at Naboro landfill. 3. Bulldozer at Naboro landfill. 4. Solid waste collection vehicle.

8 Developing a Medium Term Infrastructure Investment Program

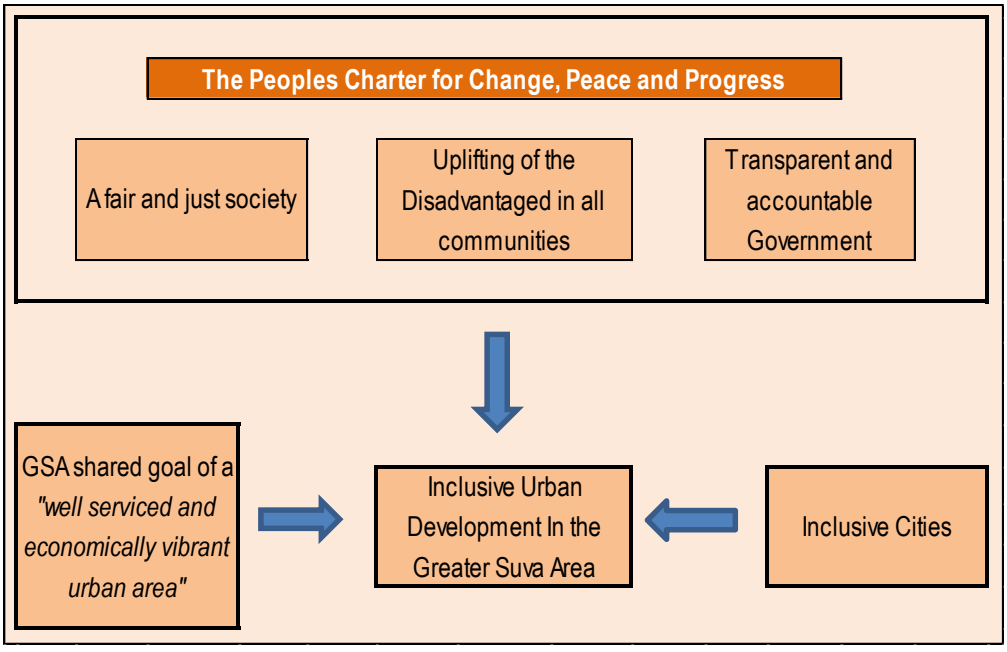
8.1 Introduction

The task of identifying and developing candidate investment options for inclusion in the MTIIP involved reviewing existing corporate plans investment strategies of Government and then through site visits, meetings with key stakeholders and individuals, understand where ongoing concerns lay in relation to the sectors within the scope of this TA. Through this process, and by using a holistic and pro poor approach, a picture of priorities for a MTIIP emerged. This chapter summarises the efforts undertaken in this process.

8.2 Identifying Candidate Projects

From a whole of Government perspective, there is a growing awareness of the need to address a number of emerging problems affecting the broader urban area that comprises the GSA. The framework used to check the relevance of potential projects is summarised in Figure 8.1. It is a framework which draws from the vision of the Fiji Peoples Charter, the landmark ADB Inclusive Cities report and the essence of the TOR for this TA.

Figure 8.1. MTIIP Development Framework



8.2.1 Logic Framework

The rationale for the projects listed in the program for prioritisation can be summarised as follows:

IMPACT – projects which help create and contribute to a vibrant and functionally efficient GSA and in accordance with the vision of the principles of *Peoples Charter for Change, Peace and Progress* and inclusiveness, thereby “ensuring the poor and vulnerable have access to the services they need to better their quality of life.

OUTCOME – an overall improvement in the quality of life of residents, particularly those that are regarded as being poor and vulnerable and have limited access to the many services and facilities available in the broader urban area. This requires a contribution to the local economy (at the local level), improvements to housing and supporting infrastructure services so that both social and environmental benefits are available to all and at a cost which is appropriate.

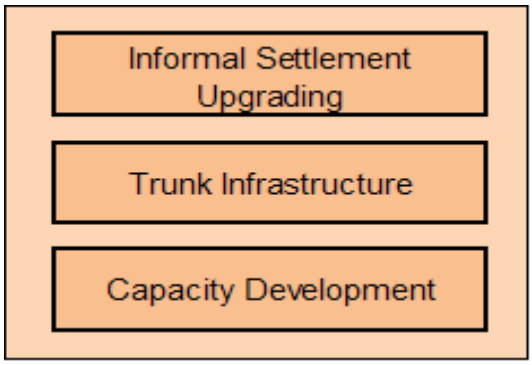
At the broader urban wide level, investment in nominated trunk infrastructure is made so that measurable improvements to the functioning of the targeted urban infrastructure sectors is achieved and provides a flow on benefit to a wide cross section of residents (including the urban poor) and commercial enterprises. In this regard, improvements in these areas contribute to social and economic opportunities for the GSA.

OUTPUTS – a MTIIP which contains a prioritized list of projects which individually fulfil the above requirements (within the scope of the individual project influence) and which can support and enhance the benefits generated by other projects included in the program and which have been identified by stakeholders as being required (ie inclusive).

8.3 The MTIIP Structure

As a result of the number of sectors being considered together with the range of Government Agencies involved in project delivery, it has been determined that a program is best structured around three separate but complementary parts. Figure 8.2 shows this structure conceptually for ease of reference.

Figure 8.2: MTIIP Structure



These parts and the logic for their inclusion are as follows:

8.3.1 PART 1 – Upgrade Informal Settlements (GSA wide)

Description

This project involves either partial or full upgrading of up to ten informal settlements in the four GSA council areas over 5 years (2014-'18). In total, 86 informal settlements have been identified in the GSA. Each subproject (settlement) will include provision of infrastructure, housing and land tenure[61], based on processes similar to those developed by PCN and Government.

The settlements will need to be prioritized according to criteria agreed between the four councils, Department of Housing and NGOs at the Feasibility Study (PPTA) stage.

The selection criteria and implementation arrangements will give councils a greater role in (a) deciding which settlements are selected for upgrading; (b) the standards adopted for

[61] Depending on whether full or partial upgrading of a particular settlement is undertaken, Infrastructure may include water supply, electricity, sewerage, internal roads, drainage, solid waste facilities and earthworks.

infrastructure in the upgraded settlements, and; (c) implementation of the upgrading works (d) the ongoing obligations required of the recipients of the upgrading regarding ongoing municipal rates and service charges. Investments which address the task of upgrading informal settlements either on a GSA wide basis[62] or on an individual settlement basis.

Rationale

The rationale for this part is the vision for rebuilding Fiji in relation to the key principle of "uplifting the disadvantaged in all communities[63]". Informal settlements have been the subject of much research and discussion regarding poverty, disadvantage and vulnerability. It is time to put into action, measures to address this aspect of urban society.

Discussions with Local Government stakeholders have revealed a general lack of engagement in many areas of service provision particularly where household rates and service charges are concerned. While land tenure issues are a contributing factor, the combined effect of poor services and facilities together with a perception that Councils are not providing adequate services helps perpetuate a "so why should I pay" view across many informal communities. It is time to break this cycle.

In breaking this cycle, when community labour based construction is a feature of contracts let, the increase in money circulating within the local community will have a multiplier effect when sustained over a number of years (such as the MTIIP timeframe proposes). In conjunction with the community capacity building programs as per (for example) the PCN workshop model, this will raise the capacity and commitment of households to meet their on-going financial obligations to Councils for rates and service charges. In this respect both the community and Councils are winners.

At the National Government level, the capacity (management, technical, financial and institutional) is limited. The recently developed National Housing Policy focuses on moving away from direct provision of housing stock to an "enabling environment" where informal settlements families are both able *and* willing to contribute their resources to the process requires additional financial resources to generate momentum to help clear the backlog of needs in this area. A well programmed and resourced informal settlement upgrading requirements will assist in addressing a problem that has the effect of suppressing the economic growth potential of many urban and peri urban areas.

At the broader societal level, the combined effect of implementing a program that provides for a *"just and fair society"* and "*an uplifting of the disadvantaged in all communities*"[64] will provide an enduring legacy and benefits for all.

8.3.2 PART 2 – Improve Trunk Urban Infrastructure

Description

Investments which target essential trunk elements of urban infrastructure within the nominated sectors and which have a broader application across the GSA.

Rationale

As has been noted earlier, a combination of inadequate ongoing maintenance and management, poor operating standards and limited capacity to recover service charges and fees has relegated elements of the trunk infrastructure to a standard which requires investment – even without the additional of demands from Part 1 investments.

[62] Including peri-urban areas
[63] See Foreword in Peoples Charter for Change Peace and Progress, 2008.
[64] See reference 32.

Thus the logic for investment in these trunk elements is that certain infrastructure has a broad benefit from an economic and environmental perspective and is required in order that all residents (including the poor and vulnerable) have access to the services and opportunities available in the urban area. In the context of this MTIIP, without ensuring adequate capacity in the trunk infrastructure components, the viability of linking additional demands into the network via the Part 1 investments is absent. That is, in order to achieve beneficial outcomes in Part 1 projects, specific investments must be made in Part 2 projects.

8.3.3 PART 3 – Capacity Development

Description

Investments which develop the capacity of existing policy makers and practitioners within Government, to plan and manage investment budgets, recover service fees and charges, and ensure timely delivery of outcomes on the basis of quantifiable and measureable outcomes within an inclusive operating framework.

Rationale

The capacity of Government is limited in a number of areas and has been well documented in this and previous reports. This phase focuses on projects dealing with capacity development tasks so that (i) programs and projects can be planned and designed properly, (ii) the necessary policy and regulatory conditions are created and implemented, (iii) sufficient human and financial capacity is available to implement and manage the project infrastructure into the future and (iv) adequate capacity is developed for improvements in the program planning, financing, delivery and management aspects going forward.

It is time to improve this situation so that Government can improve conditions in accordance with the Key Pillars in the Peoples Charter for Change, Peace and Progress. This Part of the MTIIP addresses these needs.

8.4 Draft MTIIP

A program of works to an indicative value of F$182 million (US$104 million) has been identified to date. Subject to confirmation of the final components and after review by a cost engineer/quantity surveyor, these costs can be confirmed. Table 8.1 lists this investment program on a sector by sector basis in the period 2014-18.

Table 8.1: MTIIP Cost[(i)] by Sector, 2014-2018

Sector	Indicative Cost (F$million)	Indicative Cost (US$million)
Waste Water	87.7	50.0
Urban Transport	60.5[(ii)]	34.5[(ii)]
Drainage and Flood Protection	13.2	7.5
Solid Waste	5.5	3.1
Capacity Development	15.5	8.8
Total	**182.4**	**104.0**

Note: (i) Costs rounded to one decimal point. (ii) subject to updating following further discussions with DNR.
Source: CDIA consultant estimates and Strategic Planning Office.

Details of project components for each sector have been drawn from Chapters 4-7 and combined to present an overall summary. Table 8.2 contains this summary information.

Table 8.2: Project Components and Preliminary Cost Estimates.

No	Project Name and Components
1	Informal Settlement Upgrading
	• Securing land title/lease • Housing (in case of full upgrading only) • Sewerage connections and reticulation or upgraded septic systems (100% cov.) • Road and footpath upgrading and sealing; drainage works as required • Solid waste facilities (racks for bins or skips); • Water supply and electricity • Earthworks
2	Town Extension (peri-urban) Infrastructure
	• Sewer trunk main extensions with pumping stations (if required) • Sewage reticulation and connections as required. • Sealed roads and footpaths as required. • Drainage and (if required) flood protection works. • Solid waste hard stands for bins (if required).
3	Sewage Network Expansion

	• Sewer trunk main upgrade and extensions
	• Sewage network rehabilitation and sewage pumping station upgrades
	• Sewage reticulation and about 10,700 new connections, including:
	  • Housing Authority sites (3,700 connections)
	  • PRB/Hart (400 connections)
	  • Existing formal areas (1,250 connections)
	  • Private developments(750 connections)
	  • Informal settlements (4,100 connections)

4	Road Network Improvements

	• Grantham/Laucala Bay Rd & Fletcher/Rifle Range Rd intersection upgrade.
	• A CBD traffic master strategy including:
	  • intersection redesigns, replacing Scott and Thompson Street bridges
	  • integrating pedestrian/traffic signals to optimise flow rates.
	• Intersection upgrades on Marine Drive Lami at Lain, Vetaia, Nasevou and Solomoni Street & intersection for the new coastal industrial site.
	• Realignment and widening of marine Drive Navesi Bridge to Llami

5	Public Transport Improvements
	• New Bus Stand developments in Suva & Nausori with road and pedestrian works • TOD structure plan for Nasinu town centre with Bus Stand and pedestrian plan.. • Taxi Stand & Base upgrading programme for Nasinu Town Council. • New pedestrian linkages to key arterials and for access to public transport.
6	Priority Area Drainage and Flood Management
	• Drainage Master Plans for the GSA • Drainage upgrading including pipes, open drains, and pipe flap gates in: • Lami, Suva and Nausori city/town centers; • Other high priority areas of the four councils • Nabukalou Creek flood management in Suva City • Riverbank protection in Lami, new bridge at Quaia • Levee bank, flap gates, and flood pumps in Nausori
7	Solid Waste Transfer Station
	• 60,000 tonne/year transfer station, including: • Site works – excavation, roads, hardstand, fill, ramps, retaining walls, building • Static plant, Loader/shovel, 3 hook lift trucks and 6 collector/compactor trucks
8	3Rs (Reduce, Recycle, Reuse) Pilot Project
	• Construct 5 tonne/day Integrated Resource Recovery Center (IRCC) in stages • Separation (i) green waste at markets & (ii) source separation by households • Door to door collection by waste collectors (biodegradable daily & other weekly) • Transport in small vehicles to a local IRCC and further separation • Recycling and Composting

For Part 3 of the MTIIP, the focus is on capacity development. Table 8.3 lists components proposed.

Table 8.3: MTIIP Needs for Capacity Development

No	Description	Indicative Cost (million)		Proposed Timing
		FJ$	US$	
	Systems Development			
1	Strengthen Fiji Land Information System to provide a "one stop shop" arrangement for all urban development survey and infrastructure plan preparation and purchases	1.0	0.6	By end of year 3
2	Systems to automatically record and monitor service connections and fees collection and improve recovery capacity.	1.5	0.9	By end of year 2
3	Development of public transport demand monitoring systems and capacity to undertake forward planning of sector to ensure continuing viability and mode share.	1.0	0.6	By end of year 3
	HR/Skills/Governance Development			
4	Improve capacity of Government to prepare a uniform, whole of Government GSA urban development master plans for use by all agencies in program budgeting.	1.75	1.0	By end of year 3
5	Introduce systems to reduce the land development process from 3 years.	0.80	0.5	By end of year 3
6	Amendments to Local Government Act to address selected issues raised in the 2008 Fiji Local Government Association submission.	0.10	0.6	By end of year 3
7	Consultancy services during implementation to help with capacity development in project preparation, contract management, operations and management. Skills required may include town planning, engineering, environmental, social, finance.	1.00	0.6	By end of year 7
	Financial Management Development			
8	Program development, implementation and management	0.75	0.4	By end of year 3
9	Infrastructure maintenance programming	0.50	0.3	By end of year 4
10	Improve rates and service fee collection methods.	0.50	0.3	By end of year 3
11	Complementary community awareness programs (all sectors)	0.10	0.6	By end of year 7
	Total	**9.00**	**5.1**	**By end year 7**

The eight projects listed in Table 8.2 were then presented for review and prioritisation at the Stakeholder Workshop

8.5 Prioritisation Process

The 8 candidate projects were prioritized using a participatory decision-making approach and the methodology outlined in the CDIA City Infrastructure Investment Programming & Prioritisation Toolkit: User Manual (CDIA Toolkit). A workshop was held on February 3, 2012 involving key stakeholders (executives and technical officers) from participating Councils (Suva, Lami, Nasinu, Nausori), relevant national government agencies, and NGOs. The

purpose of the workshop was to explain the MTIIP process, present and explain the 8 candidate projects, and select a short list to be considered by the Project Steering Committee for progression to the PFS phase. The presentations from this workshop are contained in Appendix 7 for reference.

Briefly, the prioritization process used the project scoring methodology and list of some 40 questions specified in the CDIA Toolkit. To streamline the process given the limited time available at the workshop, questions involving factual information were completed in advance by the CDIA specialist consultants. The questions involving preferences and judgments were then completed by stakeholders at the workshop. The stakeholders were divided into six groups, representing the four Councils, NGOs and Government agencies, and then the results were pooled. Based on the combined responses, ranking was calculated covering all questions (normalized but unweighted[65]) and for five scenarios, as specified in the CDIA Toolkit. These scenarios correspond to a range of different viewpoints which give emphasis to Pro-poor issues; Quality of Life; Environmental issues; Economic issues; and Financial performance. The results are shown in Table 8.4 (with scores out of 10).

Table 8.4: Summary of Project Scoring via CDIA Toolkit Process

	Project Scores (out of 10)							
	1	2	3	4	5	6	7	8
	Informal Settlements	Town Extension Infrastructure	Sewerage Network Extension	Road Network Improvements	Public Transport Improvements	Priority Area Drainage & Flood Mgmt	Solid Waste Transfer Station	3R's (Reduce, Recycle, Reuse)
Scenarios								
Pro-Poor	8.5	2.8	3.6	4.4	3.8	4.6	3.8	4.6
Quality of Life	4.7	3.4	5.8	4.5	5.3	6.4	3.6	3.4
Environmental	5.8	2.6	9.0	4.4	5.6	4.9	5.1	6.3
Economic	5.6	5.5	7.7	6.7	7.4	6.4	5.6	6.2
Financial	2.3	1.8	3.8	3.6	4.4	2.8	4.5	3.5
All Questions	4.9	3.7	6.1	5.2	5.4	5.4	4.9	4.9

Top
2nd
3rd

The key results of the prioritization scoring process were:

- Pro-poor: Informal Settlement Upgrading scored very highly and is the clear priority under this scenario. No other projects score more than 5 out of 10 for this scenario.
- Quality of Life: Priority Area Drainage & Flood Management is the highest ranking option under this scenario, followed closely by Sewerage Network Extension. Flooding currently has a major impact on quality of life in many low lying areas throughout GSA.

[65] The project prioritization questions are grouped into 5 headline criteria: Project Purpose, Public Response, Environmental Impact; Socio-Economic Impact; Feasibility of Implementation. All headline criteria were given equal weight in the calculation of the combined score across all criteria.

- Environmental: Sewerage Network Extension is the clear priority under this scenario due to its broad beneficial effects on the local environmental and for climate change mitigation.

- Economic: This scenario reflects potential for positive impacts on regional economic development and prosperity. Sewerage Network Extension is the highest ranked project because the sewerage system is currently a constraint on development in many areas of GSA. The transport projects also score highly under this scenario.

- Financial Performance: This scenario gauges the potential financial performance of projects. The Solid Waste Transfer Station project is the highest ranked project because it would produce very large cost savings for Councils and has a clear connection to Council revenue raising, as well as producing broad economic benefits.

- All Questions: The Sewerage Network Extension project is the highest ranked project taking into account all project prioritization questions in the CDIA Toolkit, because of its broadly based benefits to local quality of life, the environment, and economic development potential. The other projects ranked in the top three are Priority Area Drainage & Flood Management and Public Transport Improvements.

Based on the results of the prioritization process, stakeholders endorsed shortlisting the top three ranking projects based on the all-questions score. In addition, based on subsequent discussion and recognizing the critical importance of Pro-poor issues in the future of GSA, stakeholders also endorsed the inclusion of the Informal Settlement Upgrading project in the shortlist. In summary, the shortlist of projects recommended by the Stakeholder Workshop for consideration by the Steering Committee for the priority investment package and preparation of a PFS were:

- Informal Settlement Upgrading
- Sewerage Network Expansion
- Public Transport Improvements
- Priority Area Drainage and Flood Management.

The Steering Committee met on February 9, 2012 to consider the outcomes of the stakeholder workshop and select priority projects for which a PFS will be prepared in Phase II of this study.

The projects selected by the Steering Committee were:

Further discussions were held between CDIA, the consultant team and the Steering Committee on the important issue of informal settlement upgrading. As a result of these discussions, the Steering Committee advised that there was indeed a need to include informal settlement upgrading as a top priority project. Given the complexity of the range of cross cutting matters to be addressed in such a project, it was considered important that (i) the settlement be included in the PCN network for upgrading, and that both drainage and urban transport matters require attention. On this basis, Kalekana Settlement in Lami Town Council was chosen as a pilot project for implementation under this MTIIP.

In summary, the priority projects brought forward in the PFS are:

Project A: Priority Area Drainage and Flood Management due to its direct impact on a number of Council areas and as it was seen as not being addressed by any National Agency.

Project B: Urban Transport Project (including Public Transport Improvements and Road Network Improvements) because it was collectively regarded as a high priority for all

Councils, offered direct benefits to Councils and was not being addressed by any National Agency.

Project C: Upgrading of the Kalekana Informal Settlement due to its relevance for improving the living conditions of the urban poor, providing additional rateable land for Lami Town Council and offering a catalyst for a more widespread program of informal settlement upgrading to address this major issue facing the GSA urban area.

9 Financial Analysis

This Chapter provides an assessment of the capacity of Councils to fund the two priority projects selected by stakeholders at the Stakeholder workshop. Firstly it provides an overview analysis of financial issues and the financing capacity of the agencies involved in developing urban infrastructure and services. Then it undertakes a more detailed assessment of Councils' financial capacities and risks with specific reference to the two priority projects within this MTIIP.

9.1 Overview of financial capacity of key stakeholders

Under current arrangements responsibility for provision and maintenance of urban infrastructure and services predominantly lies with national or local government agencies. In some cases, access roads into new housing developments are constructed with private sector financing, but even in these cases, ongoing responsibility reverts to government. The following sections provide an overview of the current financial status of government agencies involved in urban infrastructure covered by this MTIIP. The analysis is based on the Republic of Fiji 2012 Budget; latest available corporate plans/budgets for government agencies and city/town councils; and various reports including the 2011 International Monetary Fund (IMF) review of the Fiji economy[66].

9.1.1 Municipal Government

There are four municipal governments in the GSA: Suva, Nasinu, Nausori and Lami. As discussed elsewhere in this report, these councils differ in terms of size, population, demographics, and land use patterns, but from a financial perspective, they fall into two groups:

i. Suva City Council is the central commercial and office/employment hub and the only local government area in GSA with city status. It also contains government offices, public institutions and long-established residential areas.
ii. Nasinu, Nausori and Lami Town Councils are the peri-urban growth areas of Suva. They have a mix of residential, commercial and light industrial land uses, but are increasingly dominated by residential development and commuting into central Suva.

A summary of the financial position of each Council is contained in Table 9.1.

Table 9.1: Current Council Financial Position

Item	Suva	Lami	Nasinu	Nausori
Income and Expenditure				
Operating Income ($ million)	$24.0	$1.6	$4.3	$2.2
Operating Expenses ($ million)	$19.5	$1.2	$3.1	$1.9
Operating Surplus (excl. loan repayments) ($ million)	$4.5	$0.4	$1.2	$0.3
Loan Repayments ($ million)	$4.0	$0.1	$0.2	$0.1
Budgeted Capital Investment Program ($ million)	$2.0 - 4.0	$0.5	$1.0 - 3.0	$0.8

[66] IMF (2011) *Republic of Fiji: 2010 Article IV Consultation—Staff Report and Public Information Notice on the Executive Board Discussion*, April 2011.

Item	Suva	Lami	Nasinu	Nausori
Residential/Commercial Rates				
Rate Revenue ($ million)	$15.0	$1.2	$2.5	$0.5
Equivalent revenue per resident	$175	$55	$30	$10

Suva City Council (SCC) has relatively large financial resources. Annual revenue is around $22-25 million, including residential and commercial rates of around $15 million (equivalent to $175 per resident). SCC is budgeting for a small but growing surplus after loan repayments and capital program. Capital expenditure has historically been around $1-2 million per year, but this is projected to rise to around $3-4 million per year over financial years 2010 to 2013. This capital budget covers a wide range of items relevant to municipal activities, including community facilities, roads, footpaths, drains, parks, street lights, markets, bus/taxi terminals, plant/equipment, etc. Capital expenditure is financed by loans (generally from commercial banks) with repayments made from operating surplus. This approach appears sustainable, but in the longer term may lead to accumulating debt liability and vulnerability to financial shocks.

By comparison, Lami, Nasinu, and Nausori Town Councils have modest financial resources. Lami Town Council has a small population and rate base, and very limited financial resources. Current revenue is around $1.6 million (2010 figures), of which $1.14 million is from residential/commercial rates (equivalent to $55 per resident). In 2010, Lami had a small capital investment program of around $460,000, funded from combination of loans ($270,000), grants and public/private partnership for a new market complex.

Nasinu Town Council has the largest and fastest growing population of all GSA councils, but relative to its population, Nasinu currently has a limited financial resources. Revenue is around $4-4.5 million per year, of which residential/commercial rates contribute around $2.5 million (equivalent to $25-30 per resident). Nasinu has a medium-sized but lumpy capital investment program. Capital expenditure rose to around $2.5 million in 2010 and to around $3.3 million in 2011, but is then projected to reduce around $1.3 million for 2012,13,14. The investment program is funded by combination of grants, operating surplus, and loans for major projects. Like other councils, the capital program covers a wide range of community facilities and urban infrastructure.

Nausori Town Council has a smaller but rapidly growing population, and like other councils, has limited financial resources. Revenue for 2011 is budgeted to be some $2.2 million, of which only around $460,000 is from residential/commercial rates (equivalent to $10 per resident). Nausori Town Council is highly dependent on revenue from market fees and commercial stands, and has a large amount of rate arrears. In the short term, the budgeted capital investment program (some $750,000) is expected to be financed predominantly from recovered rate arrears.

In summary, the preliminary assessment indicates that the four Councils in the GSA have modest but stable financial resources, and very limited capacity to increase investment in areas covered by this MTIIP, without (a) reducing investment in other community facilities and infrastructure, and/or (b) increasing revenue, for instance by addressing issues of rates arrears and coverage (see below).

9.1.2 National Government

Based on a review of the Fiji 2012 Budget and supporting information (Economic and Fiscal Update), and IMF analysis (IMF 2011), the current national fiscal position can be summarised as follows:

i) The Fiji economy contracted in 2009 and 2010, but has bounced back with real GDP expected to rise by 2.1% in 2011 and forecast to continue to grow by around 2% per year for the next three years. However the IMF (2011) has observed that recent economic growth "compares unfavourably with other island economies in the region" and while the Fiji economy is showing promising signs of recovery, it "risks continued low growth, greater vulnerability from the concentration of economic activity in tourism, and reduced fiscal space to deal with shocks".

ii) S&P recently upgraded Fiji's credit rating to B from B- (August 2011), in a period when many other countries have received downgrades. The current rating indicates that Fiji is "more vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments" (S&P definition).

Iii) Fiji has had a budget deficit in recent years and this is expected to continue to at least 2014. As a percentage of GDP, the budget deficit is forecast to be 1.9% for 2012 and then reduce to around 1.5%.

iv) According to IMF figures, Fiji's level of external debt is low (around 17% of GDP), but overall central government debt is around 55% of GDP and is one of the highest in the region (IMF 2011). When combined with State guarantees on loans to Government enterprises and other contingent liabilities, total public debt is over 80% of GDP (Budget Supplement 2012). These levels limit the capacity of government to sustainably absorb significant further borrowings.

According to the 2012 Budget, key elements of Government's medium-term fiscal strategy include achieving net deficits below 2.0 percent of GDP; reducing debt as a share of GDP to a sustainable level; prioritising investment in infrastructure to support the delivery of Government services and foster economic & industry development; and improving the quality and effectiveness of expenditure.

In summary, while external debt levels are relatively low, the overall picture is of slow economic recovery; limited capacity to fund major new investment programs from internal sources without reducing funding for other programs; and limited scope for additional borrowings. This assessment will be updated on the basis of further analysis during the PFS stage of the project.

9.1.3 Government agencies

Many aspects of urban infrastructure development are directly funded by the Fiji Government from budget allocation, but over recent years, government reforms have affected several areas covered by the MTIIP. This includes establishment of the Water Authority of Fiji and Department of National Roads.

The Water Authority of Fiji (WAF) was established as separate statutory authority in January 2010 with responsibility for water supply and waste water (sewage). In the longer term, the target is for WAF to become financially independent, but for at least the medium term it is likely to be dependent on government subsidies. WAF has increased revenue collection efficiency from receipts of around $1.1m per month in 2009 to over $2m per month in 2010 (ADB Finding Balance Report 2011), but payments are still only around 50% of billings and cover around 50% of operating expenses. WAF operating and capital investment activities are subsidised by Government grants which totalled around $80 million in 2010 and a similar level

in 2011. It is also noted that while WAF has status as a commercial statutory authority, it has limited financial/borrowing flexibility. In particular, any loan over $100,000 must have Ministerial approval and any capital project over $1.5m must have Ministerial approval. This means that in at least the medium term, it is likely that any significant investment in water supply and waste water would continue to be coordinated through central Government.

The Department of National Roads (DNR) is responsible for Fiji's major road network and other roads declared by the Minister. Although the scope of DNR activities does not currently extend to roads in informal/informal areas nor to ancillary facilities (such as bus/taxi stands, bus terminals etc which are Council responsibility), there may be opportunities for DNR to assist with improving transport access throughout GSA in an inclusive way. All funding for DNR programs is from national Budget allocation, based on a road upgrading/maintenance program developed by DNR with Ministerial guidance on high-level priorities. The option of establishing an earmarked road fund was proposed as part of road sector reforms, but the option has not been implemented.

Financial aspects of opportunities for coordinating the MTIIP with housing development programs of the Department of Housing, Housing Authority, Public Rental Board (PRB), HART, NGOs, etc have not been assessed in detail as part of this preliminary analysis. These opportunities will be followed up during the PFS stage. However it is noted that in the Fiji 2012 Budget, $10 million of funds from the recent EXIM Bank of China loan to Fiji has been allocated to the Housing Authority for a low cost housing project and a further $6 million to PRB for public rental housing.

This $10 million allocated to the Housing Authority will require further clarification to determine whether it is for payment of works carried out at Waila or whether it is for other projects in the program.

9.2 Other financial issues

A range of issues affecting the financial performance of both levels of government were identified during the preliminary financial assessment. In particular, three major issues are revenue collection efficiency; inflexibility in some local government financial arrangements; and gaps/overlaps in the legal framework defining responsibility for urban infrastructure.

Revenue collection efficiency is affected by factors including non-payment or late payment of fees/charges for services (such as water and municipal services), and lost revenue, for instance through illegal connections. Low levels of revenue collection efficiency adversely affect operational revenue/income, profitability, and ultimately the capacity to invest in new and upgraded infrastructure. This is currently a significant issue for all Councils in GSA (where rates arrears currently range from around 30% to more than 50%) and for WAF, as noted above. Attention to mechanisms for increasing revenue collection efficiency, for instance as part of a capacity building program to improve urban governance, could significantly increase the ability of Councils and other agencies to contribute to financing of upgraded urban infrastructure.

The second issue involves inflexibility in aspects of financial management by Councils. Under current arrangements, Ministerial approval is required to "make or amend by laws, impose of revise fees and charges, raise or borrow money, transfer funds from one account to another, pay allowances to Mayors and Councillors, etc" (Local Government Act). While this provides a safeguard against over-borrowing and potential financial instability, it limits the financial flexibility of Councils in responding to increasing costs and emerging urban development challenges. These arrangements and levels of fees, charges and penalties should be reviewed as part of a more wide ranging review and update of Acts and by-laws, as recommended elsewhere in this report.

The final issue involves gaps/overlaps in the legal framework defining responsibility for urban infrastructure. For instance, roads constructed as part of new housing developments can become caught in a complex legal web, with the result that legal ownership/responsibility is unclear and no action is taken to maintain/upgrade vital infrastructure. This issue is discussed in more detail elsewhere in this report in the context of institutional issues affecting urban infrastructure development and the need for updating the overall Local Government legal framework. From a financial perspective, these gaps/overlaps can result in lost revenue for government and councils, and deteriorating assets while responsibility remains unresolved. It can also result in unnecessary risks that negatively impact on the potential for private sector involvement in urban infrastructure in GSA. Potential for private sector involvement/investment will be analysed in more detail as part of the PFS stage of this MTIIP.

9.3 Council Capacity to Finance the Two Priority Projects

The financial capacity of each of the four GSA Councils was assessed for the implementation, operation and maintenance of the two GSA urban development projects addressed in the Prefeasibility Study (PFS) . The assessment was carried out in three parts: (i) estimating the Councils' resource gap for undertaking the two projects; (ii) identifying a feasible funding approach; and (iii) risk analysis and proposed mitigation. The assessment was conducted in Fiji dollars, based on 2011 and early 2012 constant prices.

9.4 Additional Resource Requirement

9.4.1 Estimation Method and Assumptions

To identify the additional resource requirement for a sustainable PFS investment and operation, the existing trends in council cash revenues and costs were first estimated using the income elasticity method. With the councils' 2011 actual budget performance as the baseline, projections of operating revenues and costs were derived for the period starting 2012, through the expected PFS projects implementation (2014-2018) and some ten years beyond that to 2029. To arrive at estimates of the council operating cost with the project undertaken, the existing trend costs were overlaid with estimates for (i) a correction allowance for trend underspending on maintenance; and (ii) incremental operating costs on account of the PFS projects, including an allowance for renewal of the PFS assets.
The key GDP growth assumptions used in making the estimates appear in Table 9.2.

Table 9.2: Fiji GDP Growth Assumptions (%)

Item	2011 (actual)	2012	2013	2014	2015-2019	2020 onward
Asian Development Bank Forecast[a]	1.0	1.2	1.3	ne	ne	Ne
Assumption for Financial Projections[b]	-	1.2	1.3	2.5	3.5	4.5

ne=not estimated
Source: CDIA TA Consultants and ADB
[a] *Asian Development Outlook 2012*
[b] CDIA TA Consultants for 2014 onward

Table 9.3 list other assumptions used in preparing the projections, including the PFS project costs[67].

[67] Details appear in the *Draft Prefeasibility Study Report*.

Table 9.3: Assumptions for Council Financial Projections

Item		Lami	Suva	Nasinu	Nausori
1	**Council Baseline Revenue and Cost**[a]		(F$)		
1.1	Operating Revenue	804,005	21,512,913	3,681,505	1,827,033
1.2	Operating Cost	647,456	16,442,907	3,560,342	1,802,970
1.3	Less: General Administration	211,980	7,194,015	1,335,128	804,588
1.4	OM Cost	435,476	9,248,892	2,225,214	998,382
1.5	PFS Projects Investment Cost[b]	14,497,000	38,271,150	10,875,550	10,404,200
1.6	Projects Implementation Period		2014 to 2018		

2	**Income Elasticity Factors**	(Ratio)	**3**	**Operating Cost Ratios**	(%)
2.1	Trend Revenue Growth (to GDP Growth)	1	3.1	Allowance for Shortfall in Trend OM Spending to Trend OM Cost	10.0
2.2	Trend Growth of GA	1	3.2	Project OM Cost to Project Cost	2.0
2.3	Trend Growth of OMR Cost	0.2	3.2	Project Renewal Cost to Project Cost	3.0
			3.3	Project OMR Cost to Project Cost	5.0
			3.4	Post-Completion Incremental GA to GA	20.0

GA=General Administrative Expenses; OM=recurrent operating [cost] minus GA; OMR=OM cost plus allowance for assets renewal; PFS=prefeasibility study
Source: CDIA TA Consultants and Councils
[a]Items 1.1 to 1.4 refer to the Councils' year 2011 budget implementation expressed in actual cash receipts and payments

Details of the Councils' budget implementation in 2011 appear in Appendix 7 in Volume 2. Table 9.4, below, contains a summary of the projections.

Table 9.4: Summary of Council Financial Projections - Select Years (F$)

Item	2014	2019	2024	2029
Lami				
Operating Revenue	844,836	1,003,401	1,250,420	1,558,250
Operating Cost	696,345	1,504,308	1,592,167	1,687,959
Operating Surplus/Deficit(-)	148,491	-500,907	-341,747	-129,709
Suva				
Operating Revenue	22,605,444	26,848,176	33,457,713	41,694,397
Operating Cost	17,549,055	22,079,832	23,781,123	25,645,953
Operating Surplus/Deficit(-)	5,056,389	4,768,344	9,676,589	16,048,444
Nasinu				
Operating Revenue	3,868,470	4,594,529	5,725,619	7,135,163
Operating Cost	3,816,503	4,864,718	5,215,207	5,598,030
Operating Surplus/Deficit(-)	51,967	-270,189	510,411	1,537,132
Nausori				
Operating Revenue	1,919,819	2,280,142	2,841,472	3,540,991
Operating Cost	1,923,080	2,734,679	2,936,471	3,157,717
Operating Surplus/Deficit(-)	-3,262	-454,536	-94,999	383,275

Source: CDIA TA Consultants

From these projections, three indicators of individual Councils' financial capacity to undertake the PFS projects were estimated. The indicators are described as:

Year 2029 Cumulative Operating Surplus/Deficit (-) quantifies a Council's ability to undertake unaided the PFS investment and operation, in addition to its responsibilities for existing urban infrastructure and services;

Surplus Available for PFS Investment. Intended to quantify the Council's capacity to undertake an exposure to a large single investment, this indicator is 0 if the council has an operating deficit in any one year during 2012-2018, or if the cumulative net operating revenue during 2019-2029 is negative. Otherwise it equals one half of the sum of the annual operating surplus generated during the PFS projects implementation period, so long as that sum equals at least 10% of the council's allotted PFS investment amount, and 0 if it does not;

Annual Average Debt Service Envelope. Intended to quantify the Council's capacity to make debt service payments following the completion of the PFS projects, this indicator is 0 if the council's operations return a deficit in any projection year; otherwise it equals one half of the cumulative surplus during 2019-2029 divided by the number of years (11).

The above indicators can be seen to measure progressive financial capacity from basic to higher. Failure to show a positive result for the first indicator implies the same failure for the other two indicators.

9.5 Results of Assessment

Based on the projections and the financial indicators, two Councils, Suva and Nasinu, are seen to have the capacity to undertake the required maintenance and renewal of the combination of existing and PFS infrastructure assets. The remaining two need additional resources to meet this basic requirement, and therefore also the other two, higher-level capacity requirements for undertaking a sustainable investment in the PFS projects. Suva alone is indicated to have higher-level capacity to undertake a significant investment, of F$15.8 million, in its designated portion of the PFS investment. Suva is also indicated to have the capacity to service at a market interest rate any Government-approved debt financing of the balance, amounting to F$22.5 million, of its F$38.3 million PFS projects allotment. Table 9.5 shows this.

Table 9.5: Councils Financial Capacity Indicators (F$ million)

Item	Lami	Suva	Nasinu	Nausori
Cumulative Operating Surplus/Deficit (-) (2029)	-2.4	150.1	7.3	-0.4
Surplus Available for PFS Projects Investment	0.0	15.8	0.6	0.0
Annual Average Debt Service Envelope	0.0	4.6	0.0	0.0

Source: CDIA TA Consultants

Given that the assumed 2014 GDP growth of 2.5% is a step increase from an estimated 1.3% in 2013 (with 2014 being the scheduled election year), analysis was conducted to test the effect on the councils' financial capacity of a likely variations of variations in GDP growth rates in 2014 and subsequent years. Table 9.6 lists the results of sensitivity testing and shows that, in terms the three progressive financial capacity indicators, no council graduates to a higher funding capacity or alternatively drops to a lower capacity as a result of a likely income change; in that sense the councils' capacities can be said to remain stable.

Table 9.6: Sensitivity Test of the Key GDP Growth Assumption (2.5% in 2014) (F$ million)

Item	Base-0.5%	Base Case	Base+0.5%
Lami			
Cumulative Operating Surplus/Deficit 2029	-3.01	-2.41	-1.77
Surplus Available for PFS Projects Investment	0.00	0.00	0.00
Average Annual Debt Service Envelope 2019-2029	0.00	0.00	0.00
Suva			
Cumulative Operating Surplus/Deficit 2012-2029	133.38	150.15	167.95
Surplus Available for PFS Projects Investment	15.06	15.76	16.48
Average Annual Debt Service Envelope 2019-2029	4.29	4.98	5.73
Nasinu			
Cumulative Operating Surplus/Deficit 2012-2029	4.62	7.33	10.22
Surplus Available for PFS Projects Investment	0.00	0.00	0.00
Average Annual Debt Service Envelope 2019-2029	0.00	0.00	0.00
Nausori			
Cumulative Operating Surplus/Deficit 2012-2029	-1.70	-0.42	0.95
Surplus Available for PFS Projects Investment	0.00	0.00	0.00
Average Annual Debt Service Envelope 2019-2029	0.00	0.00	0.00

Source: CDIA TA Consultants

9.6 Proposed Funding Approach

Facing an estimated shortfall in operating revenue to fund their operating cost in undertaking the PFS projects, two GSA councils will need to turn to the special rate window68. For both councils, the required special rate will fall within the aggregate special rates legal cap of 5 cents in the dollar. Having an estimated cumulative operating deficit, the same councils will have no means of financing their PFS investment except through a grant from the Government. With sufficient self-generated funds to cover operating cost, but not project implementation cost nor debt servicing of any prospective authorized borrowing, a third council is also expected to require a Government grant to finance its PFS investment. This leaves just one council which is estimated to have the internal resources to assume full responsibility for its PFS investment, including the expanded operating cost, on the condition that it can access a Government- sourced or a special Government-approved loan at market interest rate.

With a Government grant of a combined F$35.8 million, investment in needed urban infrastructure can be secured for the country's capital region and economic prime mover, and can be designed to serve as a local government pilot for the People's Charter Fourth Pillar - Enhancing Public Sector Efficiency, Performance, Effectiveness and Service Delivery.

Table 9.7 describes the essential features of a proposed funding approach which meets the criteria indicated above.

[68] Local Government Act Cap 125, Section 59

Table 9.7: Proposed Approach to Funding Councils' PFS Investment

Council	Funding for	
	Council With-Project Operating Cost	**Council PFS Projects Implementation Cost**
Lami	Operating revenue, augmented by an "Urban Infrastructure Sustainable Investment Special Rate" over an estimated 12 year period 2014-2025 at an equivalent of 50% of the Council's total 2012 rates	Government grant (through the Ministry of Local Government budget) for the F$14.5 million cost
Suva	Operating revenue	F$15.8 million from surplus operating funds; the balance of F$22.5 million from a Government loan at market interest rate
Nasinu	Operating revenue	Government grant for the F$10.9 million cost
Nausori	Operating revenue, augmented by an "Urban Infrastructure Sustainable Investment Special Rate" over estimated 7 year period 2014-2020 at an equivalent of 30% of the Council's total 2012 rates	Government grant for the F$10.4 million cost

Source: CDIA TA Consultants

With a Government grant of a combined F$35.8 million, investment in needed urban infrastructure can be secured for the country's capital region and economic prime mover. The same investment can be designed to serve as a local government pilot for the People's Charter Fourth Pillar - Enhancing Public Sector Efficiency, Performance, Effectiveness and Service Delivery. Indicative details of recent Government prioritized budget allocation among sectors appear in Appendix 7 in Volume 2.

Indicative details of recent Government prioritized budget allocation among sectors appear in Appendix 7 in Volume 2.

9.7 Councils' PFS Projects Funding Risk and Mitigation

The risks facing the Councils for successful raising funding for PFS projects implementation, using the approach proposed in Section 9.6 (above) were identified. The risk analysis and proposed mitigation requirements are summarized in Table 9.8.

Table 9.8: Summary Analysis of Councils PFS Investment Funding Risks.

Risk	Risk Level	Remarks / Comments and/or Proposed Mitigation
A. Funding of with project operating cost		
General to all Councils		
Community resistance to the new special rate for reasons of fact or perception related to: (a) poor community information about the investment purpose.	(a) Poor community information about the investment purpose (M).	Improved public information, including upgraded internet use.

		Risk after the mitigation: L
(b) unequal treatment of paying and nonpaying beneficiaries (eg rate payers have to carry the general public beneficiaries, informal settlers and i-Taukei urban villagers).	(b) Unequal treatment of paying and nonpaying beneficiaries (H/M).	1. **Policy dialogue among international development partners and national and local government** for adopting and implementing a strategy and roadmap for integrating informal settlers and traditional urban villages into the rate paying system 2. Measurable progress in that integration program is made an **ODA loan conditionality.** Risk after the mitigation: M/L
(c) Council failings in (i) cost-efficiency (in operation and/or payroll and general overheads); (ii) urban infrastructure and service quantity and quality; (iii) governance relating to financial management and/or procurement; and failings for (iv) unarticulated reasons.	(c) Perceived or real Council failings regarding: (i) cost-efficiency (in operation and/or payroll and general overheads) (M/H); (ii) urban infrastructure and service quantity and quality (M); (iii) governance relating to financial management (FM) and/or procurement (M/H); and for (iv) unarticulated reasons (M). Overall: M/H	1. For improved, evidence -based monitoring and evaluation of budget outcome and outputs by Council and all stakeholders, GSA Councils share cost of consultancy services to correct lack of output/performance based budget execution reporting system linked to the accounting and financial reporting system. 2. Councils cost-shared funding of technical consulting support and capacity enhancement in PF and procurement. Risk after the mitigation: L/M
(d) Where division of responsibilities including finance between national agencies and Councils for infrastructure in urban areas is not clearly articulated (as might be the case with roads and drainage), the uncertainty could encourage ratepayers to feel they are paying twice (through taxes and rates) for one amenity.	(d) Lack of clear understanding about division of Central and Council financial responsibilities encourage ratepayers suspicion about overpaying for urban infrastructure. (H/M)	1. MOF and MSP to work with the GSA Councils to clarify division of responsibilities and organize public information, as an **ODA conditionality.** 2. Improved coordination between national agencies and Councils through joint committees. Risk after the mitigation: M/L
Overall risk rating	**M/H**	**L/M**
Council-specific		
1. Smallest town population; high proportion of informal settlers among the town population (30% plus in 2011 against GSA average of 15%); and, excepting Suva, the highest average rates per town capita ($49.6)[69] 2. With a small community, the Council has at 33% the lowest GA as percentage of operating cost in GSA (average 40% plus) - Lami Town Council.	1. These factors mean Lami Town Council funding risk must be rated H	1. Improved community information about the Council's cost-efficient performance for enhanced community support for the special rate. 3. MLG to provide standby budget support for Lami Town Council with-project OMR cost as an **ODA loan conditionality.** 2. Lami Town Council stands to benefit significantly from initiative to bring informal settlers under rates. Risk after the mitigation: M/L
2. Low rates share in operating revenue (43% against 60% plus GSA average)	Nausori Town Council appears to have room for the special rate, but needs to	Nausori Town Council outreach campaign to increase rates base and

[69] Based on population data in the Medium Term Infrastructure Investment Report Volume 2, February 2012.

and high share of general overheads in operating cost (45%)- Nausori Town Council	understand the reason for the low rates share (M)	win special rate support Risk after the mitigation: L
Overall risk rating	**H/M**	**M/L**
B. Funding of project implementation cost		
General to all Councils/ Departments		
1. "Government adopted a new approach [to allocating budget expenditure in 2012; this assigns expenditure ceilings or budget envelopes to each Ministry and/or Department. In determining the budget envelopes, consideration was given to the capacity and responsiveness of agencies to effectively implement budget programmes and activities."[70]	The budget allocation principle puts agencies in competition with each other to be the most effective budget implementer. It creates uncertainty for financing of traditional multi-sectoral investment program implementation in integrated urban development. (M/H)	**Policy dialogue among international development partners and national and local government** to secure priority for integrated urban development in GSA, and in particular for the PFS projects. A sector strategy and roadmap link to the People's Charter is highlighted. Building sector management capacity in roads and drainage is included in the dialogue on capacity development TA. Risk after the mitigation: L/M
2. The Councils and the newly formed Fiji Road Authority (FRA) will have similar responsibilities for urban roads, introducing uncertainty.	Successful fund raising for PFS projects implementation will require that FRA and the Councils coordinate efforts in the PFS projects. (M/H)	Clarification of the roles of FRA and the Councils on urban roads to be included in **the policy dialogue** under B1 and made an **ODA loan conditionality** for the PFS projects. Risk after the mitigation: L/M
3. Position of drainage and flood management within integrated urban development needs to be upgraded under a proposed new Urban Drainage and Flood Management Department in the MLGUDHE.	Clear division of responsibilities between the new Department and the GSA Councils is needed. (M/H)	Clarification of the roles of the new MLG department and the Councils on urban drainage and flood management is to be included in **the policy dialogue** under B1 and made an **ODA loan conditionality** for the PFS projects. Risk after the mitigation: L/M
Council-specific		
Lami Town Council's need for $14.5 million grant to participate in the PFS projects implementation.	Lami Town Council's financial capacity is constrained. (H/M)	Government agrees to making a grant to Lami Town Council as an **ODA loan conditionality.** Risk after the mitigation: M/L
Suva City Council's need for $22.5 million loan financing to participate.	Government approval for borrowing necessary. (M/L)	Government agrees to making a sub-loan to Suva City Council as an **ODA loan conditionality.** Risk after the mitigation: L
Nasinu Town Council's need for $10.9 million grant to participate.	Nasinu Town Council's financial capacity for investment is constrained. (M/H)	Government agrees to making a grant to Nasinu Town Council as an **ODA loan conditionality.** Risk after the mitigation: L/M
Nasauri Town Council's need for $10.9 million grant to participate.	Nausori Town Council's financial capacity for investment is constrained. (M/H)	Government agrees to making a grant to Nausori Town Council as an **ODA loan conditionality.** Risk after the mitigation: L/M
Overall risk rating	**M/H**	**L/M**

Note: H = High, **S** = Substantial, **M** = Moderate, **L** = Negligible or Low.

[70] Republic of Fiji. 2011. *2012 Economic and Fiscal Update: Supplement to the 2012 Budget Address*

9.8 Conclusion

Overall, the financial assessment indicated that under current conditions, Councils have limited capacity to fund major new investment programs from internal sources without reducing funding for other programs; and limited scope for additional borrowings. It also identified the need for attention to issues such as revenue collection efficiency, and the potential for beneficial reforms to the legal and financial management framework for urban infrastructure in GSA.

10 Implementation Arrangements

The three priority programs will require an implementation arrangement which (i) ensures a timely delivery of the project, (ii) ensures capacity building of local counterparts for the ongoing operations and maintenance of the project as well as, a lasting capacity to plan, prepare, implement and perform ongoing operations and maintenance obligations to ensure the life of the project investment is maximised and the full benefits are captured. For this reason, while individual skills may vary, the basic approach remains consistent between projects.

10.1 Overall Approach

The preferred approach should include a three functional arrangement including:

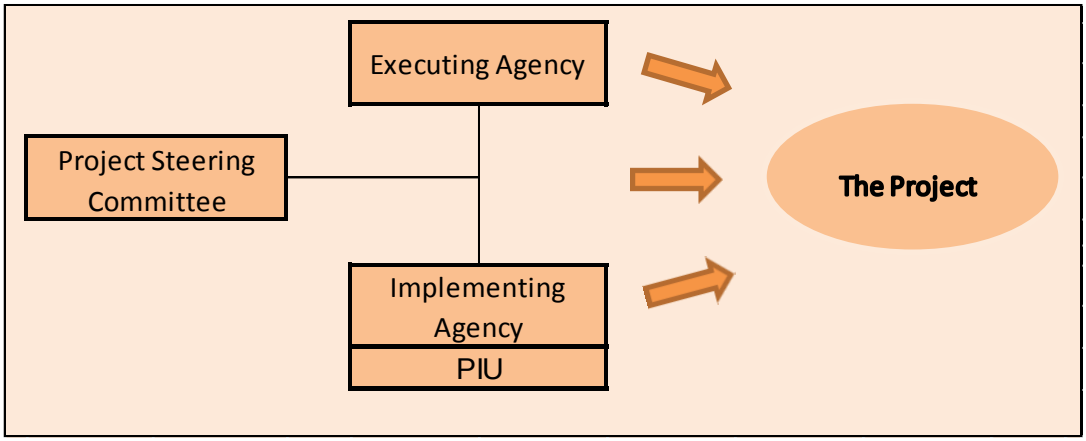
(i) Executing Agency (EA) – responsible for the overall delivery of the project and accountable to Government.

(ii) Steering Committee (SC) – responsible for providing policy and relevant technical advice, contract expenditure approvals and general guidance to the implementing agency in the daily work program required to deliver the project.

(iii) Implementing Agency (IA) – a nominated Agency with sufficient capacity to prepare and implement the project under the guidance of the SC). Within this Agency, a project implementation unit (PIU) is established for the purpose of undertaking the daily work plan required to deliver the project. The PIU will be responsible for undertaking the project preparation and design, contract management, community consultation and project financial accounting/management of the project.

An indicative organisation structure for this arrangement is contained in Figure 10.1.

Figure 10.1: MTIIP Implementation Organisation Structure



10.2 Implementation Arrangements

An implementing organisation structure is only as effective as the capabilities of the team and individuals within that team. As different projects will require varying skill sets, the final composition of the teams will be dependent on project specifications. For the three priority projects under this this TA, the following skill sets are likely to be required. Final determination will be required once all the necessary detailed assessments have been completed.

For the Executing Agency:
The relevant Departmental permanent secretary or his delegated nominee together with the necessary team of assistants to (i) ensure overall project delivery is in accordance with agreed quality, time and financial conditions.

For the Steering Committee (SC):
Council SAs, relevant Council section Directors or lead technical staff and financial staff 9one from each council relevant to the project), relevant Director or nominated delegate from the Government Department having a direct legislative lead role in key decisions to be made during project preparation, implementation and on going operations and maintenance.

The Steering Committee will have overall responsibility for ensuring the Implementing Team delivers the project according to the conditions agreed to at the outset.

For the Implementing Agency (IA):
The, IA will be chosen on the basis of the relevant resident capacity to undertake and deliver the tasks required to deliver the project. Due to the limited capacity of Councils, a Government department would normally fulfil this role. It is within this department that the PIU is established and adequately resourced to perform its obligations within the conditions of the project requirements.

Membership of this PIU (ie the project team) will be on a needs basis and technical capacity and technical relevance basis. Where there is a lack of adequate skills, external skills (national or international) will be contracted to ensure delivery of the project is in accordance with best practice and that a skills transfer occurs to the resident team.

Typically, a PIU will include the following personnel:

- PIU Director – overall responsibility for the Unit
- PIU Manager – responsible for the daily work plans and overall team deliverables
- Technical team members as required
- Seconded technical experts as required
- Financial/accounting team members as required
- Community consultation members as required
- Clerical staff as required

The staffing structure for the delivery of the priority projects under this MTIIP need to be determined when details of specific projects and funding arrangements are known in more detail.

11 Further Studies

11.1 Introduction

Based on the analysis undertaken in this TA, additional analysis will be required in the FS to prepare the projects for implementation.

11.2 Further Studies

A range of tasks and analyses will be required to confirm the project details for implementation. As much of the information required either does not exist or is significantly out of date, much will have to be sourced from primary sources. Table 11.1 summarises the essential components of this additional work.

Table 11.1: Additional Work Required for Project Preparation

Project No	Project Name	Description of Additional Work
1	Informal Settlement Upgrading	• Establish a Project Preparation Unit and Steering Committee for project preparation • Prepare Housing Sector Investment Plan and obtain approvals from Ministry of Local Government, other government agencies, municipal councils and higher authorities • Undertake Project Preparatory Technical Assistance including a Project Feasibility Study covering: engineering, environmental, social, resettlement, economic, financial, institutional and implementation aspects. • Prepare detailed feasibility studies for three sample subprojects for the three highest priority settlements. (detailed feasibility studies for other subprojects to be prepared during project implementation) • Prepare Project Administration Manual for project implementation • Ensure that the project investments are included in the Ministry of Local Government's budget for 2014-'18 • Prepare bid documents for implementation of subprojects in the three highest priority settlements (bid documents for other subprojects to be prepared during project implementation)
2	Town Extension (Peri-urban) Infrastructure	• Establish a Project Preparation Unit and Steering Committee for project preparation • Prepare Scheme Plans for proposed town boundary extensions and obtain approvals from Department of Town and Country Planning, other government agencies, municipal councils and higher authorities • Undertake information campaign and consultations to inform the public and local communities about the project • Undertake Project Preparatory Technical Assistance including a Feasibility Study for the project covering: engineering, environmental, social, resettlement, economic, financial, institutional and implementation aspects • Prepare the Project Administration Manual for project implementation • Ensure that the project investments are included in the 2014-'18 budgets of the relevant government agencies • Prepare bid documents for implementation of the highest priority subprojects (bid documents for other subprojects to be prepared during project implementation)

Project No	Project Name	Description of Additional Work
3	Sewerage Network Expansion	• Establish a Project Preparation Unit and Steering Committee for project preparation • Undertake Project Preparatory Technical Assistance including a Feasibility Study for the project covering: engineering, environmental, social, resettlement, economic, financial, institutional and implementation aspects • Undertake geotechnical investigations at sites of major structures and along alignments of selected pipelines • Prepare the Project Administration Manual for project implementation • Ensure that the project investments are included in the Water Authority of Fiji's budget for 2014-'18 • Undertake topographic surveys and produce plans at 1:500 scale with 0.5m contours for priority subprojects • Prepare bid documents for implementation of the highest priority subprojects (bid documents for other subprojects to be prepared during project implementation)
4	Road Network Improvements	• Prepare detailed designs for the Queens Road realignment and widening. • Prepare detailed intersection designs for Marine Drive, Fletcher and Granstham Road intersections for construction. Where necessary, undertake relevant traffic modeling and geotech analysis. • If relevant geotechnical data does not exist, undertake a detailed geotechnical analysis of the Harris Road alignment, Suva Bus Stand redevelopment site and at Stinson,Scott and Thompson bridge sites. • Undertake detailed modeling of the Stinson/Harris – Rodway/Thompson one way couplet arrangement to confirm the optimum design of intersections and signaling arrangements. Prepare detailed designs for construction. • Prepare detailed designs of new bridges for construction. • Undertake an assessment of the impact of the widening of the eastern footpath in Rodwell Street to better accommodate pedestrian traffic flows at peak times. • Undertake detailed assessments of roadway and associated footpath requirements in informal settlements as these settlements are identified for upgrading. • Prepare cost estimates for the above project components. • Prepare documents for the tendering of the above project components.
5	Public Transport Improvements	• Prepare detailed design of new Suva Bus Stand including bus access egress plans. • Prepare detailed site designs for Nasinu taxi stand and base program. Undertake community consultation as required. • Prepare detailed pathway designs for Nasinu pedestrian pathway program. Undertake community consultation as required. • Prepare a Town Center (CBD) structure plan for Nasinu with provision for a bus stand, taxi base and pedestrian facilities integrated into the structure in accordance with the principles of Transit Oriented Development (TOD). • Prepare plans for bus stops and taxi stand upgrades in informal settlements as the order of settlement upgrading dictates. • Prepare cost estimates for the above project components. • Prepare documentation for the tendering of the above project components.
6	Priority Area Drainage and Flood	• Establish a Project Preparation Unit and Steering Committee for project preparation Prepare topographic plans for the four council areas with 0.5m (preferably) or 1.0m

Project No	Project Name	Description of Additional Work
	Management	contours Prepare inventories of existing drains in the four council areas Undertake condition assessments of existing drains in the four council areas Prepare Drainage Master Plans for the four GSA councils • Undertake information campaign and consultations to inform the public and local communities about the project • Undertake Project Preparatory Technical Assistance including a Feasibility Study for the project covering: engineering, environmental, social, resettlement, economic, financial, institutional and implementation aspects • Undertake geotechnical investigations at sites of major structures and along alignments of selected drains • Prepare the Project Administration Manual for project implementation • Ensure that the project investments are included in the relevant Ministry's budget for 2014-'18 • Prepare bid documents for implementation of the highest priority subprojects (bid documents for other subprojects to be prepared during project implementation)
7	Solid Waste Transfer Station	• Acquire land for development of the solid waste transfer station • Establish a Project Preparation Unit and Steering Committee for project preparation • Undertake information campaign and consultations to inform the public and local communities about the project • Undertake 1:500 scale topographic survey with 0.5m contours of the proposed waste transfer station site and adjoining affected areas, including access road alignments • Undertake Project Preparatory Technical Assistance including a Feasibility Study for the project covering: engineering, environmental, social, resettlement, economic, financial, institutional and implementation aspects • Undertake geotechnical investigations at sites of major structures • Prepare the Project Administration Manual for project implementation • Ensure that the project investments are included in the relevant Ministry of Local Government's budget for 2014-'18 • Prepare bid documents for implementation of the transfer station (bid documents for rolling plant to be prepared during project implementation)
8	3Rs Solid Waste Pilot Project	• Undertake 3Rs promotional workshop for municipal councils, other relevant government agencies and the private sector • Identify and secure land for the Integrated Resource Recycling Center • Establish a Project Preparation Unit and Steering Committee for project preparation • Undertake information campaign and consultations to inform the public and local communities about the project • Undertake Project Preparatory Technical Assistance including a Feasibility Study for the project covering: engineering, environmental, social, resettlement, economic, financial, institutional and implementation aspects • Undertake geotechnical investigations at sites of major structures • Prepare the Project Administration Manual for project implementation

Project No	Project Name	Description of Additional Work
		• Ensure that the project investments are included in the relevant Ministry of Local Government's budget for 2014-'18 • Prepare bid documents for implementation of the highest priority subprojects (bid documents for other subprojects to be prepared during project implementation)