

5.0 INFRASTRUCTURE AND UTILITIES DEVELOPMENT PLAN

5.1 Introduction

The Infrastructure and Utilities Development Plan serves as the backbone of the city's physical development plan. It shall focus on the development of transport links to improve internal and external road systems as well as the development of public utilities in response to the service's demands.

This plan will ensure the provision of the necessary support infrastructure facilities that will help achieve the development vision and thrusts of the City. Investments shall focus on the provision and rehabilitation of adequate infrastructure and utilities systems.

5.2 Goals and Objectives

Goal

The overall goal of the Plan is to provide an efficient, timely, economical and sustainable utility and infrastructure system in response to the demands of the population as well as the envisioned economic development strategy for the City. It is likewise intended to provide effective development plan recommendations for specific sub-sectors as follows:

- Ensure that the mobility of people, goods and services are increased through the provision of an efficient road and transport network;
- Provide the City with adequate and efficient potable water supply and services;
- Provide adequate, efficient and least-cost drainage/sewerage system;
- Provide adequate, stable and reliable power supply services for the demand of the increasing population and expansion of economic activities; and
- Establish an efficient communication system for the whole City.

Objectives

Infrastructure

- To provide effective, efficient and economically viable internal and external transport linkages and to strengthen the link between San Jose del Monte and other cities and municipalities;

- To address access and circulation problems, decongest and increase the service levels of the roads especially in the neighbourhood service centres;
- To provide more farm to market roads and enhance the accessibility of the far-flung barangays; and
- To provide adequate public transport services and facilities which will improve the existing transportation system.

Utilities

- To ensure accessibility and efficient distribution of potable water to all households and establishments in all barangays;
- To provide and increase Level III water supply service in terms of water availability, water quality and system pressure, in particular to the urban centres;
- To ensure the rationale use of groundwater and proper monitoring of its use;
- To provide adequate storm drainage infrastructure for all flood prone barangays (prioritising Barangays Sapang Palay and San Manuel) especially built-up areas and all major roads to allay the risk of flooding;
- To implement strategies that will increase the effectiveness of drainage and sewerage systems;
- To ensure adequate supply and equitable distribution of power to all households and establishments in all barangays;
- To expand present communication services and increase coverage to boost economic opportunities in the City; and
- To increase telephone service coverage, provide adequate calling stations and improve postal service through the establishment of postal facilities and provision of adequate post office staff.

5.3 Development Strategies

The Infrastructure Development Plan shall be hinged on the following strategies:

• Roads and Transport

- Improvement of roads and bridges by securing the land and sourcing funds or assistance from the national and provincial government;
- Provide an effective road hierarchy and signage system for easy travel for the residents and visitors;
- Construct new and upgrade existing roads to a dependable, all-weather system;

- Convert all bridges into permanent structures to provide accessibility to activity centres, far-flung barangays and neighbouring municipalities;
- Provision of additional road links to connect the disjointed portions of the road system to supplement the existing road network;
- Continuously maintain all existing roads and bridges to facilitate the delivery of basic services and lessen hauling expenses; and
- Provision of a central multi-modal terminal for public transportation.

- **Water**

- Expand and modernise Level 3 water systems which may involve new construction (for those who rely on point well sources) or taking over existing private water systems within residential subdivisions to improve service delivery;
- Monitoring of illegal connections, monopolised use of water resources and unwarranted destruction and contamination of watersheds and other water sources;
- Encourage proper water supply system management and introduce watershed/forest management programmes (i.e. reforestation, protection, conservation and enhancement) to ensure the availability of water supply; and
- Conduct information and education campaigns on water resource use and watershed/forest management (conservation and protection).

- **Drainage & Sewerage**

- Improve the drainage planning capabilities of the CPDO and CEO (City Engineer's Office) through advanced technical training and provision of support computer systems; and
- Conduct information dissemination / education campaigns and impose stricter measures on waste management, environmental degradation and illegal settling along waterway easements.

- **Power**

- Explore alternative sources of electricity to supplement the existing power service;
- Encourage/support MERALCO's expansion and efforts to deliver and improve its service to the barangays;
- Encourage the development of small service co-operatives to cover the unpowered barangays;
- Promote continuous maintenance and upgrading of present services to ensure efficiency of power distribution in currently energised areas at all times;

- Promote and encourage energy conservation to ensure stable and reliable power supply; and
- Continuous liaison with MERALCO on the maintenance of distribution lines and the clearing of encroachment at ROWs.

- **Communication**

- Expand telecommunication systems by encouraging investments from service providers;
- Upgrade existing communication services to ensure efficiency and accessibility; and
- Encourage the entry of other communication service providers.

5.4 Programmes and Projects

5.4.1 Roads and Transport

The roads and transport development programme will increase accessibility to interior barangays and greatly enhances the mobility of people and produce. The projects shall be initiated by the City government, the provincial government, the Department of Public Works and Highways and sometimes the private sector.

- Development of a system of road hierarchy beginning with the imposition of the following road width requirements:
 - 15 to 30m for major roads
 - 10 to 15m for minor roads
 - 3.5 to 10m for service roads
- Construction of monuments in the form of welcome arches at entry points to physically define the boundaries of the City;
- Road widening and concreting of the following roads;

Table 5.1 Roads for Widening

NAME OF ROAD	FROM	TO	CLASSIFICATION
Quirino Highway	20m	30m	major road
Gaya-gaya provincial road	12m	20m	major road

F. Halili Avenue	10m	20m	major road
Igay Provincial Road	6m	20m	major road
San Jose Marilao Provincial Rd	10m	20m	major road
Sapang Palay Proper-Sta. Maria-Marilao	6m	20m	major road
Poblacion-Sapang Palay Proper	6m	20m	major road
Bagong buhay Ave. (from Minuyan Road 2 to Sampol)	12m	20m	major road
From Poblacion to Gumaoc-City Hall	6m	15m	minor road
From Cadiz Road	6m	15m	major road
Francisco Main Road	10m	15m	minor road
San Jose Montalban Road	6m	20m	major road
Bocauae Road	8m	20m	major road
Kaypian-Igay	6m	15m	minor road
San Jose-Tigbe	5m	10m	major road
MRC Road	6m	20m	service road
Citrus Road (cemetery)	5m	10m	service road

all alleys		minimum of 3.5m	service road
all barangay roads		8m	minor road
Farmview alternate road	6m	15m	major road
Road 1 expansion	8m	20m	major road
Asuncion Abela Municipal Road		15m	major road
NPC Road		15m	major road

- The connection of disjointed roads and the provision of alternative routes through the proposal and opening of the following City roads:

Table 5.2 Proposed Roads

NAME OF ROAD / LOCATION	PROPOSED WIDTH
Skyline diversion road (Gumaoc East) (Gumaoc – Tungkong Mangga)	15m
Amihan Alternate Road	15m
Paradise Drive	20m
Tungko – Likaw-likaw Drive (proposed) <ul style="list-style-type: none"> • Alternate route from Quirino Highway through Araneta Ave. to Likaw-likaw Road (to pass through Araneta Property) 	20m
Quirino Highway-Tungkong Mangga by-pass road (through Araneta Property)	20m
Road extension to connect Partida Road to Linawan Road (Muzon – Dulong Bayan)	15m

Road extension to connect Talisay Road to Linawan Road (Sapang Palay – Dulong Bayan)	15m
Construction of new road to connect San Pedro St / Morning Glory Subdivision to Bagong Buhay Avenue (Poblacion – Dulong Bayan – Sapang Palay)	20m
New road to connect Bocaue Provincial Road, Poblacion-Gumaoc city Road and NPC Road (between Quirino Highway and the San Jose-Marilao Road) • Includes the connector road from this new road to the Poblacion	15m
New road from Quirino Highway to access Barangay Minuyan Proper, Kaybanban, San Roque and Paradise III	20m
Road extension to connect Partida Road to Linawan Road (Muzon – Dulong Bayan)	15m
Opening of roads in the southwest periphery of SJDM to provide alternative routes to Caloocan City (Gaya-gaya)	10m

- Construction of new and expansion of existing bridges;

Table 5.3 Proposed New Bridges

LOCATION	WIDTH
Bagong Buhay – Citrus	6m
Paradise 3 – San Roque (Kantulot)	6m
Parang Bridge	4m
Tubigan Bridge – Marilao River	12m
Harmony Bridge to Bagong Silang	12m
Panaclayan – Bagong Silang Bridge	12m
Gaya-gaya – Graceville Bridge	6m

Table 5.4 Bridges For Expansion

NAME	WIDTH	
	PRESENT	PROPOSED
Sapang Alat	6m	20m
Tialo Bridge	6m	20m
Cadiz Bridge	3m	6m
Partida – Linawan (E. Sarmiento)	3m	6m
Pastol Bridge	6m	20m
Dulong Bayan Bridge	2m	12m
Kaytutong Bridge	6m	12m

- Contain the groups of public utility vehicles servicing the City in a multi-modal public transport terminal at Tungkong Mangga intersection of Quirino Highway to serve as a terminus for public tricycles, inter-municipal busses and public utility jeeps;
- Upgrade existing and construction of new terminals for public tricycles and utility jeeps adjacent to each neighbourhood activity centre (i.e. Poblacion, Sapang Palay, Muzon, etc.) in order to meet the future transport needs within the City; and
- Develop planting strips along national and local roads to encourage pedestrianisation and to help promote SJDM as the first Evergreen City in Bulacan.

Figure 5.1 illustrates the location of the proposed roads for widening as well as the proposed new roads and bridges.

5.4.2 Utilities

The provision and upgrade of utility systems are primarily the responsibility of the city government.

Water

- Expansion and upgrading of all water supply systems to Level III to lower charges, meet the demands for potable water in the service area and improve the water service (i.e. quality, availability, pressure, etc.);

- Develop new water sources (i.e. deep wells, storage facilities, pump stations), expand water treatment facilities and install additional transmission and distribution lines to the un-serviced areas
- Develop training programmes for residents of Barangays Tungkong Mangga, Kaybanban, San Roque, Paradise III and San Isidro on the establishment of individual potable water supply systems. Periodic training seminars aim to encourage self-help in the construction of water facilities. Training shall involve individual water system construction (i.e. spring development, water pumps, etc.) operations and regular maintenance.

Drainage & Sewerage

- Ensure that all households and establishments have sanitary toilets and septic tanks;
- Conduct a technical training programme for the CPDO and CEO personnel in the field of drainage planning and design;
- Survey flood prone areas and design a Storm Drainage Master Plan for the City; and
- Improve the drainage system through the construction of underground reinforced concrete pipes in all national, provincial and major city roads and the construction of open canals for all minor roads.

Power

- Upgrade and expand power services and facilities to the un-energised areas of Tungkong Mangga, Ciudad Real, Minuyan Proper, Kaybanban, San Roque, Paradise III and San Isidro; and
- Illuminate all streets to ensure efficient and safe travel within the City:
 - a. Lighting along the centre island for Quirino Highway and all major roads; and
 - b. Lighting on at least one side of the road for all secondary roads.

Communication

- Support the service expansion plans of Digitel to the 41 northern and eastern barangays presently not provided with telephone lines; and
- Encourage other service providers to invest in CSJDM to prevent the monopoly of a single service provider through tax, locational and other incentives.

5.5 Summary of Programmes and Projects

Table 5.5 presents a summary of Infrastructure and Utilities Development programmes and projects.

Table 5.5 Summary of Programmes and Projects

Code	Project Title	Location	Fund Source	Timing	Total Project Cost (Php)	City Counter-Part (Php)
ROADS AND TRANSPORT						
	Multi-modal Transport Terminal	Tungkong Mangga	City, private sectors and international funding agencies	MT	11,200,000	
IF – 2	Satellite Transport Terminal	Poblacion, Sampol Market, Muzon, Mulawin, Kaypian (near Quirino Highway)	City, private sectors	ST	6,720,000	6,720,000
IF – 3	Road Construction	Various Barangays	City, DPWH, Provincial	LT	146,855,520	89,530,684
IF – 4	Road Widening and Concreting	Inter-barangay	City, DPWH	ST-MT	173,322,880	118,781,993
IF – 5	Bridge Construction	Various Barangays	City, DPWH, Provincial	LT	30,576,000	8,255,520
IF – 6	Bridge Widening and Concreting	Various Barangays	City, DPWH, Provincial	MT	21,252,000	3,187,800
IF – 7	Construction of Welcome Arches	Ciudad Real (along Quirino Highway), Muzon, Dulong Bayan, Sapang Palay, Minuyan, San Isidro	City	LT	2,419,200	2,419,000

Table 5.5 Summary of Programmes and Projects (cont.)

IF – 8	Roadside Landscaping	Various Barangays along the main roads	City	ST-MT	16,800,000	16,800,000
WATER						
IF – 9	Level III Water Supply Development	Various Barangays	City, DPWH, International Funding Agencies	ST-LT	4,480,000	1,344,000
IF – 10	Expansion of Transmission and Distribution Lines	Tungkong Mangga, Kaybanban, San Roque, Paradise II, San Isidro	DPWH	MT	3,248,000	974,400
IF – 11	Training for the construction, operation and maintenance of Individual Water System	Tungkong Mangga, Kaybanban, San Roque, Paradise II, San Isidro	City	ST-MT	526,400	157,920
DRAINAGE AND SEWERAGE						
IF - 12	Information Drives	Various Barangays	City	ST-LT	526,400	110,544
IF – 13	Technical Training Programme		City	ST	526,400	110,544
IF – 14	Topo Survey	All Barangays along the main roads and in flood prone areas	City, DPWH, International Funding Agencies	ST-LT	560,000	117,600
IF – 15	Master Plan	All Barangays along the main roads and in flood prone areas	City, DPWH, International Funding Agencies	ST-LT	2,240,000	470,400

Table 5.5 Summary of Programmes and Projects (cont.)

IF – 16	Construction of underground RCP	All Barangays along the main roads	City, DPWH, International Funding Agencies	ST-LT	1,982,400	416,304
POWER						
IF - 17	Expansion of Power Services	Tungkong Mangga, Ciudad Real, Minuyan Proper, Kaybanban, San Roque, Paradise III, San Isidro	City, Meralco, Provincial	ST-MT	2,184,000	
IF - 18	Illumination of City Streets	All Barangays along the main roads	City, Meralco, DPWH, International Funding Agencies	ST-MT	1,680,000	352,800
COMMUNICATIONS						
IF - 19	Expansion/provision of telephone lines and facilities	Northern and Eastern Barangays	Digitel, Meralco	MT-LT	8,904,000	
TOTAL COST					427,099,200	249,749,709