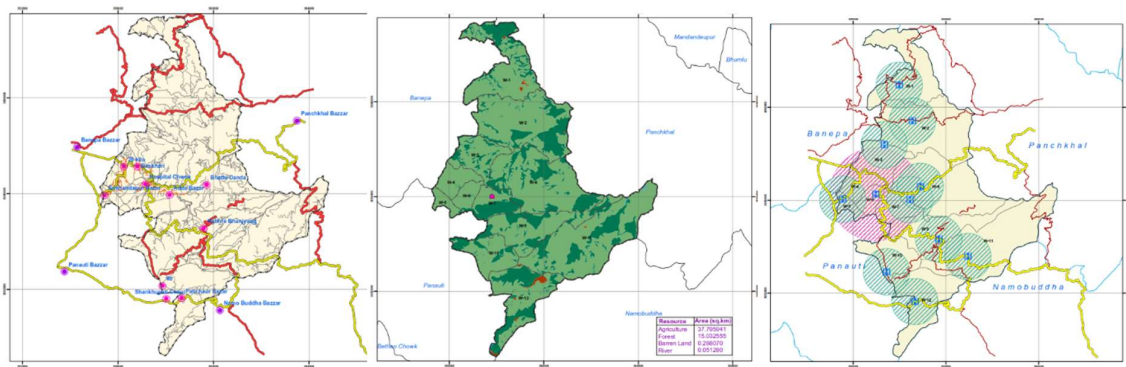




Government of Nepal  
Dhulikhel Municipality

**INTEGRATED URBAN DEVELOPMENT PLAN  
OF DHULIKHEL MUNICIPALITY**

**Volume 10: Consolidated Implementation Plan**



2019



**Submitted By:**

**GOEC-GIDA-Next JV**

**Kathmandu**

Version:

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## Executive Summary

The Integrated Urban Development Plan (IUDP) for Dhulikhel is a strategic response to the 20 year growth of Dhulikhel Municipality, which brings together infrastructure provision, environmental management, economic growth, disaster preparedness, municipal service delivery and mainstreaming gender equality and social inclusion. This “whole of Council” strategic plan will deliver on the long-term vision of Municipality:

*A prosperous, well governed and model town Dhulikhel*

*based on culture, heritage, tourism and environmentally friendly sustainable development.*

Located 30 kilometres east of Kathmandu, Dhulikhel Municipality is blessed with a diverse and vibrant community, high quality environmental assets including clean air and water, spectacular view, rich built and cultural heritage, major institutions with Kathmandu University and Dhulikhel Hospital, agricultural production and a burgeoning tourism industry.

However the Municipality is facing a number of challenges. This includes: an emerging low density and scattered settlement pattern in the rural wards with poor access to essential social and physical infrastructure; rapid urban development at a rate that is not supported by key infrastructure; fragmented agricultural land which is becoming urbanized; and prioritization of infrastructure. Analysis of physical infrastructure indicate critical problems in water supply management and solid waste management which requires immediate attention.

Observations in the field reveal housing outside, or on the edge of, urban areas being constructed without the provision of constructed roads, drainage, water and sewerage services. This reveals a disconnect between development approvals and infrastructure planning.

It appears that, in many cases, development is not occurring in sequential and planned way and that the provision of infrastructure to support the development is being provided in a reactive way, which is expensive to the community and financially and environmentally unsustainable.

Through research and community engagement, the IUDP includes analysis, strategic policy and practical actions to improve physical infrastructure, social infrastructure, risk sensitive land use, environment management at town level with proposals for capacity building and institutional strengthening of municipal authority. The IUDP also focuses on improving the conditions of women, the poor and the excluded by undertaking a community development program and gender equality and social exclusion (GESI) activities through the Social Development Plan.

The IUDP, presented in 16 volumes, also covers institutional and technical issues. The report provides comprehensive details on: urban management, institutional development; physical development planning, social development planning, economy, environment, institutional and financial planning along with social impacts and poverty; gender

and social inclusion; and the subproject resettlement plans and disaster risk reduction. Based on the immediate needs of the municipality, short term plans and long-term plans have been developed which will support Dhulikhel's growth.

In the preparation of the IUDP project, the most pressing needs of the Dhulikhel Municipality have been identified. Analysis was carried out for physical infrastructure, social infrastructure, economy and disaster management and provide priorities for short, medium and long-term needs of the Municipality.

While generally the spatial distribution of health and education facilities show good coverage, connectivity in rural wards needs to be improved through upgrading existing road networks. Likewise, disaster management is another critical issue demanding a strategic response.

Critically, the IUDP provides a new framework to manage the urbanization of Dhulikhel, while protecting its agricultural, environmental and cultural assets. This will be in the form of new processes for the Municipality, including land use zoning and by-laws, and clear processes to better link land development, community needs and the provision of infrastructure.

The IUDP:

- Sets out the planned urban expansion of Dhulikhel in three key areas to accommodate residential, tourism and commercial growth over the coming 20 years.
- Supports more intensive development around the commercial centres (chowks) that supports existing private and public investment.
- Identifies key road, water and sewerage infrastructure to support the growing community over the next 20 years.
- Identifies key road connections between the Rural wards (in particular Wards 1 and 2) to facilitate access to schools and health services.
- Establishes Land Use Zonings, based on economic, physical attributes and disaster risk management principles, which will support good decisions, guide development in strategically suitable locations and support Dhulikhel's agriculture sector.
- Identifies opportunities to support the growth in tourism and protection of heritage and environmental assets for existing and future generations.
- Identifies priority projects to be undertaken by the Municipality over the coming 5 years to support the delivery of the IUDP, supported by a financial plan.

The IUDP introduces new land use zoning and by-laws which provides for strategically-driven decision making and sustainable development of Dhulikhel into the long term.

Implementation of the actions within the IUDP from all part of the organization is critical to the success of Dhulikhel's future.

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The IUDP consists of the following Volumes:

- Volume 1 Background Report
- Volume 2 Physical Development Plan
- Volume 3 Land Use and Zoning Plan
- Volume 4 Social Development Plan
- Volume 5 Economic Development Plan
- Volume 6 Environment Management Plan
- Volume 7 Conservation, Culture and Tourism Plan
- Volume 8 Municipal Transport Management Plan
- Volume 9 Disaster Risk Reduction Plan
- Volume 10 Consolidated Implementation Plan
- Volume 11 Financial and Organisation Plan
- Volume 12 By-Laws
- Volume 13 Municipal profile
- Volume 14 Feasibility Study – Waterfall Construction in Ward 1
- Volume 15 Pre-Feasibility Study – Artificial Lake in Wards 7 and 8
- Volume 16 Feasibility Study – Walking Trail in Wards 7 and 8

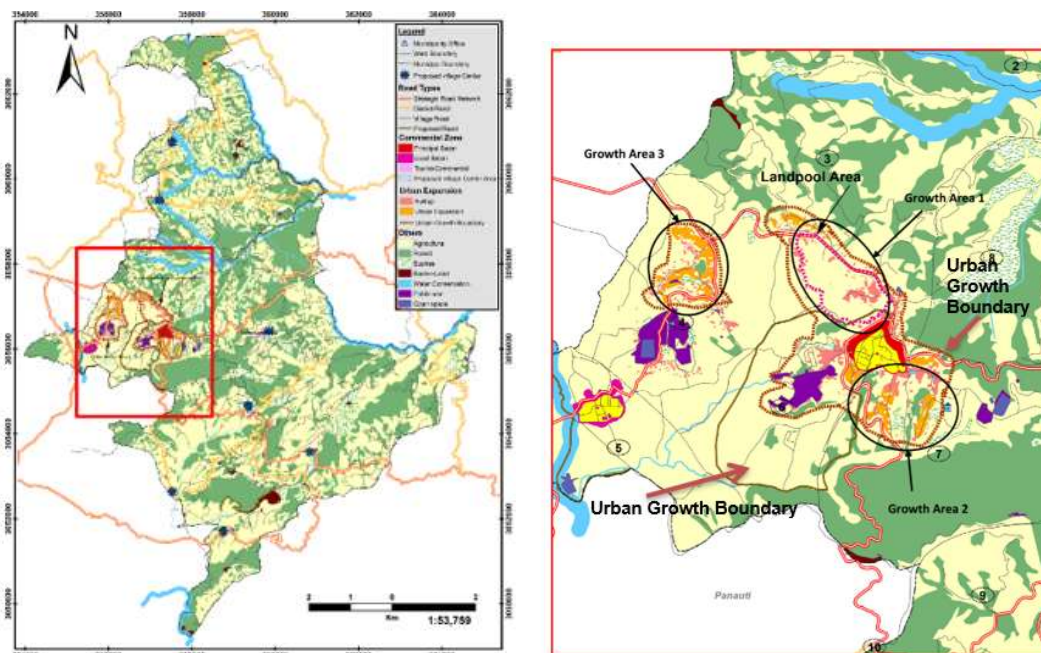
## 1. Introduction

Implementation of the IUDP is critical to the successful long-term urban development of Dhulikhel and the well-being of its community. **Implementation** will require **leadership, sustained effort, strong co-ordination** and **co-operation** within the Municipality and with its stakeholders. This requires commitment of resources and will.

This volume consolidates all actions to implement the IUDP. Furthermore, monitoring and evaluation is a critical step in the implementation process.

## 2. Physical Development Implementation Plan

Pulling together all of the Land Uses, the Dhulikhel Land Use Plan is illustrated below:



Dhulikhel Municipality Land Use Plan

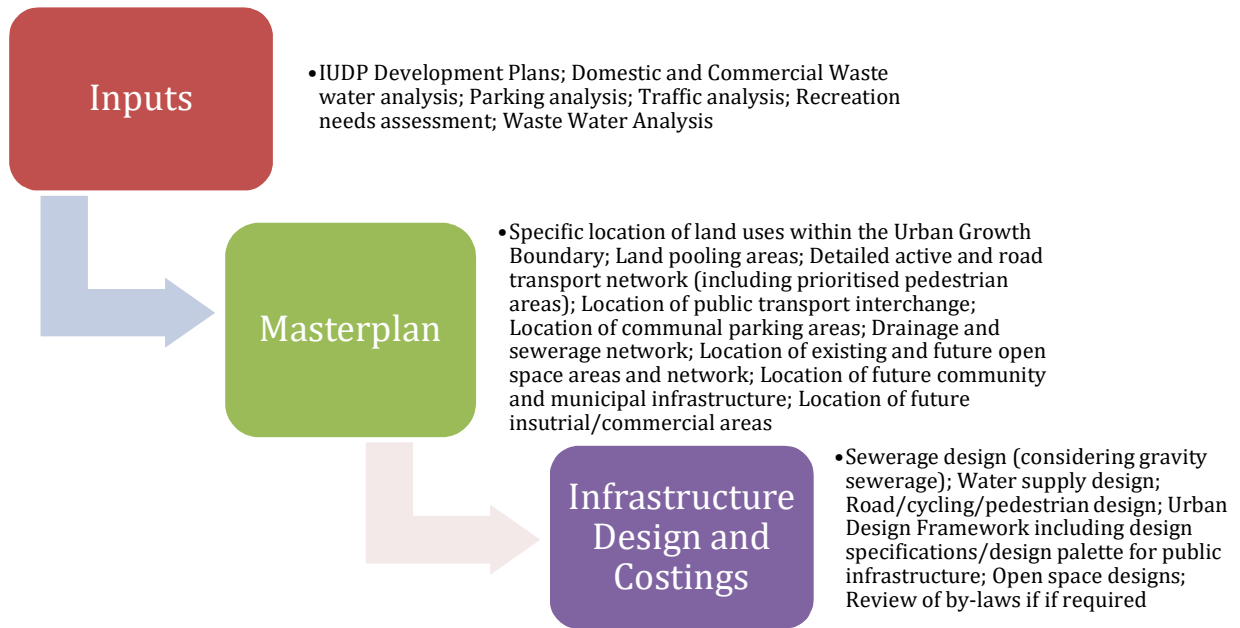
It is critical that the next phase of planning is to develop a detailed Masterplan of the Dhulikhel Urban Area (within the urban growth boundary) and the rural settlement villages.

While the IUDP is a “high level” plan for the whole municipality, the Masterplan for each urban area is a much more detailed plan for each settlement. The Masterplan identifies the land pooling areas/urban growth areas, areas where infill development is encouraged, the transport network including roads and active transport links, location and type of infrastructure including drainage and reticulated water and sewerage, public open space, communal carparking areas, bus interchange. The Masterplan will also include an Urban Design Framework which focusses on design specifications/design palette for the installation of municipal infrastructure such as footpaths, signage and street furniture. The Masterplan may recommend changes to by-laws based on more in-depth analysis of the urban area, including potential height controls, etc.

The project process is illustrated below:

### Masterplan project process





Masterplan Project process for Dhulikhel Municipality Urban and village areas

**Physical Development Plan Implementation:**

MAIN PLANS AND PROGRAMS	RESPONSIBILITY	SUCCESS INDICATOR
<b>Land Use Plan</b>		
Implementation of Land use plan, will have introduced planned urban development in the Municipality.	<p>Translate the Land Use Plan into Land Use Zoning maps and by-laws</p> <p>Planning <i>(IUDP Link: IUDP Zoning Maps)</i></p> <p>Support from the Department of Road Department of Urban Development and Building Construction and Department of Survey</p>	Zoning maps are created
Establishment of land pooling/consolidation mechanism in the Municipality	<p>Identify areas for land pooling and consolidation in order to relocate the scattered, risk prone houses and to improve the agricultural production</p> <p>Planning Building approvals</p> <p>Support from the sectoral agencies and the residents of the Municipality.</p> <p><i>(IUDP Links: Land Use Plan, Social Development Plan)</i></p>	
Masterplans for Urban Dhulikhel and small settlements – village	<p>Undertake an Urban Masterplan for urban Dhulikhel and each Village Centre in each Ward:</p> <p>Include detailed location of land pooling areas, road network and active transport links, location of water and sewerage infrastructure, public open space and recreation infrastructure, communal carparking areas, bus stops and interchange</p> <p>Planning Engineering</p> <p><i>IUDP Links: Social Development Plan, Conservation Culture and Tourism Development Plan, Environment Management Plan, Municipal Transport Management Plan)</i></p>	

	Detailed costings and implementation schedule are required		
Drainage	Drainage design and construction - Areas where the population density is high i.e. 4, 5, 6, 7  (as part of Masterplan process)	Engineering  <i>(IUDP Links: Environment Management Plan)</i>	
Water supply	Expansion of the capacity of Dhulikhel water supply users Committee.  Feasibility study for combined water supply scheme in wards 1 and 2  Feasibility study for combined water supply scheme in ward 9,10,11  Provision of other urban areas as per the Masterplans	Engineering Water Department Water Committees  Support of Drinking Water and Sewerage Departments will be received  <i>(IUDP Links: Environment Management Plan)</i>	City will have increased drinking water and sanitation facilities.  100% of households have clean and hygienic drinking water consumption
Water supply	Undertake a trial of rainwater harvesting technology using Municipality buildings as test cases.	Water Department  <i>(IUDP Links: Environment Management Plan)</i>	Test site operational
Waste water and Sanitation planning and service extension	Pipe Sewerage design and construction - Areas where the population density is high i.e. 4, 5, 6, 7  (as per future Masterplans)	Engineering Sewerage Department  <i>(IUDP Links: Environment Management Plan)</i>	100% of households using Toilet
Improvement in the linkage of rural centres of the Municipality with the urban centers like Dhulikhel Bazar	Design and construct the following roads – considering all modes of transport including active transport):  Thing khola- Kashi Bhanjyang, Milanchowk –Bhadaure Danda – Anaikot  Rabi-Deurali-Chamare, Chisapani – Sakhin Chaur, Chaplati - Ward No 1, Sisne Khola– Thini Gaun  Dhulikhel-Devitar, Panchakanya - Kutal – Rabi, Panchakanya – Chankubesi  Chukunepati – Bashghari, Dhulikhel - DMI – Shreekhandapur  Punyamata Khola Corridor, GandivChok – Chaukot,  Khawa - Sikharkatarito – Kalche, Khawa - Swarsatima – Kavre bhyanjang, Thakle– Chapaladevi, Pipalbot – Kavre bhyanjang,  Ghat Khola- Thulachaur, HulakiPati- Panitanki, Devisthan Kavrebhanjyang, Kavreybhyanjang – Thatithok, Majuwa Khola – Kavreybhyanjang  Bhairabghat – Thakurichhap, Phaskot – Krisna Mandir, Mathillo Pipalbot - Dhungeban	Engineering  <i>(IUDP Links: Municipal Transport Management Plan, Social Development, Economic Development Plan)</i>	Major identified link roads will be upgraded and the transportation system for all modes will be improved

	<p>SunarTole – Tinpile, Maskate - Thulitar – Pipalthumki, Jukepokheri - Dobane</p> <p>Sankheswari – Talloeklekhet, Eklekhet – Fending, Ite – Piple, Lamichane – Kukelthumka</p> <p>Land in the road reserve adjacent to Arankio and BP Highways (that land within Municipality jurisdiction) should include “active transport” corridors - pedestrian and cycling paths</p> <p>In the design and development of the roads, consider all modes of transport, where practical.</p>		
Creation of the employment by promoting the decentralised balanced industrial development	<p>Support the Establishment of small-scale industries related to the agriculture.</p> <p>Establishment of vegetable, milk collection centres, Rice mill, Flour mill</p>	<p>Economic Development Unit</p> <p>Support from the sectoral agencies, private sector and the residents of the Municipality.</p> <p><i>(IUDP Links: Economic Development Plan)</i></p>	
Development of Municipal facilities related Infrastructure.	<p>City House (1)</p> <p>New Buspark (1)</p> <p>Public Toilets in Main bazaar areas, Primary tourist areas, Cultural areas.</p> <p>Central Vegetable Market (1)</p> <p>Slaughter House (1)</p> <p>Security Posts</p> <p>School in Ward 2</p> <p>Health posts</p> <p>Recreation facilities in Public Open Space</p> <p>Cycling tracks</p> <p>Trekking tracks</p> <p>Sanitary Landfill site</p> <p>(include within Masterplans)</p>	<p>TBC</p> <p><i>(IUDP Link: Social Development Plan, Municipal Transport Management Plan, Economic Development Plan, Environment Management Plan, Tourism Development Plan)</i></p>	
Co-ordinated and Integrated Development approvals	<p><b>Establish a new integrated permit system of development approvals and infrastructure provision</b> to ensure that new communities/dwellings that are serviced with critical infrastructure and that new developments do not compromise infrastructure</p>	<p>Engineering</p> <p>Planning</p> <p>Building approvals</p> <p><i>(IUDP Link: Physical Development Plan,</i></p>	Process developed
	<p><b>Development Referrals to Environmental Health</b> – As part of the by-laws process, all development applications for the construction of</p>	<p>Planning</p> <p>Building approvals</p>	Applications referred

	<p> dwellings or commercial premises that propose to use a septic tank be referred to Environmental Health Department. The Environmental Health department will determine whether the land has the capacity to deal with the waste water.</p>	<p>Environmental Health  <i>(IUDP Link: Environment Management Plan, Land Use Plan)</i></p>	
	<p><b>Development Referrals to Engineering Water Department and Power Service providers</b> – As part of the by-laws process, all development applications for the construction of dwellings or commercial premises that require the construction of a road, footpaths, stormwater drainage, water supply and electricity supply be referred. These departments will determine if, when and how the infrastructure can be provided and responsibilities of the applicant.</p>	<p>Planning  Building approvals  Engineering  <i>(IUDP Link: Physical Development Plan, Land Use Plan)</i></p>	<p>Applications referred</p>

### 3. Social Development Implementation Plan

MAIN PLANS AND PROGRAMS	RESPONSIBILITY	SUCCESS INDICATOR
<b>Status of Women and Girls</b>		
To practically promote gender equality through education and economic empowerment	Develop and deliver Awareness programs for ensuring rights of women, their social status, gender and discrimination.  Women's Development Committee Social Development Officer  <i>(IUDP Link: Organogram)</i>	
	Livelihood improvement plan for vulnerable women groups in all Wards  Women's Development Committee Social Development Officer Economic Development Officer  <i>(IUDP Link: Organogram)</i>	
	Develop and deliver Awareness program on Gender Transformative approach in sexual and reproductive health of young people.  Women's Development Committee Education Department Social Development Officer  <i>(IUDP Link: Organogram)</i>	
<b>Caste/Ethnic/Cultural Practices</b>		
To preserve Dhulikhel's social and architectural cultural heritage	Protection and promotion of core areas in ward 5,6 and 7.  Building and Planning Tourism Development and Marketing Officer  <i>(IUDP Link: Land Use Plan, Heritage Strategy, By Laws, Tourism Development Strategy)</i>	The traditional architecture within the core area will be preserved and promoted.
	Continue and promote cultural festivals of Dhulikhel to visitors  Dhulikhel Environment and Tourism Committee  <i>(IUDP Link: Tourism Development Strategy)</i>	
<b>Capacity and empowerment</b>		
The voices, contribution & decision making roles	The Municipality develops a Community Engagement Policy and Practice to ensure that the views and  Councillor/Executive Group	Community Engagement is

of women, Dalit and disadvantaged groups will increase in the planning process.	ideas of all members of the community are considered in the development of municipality projects.		“business as usual”.  For every project Plan and Brief, a Community Engagement Plan is developed and undertaken.
	Train staff who undertake project management and Councillors in undertaking community engagement ie. IAP2 (International Association of Public Participation)		
	Programs oriented for Dalits, Janajatis, and disadvantaged populations.  Job provider Training like as carpentry, colouring, auto mobiles should be given to young person (Man/Women) in all Wards	Engineering  Tourism Development Committee  <i>(IUDP Link: Physical Development Plan)</i>	The number of women in the leadership level of social and community organizations will be at least 33 %.  30% to 50% will be represented based on the population of Dalit, Janajati and disadvantaged groups in the leadership level of social and community organizations and school management committee.
<b>Health</b>			
Significant improvement of health facilities of Women and children.	Awareness programs on maternity and child health.	District Population and health Office	There will be significant reduction in newborn child and maternal mortality.
	CRVS (Civil Registrations and vital Service campaign must be done in each ward		
	Basic level facilities related to health centres provided to the people	Health department	Increase in facilities provide by health centres

<b>Education</b>			
<p>Educational facilities will be made accessible to women, Children, Dalits, Janajatis and vulnerable groups and all people in all the wards of the municipality.</p>	<p>Program for Increasing Primary Education accessibility</p> <ol style="list-style-type: none"> <li>1. Upgrade identified link road (these roads are listed in Urban Linkage section of the report) connecting fringe settlements with the service centres and major highways.</li> <li>2. New schools must be located in the village centres so that the population could be benefited equally.</li> <li>3. New schemes such as land readjustment/land pooling are recommended. This will serve the service accessibility problems in the Municipality. These could be the ultimate solution for the scattered settlements in the Municipality</li> </ol>	<p>District Education Office</p> <p>Engineering</p> <p>Planning</p> <p><i>(IUDP Link: Land Use Plans, Zoning Plans, Physical Development Plan, Municipal Transport Plan)</i></p>	<p>Women's Literacy rate will be equal to that of men</p> <p>Increase in the number of children completing primary school.</p> <p>Significant increase in the literacy status of Dalits.</p>
	<p>Establish a Primary school facility in ward 2 as the coverage in this area is weak.</p>	<p>District Education Office</p>	
	<p>Water supply facilities will be available in every educational institutions</p> <p>Each and every school will have its own toilet</p>	<p>District Education Office</p> <p>Water Department</p>	<p>100% of schools will have toilet facility</p>
<b>Open Space and Recreation</b>			
<p>That public Open Spaces contribute to the improvement of health and wellbeing of the community</p>	<p>Protect existing areas of identified Open spaces as listed in this plan, using by-laws to protect them are addressed in the building by- laws of the Municipality – Zone all Open Space areas as Public Use Zone</p> <p>Apply a building/planning by-law that prohibits squatting, or otherwise occupying any land; and Constructing or maintaining any kind of structure, fence or enclosures, establishing any business enterprise without a permit. Introduce and enforce a new local law to prohibit dumping of any form of waste products, leaving in refuse in exposed or unsanitary conditions, or depositing them in community open space. This regulation is to be enforced by the local municipal police.</p>	<p>Planning</p> <p>Local Municipal Police</p>	<p>Zoning is applied</p>

	For private open space for development, use Building coverage and FAR in the construction of buildings in prescribed zones to maintain the openness (private open spaces can either be traditional ‘court yard’ spaces, kitchen or ornamental gardens).	Building approvals  Planning  <i>(IUDP Link: Land Use Plan, Zonings)</i>	
	Promote awareness in the community towards the importance of open-spaces during the time of disaster.	Social Development Officer	
	Develop a Recreation Plan to document the sport and recreation needs of the communities within the municipality and how the open space can be designed and developed to meet those needs.	Urban Planner	
	Development of sports in the Municipality.	TBC  <i>Refer to (IUDP Link: Land Use Plan, Zoning Plan, By-laws)</i>	At least 1 city level sports ground will be operational.
	Plan a network of open space across the municipality to serve the recreational and wellbeing needs of the community. This can be undertaken alongside township master planning (this issue is linked with Physical Development Plan, Land Use Plan and Implementation Plan).  In designing public open space, provision should made for safe and equitable access, litter bins and signage, and passive.	Urban Planner	
	Appoint parks and recreation crew to maintain Municipal Open Space areas	Councillors/Executive	Maintenance of a ward level sports grounds  High level of resident satisfaction rates
<b>Security</b>			
To provide a safe environment for the whole community and reduce security risks	Improve Security by establishing the following additional police posts in the rural area:  One police post to serve wards 1 and 2 and One police post to serve wards 10, 11 and 12	Police  <i>(Refer to IUDP Physical Development Plan)</i>	isting crime incidents in the municipal area will decrease by one third.



Market areas would be well managed.	Regular management and monitoring of bazar areas in Main Bazar Areas in wards 4,5,6 and 7.	Police	Monitoring team in the municipality will be constituted and regular market monitoring will be done.
	Awareness programs are launched against drug abuse and criminal activities.	Social Development Officer	
	The Design of Public Places and Public Buildings includes Safe Design features including active street frontages, lighting, low or minimal fencing	Planning Engineering	
<b>Housing</b>			
All residents within Dhulikhel Municipality have safe, affordable and dignified accommodation and secure tenure	Encourage private sector to provide housing to the EWS (economically weakerstrata)  Review and develop relevant incentive and facility package: land/infrastructure provisioning etc. to encourage private sectors	Planning	
	Promote innovative, economic and environment friendly buildings Develop model and promote practices of ecologically sensitive and vernacular construction technology and building material	Planning Building approvals	
	Discourage squatter settlements and encroachment on public land and land in high risk areas  Encourage private sector to develop affordable rental housing through the provision of incentives and facilitate (incentives: easier permit process, facilitate land consolidation, taxation abatement, Facilities: facilitating development and access to infrastructure provision such as roads, utility lines etc).	Planning	
	Promote People's Housing and encourage and facilitate co-operative mechanism for the production of housing for EWS.	Planning	

	Create institutional and legal basis and incentives for facilitating the cooperative sector.		
	Encourage and facilitate production of serviced land through public-private/community partnership  Review existing policies, law and create institutional and legal basis to facilitate and encourage schemes such as land pooling through community/private sectors.	Planning	
<b>Infrastructure</b>			
Infrastructure facilitates access to critical services	Major link roads connecting settlements with health, education and security facilities will be upgraded.	Engineering  <i>(IUDP Link: Physical Development Plan, Municipal Transport Management Plan)</i>	
	Relocating settlements in village centres using Urban Planning methods like land pooling will be adopted to increase the accessibility of services	Planning  <i>(IUDP Link: Land Use Plan, Zoning Maps, Physical Development Plan)</i>	
	Ensure all settlements have access to clean drinking water and sanitation	Water Department  <i>(IUDP Link: Physical Development Plan)</i>	
	Ensure that in the development of public infrastructure, including footpaths and public areas are accessible, apply Disability Accessible Accessible Physical Structure and Communication Service Directive for People with Disabilities, 2013	Engineering	All new infrastructure installed by the Municipality complies with the "Accessible Physical Structure and Communication Service Directive for People with Disabilities, 2013"

## 4 Economic Development Implementation Plan

Action and Programs	Locale and Description	Responsibility
Establish an Economic Development Unit, including Small Business/Entrepreneur/Investment Attraction Support Officer and Tourism Marketing and Development Officer	Not applicable	Council and Executive
Development of an Agriculture Development Strategy	All wards	Agriculture Office
Construction of new Vegetable and fruit market	To be confirmed	Small Business/ Entrepreneur /Investment Attraction Support Officer Agriculture Office
A systematic Slaughter House will be constructed	To be confirmed	Small Business/ Entrepreneur /Investment Attraction Support Officer Agriculture Office
Agricultural training for farmers for commercial farming	All the wards except bazar	Agriculture Office
Technical assistance according to the farmer's need	All the wards except bazar	Agriculture Office
Technical assistance for commercial vegetable and fruit farming	All the wards except bazar	Agriculture Office
Agriculture research	All wards	Agriculture Office
Establishment of cold store	All the wards except bazar	Agriculture Office
Support to establish and operate agricultural cooperative shops	Major centres of the Municipality	Small Business/ Entrepreneur /Investment Attraction Support Officer Agriculture Office
Advanced seeds distribution for agriculture	All the wards except bazar	Agriculture Office
Economic development training to women for works that can be performed within houses should be involved.	All wards	Small Business/ Entrepreneur /Investment Attraction Support Officer Economic Development Unit
Programs oriented for Dalits, Janajatis, and disadvantaged populations. Job provider Training such as carpentry, colouring, auto mobiles should be given to young person (Man/Women) in all Wards	All wards	Small Business/ Entrepreneur /Investment Attraction Support Officer Economic Development Unit Social Development Unit

		<i>(IUDP Link: Social Development Plan)</i>
Business mentoring for tourist accommodation and hospitality businesses in Heritage buildings	Wards 4, 5, 8, 10	Tourism Development and Marketing Officer  Tourism Development Committee  <i>(IUDP Link: Tourism Development Strategy, Heritage Strategy)</i>
Implementation of Land use plan, will have introduced planned urban development in the Municipality.	All wards	Planning  <i>(IUDP Links: Land Use and Zoning Plan)</i>
Support the appropriate development of Agro-based resorts in Wards 11 and 12 to promote Ago-tourism	Wards 11 and 12	Planning  <i>(IUDP Link: Tourism Development Plan, Land Use Plans, Zoning Plans, By-laws)</i>
Support and encourage the development of homestays in Wards 2, 3, 6, 8, 9, 12	Wards 2, 3, 6, 7, 9, 12	Planning  <i>(IUDP Link: Tourism Development Plan, Land Use Plans, Zoning Plans, By-laws)</i>
Develop road connections and upgrade roads as per the MTMP	All wards	Engineering  <i>(IUDP Links: MTMP)</i>

## 5 Environment Management Implementation Plan

Sectoral objectives for the Environment Management Plan in Dhulikhel:

Measurement Indicators	Means of Verification	Important Forecasts
<p><b>Sectoral Objectives</b> Forest and environment will be properly administered and Dhulikhel will be established as pollution free green city.</p> <ul style="list-style-type: none"> <li>Land use plan and policy will be implemented.</li> <li>Water, air, and sound pollution criteria will be prepared and implemented.</li> <li>Establishment of Environment Branch in Municipality.</li> </ul>	<ul style="list-style-type: none"> <li>Land use Plan</li> <li>Land use policies</li> <li>Air, Water and Noise Pollution Norms and Standards</li> <li>Organogram of the Municipality</li> </ul>	<ul style="list-style-type: none"> <li>The assistance of District Forest and Environmental Development Office will be received.</li> </ul>

Implementation Plan:

MAIN PLANS AND PROGRAMS	RESPONSIBILITY	SUCCESS INDICATOR
<b>Waterways and water bodies</b>		
To have healthy waterways free of pollution.	<p>Creation of green corridors along riverbeds and roads; Punyamati river, Dhulikhel khola and major roads in the Municipality.</p> <p>Local Community User Groups Environment Department (IUDP Link: Organogram)</p>	
Regulation of riverbeds in Punyamati river using natural materials in order to prevent floods	<p>Planning Building approvals (IUDP Link: Organogram)</p>	Zoning and by-laws applied
Construct and conserve more recharge ponds.	<p>Water Department Local Water Committees (IUDP Link: Physical Development Plan)</p>	More recharge ponds will be constructed and conserved.
<p>Install fencing along waterways to prevent stock from eroding banks and defecating in the water.</p> <p>Encourage active participation of Tole Lane Organisation (TLO) sanitation campaign plantation program and pond conservation activities.</p>	<p>Landowners Local Community User Groups Environment Department (IUDP Link: Organogram)</p>	<p>Ownership of the community will be ensured through their involvement in pond and park construction and conservation.</p> <p>Public land will be protected by plantation.</p>
Apply a condition on all construction permits that construction material including gravel, cement and sand must be contained, and removed after the	<p>Planning Building approvals</p>	100% of Certificates comply with the "construction

	completion of the build, to the satisfaction of the Municipality, and ensure compliance (Through site inspection) with this condition at “Temporary Build Certificate” Stage, “Permanent Building Certificate” Stage and “Finished Certificate” Stage.		materials control condition”
	The Municipality install litter traps in strategic locations.	Environment Department Engineering	Litter traps installed
	Apply Forest and Protection Zones (construction restricted areas) and by-laws to the following areas: <ul style="list-style-type: none"> <li>• The blue conservation zone includes the river and 100m buffer from the river.</li> <li>• The buffer of 10m around all the wet land, 3m buffer from main canal and 1.5m buffer from side canal on either side is also considered as the buffer area.</li> <li>• Identified forest areas and wetlands should be addressed in the Building by-laws of the municipality.</li> </ul>	Planning	All the lakes, ponds and wet lands are protected and addressed in the Building By-laws of the Municipality.
<b>Forest Areas</b>			
Protect and manage Forest Areas for their habitat values and sustainable use	Protect forest areas by applying the Forest Zone. The purpose of the zone is to protect the identified community and government forests in the Municipality.	Planning  <i>(IUDP Links: Land Use Plan and Zoning, By-laws)</i>	TBC
	Apply by-laws effectively and consistently to ensure the sustainable management of the Forest.	Planning  <i>(IUDP Links: Land Use Plan and Zoning, By-laws)</i>	TBC
<b>Air and Noise</b>			
To prevent noise and air pollution, and effectively manage the impacts	Reduce the amount of traffic in the central zones that causes excessive air and noise pollution.	Engineering  <i>(IUDP Links: Municipal Transport Management Plan)</i>	Number of vehicles within town does not increase.  Communal carparks at the town edges are established
	Reduce speed of vehicles within the urban areas by introducing speed controls to reduce vehicle noise in built up areas.	Engineering  Local Municipal Police  <i>(IUDP Links: Municipal Transport Management Plan)</i>	Speed limits applied within towns

	Protect residential areas and other sensitive uses such as hospitals and schools by applying a buffer between heavy industrial uses and sensitive uses. Include a “buffer distance” provision in the by-laws	Planning  <i>(IUDP Link: Physical Development Plan, Land Use/Zoning)</i>	By-laws include a “buffer distance” provision between sensitive uses and heavy industrial uses
	Apply zoning and effective by-laws that require industrial uses to operate to minimise impact on water and air quality and upon the amenity of the area.	Planning  <i>(IUDP Link: Physical Development Plan, Land Use/Zoning)</i>	Zoning and by-laws applied
	Regularly monitor air, noise and water in strategic locations  Respond to complaints within 7 days	Environment Department	Air, Water and Noise pollution will be reduced to 90%
<b>Soil health</b>			
	Continue to support farmer education on Integrated Pest Management and bio-organic fertilisers	Agriculture Department	TBC
<b>Domestic and Commercial Waste water and Stormwater</b>			
To reduce water and soil contamination by effectively manage the impacts of domestic and commercial waste water and stormwater	<b>Undertake a Waste Water Analysis</b> to determine the appropriate solution to improve the poor wastewater management within the municipality, as follows: Identify areas where wastewater disposal or septic tanks are problematic, i.e. where septic tanks are overflowing onto land or into surface water drainage: e.g. due to <ul style="list-style-type: none"> <li>• High water table;</li> <li>• Impervious ground;</li> <li>• No space for soak-pit;</li> <li>• No space for septic tank;</li> <li>• Density of development; and/or</li> <li>• Prolonged seasonal flooding.</li> </ul>	Environmental Health  Planning  Sewerage and Water Department  <i>(IUDP Link: Physical Development Plan, Land Use Plan)</i>	Clean and hygienic drinking water consumption
City will have increased drinking water and sanitation facilities.	<b>Urban Development Masterplan -</b> Where areas are identified in the PDP and Land Use Plan for conventional residential development, infill areas or new growth areas, plan for strategic provision of sewerage infrastructure	Planning  Engineering  Sewerage and Water Department  <i>(IUDP Link: Physical Development Plan, Land Use Plan)</i>	Establishing Drainage Facilities where the population Densities are high i.e. Ward No. 4, 5, 6, 7  Construction of treatment plant in one of the wards with higher population

			density i.e. Ward No. 5,6,7
	<p><b>Development Referrals to Environmental Health</b> – As part of the by-laws process, all development applications for the construction of dwellings or commercial premises that propose to use a septic tank be referred to Environmental Health Department. The Environmental Health department will determine whether the land has the capacity to deal with the waste water.</p>	<p>Planning Building approvals Environmental Health <i>(IUDP Link: Physical Development Plan, Land Use Plan)</i></p>	100% of Households will use toilet
	Public toilets will be installed in main Bazaar areas, major tourist locations and cultural locations	<p>Engineering Drinking water and Sewerage Department</p>	<p>Toilets will be installed Support of drinking water and sewage department will be received</p>
<b>Solid Waste Management</b>			
To Minimise the impact of waste and litter	<p>Land Fill and Waste Transfer sites – Undertake a <b>feasibility study</b> of potential sites (listed in this Plan) to determine environmental impact (including waterways, amenity impacts, CO2 emissions and access), capacity, type of waste disposed and number of service years. Construct sanitary landfill site</p>	<p>Environment Department Waste Management Officer Planning and Engineering <i>(IUDP Link: Physical Development Plan)</i></p>	
	Develop a Recycling Program and implement across the Municipality	<p>Environment Department Waste Management Officer</p>	
	Encourage Recycling organic waste products in rural wards to generate organic Fertilizer.	<p>Environment Department Waste Management Officer</p>	
	Install litter and recycling bins in all tourist locations and within strategic locations in the town centres	<p>Waste Management Officer Engineering</p>	Litter bins and recycling bins installed
	Undertake a regular education and anti-litter campaign	Waste Management Officer	
<b>Renewable energy</b>			
Improvement of healthy and alternative energy will have improved	All the newly constructed houses will have solar connections for light facilities as addressed in the Building bylaws of the Municipality.	<p>Building approvals <i>(IUDP Link: By-Laws)</i></p>	



the health of the residents.			
	SewerageBio gas plant will be encouraged in rural wards.	Engineering  Sewerage Department  Assistance of Alternative energy development center.	
<b>Governance and Human resources</b>			
To provide a safe environment for the whole community and reduce security risks	Resource a comprehensive Environment Department including a: <ul style="list-style-type: none"> <li>• Waste Management Officer</li> <li>• Environmental enforcement/regulator</li> <li>• Environmental officer to undertake strategic work</li> </ul>	Council/Executive  <i>(Refer to IUDP Organogram)</i>	Environment department in the Municipality will be established.
	Council to adopt measurable Environmental Standards	Council  Environment Department	

## 6 Conservation, Cultures and Tourism Development Implementation Plan

MAIN PLANS AND PROGRAMS		DESCRIPTION
<b>Governance and Human Resources</b>		
To support tourism development with effective Human resources and governance structures to work with tourism industry.	Establishment of Tourist Development Council	Council/Executive  <i>(IUDP Link: Organogram)</i>
	Appoint a specialist Tourism Development and Marketing officer	Council/Executive  <i>(IUDP Link: Organogram)</i>
<b>Heritage</b>		
To capitalize on Dhulikhel's historic social and architectural cultural heritage	<b>Establish a Heritage Advisory Committee</b> to assist decision making for heritage places.	Council and Executive
	<b>Develop a Heritage Strategy</b> to prioritise actions for Heritage.	Planning  Heritage Advisory Committee

	<b>Formally protect and conserve</b> the identified significant heritage assets in Wards 5, 6 and 7 through land use zoning, by-laws, using the Heritage Study prepared by Technical University of Berlin and Kathmandu University as a base.	Building and Planning <i>(IUDP Link: Land Use Plan, Heritage Strategy, By Laws)</i>
	<b>Prepare heritage guidelines</b> to assist Municipality staff and land owners to make decisions on heritage buildings, based on best practice.	Heritage Advisory Committee Planning Department of Archaeology <i>(IUDP Link: Heritage Strategy, By-Laws)</i>
	<b>Prioritise the restoration of key heritage places</b> that were affected by the major earthquakes in the year 2072, based on the findings of the Technical University of Berlin and Kathmandu University Heritage Study.	Heritage Advisory Committee Planning <i>(IUDP Link: Heritage Strategy)</i>
	<b>Support the adaptive reuse of heritage buildings</b> as affordable and safe accommodation for mid and low range tourists, within historic areas	Planning Heritage Advisory Committee <i>(IUDP Link: Land Zoning Plan, By-Laws, Heritage Strategy)</i>
	Establish a <b>Heritage Walk</b> (in partnership with the Dhulikhel Environment and Tourist Promotion Committee) <i>(IUDP Link: Heritage Strategy)</i>	Heritage Advisory Committee Dhulikhel Environment and Tourism Promotion Committee <i>(IUDP Link: Heritage Strategy)</i>
	<b>Improve signage, interpretation and information</b> about Dhulikhel's significant places.	Heritage Advisory Committee Tourism Development Committee Tourism Development and Marketing Officer <i>(IUDP Link: Heritage Strategy)</i>
	Work with local community to <b>develop a high quality and accessible museum</b> to properly archive, display and promote heritage artifacts significant to Dhulikhel.	Heritage Advisory Committee Tourism Development Committee Tourism Development and Marketing Officer <i>(IUDP Link: Heritage Strategy)</i>
	<b>Promote cultural festivals</b> of Dhulikhel to visitors	Dhulikhel Environment and Tourism Committee Tourism Development and Marketing Officer <i>(IUDP Link: Heritage Strategy)</i>
	<b>Business mentoring</b> for tourist accommodation and hospitality businesses in Heritage buildings	Tourism Development and Marketing Officer Tourism Development Committee <i>(IUDP Link: Economic Development Strategy, Heritage Strategy)</i>
	<b>Establish and promote religious/cultural heritage treks:</b> - Ugrachandi Nala (Karunamaya) temple – Panauti Indreswor	Heritage Advisory Committee Tourism Development Committee

	- Nala Karmapa Buddhist monastery – Namo Buddha Tour/trekking	<i>(IUDP Link: Heritage Strategy, Physical Development Plan)</i>
	<b>Develop an incentives program</b> through either tax reductions or a heritage grants scheme to encourage the retention and regular maintenance of private heritage properties.	Heritage Advisory Committee Finance <i>(IUDP Link: Heritage Strategy)</i>
<b>Landscape</b>		
To capitalize on Dhulikhel’s scenic appeal and scenic view oriented recreational attractions	<b>Protect significant landscapes</b> through planning policy and by-laws that encourage sympathetic design and allows tourist accommodation to share views	Planning <i>(IUDP Link: Land Use and Zoning Plans)</i>
	<b>Establish viewing platforms and seating</b> in key scenic viewing locations.	Engineering  Tourism Development Committee <i>(IUDP Link: Physical Development Plan)</i>
<b>Adventure tourism</b>		
	<b>Establishment and Promotion of hiking/trekking and cycling circuits</b> including: <ul style="list-style-type: none"> <li>● Dhulikhel-Namobuddha-Balthali-Khopasi-Panauti</li> <li>● Dhulikhel-Ravi-Nagarkot</li> <li>● Baluwa Pati-Deupur-Nagarkot Mountain View</li> <li>● Naya Gaun – Deupur – Dwarpal-Thulochaur Mountain View</li> <li>● Dhulikhel Municipality – Dhulikhel – Devasthan Hill – Old City of Dhulikhel</li> <li>● Mahadevsthan – Jyamdi – Jaisithok – Chandinimandan Boundary Sulikot – Mane Danda Sunrise Area</li> <li>● Bhumlutar Bedada – Sunkoshi Indrawati Mountain View</li> <li>● Nauka Bihar – Chaubas Saraswati Danda – Sagarmatha/Gaurishanker Mountain view</li> <li>● Sathighar Bhagwati – Palanchok Bhagwati Temple – Balthali Thumki Danda</li> <li>● Dhulikhel – Namo Buddha Trekking</li> </ul>	Tourism Development Committee  Engineering Department  <i>(IUDP Link: Physical Development Plan)</i>
	Undertake a feasibility study for: <ul style="list-style-type: none"> <li>● The establishment of a Bunji-Jumping</li> <li>● The establishment of a Rope Walk</li> <li>● The establishment of a cycle track to waterfall at Devitar</li> </ul>	Tourism Development Committee  Engineering Department
<b>Agro-tourism</b>		
To leverage agriculture areas toward <b>agro-based tourism</b>	Support the appropriate development of Agro-based resorts in Wards 11 and 12 to promote Ago-tourism	Planning <i>(IUDP Link: Land Use Plans, Zoning Plans, By-laws)</i>

	Look at unique and distinctive opportunities for homestays	Tourism Development and Marketing Officer  Tourism Development Committee
	Support and encourage the development of homestays in Wards 2, 3, 6, 8, 9, 12	Planning  Tourism Development Committee
<b>Accommodation</b>		
To expand and improve the <b>tourist accommodation offer</b> across the Municipality	Apply <b>positive planning policies and by-laws</b> and <b>land zoning</b> that encourage the development of <b>tourist accommodation</b> in tourist destinations <b>outside the urban centres</b> .	Planning  <i>Refer to (IUDP Link: Land Use Plan, Zoning Plan, By-laws)</i>
	<b>Support opportunities</b> for <b>short to medium accommodation</b> to service INGOs, NGOs, the Hospital and University.	Planning  Tourism Development Committee  Tourism Devt. And Marketing Officer  <i>(Refer to IUDP : Land Use Plan, Zoning Plan, By-laws)</i>
	<b>Improve information and services from accommodation providers</b> for tourists regarding how to use local transport, providing of guiding services etc.	Tourism Development Committee  Tourism Dev't and Marketing Officer
	<b>Establish local Tourism Excellence Awards</b> for providers to encourage improved tourism services.	Tourism Development Committee  Tourism Dev't and Marketing Officer
<b>Infrastructure</b>		
To improve and maintain the <b>tourism infrastructure</b>	<b>Design and develop additional trekking routes</b> (refer to Adventure Tourism) and maintain existing routes to a high standard.	Tourism Development Committee  Engineering  <i>(Refer to IUDP Physical Development Plan)</i>
	Ensure access to <b>drinking water</b> and <b>reliable electricity</b>	Water Committee  <i>(Refer to IUDP Physical Development Plan)</i>

	<b>Upgrade roads</b> that connect the major tourist attractions with the urban centres.	Engineering  <i>(Refer to IUDP Physical Development Plan, Municipal Transport Management Plan)</i>
	<b>Design and Construct a cycle route</b> from Dhulikhel Bazar to waterfall at Ward 1	Engineering  <i>(Refer to IUDP Physical Development Plan)</i>
	<b>Ensure existing and new tourist facilities, accommodation, attractions and supporting infrastructure</b> is accessible for people of all abilities. - Undertake accessibility audit of existing tourist attractions and recommend changes - All new infrastructure is designed to National Disability Access standards	Engineering, Planning and Building approvals
<b>Marketing</b>		
	Commission the <b>design of tourism branding and marketing campaign</b> for Dhulikhel	Tourism Dev't and Marketing Officer
	<b>Co-ordinate Business mentoring</b> for tourist related businesses including accommodation, hospitality, arts and crafts and tourist operators, training for potential guides. Accreditation of guides and tourism operators. Prioritise support for women, rural communities and disadvantaged groups.	Tourism Dev't and Marketing Officer
	Establish annual <b>Tourism Awards</b>	Tourism Dev't and Marketing Officer  Tourism Development Committee
	<b>Seek expressions of interest from locals</b> to undertake paid tours and classes hosted by local people in the community (can be achieved on sites like Airbnb as “experiences” or Backstreet Academy)	Tourism Dev't and Marketing Officer  Tourism Development Committee
	<b>Arrange specialist training sessions</b> for accommodation and local experience providers (hosts) in using online platforms to organise and promote business.	Tourism Dev't and Marketing Officer  Tourism Development Committee

## 7 Disaster Risk Reduction Implementation Plan

MAIN PLANS AND PROGRAMS		DESCRIPTION	Measurement Indicators and Means of Verification
Municipality will be protected from all kinds of Hazards.	<p>Apply Land Use Zones and By-laws to prevent settlement of land that is high risk to disaster (including proximity to flooding, areas of higher fire risk, land slides)</p> <p>Allocate a “fire line” so that no one can use fire producing material inside the boundary</p>	<p>Planning Building approvals</p> <p><i>(IUDP Link: Physical Development Plan, Land Use and Zoning Plan, By-Laws)</i></p>	<p>Complaints of all types of disasters in municipality will decrease in comparison to current situation</p> <p>Registers in municipality’s Ward Offices.</p>
	<p>Continue to apply building regulations to ensure new buildings are earth-quake proof</p>	<p>Planning Building approvals</p> <p><i>(IUDP Link: Land Use and Zoning Plan, By-Laws)</i></p>	<p>The damage caused by earthquake in the city would have dropped significantly.</p> <p>Physical structures within the municipality will be constructed according to building bye laws.</p>
	<p>Discourage squatter settlements on land in high risk areas</p> <p>Encourage private sector to develop affordable rental housing through the provision of incentives and facilitate (incentives: easier permit process, facilitate land consolidation, taxation abatement, Facilities: facilitating development and access to infrastructure provision such as roads, utility lines etc).</p> <p>Consider land plotting while constructing road and settlement development.</p>	<p>Planning</p> <p><i>(IUDP Link: Social Development Plan, Physical Development Plan, Land Use/Zoning)</i></p>	
	<p>Protect residential areas and other sensitive uses such as hospitals and schools by applying a buffer between heavy industrial uses and sensitive uses. Include a “buffer distance” provision in the by-laws</p>	<p>Planning</p> <p><i>(IUDP Link: Environmental Management Plan, Physical Development Plan, Land Use/Zoning)</i></p>	<p>By-laws include a “buffer distance” provision between sensitive uses and heavy industrial uses</p>
	<p>Regularly monitor air, noise and water in strategic locations</p> <p>Respond to complaints within 7 days</p>	<p>Environment Department</p>	<p>Air, Water and Noise pollution will be reduced to 90%</p>

		<i>(IUDP Link: Environment Management Plan)</i>	
	Undertake annual Forestation programs to prevent/reduce the occurrence of landslides	Environment Department  <i>(IUDP Link: Environment Management Plan)</i>	
Address impact of River Cutting and flooding	Regulation the Punyamati river using natural materials in order to prevent floods	Planning Building approvals  <i>(IUDP Link: Environment Management Plan, Physical Development Plan, Land Use and Zoning Plan, By-Laws)</i>	Zoning and by-laws applied
	River training works and dams will be constructed on the rivers which have problems with river induced erosion at the end of 5 years at Dhulikhel	Engineering	
The risk of fire in the core traditional area and settlement areas would have dropped significantly.	Awareness programs in the fire risk zones  Fire-fighting infrastructure included in new developments and retro-fitted in existing settlements (ie. Ponds/hydrants)	Fire Service  Planning  Engineering  <i>(IUDP Link: Physical Development Plan)</i>	
Immediate victims of Disaster will be provided with relief programs.	Disaster risk management centers will be established and fund will be raised.	Kavre District Office	
	Provision of open space for escape during disaster	Planning  <i>(IUDP Link: Physical Development Plan, Masterplans)</i>	
	Emergency supplies storage for time of disaster	DRR Committee	
	Public awareness program should be conducted	DRR Committee	
	Alarm system should be developed to mitigate vulnerability of risk during disaster.	DRR Committee	
	Coordination for organizations working within the relief and rescue sector will be managed by the municipality.	DRR Committee	
	Provision of Emergency ambulance	DRR Committee Dhulikhel Hospital	
	Emergency vehicle management in each settlement for, during time of disaster.	DRR Committee Dhulikhel Hospital	
	Provision of Fire Fighting services	Fire Service DRR Committee	

## 8 Municipal Transport Management Implementation Plan

### 8.1 Implementation Plan

The Implementation Plan for the Municipal Road Network includes the upgrading and maintenance of the access and collector roads and development of higher hierarchy road corridors supporting mobility of the roads.

**Short term** - The first five years should focus on development of existing access roads and their maintenance. It also incorporates construction of new road linkages to provide basic access to the settlements.

### 8.2 Short term Municipality Transport Master Plan (Five years)

The short-term Municipality transport master plan has been developed to guide the municipal investments on road infrastructure and need to be compatible with the medium and long term planning. Short term planning elements generally known as transportation system management (TSM) are basically meant for efficient use of existing and proposed infrastructure (Verma and Ramanaya, 2015). The period of short-term plan controls the encroachment and urban sprawl growth along the ROW of the Class B roads.

Survey results show majority of the households do not own any vehicle, and most trips are made either by public transport or by walking, So, besides making more appropriate route for Public transport vehicles, a strategy towards improving/creating cycle tracks and footpath needs to delivered within this MTMP period. Similarly, the roads which are earthen need to be gravelled from maintenance fund or from local share. Also, the right of way needs to be introduced in general public level and the concept of land pooling need to be adopted.

Class “C” Roads will be widened to provide proper cycle tracks and pedestrian ways where permitted by the available road space.

During this period, formulated road hierarchy will be implemented in terms of policy and enforcement of bylaws. Within 2 years’ other complementary plans of land use and city development will be developed (through Masterplanning of Urban Dhulikhel) and the village settlements.

In the third year, the MTMP and its perspective plan should be revised in coordination with the other plans formulated and changes captured during this period.

#### ***Summary of short-term plan:***

- Links for public transport routes
- Improving/creating cycle tracks and footpaths



- Through ‘soft’ engineering interventions ‘signage, road surface changes and speed limits’ make urban areas ‘pedestrian priority areas’
- Resurface earthen roads to gravelled surfaces (all-weather access)
- Adopt land pooling as a method to facilitate widening of Category A and B roads if required
- Apply the Public Use Zone to Class A and B Roads to prevent further construction of permanent structures on land within the designated ROW.

### **8.3 Medium term Municipality Transport Master Plan**

**Medium term** planning will implement the higher hierarchy roads in stages of clearing of the required ROW and infrastructure facilitation. Proper development stages of roads should be planned (construction of Class “A” roads to the standards of Class “C”, then gradually upgrading to Class “B” and to Class “A”). Other implementation strategies should be developed and finalized at the end of this period. The road network developed during this period shall complete construction of Class “C” roads. Gradual upgrading of the higher hierarchy road networks during year ten to twenty will be justified by the traffic generated and level of mobility demanded to support the emerging economy.

Land development and management should go parallel with clearance of RoW of higher classes of road. Road corridor development projects should be introduced for acquisition of land required to clear RoW for various classes of road. Each road project requires to be individual project. The development project is aimed at minimizing social, financial and physical loss. The process of development needs to internalize the value created beyond the corridor as a result of corridor development in trickle down order. Generation and sales of sales plot can be enough to compensate for physical loss of building and account for social exclusion and rehabilitation. Moreover, the development project should be launched by the land owners’ committee rather than central government.

The Medium term plan continues the development and maintenance of the access roads and, expansion and maintenance of collector roads to their respective standard layout. Class “B” roads will also need to be constructed and expanded during the medium-term plan depending upon the necessity/demand of road hierarchy. All the roads of Class “C” will be constructed and maintained at their designated standard layout at the end of medium-term plan. Class “B” and Class “A” roads will also be constructed wide enough to address the demand generated during this period. Few class “B” roads will be constructed to their full width with designated pedestrian paths and cycle tracks. For other class “B” roads, the medium-term time period will allow opening of the track by shifting the existing structures and stopping further construction of other structures within the designated ROW.

The service centers and market areas is expected to grow rapidly in wards **6 and 7**, so it is expected to occur the parking problem in these wards. Thus parking management is must in these wards. This

can be achieved by allocating areas for communal parking on the edge of bazar areas. The only buspark in the municipality is also not sufficient to cope the increasing parking demand. These issues will be resolved during the Masterplanning process for Urban Dhulikhel (refer to Volume 2, Physical Development Plan, that sets out this process).

*Summary of medium-term plan:*

- Construct Class “B” roads depending upon the necessity/demand of road hierarchy, including provision for cycling infrastructure.
- Construct and maintain all Class “C” roads to their designated standard layout
- In wards **6 and 7 (Market centres)**, allocate designated communal parking areas for residents and visitors (identified through masterplanning of these areas).
- Upgrade the Dhulikhel buspark to accommodate increasing bus-parking demand.

#### **8.4 Long Term Municipality Transport Master Plan (Twenty Years)**

Long term Municipal Transport Master Plan envisages the development of the roads of all hierarchy within the Municipality as depicted by the perspective plan in full phase. First ten years is critical in developing proper implementation policies, tools and plans for the construction and implementation of the standards of these roads in the long-term planning period of ten to twenty years. Plans to integrate other service facilities such as electricity, drainage and drinking water pipes should be developed during this period.

#### **8.5 Municipal Transport Financial Plan**

To determine how much of the proposed work can be carried out in the 5-year MTMP period, it is necessary to estimate the budget available in this period. This is done by estimating the amount of money available from different sources based on the actual amounts of the current or last financial year, assuming certain growth rates for each funding source.

Firstly, the total budget for the current or last financial year needs to be determined. This information needs to be obtained from the municipality account and planning section or the Annual Budget Book published by the municipality, indicating the different sources of funding and the amount of funding from each source allocated to the road sector. Sources of funding should be clarified as much as possible to avoid confusion and duplication. In writing up the budget of the last financial year, the wording of the funding sources below should be used to facilitate understanding and comparison with other municipalities. Additional funding sources may be included where relevant.

Planning of the investment is essential to support local government in developing good and best practice in construction, upgrading, overall asset management and especially operation and maintenance the road project. The grass root level involvement in the development of the road sector helps to create an informed and responsible citizen in the society. Thus, it is important to have local people's participation in the construction works of the local access roads. A majority (if not all) the local access roads should be constructed by the local people in coordination with the municipality. People's participation can be achieved in plantation alongside of the roads, cleaning of the road area and other activities.

The Municipality has a major role in developing the roads. It has the responsibility of preparing the necessary framework and implementing policies and strategies for the planned development of the municipal roads and thus the municipality as a whole. A major share of the municipal budget should be used to maintain the roads and construct wider roads to meet the planned class and ROW. The annual program should address the local need and the need of emergency and specific maintenance. Specific roads should be constructed as a whole and not in parts over a longer period of time.

Other institutions are district and division line agencies such as DoR, DoLIDAR. These institutions are responsible for the development of road corridors that are important to the district or a larger area as a whole. Their contribution may or may not invest in the roads within the municipality, but wider roads of the municipality that extends to the boundary to other VDC/districts may draw investment beyond the municipal boundary. This will ultimately help in the development of the local municipal market centre.

The development of higher hierarchy road corridors cannot be directly developed by the municipality's annual budget alone. This needs bigger investment. This is where the central government or the ministry might want to invest as these higher hierarchy roads are meant for mobility and can provide greater coverage beyond the municipality in the future. These roads can be upgraded to expressways. The budget that flows into the municipality for the development of MTMP roads should come from an earmarked fund (one window) and not from specific institution.

क्र.नं

धुलिखेल नगरपालिका  
नगर कार्यपालिकाको कार्यालय, धुलिखेल  
आ.व. २०७४/७५ को संशोधित तथा २०७५/७६ को बजेट तथा कार्यक्रमको सारांश

५५	सडक तथा पुल निर्माण	३११५१	११७०००००	१५०००००	१००००००	१६२७००००	८००००००	२२३०००००	२२१३००००	५००००००	१५५०००००
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Table: Budget for Fiscal Yr. 2075/76

## 8.6 Five Years budget Expenditure

Provision of annual budget expenditure for road projects (new construction, upgrading, maintenance and rehabilitation) is one of the final outcomes of the study. The budget plan is based on a realistic approach and takes consideration the annual allocated budget of municipality. Should the road project not be completed in the preceding year, it should be the next priority in coming year. If a certain road, which was targeted to complete in first year could not be finished in first year, it needs to be given first priority in next year's expenditure plan. If there is a deficit in annual expenditure, the municipality needs to incorporate that particular heading in next year at any cost. They can look for grant, assistance from district or even central level or they can incorporate them by reallocating less important budget items.

Budgeting of roads has been divided according to interventions:

- i. Construction and upgrading (70%)
- ii. Maintenance (30%)

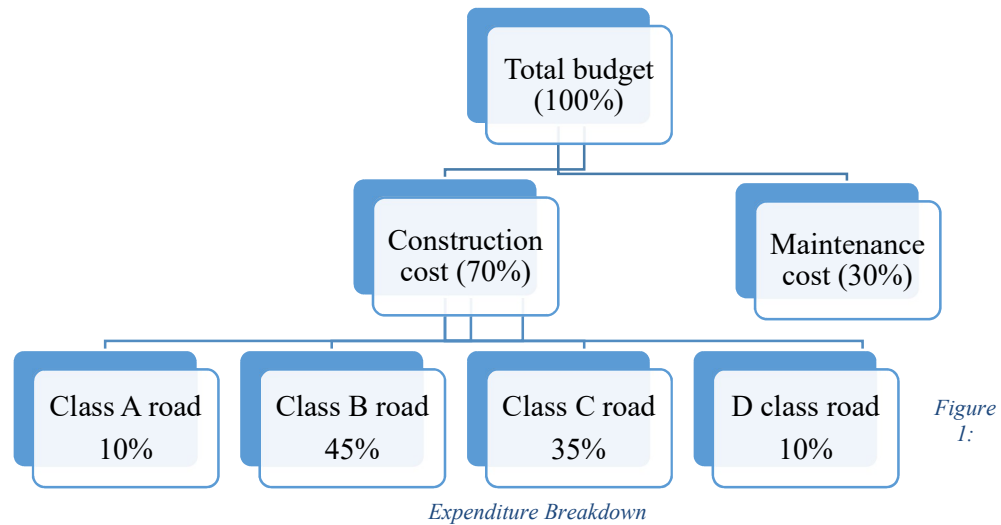
Budgeting of municipal roads has been calculated starting from total cost required for interventions (construction and upgrading) to be provided for road classes "A", "B" and "C" in the respective of 20 years. The cost is divided into twenty years on the assumption of capacity enhancement of the municipality by 10% each year. The cost of construction and upgrading of road of class "D" is subjected to 10% of total cost of construction and upgrading. Class A road owes 10%, Class B 35% and Class C 45%.

30% of the funds available for municipal roads have been allocated to maintenance costs. Yearly maintenance plans according to need-based assessment of required maintenance have to be prepared and cost allocation needs to be done through this plan. Rs 10 lakhs required for advocacy and promotion of higher classes of road for clearance of RoW through land development and land pooling projects is allocated from budget available for maintenance. These projects of road corridor development should be conducted by directly involving local people.

In absence of specific funds granted for special projects, all other funds available to the Municipality for the construction of roads should come through one window system, collected in a single basket and allocated to the roads based on ranking of roads. Normally, the construction and upgrading of prioritized roads into bituminous pavement shall be completed one kilometre for each road each year. This practice could be relaxed for special cases where shorter length sections remain for construction

in the later years. This plan is aimed to include more roads maintaining standards of construction within five years of MTMP.

It is assumed that all roads and interventions will be completed within a 20-year time period and on this basis the yearly budget has been calculated. The total cost of total intervention is 26309 Lakhs.



Class A in short term will be made of 5.5m intermediate lane with 1.5m total shoulder width. All the other roads will be made of 4m with 1.5 m of shoulder and 0.5m of drain on either side (where required).

Retaining structure cost and cost of pipe culvert cost is tentatively calculated using the “rule of thumb” that about 5% of total road construction cost goes to structure, although this value may increase in some segments and might be too low for other segments. Hence generalizing we came with that value.

Table 1: Total Budget allocation on Total Road Intervention

Year	Cost of various Intervention (In Lakhs)							
	Class A	Class B	Class C	Class D	Maintenance	Total	Probable Budget	Deficit
1	64	224	288	70	276.85	922.85	641	281.85
2	70	247	317	68.2	301	1003.2	706	297.2
3	77	271	349	77	331.7	1105.7	776.7	329
4	85	299	384	85	365.57	1218.57	854	364.57
5	93	328	422	93.9	401.5	1338.4	839.8	498.6

S. No.	Municipal Code	Existing surface	Surface type to be made	Total Length(KM)	Type of CD Structures			New Construction	Existing Width (m)	Drainage (m)	Pavement width(m)	Gravel width	Recurrent Maintenance	Total Cost	Pavement cost	CDS and DS cost	Track Opening Cost	Gravelling Cost	Total Cost for Short Term	Per Km Cost
					Bridge	Cause way	Culvert													
1	24M01A001	New	Gravel	6.46		4.0		6.46	0.0	12920.0	3.75	1.5		195031428.6	39452142.9	16920000.0	25840000.0	6090857.1	88303000.0	13669195.0
2	24M01A002	New	Gravel	1.75	1.0		1.0	1.75	0.0	3500.0	3.75	1.5		82425000.0	10687500.0	4775000.0	7000000.0	1650000.0	24112500.0	13778571.4
3	24M01B001	Gravel	Bitumen	2.72				0.00	5.0	5440.0	5.50	1.5		61005714.3	24363428.6	5440000.0	0.0	2564571.4	32368000.0	11900000.0
4	24M01B002	Gravel	Bitumen	0.33				0.00	6.0	660.0	5.50	1.5		7401428.6	2955857.1	660000.0	0.0	311142.9	3927000.0	11900000.0
5	24M01B003	New	Gravel	2.66		2.0		2.66	0.0	5320.0	5.50	1.5		72300000.0	23826000.0	7320000.0	10640000.0	2508000.0	44294000.0	16651879.7
6	24M01B004	Bitumen	Recurrent Maintenance	0.49				0.00	7.0	980.0	5.50	0.0	0.49	1225000.0	4389000.0	980000.0	0.0	0.0	5369000.0	10957142.9
7	24M01B005	Earthen	Gravel	2.28				0.00	7.0	4560.0	5.50	1.5		51137142.9	20422285.7	4560000.0	0.0	2149714.3	27132000.0	11900000.0
8	24M02B006	Earthen	Gravel	0.78				0.00	7.0	1560.0	5.50	1.5		17494285.7	6986571.4	1560000.0	0.0	735428.6	9282000.0	11900000.0
9	24M02B007	Earthen	Gravel	1.18				0.00	7.0	2360.0	5.50	1.5		26465714.3	10569428.6	2360000.0	0.0	1112571.4	14042000.0	11900000.0
10	24M02B008	Earthen	Gravel	0.21				0.00	7.0	420.0	5.50	1.5		4710000.0	1881000.0	420000.0	0.0	198000.0	2499000.0	11900000.0
11	24M02B009	Bitumen	Recurrent Maintenance	0.65				0.00	7.0	1300.0	5.50	0.0	0.65	1625000.0	5822142.9	1300000.0	0.0	0.0	7122142.9	10957142.9
12	24M02C001	Earthen	Gravel	5.91		5.0	1.0	0.0	4	11817.5	5.50	1.5		95994632.4	52925616.4	17492522.0	0.0	5571117.5	75989255.9	12860438.2
13	24M02C002	Earthen	Gravel	4.85		4.0	1.0	0.0	4	9691.9	5.50	1.5	4.85	78748791.9	43405857.5	14366898.0	0.0	4569037.6	62341793.1	12864723.3
14	24M02C003	Earthen	Gravel	2.80				0.0	4	5601.0	5.50	1.5		42807704.0	25084514.4	5601008.0	0.0	2640475.2	33325997.6	11900000.0
15	24M02C004	Earthen	Gravel	3.19				0.0	4	6388.6	5.50	1.5		48827401.7	28611944.7	6388632.0	0.0	3011783.7	38012360.4	11900000.0
16	24M02C005	Earthen	Gravel	2.04				0.0	4	4079.3	5.50	1.5		31177797.6	18269606.6	4079338.0	0.0	1923116.5	24272061.1	11900000.0
17	24M02C006	Earthen	Gravel	1.01				0.0	4	2016.0	5.50	1.5		15408107.0	9028862.7	2016014.0	0.0	950406.6	11995283.3	11900000.0
18	24M02C007	Earthen	Gravel	1.51				0.0	4	3017.2	5.50	1.5		23059936.9	13512692.0	3017188.0	0.0	1422388.6	17952268.6	11900000.0
19	24M02C008	Earthen	Gravel	1.62				0.0	4	3249.3	5.50	1.5		24833630.0	14552043.0	3249260.0	0.0	1531794.0	19333097.0	11900000.0
20	24M02C009	Earthen	Gravel	1.45				0.0	4	2897.9	5.50	1.5		22148006.4	12978317.8	2897870.0	0.0	1366138.7	17242326.5	11900000.0
21	24M02C010	Earthen	Gravel	0.85				0.0	4	1703.7	5.50	1.5		13021196.9	7630178.0	1703708.0	0.0	803176.6	10137062.6	11900000.0
22	24M02C011	Earthen	Gravel	0.59				0.0	4	1171.3	5.50	1.5		8951696.4	5245526.8	1171250.0	0.0	552160.7	6968937.5	11900000.0
23	24M02C012	Earthen	Gravel	0.57				0.0	4	1132.5	5.50	1.5		8655535.7	5071982.1	1132500.0	0.0	533892.9	6738375.0	11900000.0
24	24M02C013	Earthen	Gravel	0.56				0.0	4	1117.6	5.50	1.5		8541534.9	5005179.8	1117584.0	0.0	526861.0	6649624.8	11900000.0
25	24M02C014	Earthen	Gravel	4.15				0.0	4	8290.4	5.50	1.5		63362297.0	37129121.7	8290394.0	0.0	3908328.6	49327844.3	11900000.0
26	24M02C015	Earthen	Gravel	3.20				0.0	4	6397.2	5.50	1.5		48893023.3	28650397.8	6397218.0	0.0	3015831.3	38063447.1	11900000.0
27	24M02C016	Earthen	Gravel	2.62		5.0	4.0	0.0	4	5246.0	5.50	1.5		47794214.6	23494460.3	12945972.0	0.0	2473101.1	38913533.4	14835585.6
28	24M02C017	Earthen	Gravel	1.94			1.0	0.0	4	3874.8	5.50	1.5		30289863.9	17353756.7	4549842.0	0.0	1826711.2	23730309.9	12248401.3
29	24M02C018	Earthen	Gravel	4.34	1.0			0.0	4	8674.8	5.50	1.5		96300058.4	38850595.0	9274774.0	0.0	4089536.3	52214905.3	12038332.1
30	24M02C019	Earthen	Gravel	0.73				0.0	4	1463.0	5.50	1.5		11181163.7	6551952.9	1462956.0	0.0	689679.3	8704588.2	11900000.0
31	24M02C020	Earthen	Gravel	3.18				0.0	4	6351.6	5.50	1.5		48544600.7	28446228.6	6351630.0	0.0	2994339.9	37792198.5	11900000.0
32	24M02C021	Earthen	Gravel	2.64				0.0	4	5286.8	5.50	1.5		40406379.4	23677383.1	5286816.0	0.0	2492356.1	31456555.2	11900000.0



33	24M02C022	Earthen	Gravel	4.14		1.0	2.0	0.0	4	8279.8	5.50	1.5		65631298.0	37081657.8	10629796.0	0.0	3903332.4	51614786.2	12467646.8
34	24M02C023	Earthen	Gravel	1.62				0.0	4	3236.1	5.50	1.5		24733386.3	14493302.1	3236144.0	0.0	1525610.7	19255056.8	11900000.0
35	24M02C024	Gravel	Bitumen	3.55			3.0	0.0	4	7100.1	5.50	1.5		56290157.0	31798367.7	9125114.0	0.0	3347196.6	44270678.3	12470413.4
36	24M02C025	Earthen	Gravel	0.93				0.0	4	1859.6	5.50	1.5		14212611.3	8328324.6	1859594.0	0.0	876665.7	11064584.3	11900000.0
37	24M02C026	Bitumen	Recurrent Maintenance	0.29				0.0	4	577.4	5.50	1.5	0.29	4557493.6	2586016.7	577420.0	0.0	272212.3	3435649.0	11900000.0
38	24M02C027	Bitumen	Recurrent Maintenance	0.23				0.0	4	463.6	5.50	1.5	0.23	3659049.6	2076220.9	463590.0	0.0	218549.6	2758360.5	11900000.0
39	24M02C028	Bitumen	Recurrent Maintenance	1.76				0.0	4	3515.7	5.50	1.5	1.76	27749296.7	15745528.5	3515748.0	0.0	1657424.1	20918700.6	11900000.0
40	24M02C029	Gravel	Bitumen	1.59				0.0	4	3186.4	5.50	1.5		24353352.9	14270609.6	3186420.0	0.0	1502169.4	18959199.0	11900000.0
41	24M02C030	Gravel	Bitumen	0.62				0.0	4	1243.7	5.50	1.5		9505482.6	5570035.1	1243708.0	0.0	586319.5	7400062.6	11900000.0
42	24M02C031	Gravel	Bitumen	0.61				0.0	4	1217.6	5.50	1.5		9306309.7	5453323.5	1217648.0	0.0	574034.1	7245005.6	11900000.0
43	24M02C032	Gravel	Bitumen	0.44				0.0	4	885.0	5.50	1.5		6764173.1	3963679.0	885032.0	0.0	417229.4	5265940.4	11900000.0
44	24M02C033	Bitumen	Recurrent Maintenance	0.40				0.0	4	794.8	5.50	1.5	0.40	6273369.1	3559640.2	794816.0	0.0	374699.0	4729155.2	11900000.0
45	24M02C034	Bitumen	Recurrent Maintenance	0.71				0.0	4	1413.2	5.50	1.5	0.71	11153870.0	6328938.0	1413160.0	0.0	666204.0	8408302.0	11900000.0
46	24M02C035	Bitumen	Recurrent Maintenance	0.23				0.0	4	467.0	5.50	1.5	0.23	3686201.1	2091627.2	467030.0	0.0	220171.3	2778828.5	11900000.0
47	24M02C036	Bitumen	Recurrent Maintenance	1.57				0.0	4	3147.6	5.50	1.5	1.57	24843809.7	14096894.7	3147632.0	0.0	1483883.7	18728410.4	11900000.0
48	24M02C037	Gravel	Bitumen	0.48				0.0	4	963.0	5.50	1.5		7359872.7	4312747.8	962974.0	0.0	453973.5	5729695.3	11900000.0
49	24M02C038	Bitumen	Recurrent Maintenance	0.28				0.0	4	569.1	5.50	1.5	0.28	4491682.9	2548674.4	569082.0	0.0	268281.5	3386037.9	11900000.0
50	24M02C039	Gravel	Bitumen	0.81				0.0	4	1618.2	5.50	1.5		12367319.9	7247018.3	1618154.0	0.0	762844.0	9628016.3	11900000.0
51	24M02C040	Gravel	Bitumen	0.25				0.0	4	503.6	5.50	1.5		3849156.9	2255534.0	503628.0	0.0	237424.6	2996586.6	11900000.0
52	24M02C041	Gravel	Bitumen	0.50				0.0	4	998.6	5.50	1.5		7631836.1	4472113.3	998558.0	0.0	470748.8	5941420.1	11900000.0
53	24M02C042	Bitumen	Recurrent Maintenance	0.34				0.0	4	682.1	5.50	1.5	0.34	5383575.8	3054753.0	682082.0	0.0	321552.9	4058387.9	11900000.0
54	24M02C043	Bitumen	Recurrent Maintenance	0.21				0.0	4	425.7	5.50	1.5	0.21	3359736.7	1906384.5	425668.0	0.0	200672.1	2532724.6	11900000.0
55	24M02C044	Bitumen	Recurrent Maintenance	0.31				0.0	4	626.4	5.50	1.5	0.31	4944290.9	2805493.6	626426.0		295315.1	3727234.7	11900000.0
56	24M02C045	Bitumen	Recurrent Maintenance	0.15				0.0	4	304.5	5.50	1.5	0.15	2403311.9	1363689.2	304492.0		143546.2	1811727.4	11900000.0
57	24M02C046	Bitumen	Recurrent Maintenance	0.10				0.0	4	205.3	5.50	1.5	0.10	1620072.1	919262.6	205258.0		96764.5	1221285.1	11900000.0
58	24M02C047	Bitumen	Recurrent Maintenance	0.10				0.0	4	198.2	5.50	1.5	0.10	1564427.4	887688.7	198208.0		93440.9	1179337.6	11900000.0
59	24M02C048	Earthen	Gravel	1.77		1.0		0.0	4	3547.9	5.50	1.5		28115726.0	15889308.6	4547852.0		1672558.8	22109719.4	12463721.4

60	24M02C049	Bitumen	Recurrent Maintenance	2.28				0.0	4	4555.2	5.50	0.0	2.28	35953495.5	20400761.7	4555194.0		0.0	24955955.7	10957142.9
61	24M02C050	Bitumen	Recurrent Maintenance	0.70				0.0	4	1404.7	5.50	1.5	0.70	11086828.1	6290897.0	1404666.0		662199.7	8357762.7	11900000.0
62	24M02C051	Gravel	Bitumen	0.62				0.0	4	1231.4	5.50	1.5		9411628.3	5515038.3	1231428.0		580530.3	7326996.6	11900000.0
63	24M02C052	Gravel	Bitumen	0.62				0.0	4	1243.7	5.50	1.5		9505085.1	5569802.2	1243656.0		586295.0	7399753.2	11900000.0
64	24M02C053	Bitumen	Recurrent Maintenance	0.53				0.0	4	1065.4	5.50	1.5	0.53	8409018.4	4771452.1	1065396.0		502258.1	6339106.2	11900000.0
65	24M02C054	Gravel	Bitumen	0.33				0.0	4	658.8	5.50	1.5		5034839.1	2950321.6	658764.0		310560.2	3919645.8	11900000.0
66	24M02C055	Earthen	Gravel	0.26				0.0	4	519.5	5.50	1.5		3970219.7	2326474.5	519468.0		244892.1	3090834.6	11900000.0
67	24M02C056	Bitumen	Recurrent Maintenance	0.19				0.0	4	378.2	5.50	1.5	0.19	2984889.1	1693688.2	378176.0		178283.0	2250147.2	11900000.0
68	24M02C057	Earthen	Gravel	2.74		1.0	1.0	0.0	4	5479.4	5.50	1.5		43553317.3	24539911.2	7154406.0		2583148.5	34277465.7	12511380.1
69	24M02C058	Earthen	Gravel	1.66				0.0	4	3310.8	5.50	1.5		25303956.1	14827645.3	3310798.0		1560804.8	19699248.1	11900000.0
70	24M02C059	Earthen	Gravel	2.25				0.0	4	4503.5	5.50	1.5		34419439.0	20169147.9	4503478.0		2123068.2	26795694.1	11900000.0
71	24M02C060	Earthen	Gravel	2.16				0.0	4	4324.4	5.50	1.5		33050802.0	19367152.2	4324404.0		2038647.6	25730203.8	11900000.0
72	24M02C061	Earthen	Gravel	2.24				0.0	4	4474.8	5.50	1.5		34200532.3	20040872.7	4474836.0		2109565.5	26625274.2	11900000.0
73	24M02C062	Earthen	Gravel	3.94		1.0		0.0	4	7887.5	5.50	1.5		61283265.0	35324866.5	8887530.0		3718407.0	47930803.5	12153564.8
74	24M02C063	Earthen	Gravel	10.09	1.0	1.0		0.0	4	20170.2	5.50	1.5		185157926.6	90333663.5	21770196.0		9508806.7	121612666.2	12058649.9
75	24M02C064	Earthen	Gravel	0.60				0.0	4	1195.4	5.50	1.5		9136133.9	5353603.7	1195382.0		563537.2	7112522.9	11900000.0
76	24M02C065	Earthen	Gravel	1.56				0.0	4	3129.3	5.50	1.5		23916869.3	14014838.4	3129310.0		1475246.1	18619394.5	11900000.0
77	24M02C066	Earthen	Gravel	2.91		4.0		0.0	4	5816.3	5.50	1.5		48452981.9	26048616.5	9816278.0		2741959.6	38606854.1	13275450.1
78	24M02C067	Earthen	Gravel	1.46				0.0	4	2916.4	5.50	1.5		22289873.1	13061449.0	2916432.0		1374889.4	17352770.4	11900000.0
79	24M02C068	Earthen	Gravel	2.39				0.0	4	4785.1	5.50	1.5		36571514.7	21430224.0	4785058.0		2255813.1	28471095.1	11900000.0
80	24M02C069	Earthen	Gravel	2.45			2.0	0.0	4	4901.1	5.50	1.5		38808697.6	21950096.6	6251138.0		2310536.5	30511771.1	12450892.5
81	24M02C070	Earthen	Gravel	2.05				0.0	4	4108.5	5.50	1.5		31400770.3	18400264.5	4108512.0		1936869.9	24445646.4	11900000.0
82	24M02C071	Earthen	Gravel	1.89				0.0	4	3780.9	5.50	1.5		28896588.1	16932860.5	3780862.0		1782406.4	22496128.9	11900000.0
83	24M02C072	Earthen	Gravel	1.89		1.0		0.0	4	3777.7	5.50	1.5		29872513.1	16918753.0	4777712.0		1780921.4	23477386.4	12429421.0
84	24M02C073	Earthen	Gravel	1.08				0.0	4	2154.7	5.50	1.5		16468094.9	9649995.8	2154704.0		1015789.0	12820488.8	11900000.0
85	24M02C074	Earthen	Gravel	1.06	1.0		1.0	0.0	4	2121.5	5.50	1.5		46889489.6	9501387.8	3396522.0		1000146.1	13898055.9	13101967.3
86	24M02C075	Earthen	Gravel	0.73				0.0	4	1459.6	5.50	1.5		11155728.3	6537048.3	1459628.0		688110.3	8684786.6	11900000.0
87	24M02C076	Earthen	Gravel	0.59				0.0	4	1182.5	5.50	1.5		9037785.6	5295973.4	1182514.0		557470.9	7035958.3	11900000.0
88	24M02C077	Earthen	Gravel	0.45				0.0	4	895.1	5.50	1.5		6840861.6	4008617.0	895066.0		421959.7	5325642.7	11900000.0
89	24M02C078	Earthen	Gravel	0.45				0.0	4	891.2	5.50	1.5		6810978.0	3991105.8	891156.0		420116.4	5302378.2	11900000.0
90	24M02C079	Earthen	Gravel	2.52				0.0	4	5037.4	5.50	1.5		38500205.0	22560400.5	5037410.0		2374779.0	29972589.5	11900000.0
91	24M02C080	Earthen	Gravel	0.26				0.0	4	526.7	5.50	1.5		4025462.3	2358845.7	526696.0		248299.5	3133841.2	11900000.0
92	24M02C081	Earthen	Gravel	0.11				0.0	4	212.9	5.50	1.5		1627363.0	953604.3	212926.0		100379.4	1266909.7	11900000.0
93	24M02C082	Earthen	Gravel	0.20				0.0	4	390.7	5.50	1.5		2985835.0	1749643.5	390670.0		184173.0	2324486.5	11900000.0

94	24M02C083	Earthen	Gravel	0.28				0.0	4	555.4	5.50	1.5		4244735.9	2487335.9	555386.0		261824.8	3304546.7	11900000.0
95	24M02C084	Earthen	Gravel	0.27				0.0	4	540.8	5.50	1.5		4132936.1	2421823.3	540758.0		254928.8	3217510.1	11900000.0

*Budget allocated for various classes of roads for Five years*

S. No.	Code	Score	Length	YEAR I		Year II		Year III		Year IV		Year V		Length Completed
				Length	Cost	Length	Cost	Length	Cost	Length	Cost	Length	Cost	

*A Class Roads*

1	24M01A001	1.00	6.46	-	-	0.26	3,530,450.00	0.28	3883495	0.31	4271844.5	0.25	3383300.844	1.10
2	24M01A002	2.00	1.75	0.47	6,419,000.00	0.26	3,530,450.00	0.28	3,883,495.00	0.31	4,271,844.50	0.44	6,014,757.06	1.75
			<b>8.21</b>	<b>0.47</b>	<b>6,419,000.00</b>	<b>0.51</b>	<b>7,060,900.00</b>	<b>0.57</b>	<b>7,766,990.00</b>	<b>0.62</b>	<b>8,543,689.00</b>	<b>0.68</b>	<b>9,398,057.90</b>	<b>2.85</b>

*B Class Roads*

2	24M01B001	1.00	2.72	0.94	11,233,250.00	0.93	11,120,917.50	0.85	10,058,252.05	0.00	-	0.00	-	2.72
3	24M01B002	2.00	0.33	0.00	-	0.00	-	0.00	-	0.33	3,887,378.50	0.00	-	0.33
4	24M01B003	3.00	2.66	0.67	11,233,250.00	0.82	13,592,232.50	1.03	17,126,212.95	0.00	-	0.00	-	2.66
5	24M01B004	4.00	0.49	0.00	-	0.00	-	0.00	-	0.00	-	0.53	5,822,096.87	0.49
6	24M01B005	5.00	2.28	0.00	-	0.00	-	0.00	-	1.01	11,961,164.60	1.27	15,130,873.22	2.28
7	24M01B006	6.00	0.78	0.00	-	0.00	-	0.00	-	0.00	-	0.77	9,210,096.74	0.77
8	24M01B007	7.00	1.18	0.00	-	0.00	-	0.00	-	1.18	14,054,368.41	0.00	-	1.18
9	24M01B008	8.00	0.21	0.00	-	0.00	-	0.00	-	0.00	-	0.23	2,730,135.82	0.21
			<b>10.65</b>	<b>1.62</b>	<b>22,466,500.00</b>	<b>1.75</b>	<b>24,713,150.00</b>	<b>1.87</b>	<b>27,184,465.00</b>	<b>2.51</b>	<b>29,902,911.50</b>	<b>2.81</b>	<b>32,893,202.65</b>	<b>10.65</b>

*C Class Roads*

10	24M02C024	1.00	3.55	0.58	7,221,375.00	0.76	9532215.00	0.70	8737863.75	0.77	9611650.13	0.71	8881164.72	3.53
11	24M02C029	2.00	1.59	0.61	7,221,375.00	0.99	11756398.50	0.00	0.00	0.00	0.00	0.00	0.00	1.59
12	24M02C041	5.00	0.50	0.00	-	0.00	0.00	0.50	5941747.35	0.00	0.00	0.00	0.00	0.50
13	24M02C049	6.00	2.28	0.00	-	0.00	0.00	0.00	0.00	0.88	9611650.13	1.39	15224853.80	2.27
14	24M02C057	4.00	2.74	0.58	7,221,375.00	0.42	5242718.25	0.70	8737863.75	1.04	13071844.17	0.00	0.00	2.74
15	24M02C063	3.00	10.09	0.60	7,221,375.00	0.43	5242718.25	0.96	11533980.15	0.51	6151456.08	1.51	18185242.04	4.01
			<b>20.74</b>	<b>2.36</b>	<b>28,885,500.00</b>	<b>1.75</b>	<b>31774050.00</b>	<b>0.70</b>	<b>34951455.00</b>	<b>0.77</b>	<b>38446600.50</b>	<b>0.71</b>	<b>42291260.55</b>	<b>14.64</b>

*D Class Roads*

16	24M02D109	1.00	4.34	0.00	0.00	0.00	0.00	0.00	0.00	0.57	6834951.20	0.79	9398057.90	1.36
17	24M02D159	2.00	1.93	0.54	6419000.00	0.59	7060900.00	0.65	7766990.00	0.14	1708737.80	0.00	0.00	1.93

6.27	0.54	6419000.00	0.59	7060900.00	0.65	7766990.00	0.72	8543689.00	0.79	9398057.90	3.29
		64190000.00		70609000.00		77669900.00		85436890.00		93980579.00	
Total Length of Road, Km	45.87	<i>Total Length of Road to be Completed Within 5 Year in Km</i>									31.43

## **9 Monitoring and Evaluation**

This plan should be reviewed annually (prior to the preparation of the Municipal Budget). The annual review will set out 12-month priorities.

The progress of the Implementation Plan should be reported to the Mayor and Council on a monthly basis.

A new Plan should be developed after 5 years (2080). This process should include an assessment of the progress of the Plan and the physical, economic and social impacts of the Plan.