



## 4.12 Spatial Development Forms

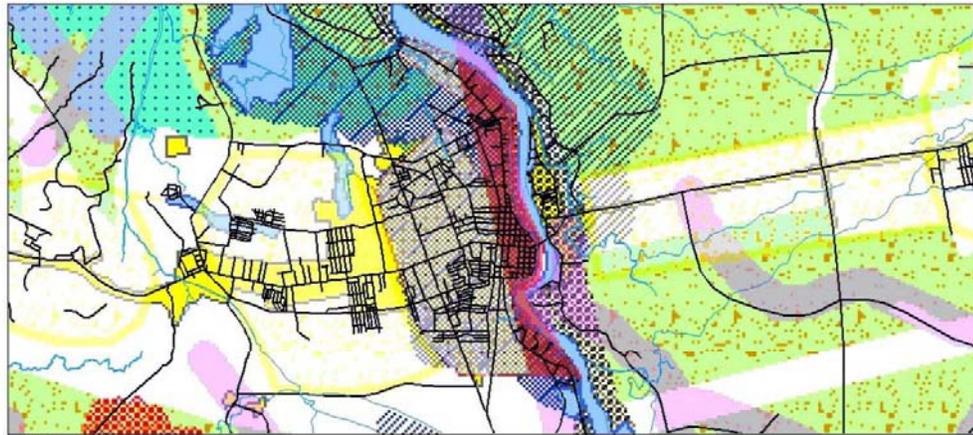
*Disclaimer: This is a first attempt to provide guidance in preparing the information product needed for the CLUP and is intended to be used hand-in-hand with Volumes 1 and 2. As more knowledge is gathered, the IP will be updated. Likewise, revisions may be required due to new or changing of land use policies. Furthermore, data will continuously be prepared by the custodians, which may require updates.*

*For the latest update, please check HLURB Homepage: <http://www.hlurb.gov.ph/> or contact HLURB, telephone +632 927 2698.*

<p><b>Step 1: Background and Objective of the GIS Analysis</b></p>		
<p>The planning process should involve the identification of needs and goals, the formulation and evaluation of alternative courses of action and monitoring of adopted projects. The municipality's issues and problems, needs and goals, as identified in the previous steps of the CLUP preparation need to be resolved together in an integrated approach. Doing so, several development alternatives must be tried, combined, improved and tested theoretically and virtually, and further disseminated to the public. The preparation of development scenarios is a policy-oriented planning tool that can be used to determine what would happen if certain policy choices are made, and if the assumptions concerning the future are correct. Scenario preparation involves three steps: (1) formulating land suitability maps using spatial data sets, (2) predicting future land use requirement based upon projected population, and (3) forecasting patterns of change using land use controls and growth pattern value.</p>		
<p>The Objective is to use GIS to visualize three different Spatial Development Forms after having chosen the preferred Development Strategy.</p>		
<p><b>Step 2: Identify the Indicators to Evaluate Objective Fulfillment</b></p>		
<p>To get hold of the indicators, the main planning concept behind each development form should be defined. Examples of common development forms found in existing CLUPs are:</p>		



<p>A. Concentric Development: To promote concentric expansion of the City Proper to encourage development 'close to' public services and transportation nodes. In this Spatial development form, public services can be found in the Base line studies; however, 'close to' has to be defined as a measurable indicator.</p>	
<p>B. Linear Development: To encourage development particularly 'in proximity to' the main road based on continued growth strategy. In this development form, 'in proximity to' has to be defined as a measurable indicator.</p>	
<p>C. Satellite Development: To develop 'satellite' urbanized areas to stimulate development in the entire municipality.</p>	
<p>Evaluation of the spatial development forms involves making decisions about the suitable development direction that should be taken, given the various socio-economic and environmental impacts and risks. The evaluation process is done through quantitative assessment that involves multi-criteria analysis where weighted summation method and interval standardization for ranking of alternatives were carried out.</p>	
<p><b>Step 3: Create the Database</b></p>	
<p>The Custodian of the Spatial Development Form data is the MPDO.</p>	
<p>The feature types will be polygons, polylines and points as well. Graphs may be used for comparison.</p>	
<p>Regarding <b>areas for urban expansion</b>, the Needs Assessment has specified the land area required for urban development over the projected time set by the CLUP objectives. Likewise, the Risk and Suitability Analysis has defined the potential areas for urban development:</p>	



**Spatial Development Forms**



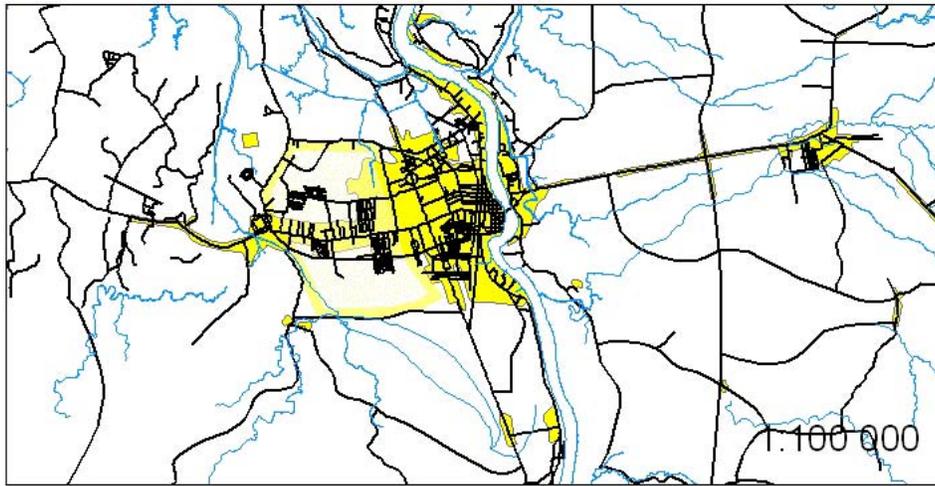
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1:50 000

The map above is too complicated to be understood by a layman stakeholder and needs to be edited to focus on the various spatial development forms. A simplified legend is used:

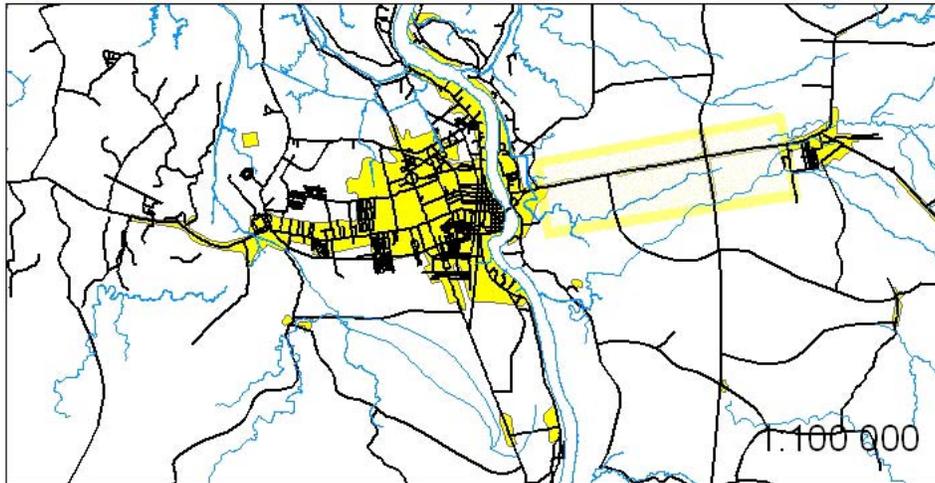
**Spatial Development Forms**



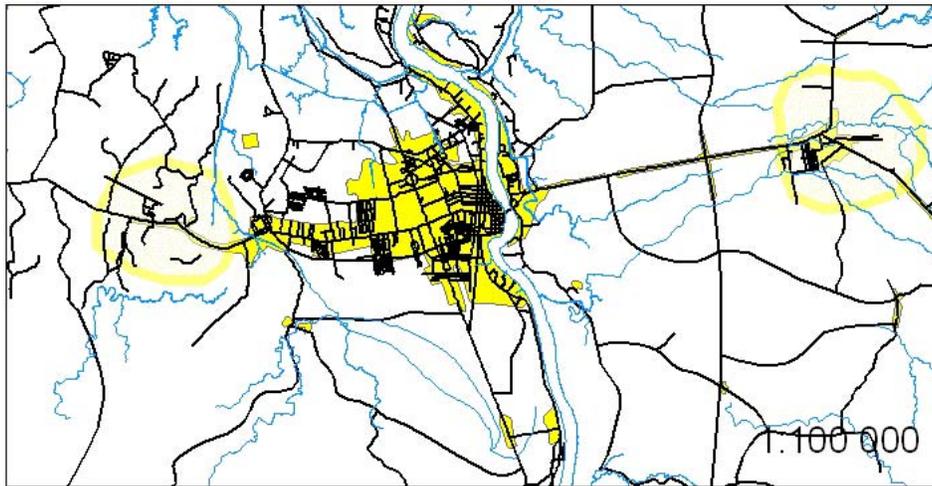
Consequently, the first Form (Concentric Development) **(A)** can be shown as follows:



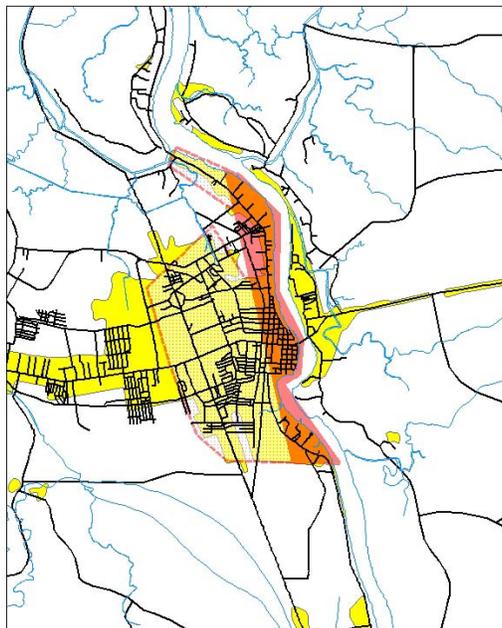
The second Form (Linear Development) **(B)** can be shown as:



And the third Form (Satellite Development) **(C)** will look like this:



Regarding existing urban areas where interventions are needed to minimize risks, a map should also be prepared for the stakeholders. In this example notations are made for certain existing built-up areas based on findings from the Risk and Suitability Analysis.



**Existing built-up areas exposed to hazards**

-  Rezone due to flooding risk
-  Rezone due to earthquake risk
-  Built Up
-  road
-  RIVER

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**Step 4: Analyze the data**

Overlay analysis is the process of putting two or more layers on top of each other in



<p>the GIS to determine areas of convergence of certain features that give a comprehensive picture for a particular purpose, and thus enable the elimination or screening out of those features that are not suitable for that purpose.</p>	<p>In determining the areas for urban expansion, the result might show that not all ecosystems can be preserved, not all natural hazards can be avoided and not all regulations can be considered. There may be compromises that have to be made. In the next step, (Spatial Development Forms), these compromises will have to be evaluated to determine feasibility of adoption. ‘What if’ and ‘Making the best out of it’ will present pragmatic conclusive alternatives.</p>
<p>The indicators will reflect a quantitative impact on the existing land-use, for example: ‘Loss of agricultural land (in hectares),’ or may reflect a qualitative impact such as: ‘Development occurs in a geohazard area.’ The example below shows that Form B is encroaching on a SAFDZ zone reserved for Crop Development:</p>	<p>The map displays several land-use zones: SAFDZ (pink), Crop Development Zone (light green), Agro-Forestry Zone (yellow-green), Watershed/Forestry Zone (cross-hatched), Remaining NPAAAD (grid pattern), Fishery Development Zone (blue), and River (light blue). A red outline highlights an area where development is encroaching on the SAFDZ zone. A red arrow points from the legend to this area.</p>
<p><b>Step 5 Present the Data</b></p>	
<p>The Spatial Development Form maps prepared in GIS will be used in the CLUP Draft and also displayed during public consultations and hearings, which is the next step of the CLUP preparation process. If aerial photos are available, they should be used as backdrop to facilitate the viewer recognition of the development alternatives and the constraints to the built-up areas.</p>	