

EXERCISE - 4

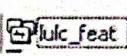
STUDY OF FEATURES ESTIMATION

Objective: To obtain areas and lengths of the digitized features

Input Data: Topologically validated LULC shape file

PROCEDURE

Step 1: Process using ArcCatalog Component

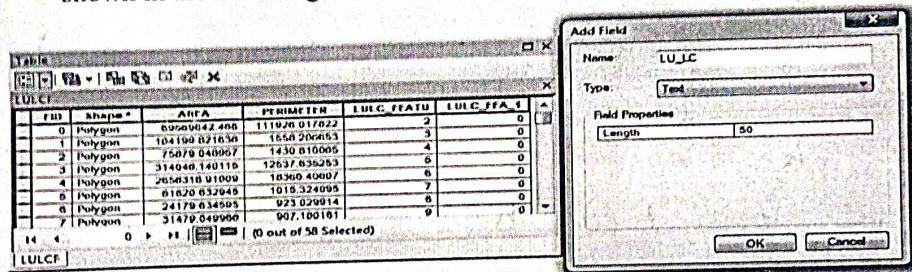
- R Click on the feature dataset file then go to **Export** option and select the **To Coverage** option for exporting the validated topology shape file in to coverage file (It is need to Clean and Build the features for the conversion of polylines to polygons).
- When select and click the **To Coverage** option, Feature Class to Coverage dialog box will appears. There that will takes the input file by defaultly. But once we need to check where our's output file is saved. The output file is  appears like this
- After the successful execution of file then go to file location and select with R Click on the coverage file → Go to Properties once click on **Clean** option (Coverage properties Dialogue Box) and **OK**. Once again go to Coverage properties Dialogue Box then click on **Build** option and Click on **OK** (twice) option (This process will be help full to convert the poly line features to polygons).

Step 2: Process using ArcMap Component

- Go to **ArcMap** window and Add the processed **Coverage file**
- Go to **table of contents** then select and R.Click on the coverage file → Go to **Data** option then choose and click on **Export Data** option (This will be useful to assigning the Non spatial/attribute information to the spatial data).
- In Export Dialogue Box define our destination folder for saving the final output shape file then click **OK**
- When the execution of file exporting is successful the system (ArcMap) will ask *Do you want to add the exported data to the map as a layer .Click Yes*
- When it is adds in to the table of contents then remove the Coverage file from there.

Estimation of Areas for Tanks/Water bodies

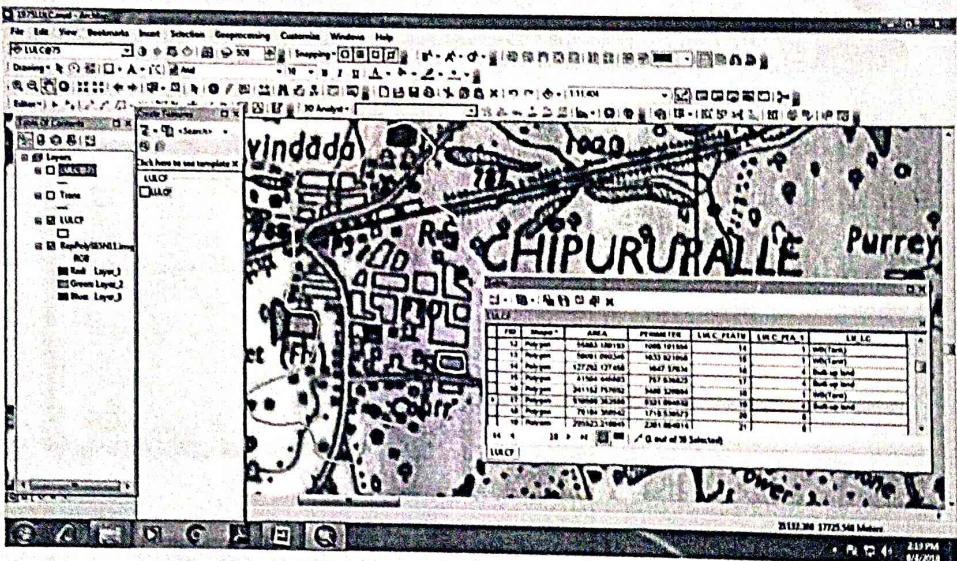
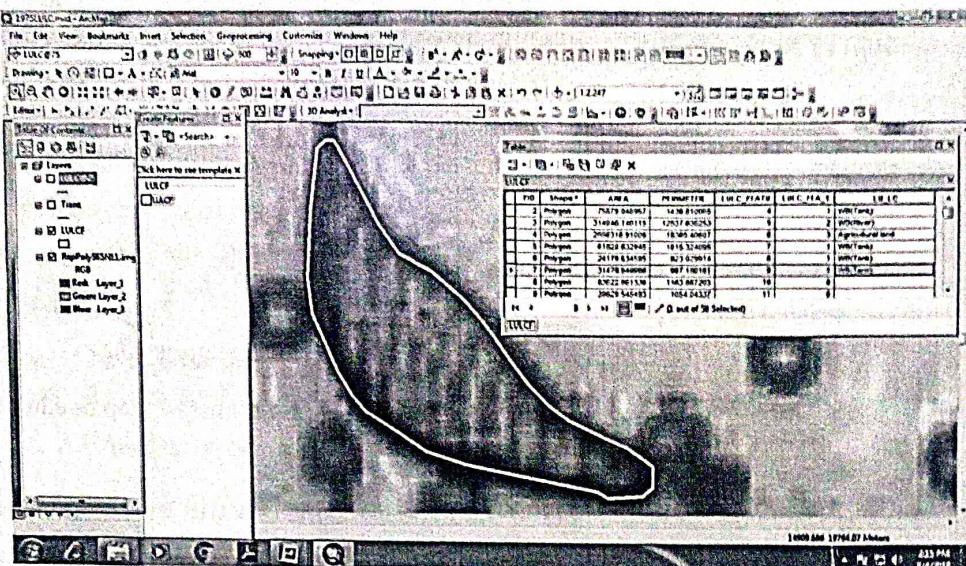
- Go to Editor, select Start Editing.
- Go to table of contents → Select & R.Click on Shape file
- Go to Open Attribute Table option and click on that.
- In the Attribute Table need to add the new fields for assigning the Label/Numerical information to the spatial data. For that
- Go to Table Options (It is available at Top Left corner of the Table).
- Pulldown the arrow → go to Add Field option (Editor must be stop in editing mode. Otherwise it's appears in Disable mode).
- When click on Add Field option Add Field Dialogue Box will appears. Here in that in the Name column type the name of the Field (Eg. LU_LC) → In Type column select the Text option, In the field properties length is our choice. Click OK. As shown in the below figure.
- When click OK option a new field will be added to the attribute table. As shown in the below figure.



- Go to Editor select Start Editing

FID	Shape *	AREA	PERIMETER	LULC_FEATU	LULC_FEA_1	LU_LC
0	Polygon	609569042.460	111926.017622	2	0	Tank
1	Polygon	104190.021630	1550.206053	3	0	Built-up
2	Polygon	75879.040067	1430.810005	4	0	Wasteland
3	Polygon	314046.140116	12637.635253	5	0	Water body
4	Polygon	2656318.910005	18360.400007	6	0	
5	Polygon	81820.632045	1015.324095	7	0	
6	Polygon	24179.634595	923.029914	8	0	
7	Polygon	31479.049960	907.180181	9	0	

Select row by row in the attribute table and type the feature name in the field (Eg. Tank/Built-up/Wasteland etc.,) as shown in the below figure. Whenever selecting the row the concern polygon will be highlighted.

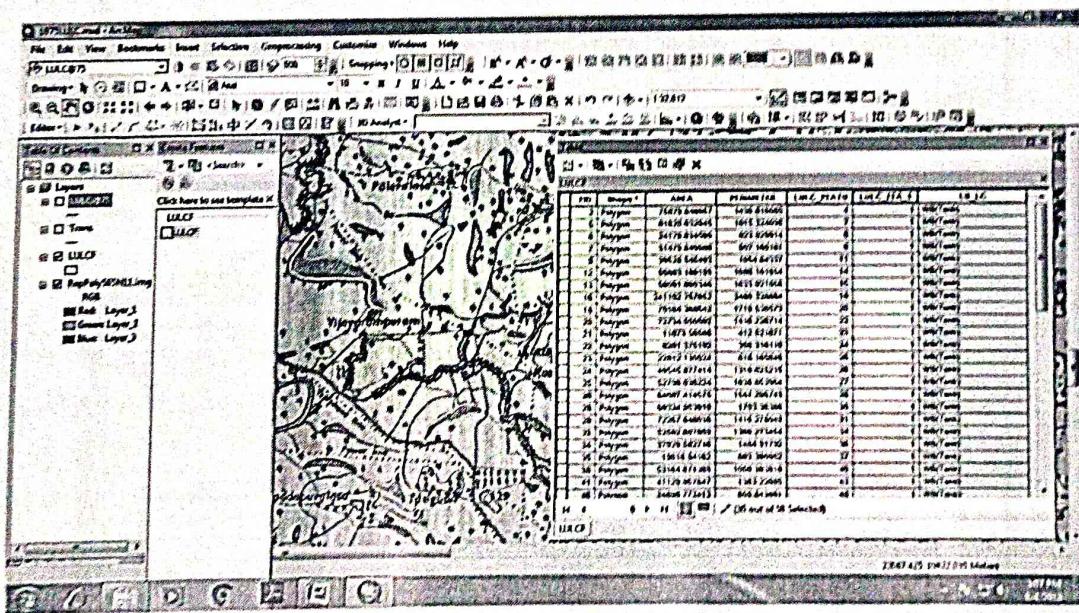
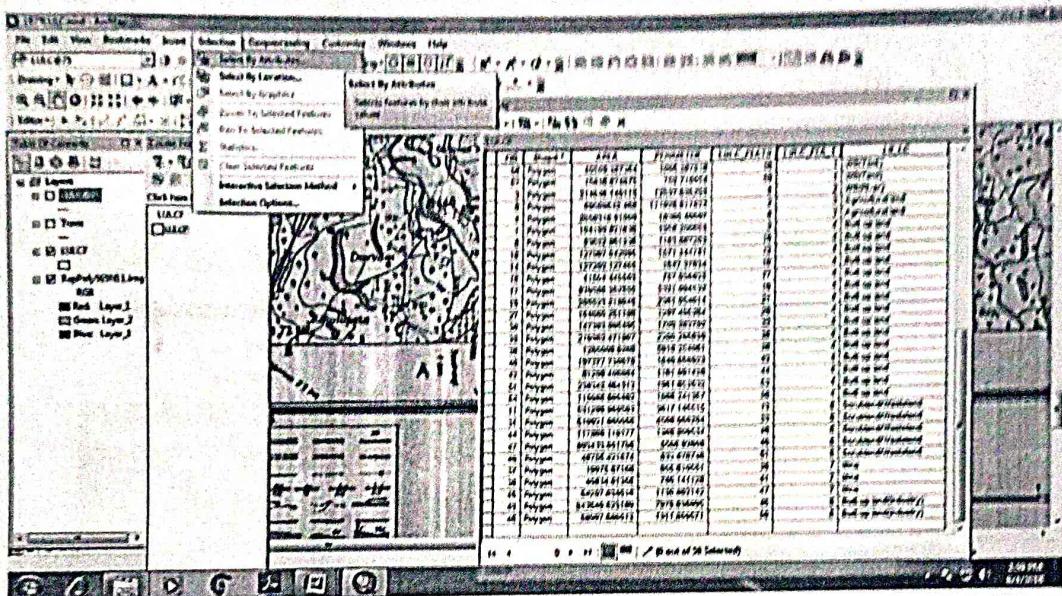


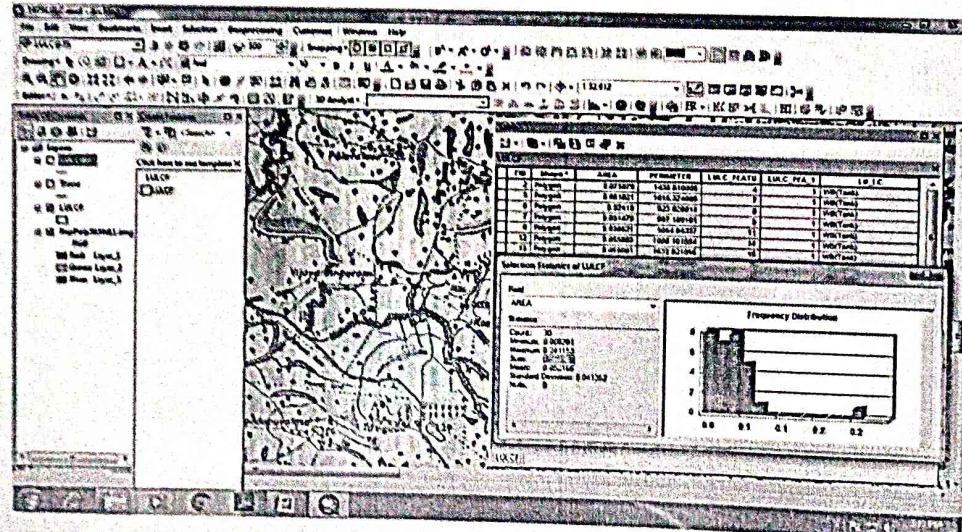
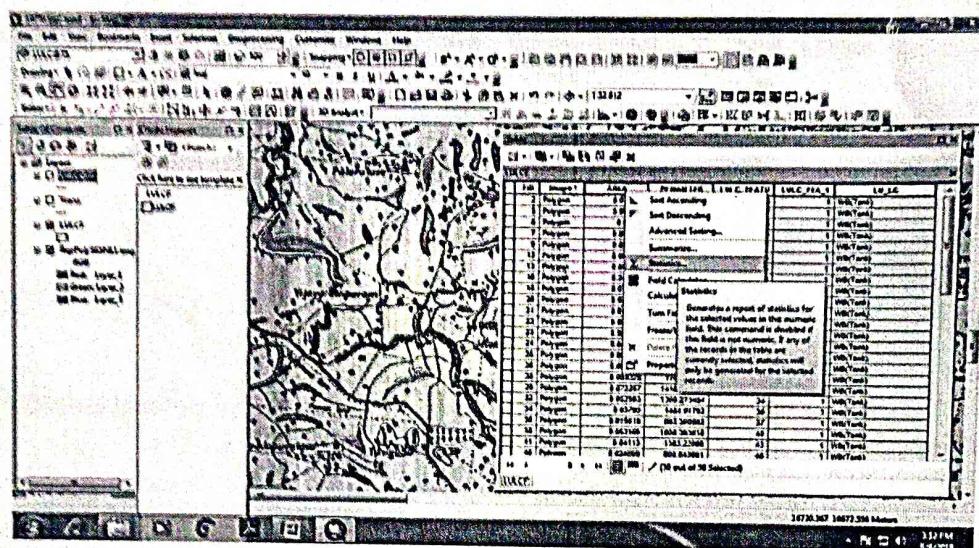
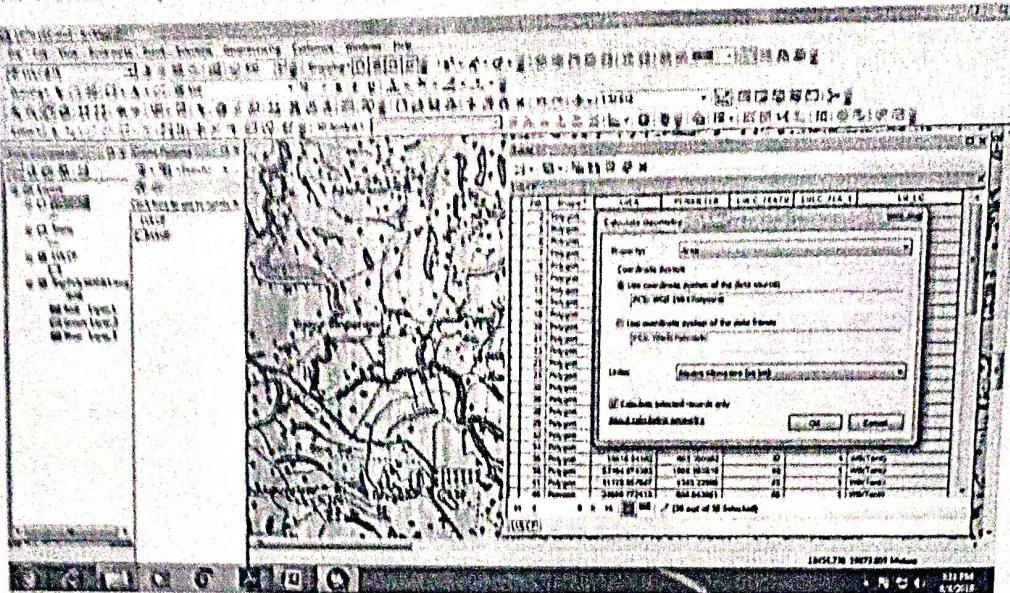
- Once finish entering the non spatial information / attributing data in the table.
- Go to Editor once click on Save Edits and Stop Editing

Procedure for estimating the areas of tanks in the study area by using query:

- Click on tab key of Selection from ArcMap window, then choose Select by Attributes
- From the Select by Attributes pallet choose LU_LC and give the Query i.e., "LU_LC"= 'WB(Tank)', then Click Apply and OK.
- Go to Attribute Table R.Click on the Area field and choose the Calculate Geometry

- From the Calculate Geometry dialogue box select the units as **Square Kilometers/Acre** and then click **OK**
- Once again R.Click on the Area field and choose the **Statistics**
- The procedure has shown in the below figures.





Result: The WB (Tanks) are occupied an area about: 1.564967 km^2 , in the total of 81.350901 km^2 area of the study.

EXERCISE - 5

Objective:

To display the spatial features (shaded polygons, graduated symbols, etc) with different hatching patterns.

Input Data: Shape file (Eg.LU LC or Trans)

PROCEDURE

- Double click the layer and select the Symbology tab
 - Click the items listed in the Show box. Note the different types of symbolic maps

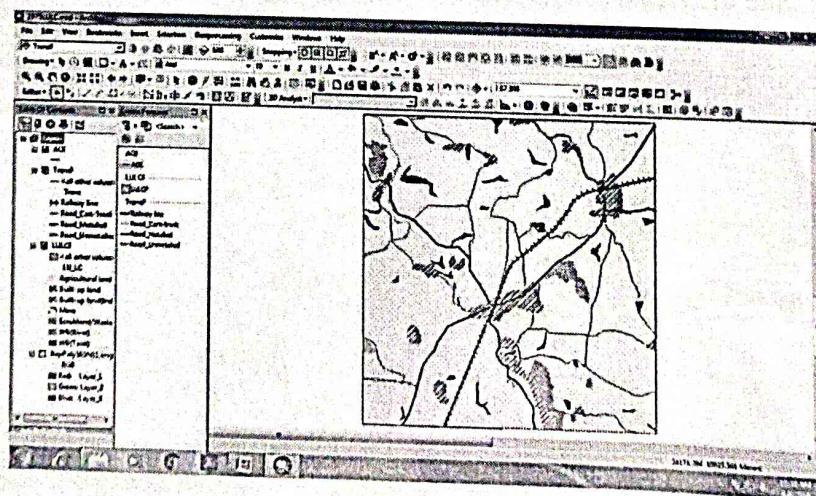
Features

- Single Feature: all features displayed the same (default)
 - Categories—for categorical scale or “name” variables (e.g countries)
 - Unique Values
 - Unique Values, multiple variables: can combine up to three variables
 - Be careful. Should have very few different values on each variable!

Quantities—for nominal or interval scale variables

- Graduate colors: shaded polygons (choropleth map) based on categorization
 - Graduated symbols: relative size symbols based on categorization
 - Proportional symbols: symbol size based on exact data value

Charts: insert Pie or bar charts



Result: LU_LC features with different hatching pattern as shown in below figure.

EXERCISE - 6

LAYOUT PREPARATION

Introduction

This draws the map as it is placed on paper for printing. It does include the additional non-feature map elements such as north arrows, legends, scale bars, etc. that would appear on a printed version of a map. The layout view is pretty much a “what you see is what you get” presentation of the printed map. It shows the edges of the page and where on the page the elements of the printed map will appear.

Objective:

To assemble the spatial components and elements in the map for print on a paper

Input Data: Thematic map (Eg.LU_LC or Utility)

PROCEDURE

INSTRUCTIONS:

- Open a document and check the datasets you want to present in a map.
- Set the view window to layout view.
- You will find all necessary buttons to add map elements to your map in the Insert pull down menu in the menu bar (figure 5.1). Note that these buttons are only active when working in layout view.

When the layout view is activated, it is possible to change its settings. It is possible to change the size and location of the visualized datasets. By right clicking on the layout view, it is also possible to alter the type of layout and the page settings

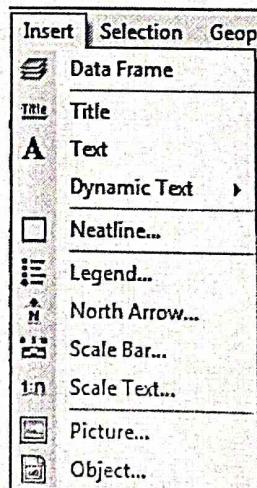


Fig. 5. 1

Adding a data frame to a layout

The central element of the layout is the data frame. This is a frame that presents your datasets. You can have more than one data frame in your layout. Simple maps usually have only a single data frame.

- To alter the properties of the frames in layout view: right-click the frame and select properties. You can for example change the border of the frame, set a scale or add a reference grid to your map.

Adding a legend to a layout

A **legend** tells a map user what the symbols on the map, used to represent features, mean. A legend in a layout is associated with the legend already used in the table of contents. When you change the symbology of a dataset (its appearance) it automatically changes the legend in the layout.

INSTRUCTIONS:

1. In the menu bar select: **Insert → Legend** (this is only possible when you are in layout view).
2. In the appearing window, select the dataset(s) you want to **add** to the legend. You can also change the **order** of the datasets in the legend (think about **hierarchy!!**) with the up and down arrows. Click next.
3. In the following windows some options appear to customize your legend. For now, just click next and finish. Of course, you are free to play around with the options if you wish!
4. The legend is placed in the layout, where it is possible to move it around and change its size.
5. If you are not satisfied with the result you can always modify your legend. Right-click the legend in the layout and select **Properties** from the menu that appears. The Legend Properties window opens in which you can adjust some legend settings.

It is always possible to change the name of one of the layers by clicking on it in the table of contents.

Adding a Title to a layout

A title gives the user of the map guidance in the use and content of a map.

INSTRUCTIONS:

1. In the menu bar select: **Insert → Legend** (this is only possible when you are in layout view).
2. In the **Textbox** you can define your title
3. Click **OK** and move the title to an appropriate place within the layout.

Adding a north arrow to a layout

North arrows indicate the orientation of the map.

INSTRUCTIONS:

1. In the menu bar select: **Insert → North Arrow** (this is only possible when you are in layout view).
2. In the **North Arrow Selector** menu you can choose the north arrow **style**.
3. Click the **Properties** button and select the **North Arrow** tab to set the **calibration angle**. You can also change the size, style and font of the arrow.
4. Click **OK** and move the north arrow to an appropriate place within the layout.

Adding a scale bar to a layout

A **scale bar** provides a visual indication of the size of features and distance between features on the map. A scale bar is a line or bar divided into parts and labeled with its ground length, usually in multiples of map units such as tens of kilometers or hundreds of miles. If the map is enlarged or reduced, the scale bar remains correct.

Add a scale bar after the datasets and a legend are added to the layout.

Note: Before you add the scale bar to your layout, you have to check if your data frame has a coordinate system (see Module 3) and if the **map units** of the data frame are set to **meters!!!** To check this, go to the menu bar and select: **View → Data Frame Properties → General**.

INSTRUCTIONS:

1. In the **menu bar** select: **Insert → Scale Bar** (this is only possible when you are in **layout view**).
2. Choose the scale bar you want to insert and click **OK**.

3. The Scale bar is added to the layout where you can change its size and move it. Make sure it is not too small!
4. Double click on the scale bar, to open the Properties window.
5. In this window the *Scale and Units* and the *Numbers and Marks* tabs are important.
6. In the *Scale and Units* tab it is possible to set the *Division value* (not to small!), *number of divisions*, *number of subdivisions* and what the scale bar should do when it is being resized (don't use the 'adjust division value', because the division value should be a 'round number', like 1km, 500 m etc.).
7. Choose the scale bar units.
8. In the *Number and Marks* tab it is possible to define how often a numerical value appears on the scale bar, and where this is placed in relation to the scale bar.
9. Click apply and OK.

Adding text and other graphics to a layout

INSTRUCTIONS:

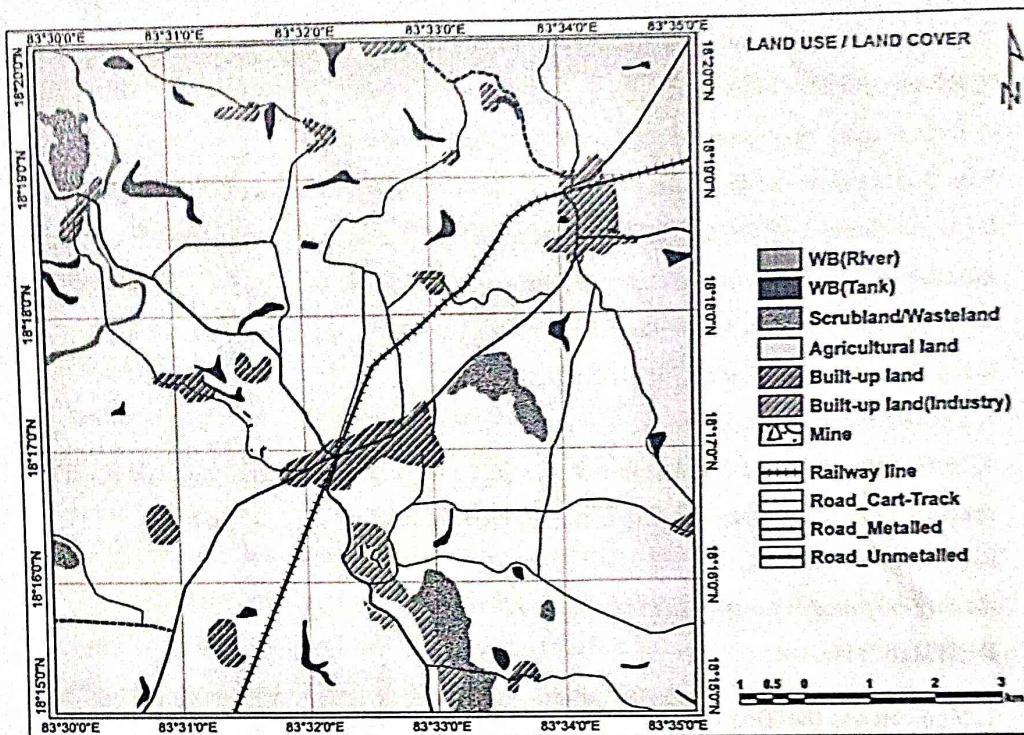
1. You can use the *Text* tool  to add text for titles and other descriptive text (e.g. the source) and you can use the *drawing* tools to add graphics such as boxes, circles and arrows anywhere on your layout.
2. The drawing tools are in a dropdown list in the *Draw* tool bar
3. You always can change the properties of a frame: right-click the frame in the layout and select properties. You can't change the font size directly. If you wan't to change it you should enlarge the text box.

Exporting and printing a map

If you want to use your map in a report you want to keep the quality of the map and not use a screendump of your map.

INSTRUCTIONS:

1. In the menu bar select: export map
2. In the following dialog box you can specify the file type (e.g. .bmp, .jpg, .png), dpi and the output location and name of your map.
3. Click Ok



Result: Layout LU_LC map
