

## Exercise 3 – Creating layouts

In this exercise you will learn how to create layouts in QGIS. In the end of the exercise we will also go through what is important when making a layout.

Assignment: Hand in a map containing all of the required features. The map, which should cover an A4-page, is to be uploaded on Canvas as a **PDF document**. See example on the last page.

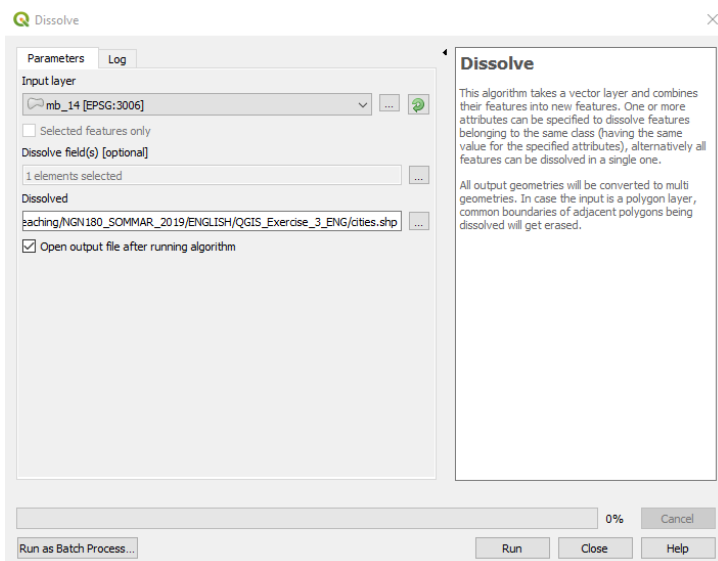
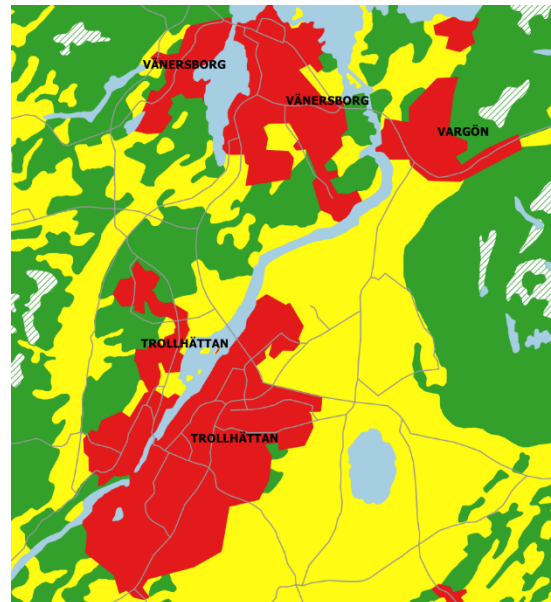
### 1. Preparations

Open the following layers: ms\_14.shp (lakes), mb\_14.shp (settlements), va\_14.shp (roads) and my\_14.shp (land use). **Remember:** for each shapefile change the encoding to **System** (for Windows) or **ISO 8859-1** (for Mac) to avoid problems with Swedish letters (åäö) in the attributes!

Make sure the layers look good (classify/visualize **land use**) and visualize the larger cities with labels. Zoom in so that the area between Vänersborg/Uddevalla and Lilla Edet, watch the map on the last page if you are unsure where they are located.

When zoomed in you can see that the labels of both Trollhättan and Vänersborg appear two times. This is because these cities are divided into two polygons. This is easily corrected by clicking **Vector** → **Geoprocessing tools** → **Dissolve...** in the menu. A new window is open as shown below.

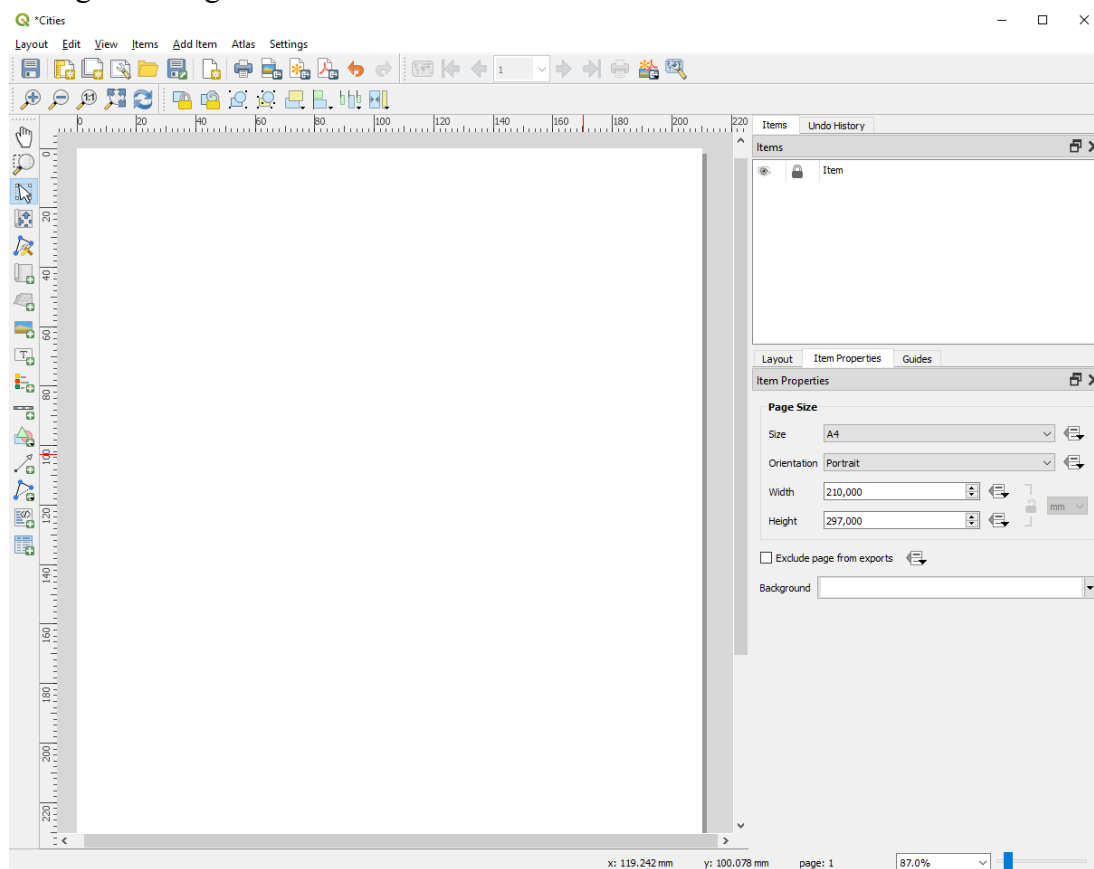
Choose mb\_14 as input vector layer, NAMN under **Dissolve field(s)** field and save the output file in a suitable folder. Have the box **Open output file after running algorithm** checked. Edit the layout and labels so that all cities with *more than 2000 inhabitants* (*attribute BEF*) are marked on the map.





When you are done move on the next stage. Make sure the canvas units are set to Meters in Project - Project Properties.

## 2. Create a layout




Click Project → **New Print Layout** and a small window where Layout title is filled in appear. Write a title and click OK. A new window where the layout is created appears. Right-click the canvas and left-click Page properties. This will open the **Item properties** on the right hand side. Set **Size to A4 and orientation to Portrait**. Under the tab **Layout** choose to set the Export resolution to **300 dpi**. 300 dpi is usually a high enough resolution for printing and still the file is small enough for e-mails. Leave the other settings unchanged.



## 3. Add the Map


Click the icon **Add a new map**;  in the settings field to the left. Right-click a couple of centimeters inside of one of the corners of the white sheet, hold in the mouse button and drag a rectangle covering approx.  $\frac{3}{4}$  of the layout sheet. Your map should now appear in the layout sheet. If you want to edit the area covered you can move around the map until it shows the proper area by using **Move item content**. To move the square itself use the tool **Select/move item**. At any time you can undo an action by pressing **Revert last change** . The map does not need to show the whole area (with white areas where there are no data. Instead you can focus on one part (zoomed in) so that the whole map area is filled with data. To zoom in, select the map item click on the zoom in/zoom out icons or use your **mouse wheel**.



## 4. Add a Legend

Add a legend by clicking the symbol **Add new Legend**;  or through **Layout** → **Add Legend**. Drag out the area where you want the legend to be located in the same way as the map. To change the size and appearance of the legend enter the tab **Item properties** located to the right of the map image. Under **Legend items** you can choose what layers are to be viewed in the legend. Make sure the **Auto update** is unchecked, then remove layers by highlighting them and pressing minus symbol . If you have added the text layer (tx\_14) remove it from the legend. Rename the remaining layers by highlighting them and pressing the pen:  Name the layer va\_14 = Roads, mb\_14 = Cities, ms\_14 = Water, My\_14 = Land type. You can change the font size and distance between the elements in the legend. You can also change background color, add a frame and much more. Try it out to create a nice legend.

## 5. Add more map features

There are a couple more features that need to be present in a map. The scalebar shows the scale

of the map and is added by pressing **Add new scalebar**;  and clicking under the map image to summon it. You also need to change its layout: In the **Item Properties** change the **Fixed width** to 2000 units (if you use [meters], otherwise 2 kilometers) and **Segment** = left 0 and right 5. Make sure that the **Map units per bar unit** are 1000. Choose the style you deem most appropriate and try changing the other settings so the scale becomes easy-to-read.

Add a title by clicking  (**Add new label**) where you give your layout an appropriate and informative name. If you need to add text to your map this is the tool to use. Add a box containing your name. Every map needs a **north arrow**. Add a north arrow by clicking . It's usually good to place the arrow in the upper left or right corner.

If you want to point out an area or place in the map you can do so by clicking the symbol **Add ellipse**. In the drop-down menu you can choose to add ellipse, triangle or rectangle. They are dragged out in the same manner as the arrow. No such symbol is needed in the hand-in.

## 6. Save the layout as template

When you are satisfied with the layout you can save it as a template by clicking the **Save as template** symbol in the top menu or under **Composer**. You can then use the same template for several maps by opening a new composer and choosing **Add Items from template** under **Composer**, thereby saving precious time.

## 7. Export the map

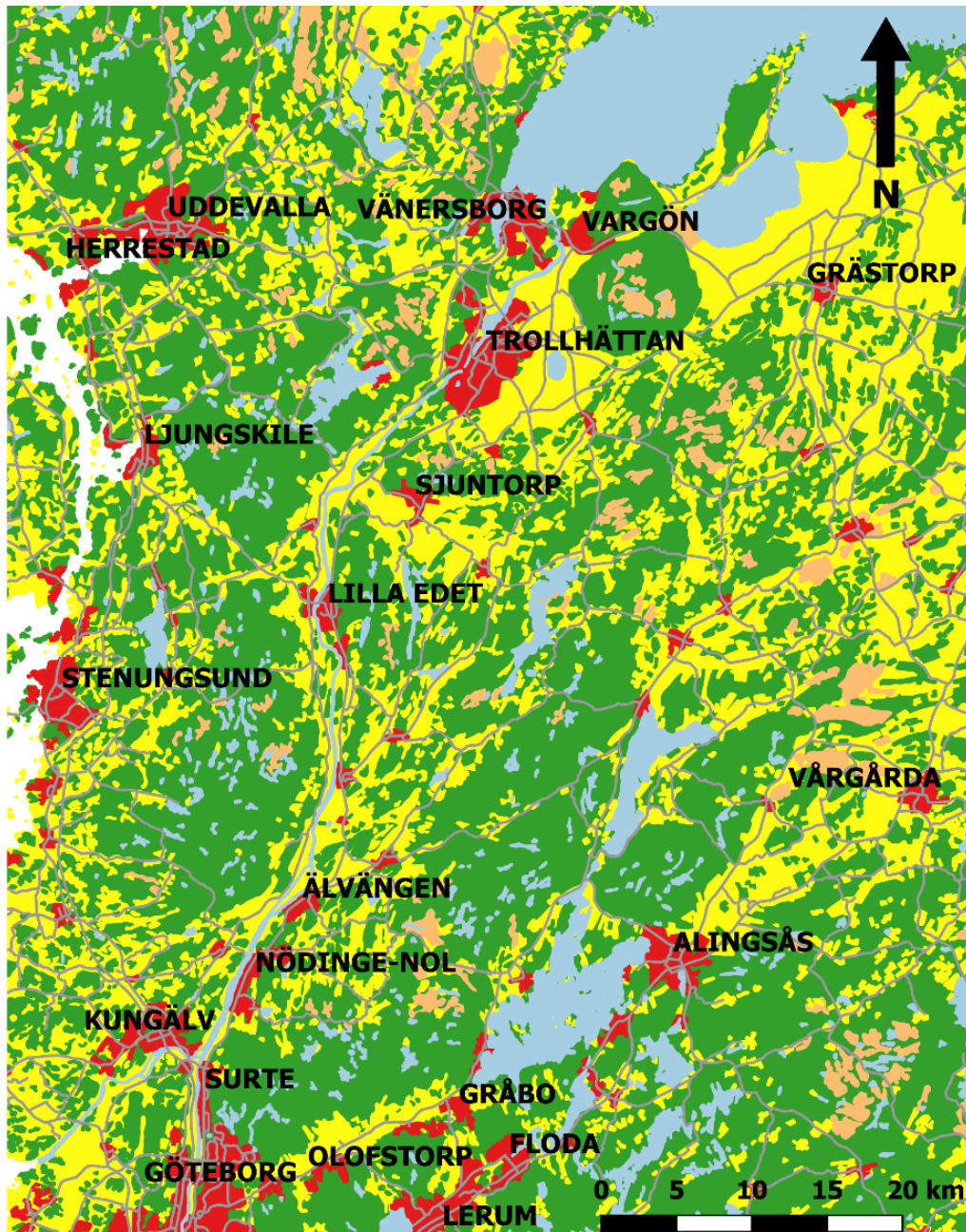
To export the finished layout click **Export as PDF** under **Composer**. You can also **Export as Image** but for these exercise the hand-in shall be **PDF**.

## 8. Some suggestions!

Border lines are usually not necessary and it can become hard to read the map if all polygons have back border lines. Try to choose colors and symbols that can be easy to differentiate and understand even without looking at the legend (e.g. green polygons: forests, blue lines: rivers, triangles: mountain tops, etc.). It should be easy to see everything in the map. Think about the purpose of the map – what do you want to view? It is supposed to be easy to read and interpret. Make sure that the legend is explicit and easy to understand, rather make it too big than too small. Do not include items in the legend if they are missing in the map, and vice versa. Below you see two sample layouts!

*Don't forget to submit a nice PDF map to Canvas (filling A4 size) including all essential map elements. Use labels for the settlements. Zoom in so one can see the area Vänersborg-Uddevalla-Lilla Edet, not so much more.*

Example Layouts:



## Vänernsberg - Lilla Edet

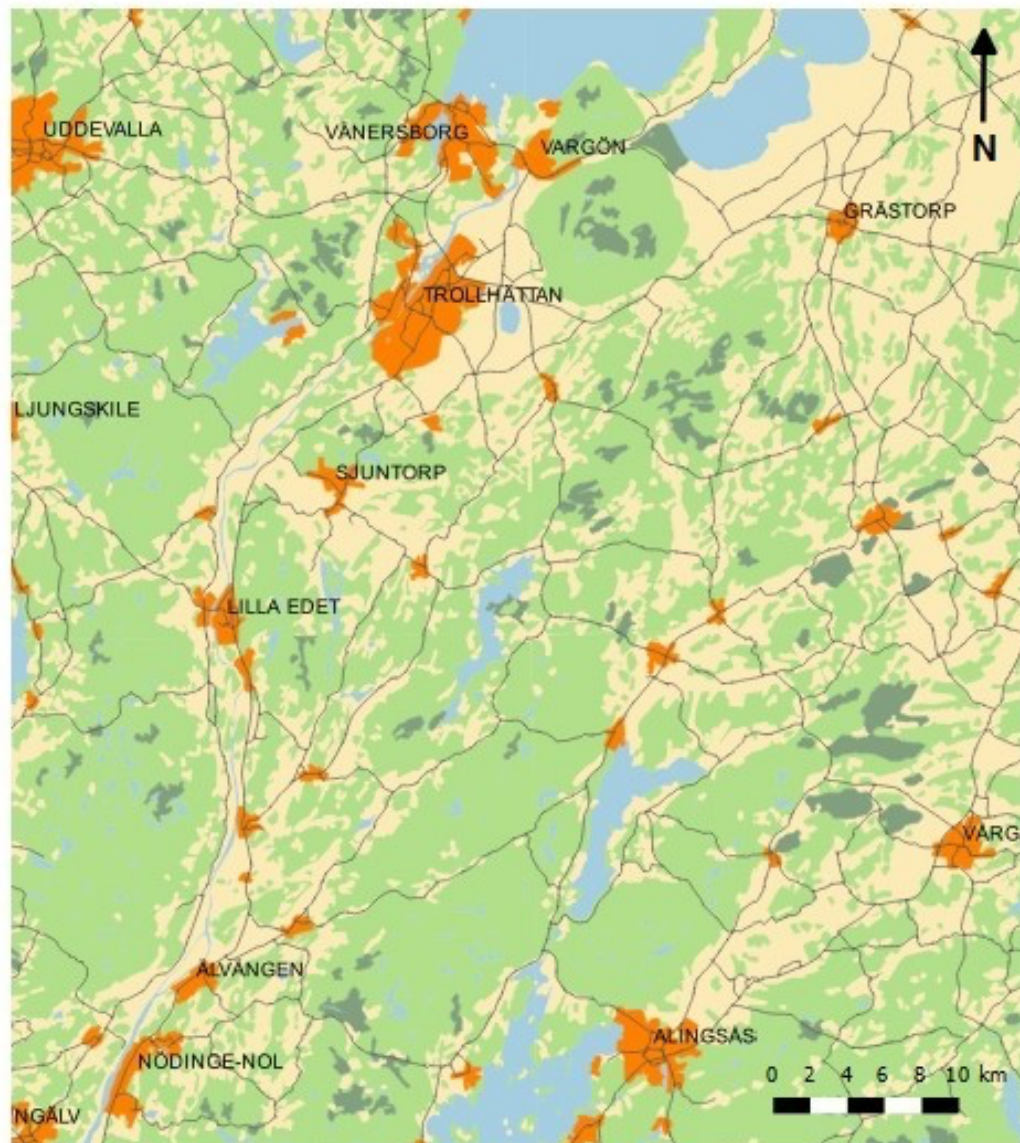
### Exercise 3, NGN180

Cartographer: Nils Wallenberg

#### Legend

- Water
- Urban areas
- Roads
- Landuse
  - Wetlands
  - Forests
  - Open fields





## Kartans titel. Uppgift 3

GIS-kurs NGN180

Kartograf: Ditt namn

### Teckenförklaring

- Tätort
- Vatten
- Marktyp
- Sänksmark
- Skogsmark
- Öppen mark
- Vägar