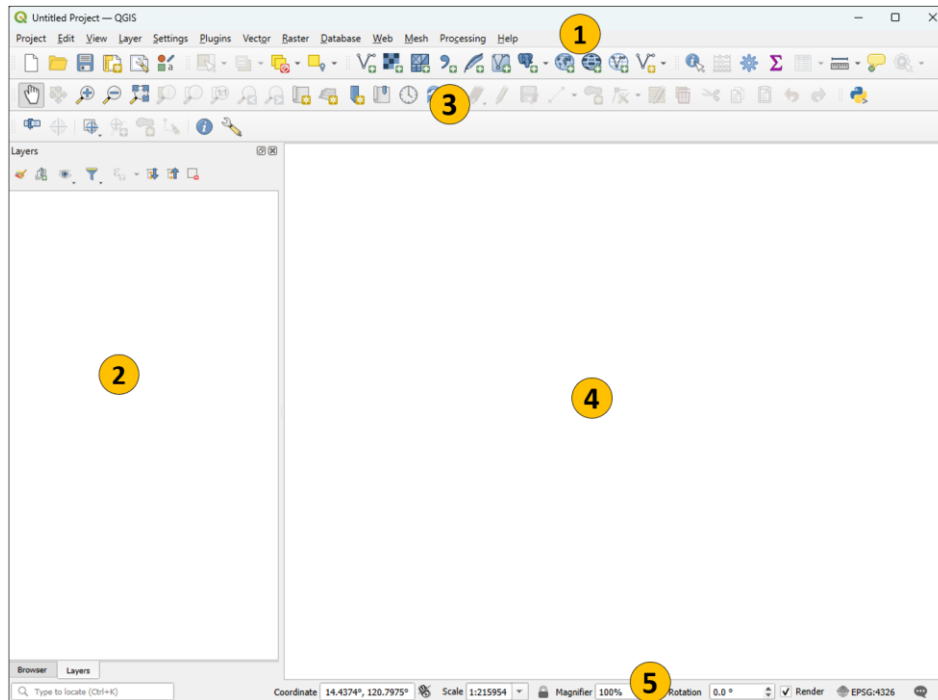


Introduction to geospatial data management and technologies for Health Programs training workshop - Timor Leste

Exercise 2: Using the basic functionalities of GIS software (QGIS)

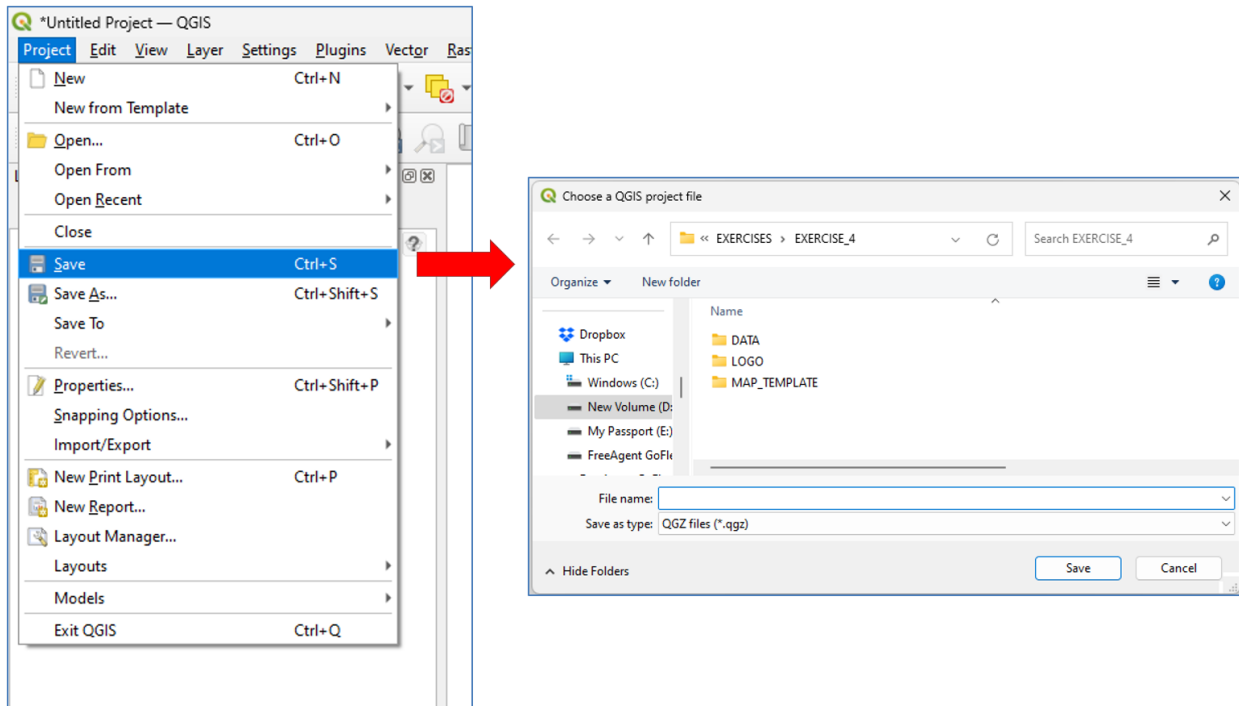
Navigating the Interface:



QGIS interface is divided into 5 main areas:

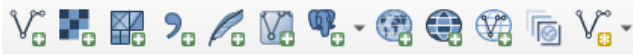
1. Main Menu
 - Provides access to various QGIS features using a standard hierarchical menu
2. Layers Panel / Browser Panel
 - Layers Panel: where you will see the list of different map layers you have added to your map
 - Browser Panel: Lets you easily navigate in your file system and manage your data.
3. Toolbars
 - Provides access to most of the same functions as the menus, plus additional tools for interacting with the map
4. Map View
 - Also called Map canvas, this is the “business end” of QGIS — maps are displayed in this area.
5. Status bar
 - Provides you with general information about the map view, and actions processed or available and offers you tools to manage the map view.

Saving Project Files



- QGIS can save user sessions. (A QGIS file is called a 'project'.)
- From the main menu, click *Project > Save*
- Type in a file name and save your project as a QGZ file (.qgz)
 - QGZ file format is the new default format for QGIS. It is a compressed format with the .qgs file (former default format) embedded in it together with its associated sqlite database (.qgd) for auxiliary data.

Manage Layers Toolbar



- Add Vector Layer
- Add Raster Layer
- Add Mesh Layer
- Add Delimited Text Layer
- Add SpatiaLite Layer
- Add/Edit Virtual Layer
- Add PostGIS Layers
- Add WMS/WMTS Layer
- Add WCS Layer
- Add WFS Layer
- Add Layer from STAC Catalog
- New Shapefile Layer

Attributes Toolbar



- Identify Features
- Open Field Calculator
- Toolbox
- Show Statistical Summary
- Open Attribute Table
- Measure Line
- Show Map Tips

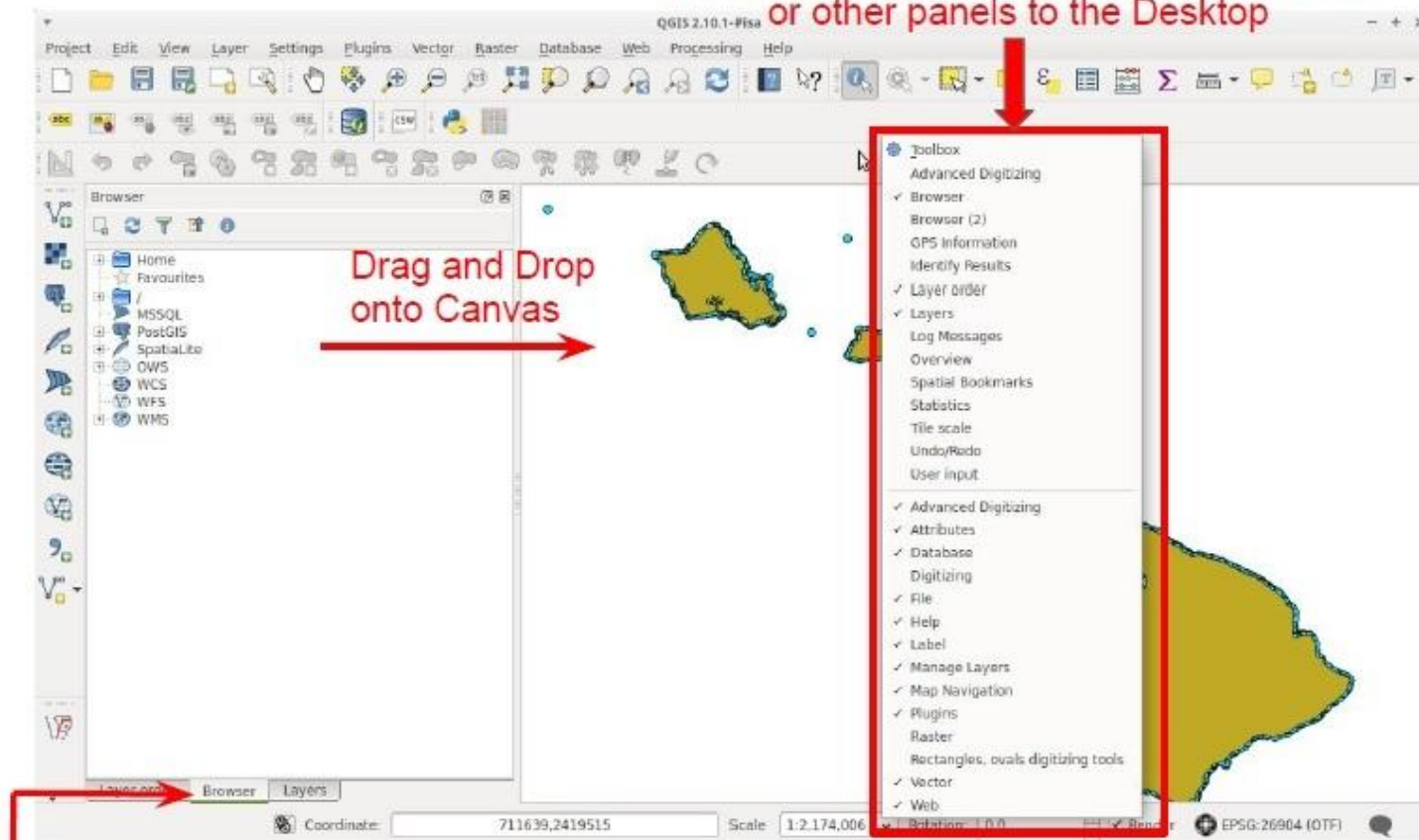
Map Navigation Toolbar



- Pan Map
- Pan Map to Selection
- Zoom In
- Zoom Out
- Zoom Full
- Zoom to Selection
- Zoom to Layer
- Zoom to Native Resolution
- Zoom Last
- Zoom Next
- New Map View
- New 3D Map View
- New Spatial Bookmark
- Show Spatial Bookmarks
- Temporal Control Panel
- Refresh

Browser Tab

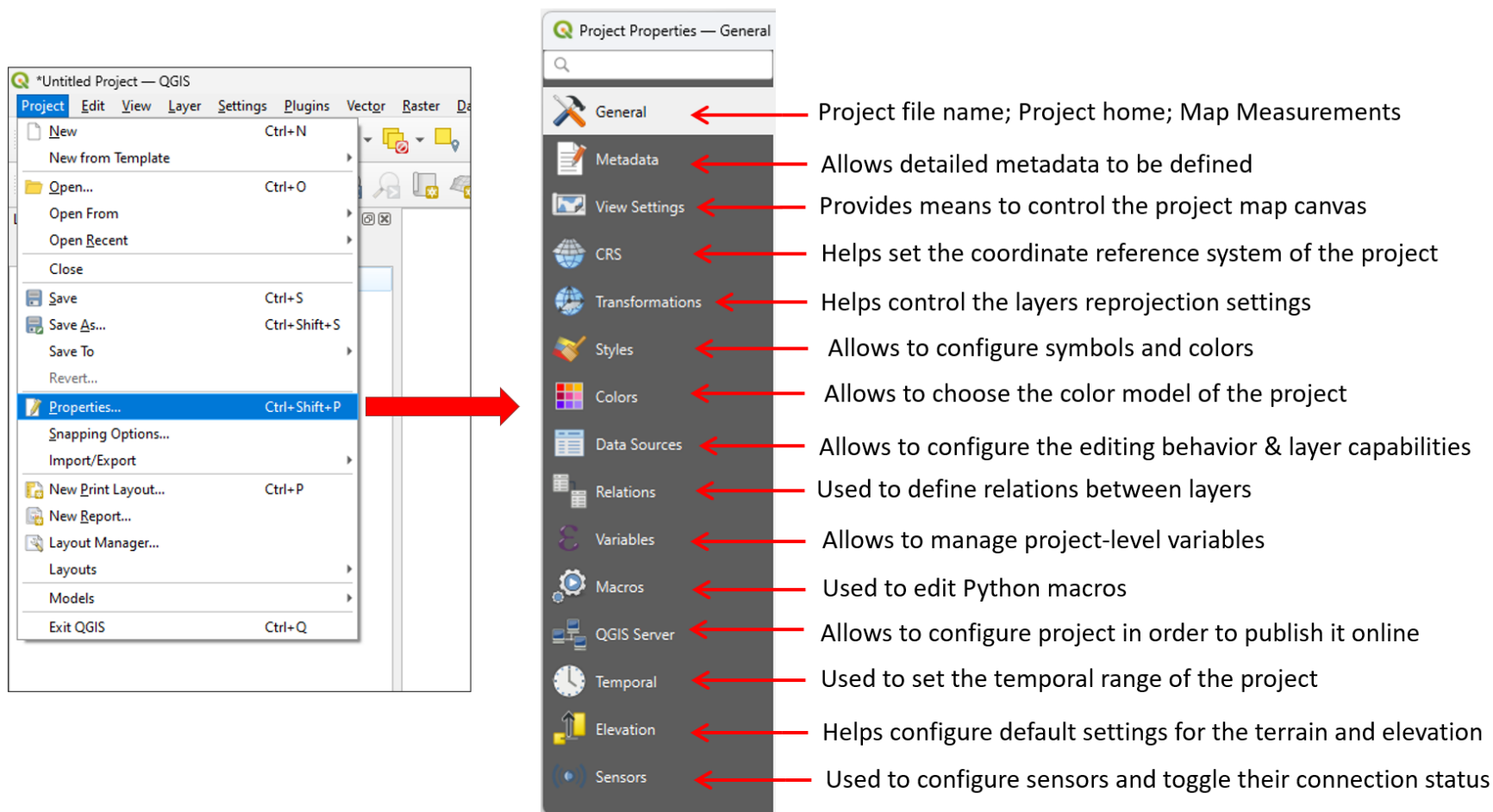
Right Click in Toolbar area to add browser
or other panels to the Desktop



Browser Tab

From the Manage Layers Toolbar and the Browser Panel you can add Shapefiles, Databases, WFS, WMS, and several other types of files.

Project Properties



The image shows the QGIS Project Properties dialog box with the 'General' tab selected. A red arrow points from the 'Properties...' menu item in the QGIS main window to the dialog box. Red arrows also point from each tab name to its corresponding description.

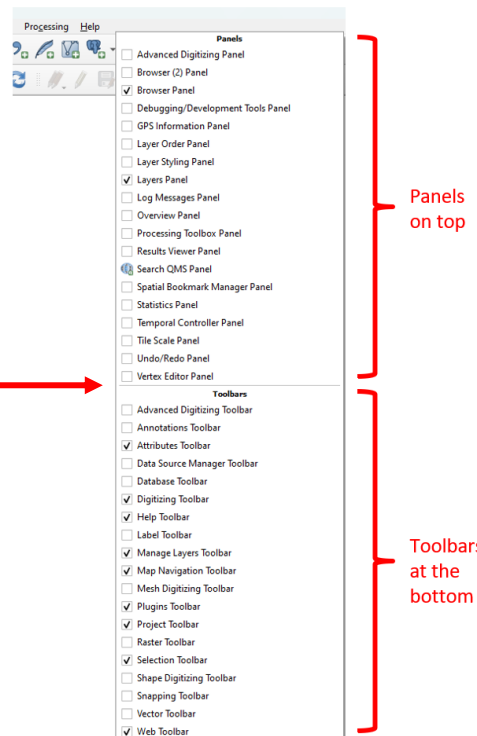
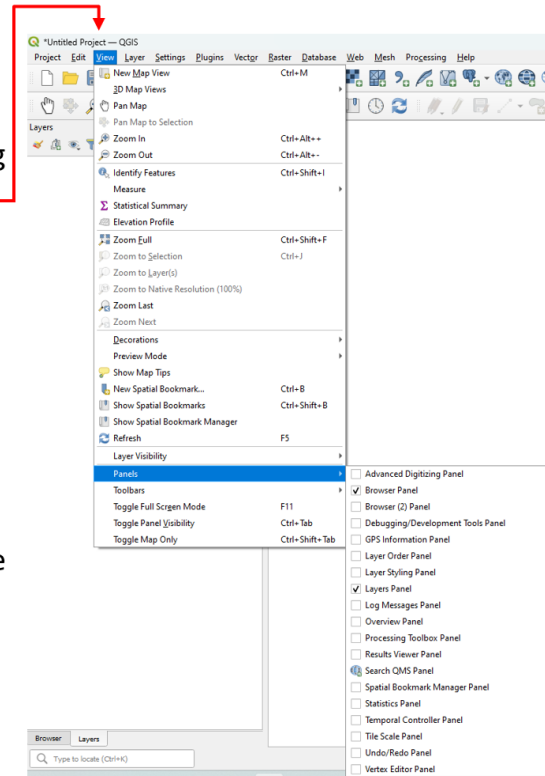
Tab Name	Description
General	Project file name; Project home; Map Measurements
Metadata	Allows detailed metadata to be defined
View Settings	Provides means to control the project map canvas
CRS	Helps set the coordinate reference system of the project
Transformations	Helps control the layers reprojection settings
Styles	Allows to configure symbols and colors
Colors	Allows to choose the color model of the project
Data Sources	Allows to configure the editing behavior & layer capabilities
Relations	Used to define relations between layers
Variables	Allows to manage project-level variables
Macros	Used to edit Python macros
QGIS Server	Allows to configure project in order to publish it online
Temporal	Used to set the temporal range of the project
Elevation	Helps configure default settings for the terrain and elevation
Sensors	Used to configure sensors and toggle their connection status

Project Properties allows to change the default settings for the **CURRENT** QGIS project.

Panels and Toolbars

Panels and Toolbars:

- Turn them on and off by going to **View > Panels or Toolbars**
- Panels provide interactive “windows”. Examples: Layers, Browser, GPS Information
- Toolbars are a grouping of tools
- Panels/Toolbars can also be added/removed by right-clicking on the toolbar area then checking/unchecking the desired panel or toolbar



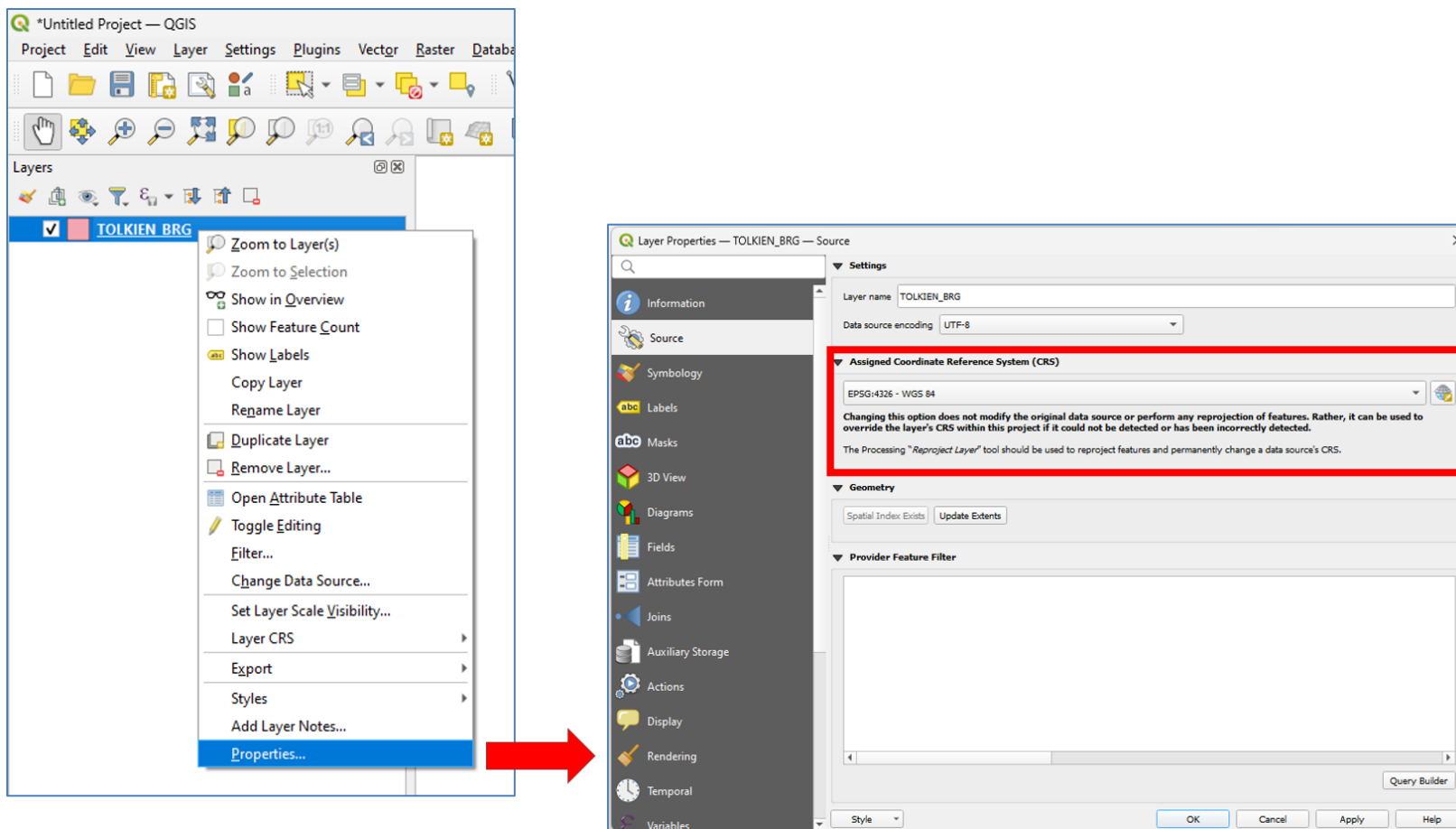
Vector Layer Properties

The screenshot shows the QGIS interface with the 'Vector Layer Properties' window open for the 'TOLKIEN_BRG' layer. The window is divided into two main sections. The left section shows a list of property categories, and the right section shows the 'Information' tab. Red arrows point from text descriptions to each category in the list.

Property Category	Description
Information	Read-only summary of information and metadata on the current layer
Source	Used to define general settings for the vector layer
Symbology	Provides a comprehensive tool for rendering and symbolizing vector data
Labels	Provides the capabilities to configure smart labeling on vector layers
Masks	Helps configure the current layer symbols overlay with other symbol layers or labels
3D View	Provides settings for vector layers that should be depicted in the 3D Map view tool
Diagrams	Allows to add a graphic overlay to a vector layer
Fields	Provides information on fields related to the layer and helps organize them
Attributes Form	Helps set up the form to display when creating new features or querying existing one
Joins	Allows to associate features of one layer to features from another loaded vector or table
Auxiliary Storage	Allows to store properties for layers that are not editable
Actions	Provides the ability to perform an action based on the attributes of a feature
Display	Helps configure fields to use for feature identification
Rendering	Allows to set the scale dependent visibility and simplify geometry
Temporal	Provides options to control the rendering of the layer over time
Variables	Lists all the variables available at the layer's level
Elevation	Provides options to control the layer elevation properties within a 3D map view
Metadata	Provides options to create and edit a metadata report on a layer
Dependencies	Allows to declare data dependencies between layers
Legend	Provides advanced settings for the Layers panel and/or the print layout legend
QGIS Server	Consists of Description, Attribution, MetadataURL, and LegendUrl sections
Digitizing	Gives access to options that help to ensure the quality of digitized geometries

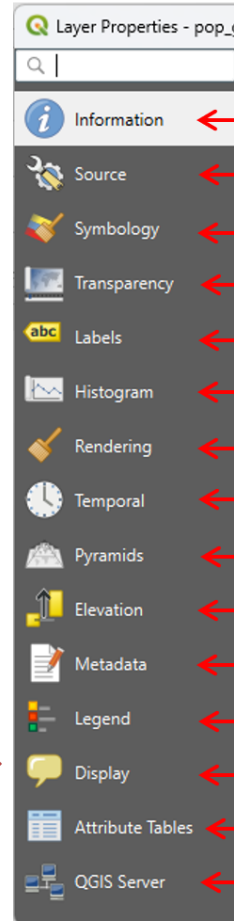
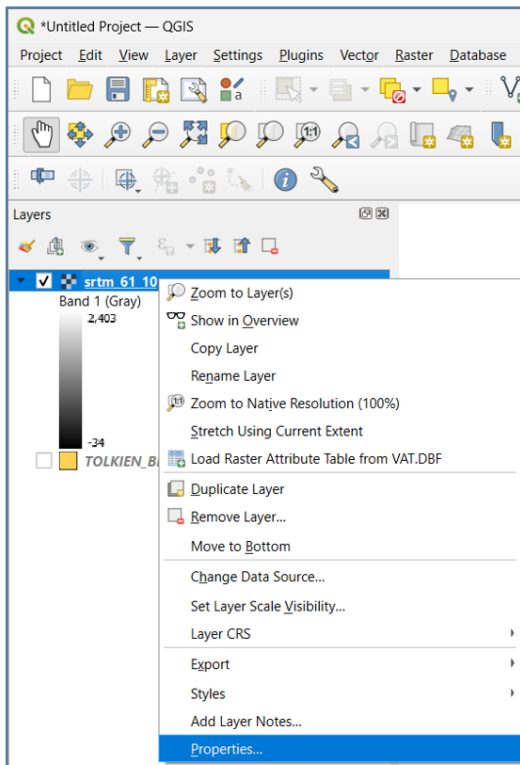
The (Vector) Layer Properties window provides information about the vector layer and provides general settings to manage appearance of layer features in the map (symbology, labeling, diagrams) and interaction with the mouse (actions, map tips, form design).

Data Projections



All vector/raster layers have a projection or Coordinate Reference System (CRS). The quickest way to check projections is to right click on the layer > *Properties...* > *Source* tab.

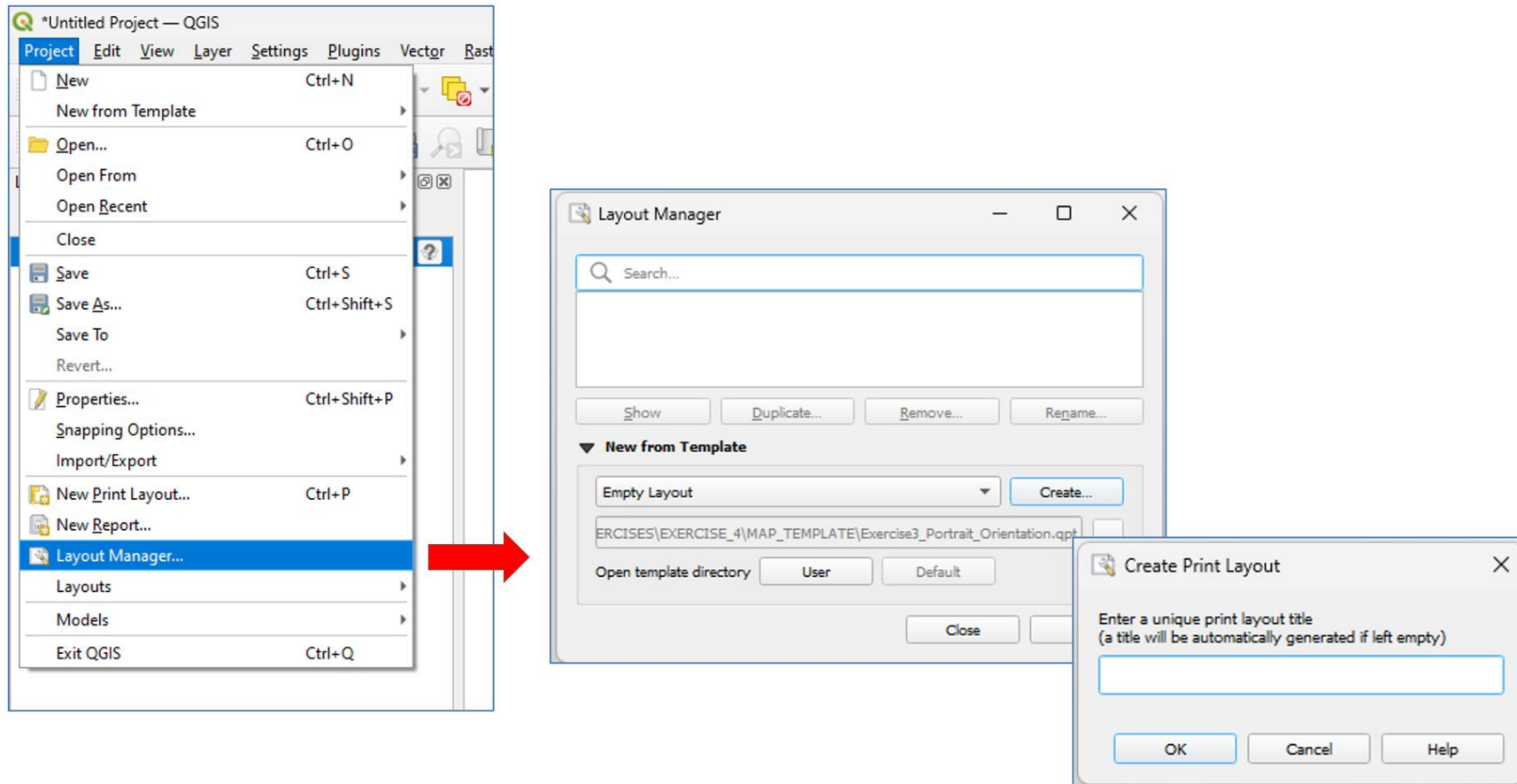
Raster Layer Properties



- ← Read-only summary of information and metadata on the current layer
- ← Displays basic information about the selected raster
- ← Allows to control how the raster layer is rendered on map
- ← Provides capabilities to set the transparency level of the raster layer
- ← Provides the capabilities to configure smart labeling on raster layer
- ← Allows to view the distribution of the values in the raster
- ← Allows to set scale dependent visibility and refresh layers at interval
- ← Provides options to control the rendering of the layer over time
- ← Allows to build pyramids to improve raster performance
- ← Provides options to control the layer elevation properties within a 3D map view
- ← Provides options to create and edit a metadata report on a layer
- ← Provides advanced settings for the Layers panel and/or the print layout legend
- ← Helps to configure HTML map tips to use for pixel identification
- ← Allows to convert symbology to and import an attribute table
- ← Helps to configure settings of the data when published by QGIS Server

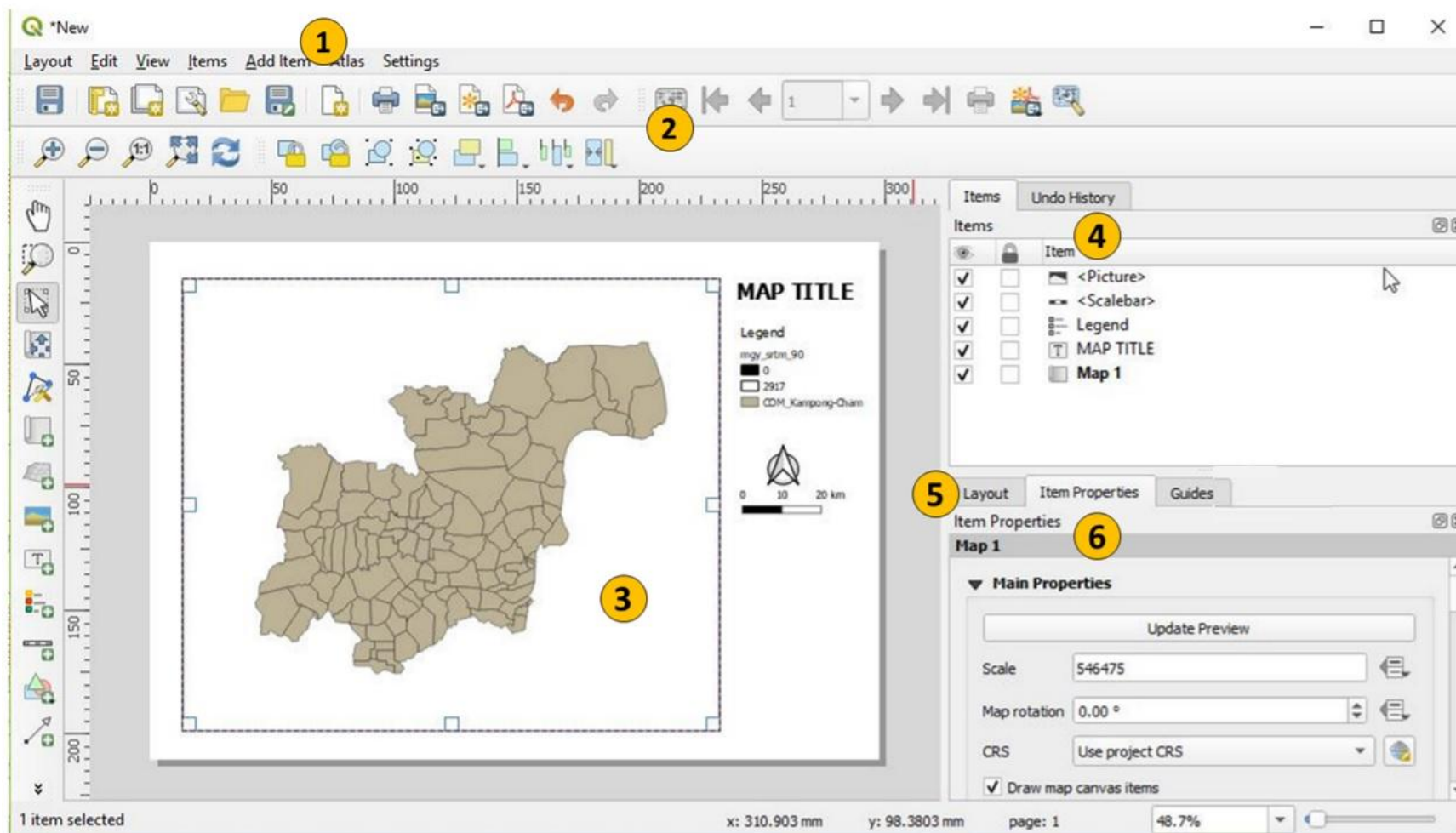
The (Raster) Layer Properties window provides information about the layer as well as the ability to set pyramids levels, adjust appearance, and view the histogram.

Layout Manager



The Layout Manager allows you to create a new map layout either from an empty layout or a template. It can be accessed from the Project menu (*Project > Layout Manager...*) or in the Print Layout window (*Layout > Layout Manager...*).

Print Layout



Print Layout interface: 1. Menu Bar; 2. Toolbar; 3. Map Layout; 4. Items and Command History; 5. Layout Properties; 6. Item Properties

Layout

Toolbar



- Save project
- New layout
- Duplicate layout
- Layout manager
- Add items from template
- Save as template
- Add Pages...
- Print Layout
- Export as image
- Export as SVG...
- Export as PDF...
- Undo
- Redo

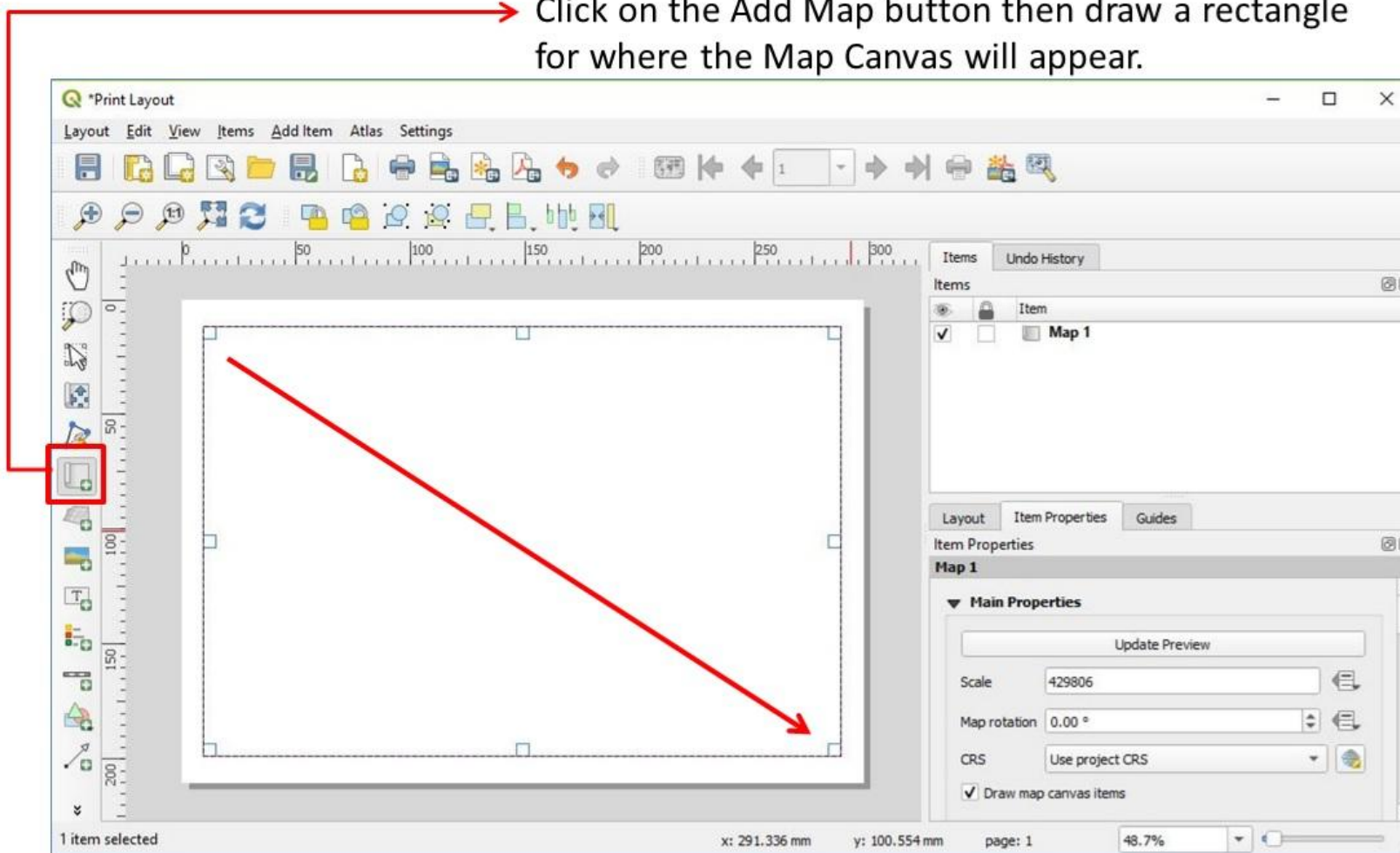
Navigation Toolbar



- Zoom in
- Zoom out
- Zoom to 100%
- Zoom full
- Refresh view

Print Layout

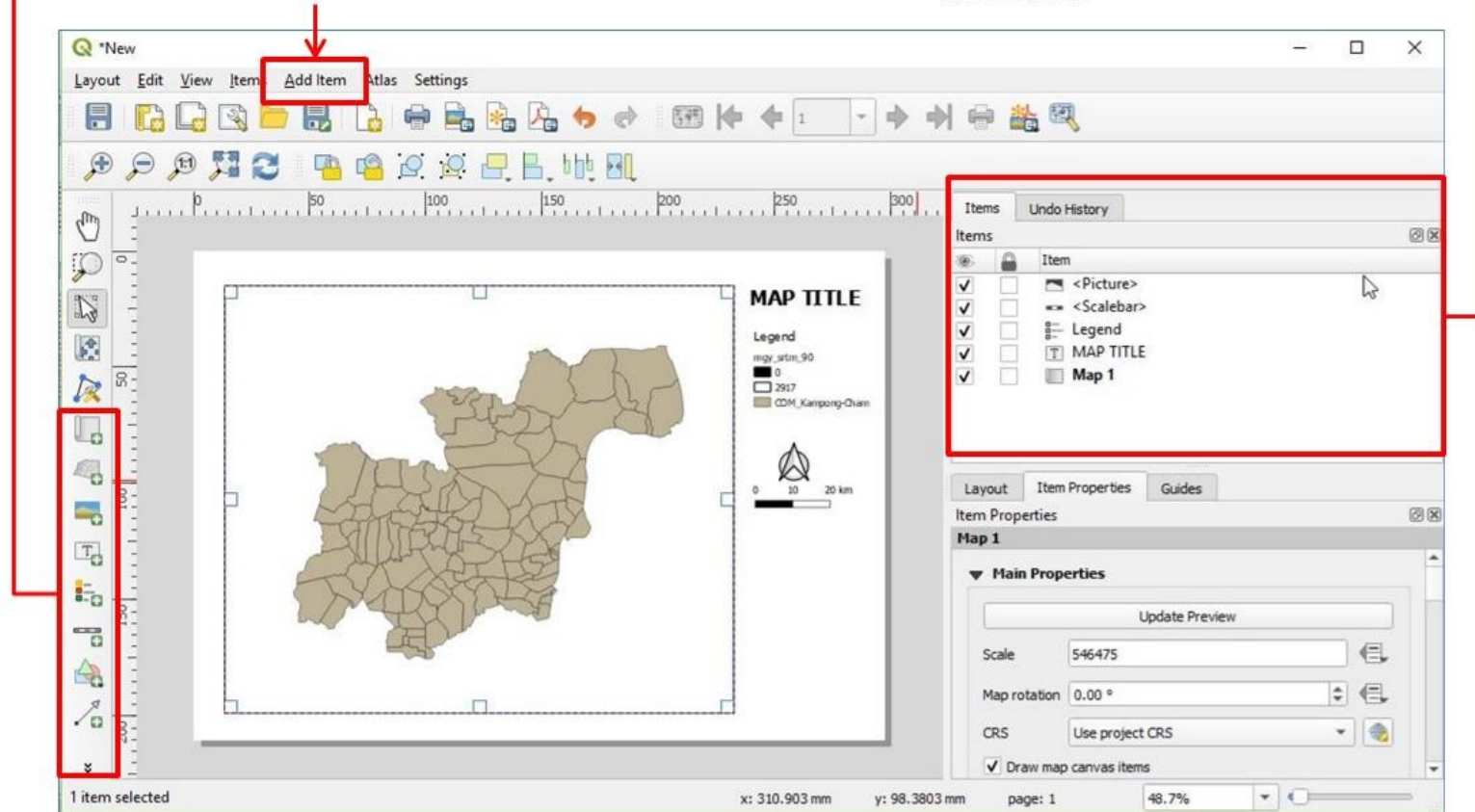
Click on the Add Map button then draw a rectangle for where the Map Canvas will appear.



Map Elements

Add map elements by clicking on the icons on the toolbar or in the Add Item menu

This area keeps track of changes and allows you to customize map elements.



Once the map has been added, the other map elements can be added. Their properties, as well as the page properties, can be viewed and modified. The Print Layout tracks changes in the Undo History window.

Layout

- Set the grid spacing and snap tolerance
- Export settings
- Resize layout to content



Item Properties

- Set the font
- Set scale bar properties
- Set legend properties
- Set map element properties