Interactive Maps

Purpose: The purpose of this application is to provide the facility to the citizen to navigate to a Property through an On-line Free Web Application in real time. The application uses the Geographical Information Systems of the Department, extending them through Web GIS capabilities. Various layers of information are available, such as parcels, buildings, sheet / plans, aerial photography, planning zones, etc. The ability to identify each property is available along with important parcel characteristics, relative scanned cadastral plans, the values of the general valuation and many others. Two additional thematic On-line services are also available with very important multi-variable attributes; the topographical and the hydrographical. Search, printing, as well as access via web-services is also offered.

Login to the System: The user enters the system without having to create any account, from the website of the Department of Lands and Surveys, using the tab "**Interactive Maps**" as shown in red frame in Figure 1 below.

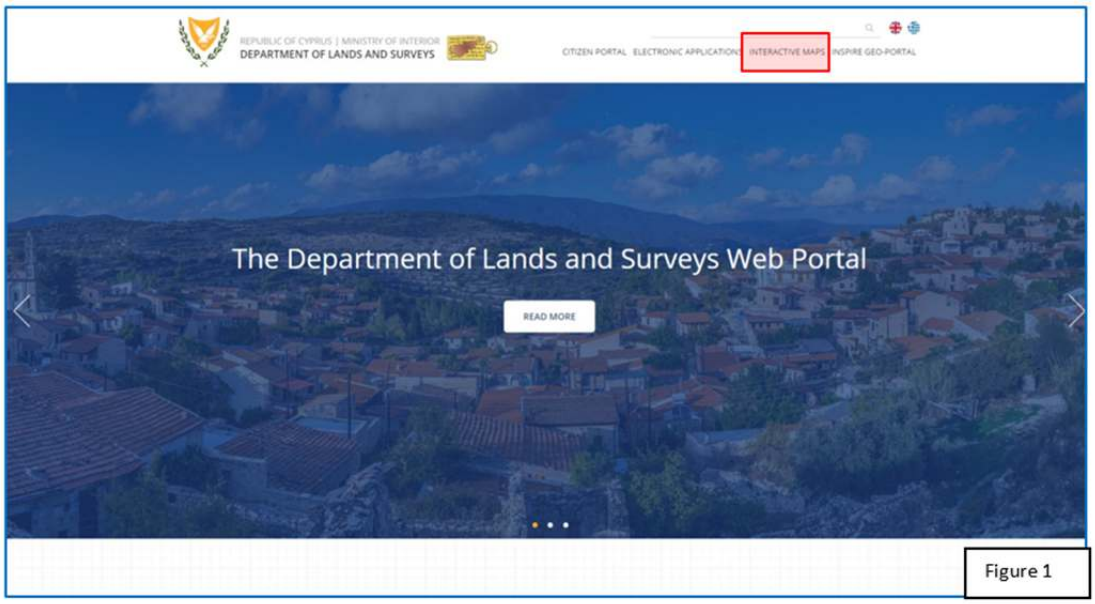


Figure 1

Automatically, the System transfers the user to the central page of the application and also a reminder of the terms of use, appears, as shown in Figure 1a. The user using the "**CONTINUE**" button, as in red frame in figure 1a, should read the terms and should accept them using "**AGREE**" button, at the end of the terms, in order to continue.

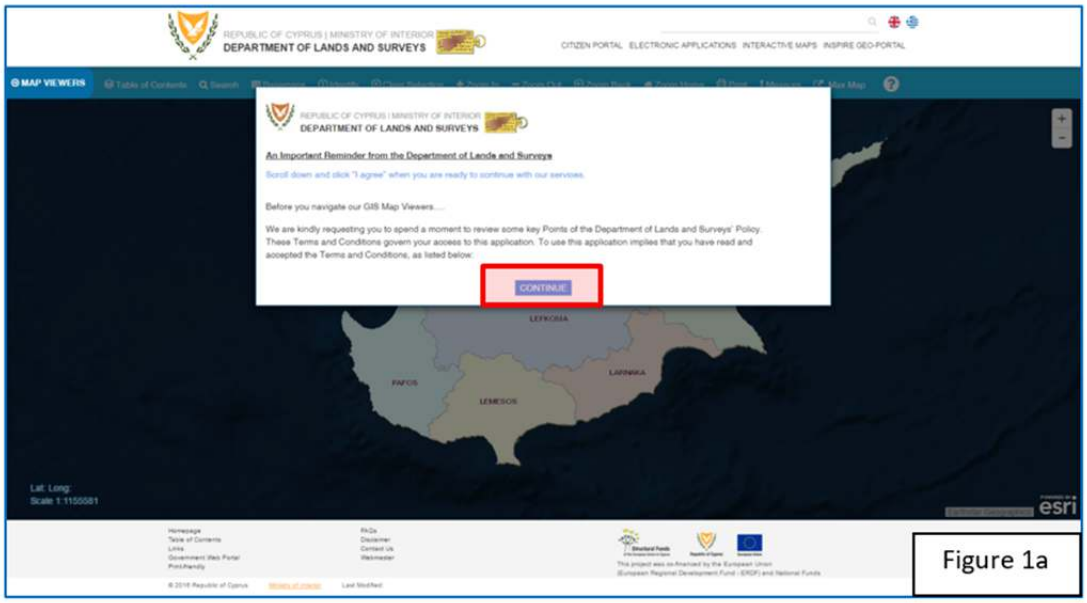


Figure 1a

By accepting the terms, the map appears clearly, as in Figure 2 and the user can start navigating.

Figure 2

In this page, on the top tool bar shown in blue frame in Figure 2, the user can see the followings tools:

1. The available applications "**Applications**" tab,
2. The table of contents for each application, "**Table of Contents**" tab,
3. The Parcel search, "**Search**" tab,
4. The available backgrounds, "**Basemaps**" tab,
5. The data identification tool, "**Identify**" tab,
6. The tool of deselect the selection, "**Clear Selection**" tab,
7. The navigation tools, "**Zoom in**", "**Zoom out**", "**Zoom Back**", and "**Zoom Home**", tabs
8. The printing maps tool, "**Print**" tab,
9. The measurement tool, "**Measure**" tab and
10. The map maximization tool, "**Max. Map**" tab.

1. <u>Available Applications, Tab "Applications"</u>

The Cadastral Maps Layers, (applications) that are currently available are:

1. Cadastral
2. Topographic
3. Hydrography
4. Administrative Boundaries

<u>Note:</u> The Department of Lands and Surveys, reserves the right to modify, remove and / or addition of a new Cadastral Map Layer, (new service) at any time.

The user can display the available Cadastral Maps Layers, (Services), using the "Map Viewers" tab on the tool bar. In the expansion of this function the services displayed on the left side of the screen, as shown in Figure 3 below.

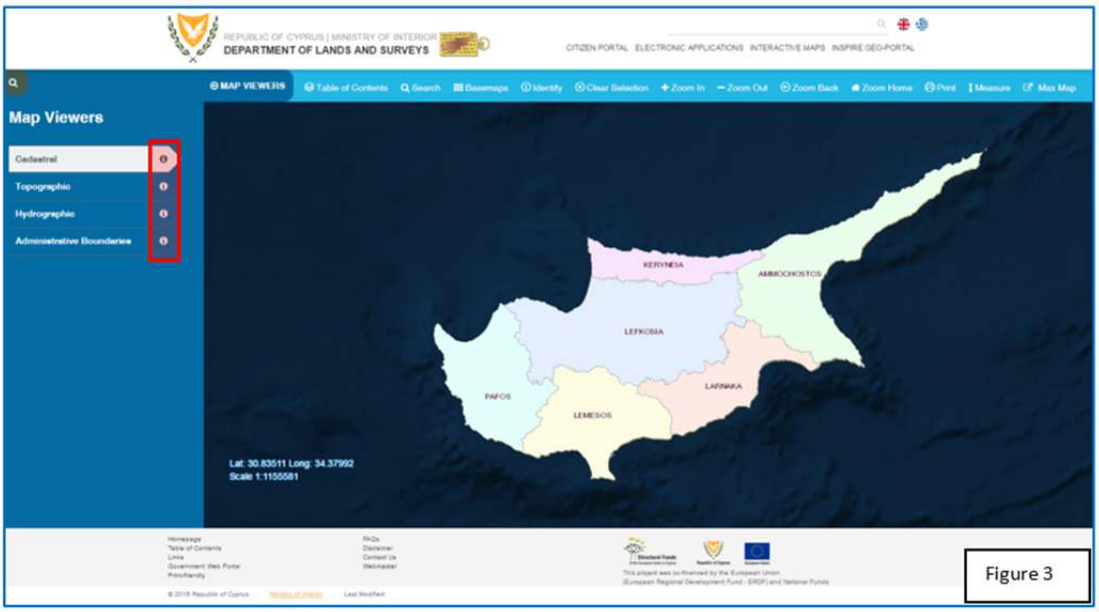
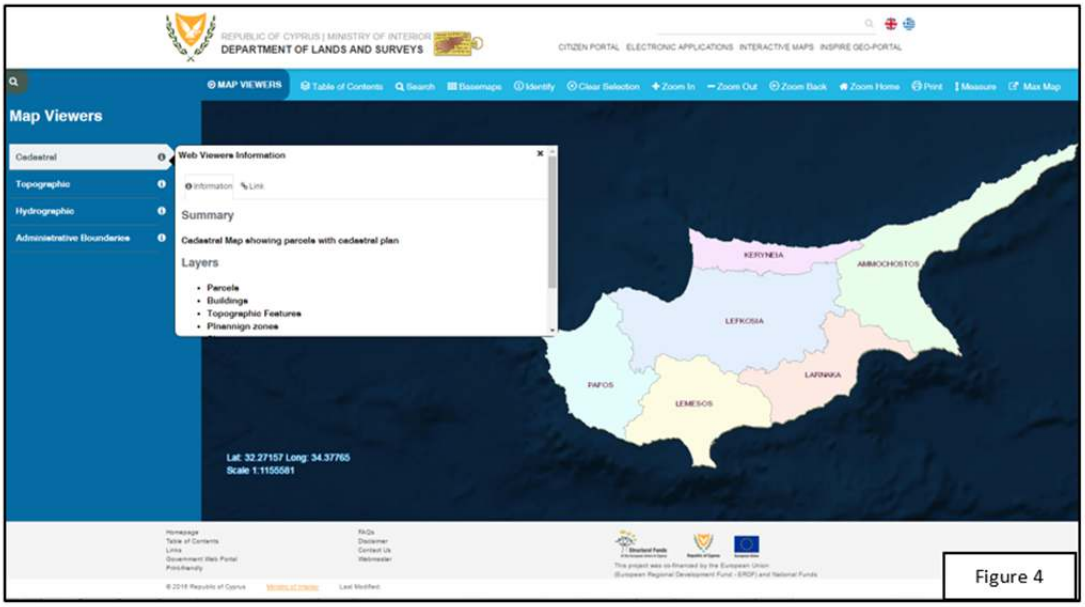


Figure 3

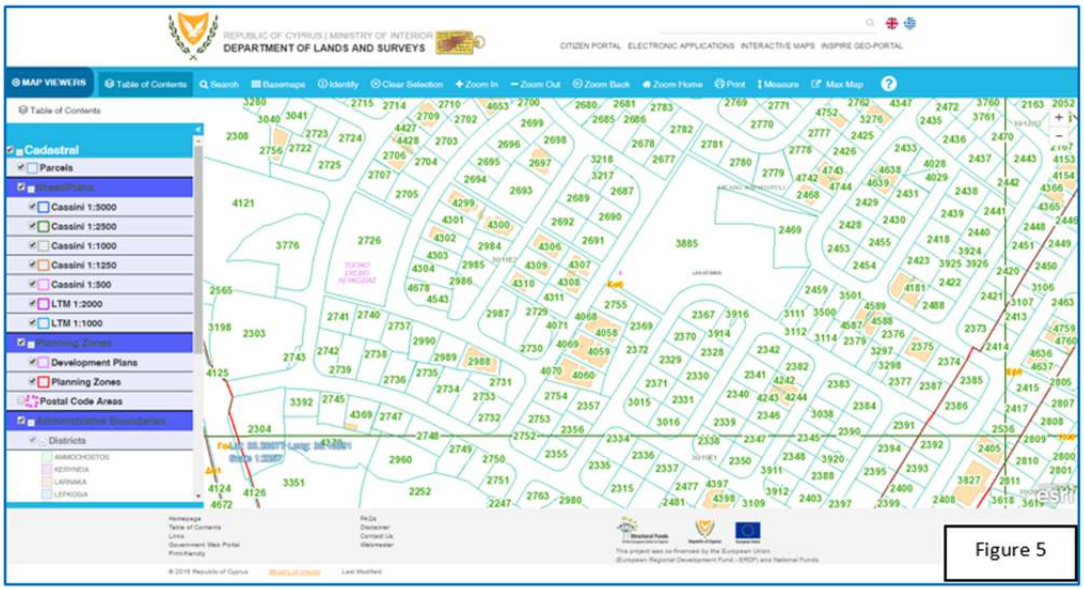
Each Service contains various information such as its description, its layers etc. To view this information, the user should select the icon «**i**», next to each service in the services frame as shown in the red box in Figure 3 above. As soon as the user press the «**i**» icon, a window appears in which there are 2 tabs (1. Information, 2. Link), as shown in Figure 4 below. In the first tab "Information", the user can see the description of each map viewer and some of the most basic layers. On the second tab "Link", there is a link presented that the user can use so as to add the corresponding thematic map in GIS software (ArcGIS or QGIS). The instructions on how to use the link, can be found at the end of this document.



The user selects a service, and closes the list of thematic maps, by clicking once the "Map Viewers" tab. By Using the navigation buttons, the user can navigate the map.

2. Service Catalogue Layers, tab «Table of Contents»

The user should select the tab "**Table of Contents**" in order to display the contents of the service (thematic map). The contents of the map, appears as shown in Figure 5 below.



The user has the option to make visible or not any data on the map. This can be done by activating or deactivating the Layers from the table of contents. After the user configures the map as desired, he can close the Table of Contents frame, by clicking once on the "**Table of contents**" tab.

3. Navigate to Parcel, Tab «Search»

The user has the ability to search, for a specific parcel, using the "**Search**" Tab. In the expansion of this function, as shown in Figure 6, below, the user must fill the search fields, by selecting the appropriate values from the drop down list for each field.

Every time the user enters a value in a field, he can navigate to the area of that field by pressing the "Zoom" button, as shown in green color in the search frame.

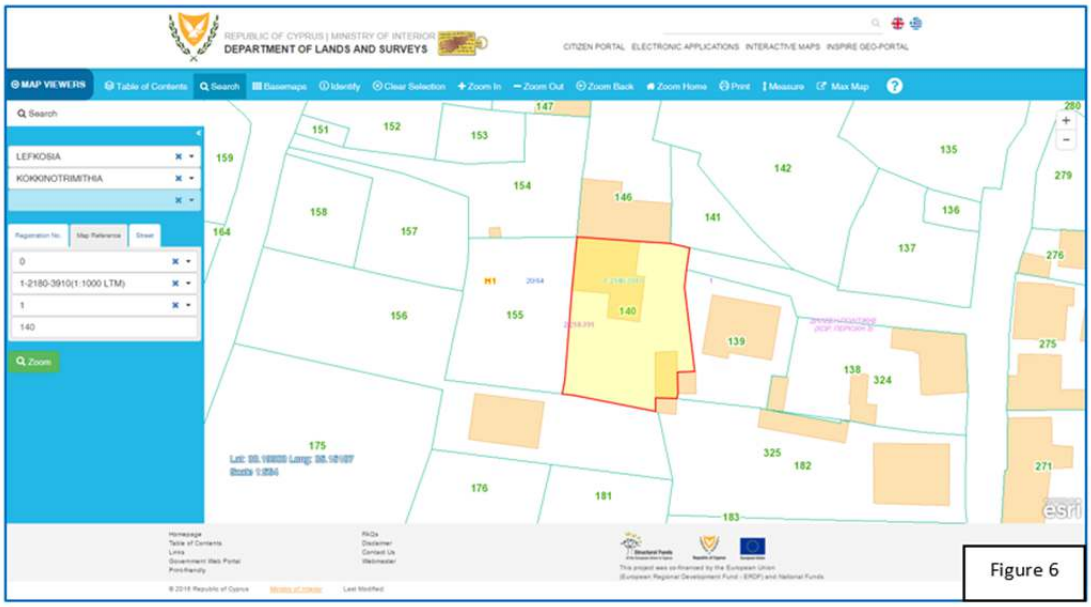


Figure 6

Once the user, has entered the values for the fields District, Municipality/community and Quarter, then ~~has~~ there is the ability to search in three different ways:

- Registration Number, (Registration Block and Registration Number)
- Map Reference, (Sheet, Plan, Block, Parcel Number)
- Street, (Street Name)

After completing the review of the Parcel he is interested in, the user can close the search frame, by pressing once the "**Search**" Tab.

4. Available Backgrounds, Tab «BaseMaps»

In all four available Map Viewers, (Services), the user has the option to use a Basemap as a background from those available. This is offered to the user from the "**Basemaps**" tab. The following Basemaps are available, as shown in Figure 7 below:

1. Satellite (ArcGIS)
2. DLS Orthophotos 2014
3. DLS Satellites 2009-2013
4. DLS Orthophotos 1993
5. DLS Orthophotos 1963
6. DLS hillshade 1993
7. Bing Maps
8. Google Maps Satellite
9. Google Maps Street

***Note:** The Department of Lands and Surveys, reserves the right to remove and / or add a new Background at anytime.*

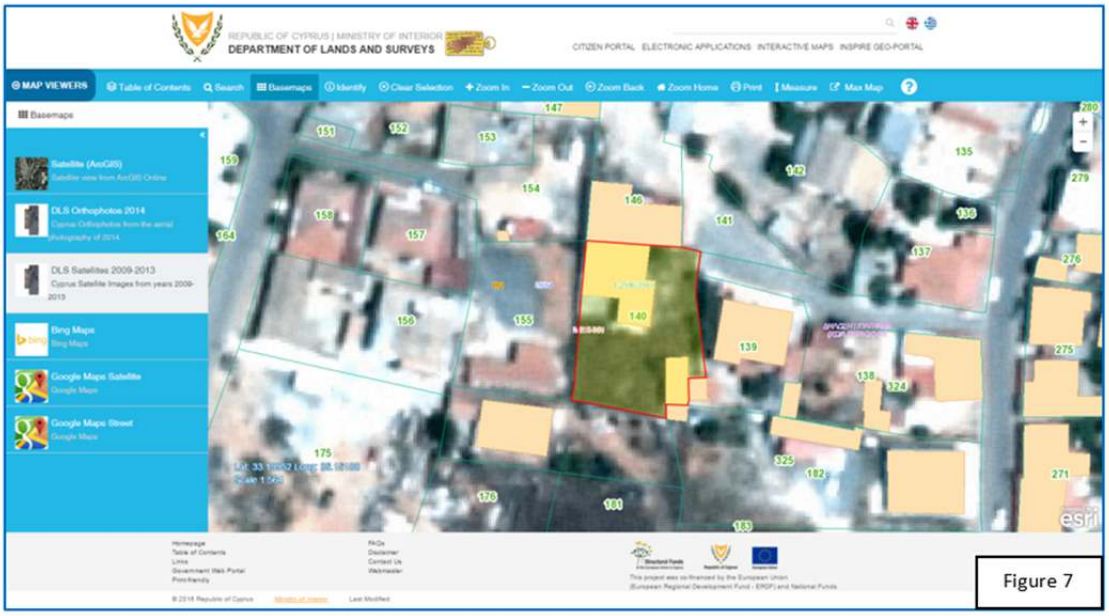


Figure 7

5. Data Identification, Tab «Identify»

The user has the ability to display and view information on the data included in the service already chosen, by using the "**Identify**" tab. The identification frame appears with the message "**Click on the map to view identification results**", as shown in Figure 8 below.

Figure 8

The user should only click inside the parcel of interest. Automatically, in the "Identification Results" frame, appears all the information of the specific data, as shown in Figure 9 below.

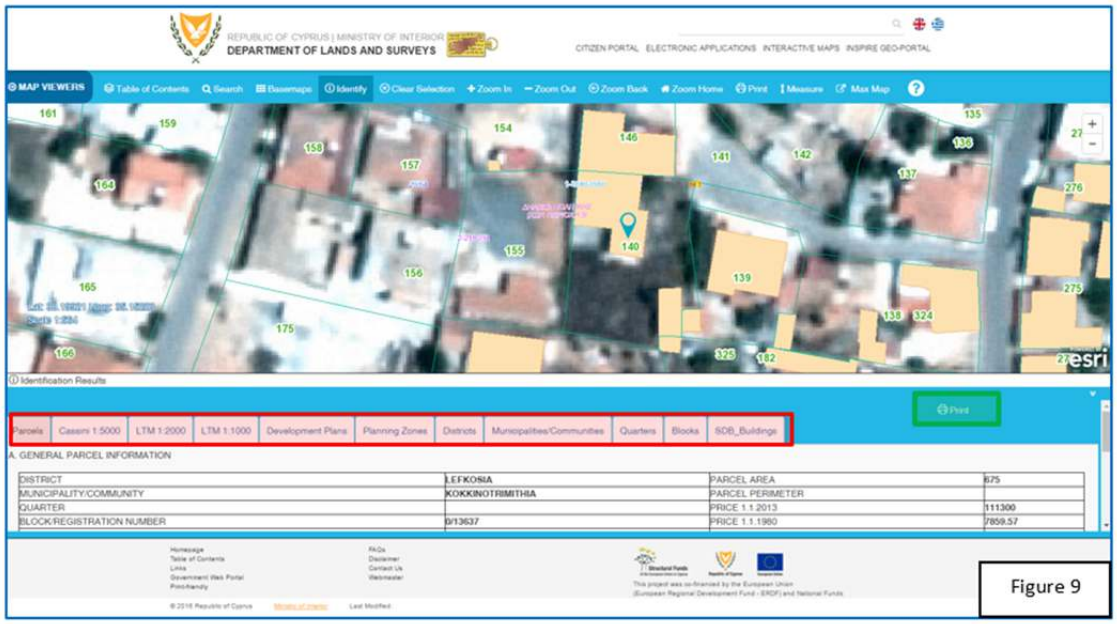


Figure 9

In the "Identification results" frame, there is information ONLY for the Layers that are visible on the map. These layers are shown in tabs form at the top of the frame, as shown in the red box in Figure 9. To see the information results for a specific Layer, just click on the appropriate tab.

If there is a need to see identification results for layers not displayed, just make them visible (to activate it), in the table of contents.

In some cases, you may need to scroll down the Identification results frame to see all the information of a layer. There is also the option to print the results by using the "Print", button, in the identification results frame, as shown in green color in Figure 9.

If the user selects the tab "Parcels" (figure 9) and then scrolls down, two options would be available as shown with red frame in figure 9A:

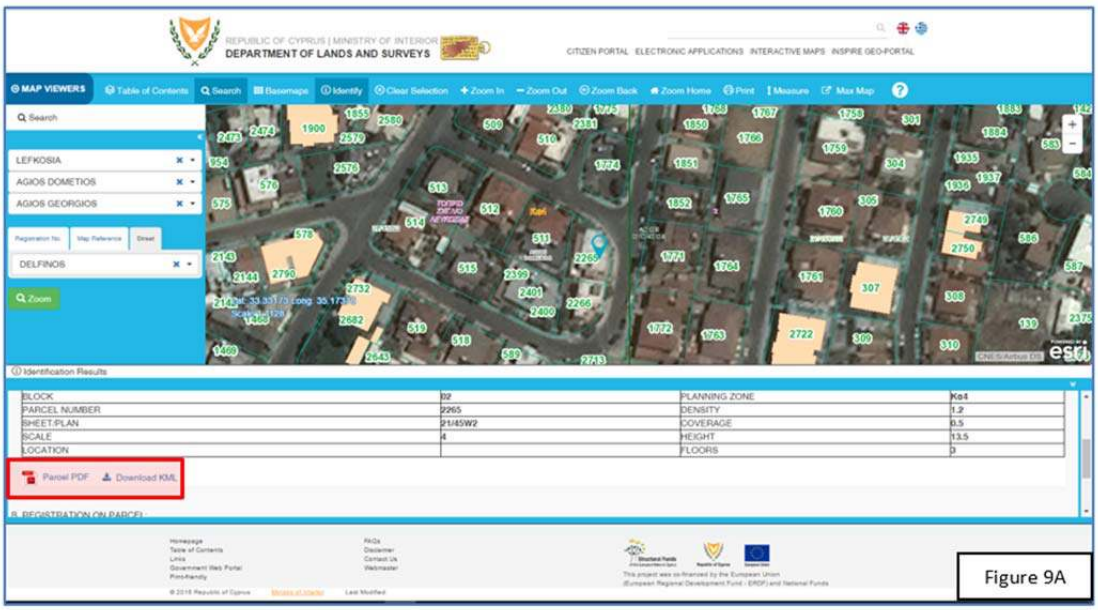


Figure 9A

1. "Cadastral Plan": He can open the cadastral plan, which depicts the identified parcel, in PDF format.
2. "Download KML": He can export the boundaries of the identified parcel in KML format, which later can be opened in "Google Earth".

6. Deselect the Selection, Tab «Clear Selection»

The user has the possibility to deselect the selection made by using the tool "Search" and select another area, using the tool "Clear Selection".

7. The navigation tools, Tabs "Zoom in", "Zoom out", "Zoom Back", and "Zoom Home"

Using the navigation tools, the user can move anywhere on the map, in any service selected. There are the following tools, as shown in red frame in Figure 10 below.

1. **Zoom in**: The user can zoom in the map in a larger scale.
2. **Zoom out**: The user can zoom out the map in a smaller scale.
3. **Zoom Back**: The user can return to the previous extent of the map.
4. **Zoom Home**: The user can reset the map to the whole Extent.

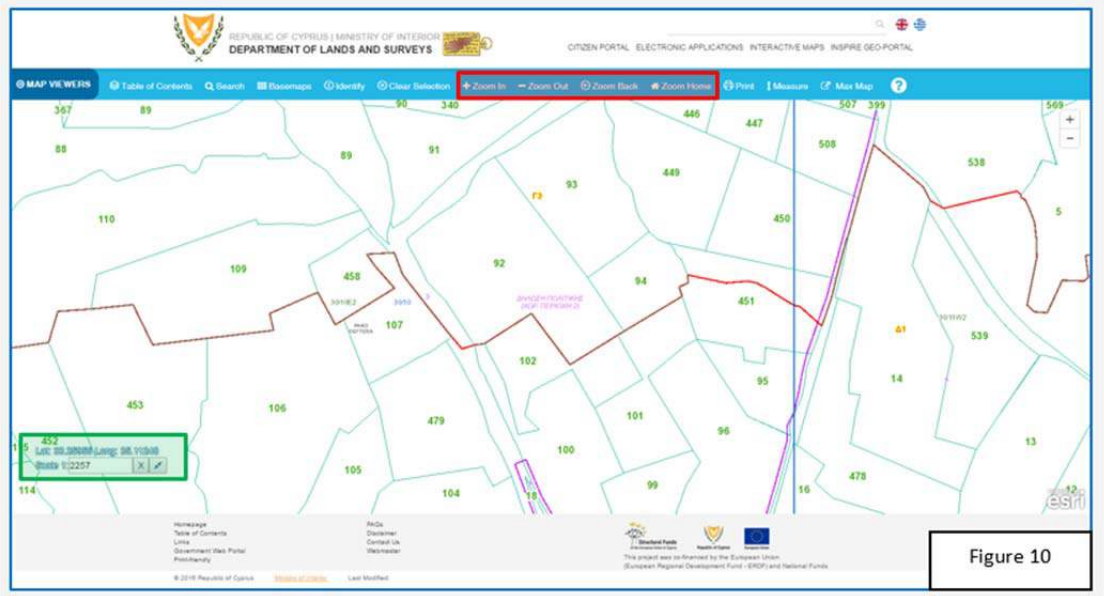


Figure 10

The user has also the option to display the data in the map, at a specific scale. This can be done by entering the scale in the "**Scale**" field that appears at the bottom left side of the screen, in green frame, figure 10. After registering the scale, the user should press the Icon which appears next to the specific field, in order to Activate the scale. To close the scale field the user should press the icon next to the scale field.

8. Map Printing, Tab «Print»

The user has the ability to prepare a map using the "**Print**" tab. By selecting the specific tool the system displays the printing frame, as shown in Figure 11 below. In this frame, there are some parameters which the user must fill in using the List of Values, as below:

- Plan format selection, (PDF, PNG32, PNG8, JPG, GIF, EPS, SVG, SVGZ)
- Page size selection, (Sizes A4 and A3 in Portrait and Landscape position, either in Greek or English language.
- Plan Title

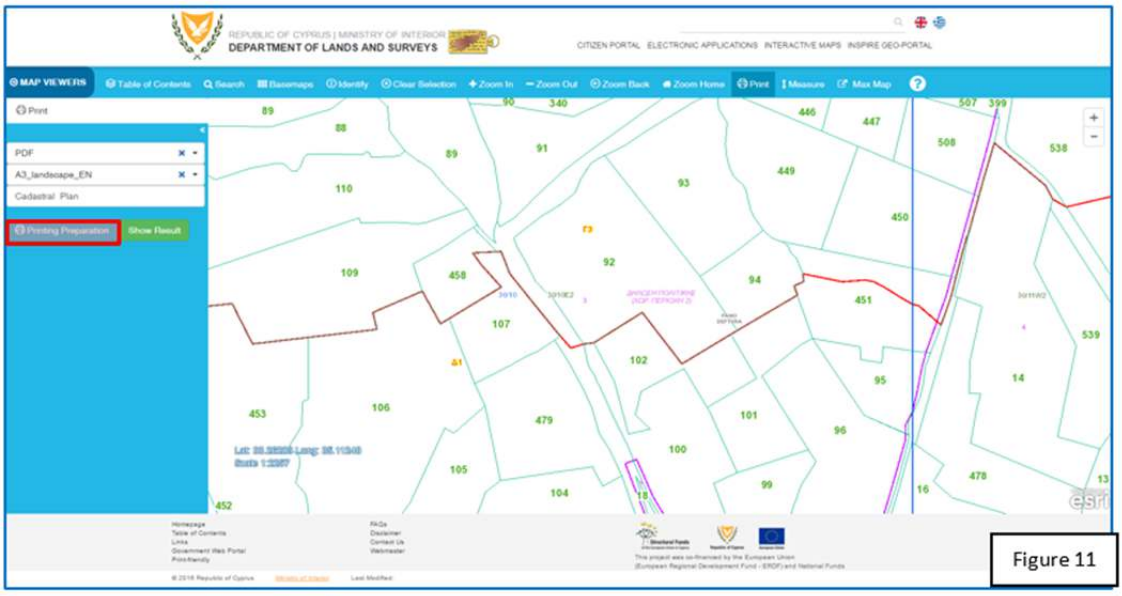


Figure 11

After the user has entered the above parameters, then he should select the button, "**Printing Preparation**", as shown in red box in Figure 11. Once the plan is ready, the "**Show Results**" button is displayed, (see Figure 11), and when the user press it the map appears, as in figure 12.

With the tools shown in the red box in Figure 12, the user can save or print the plan.

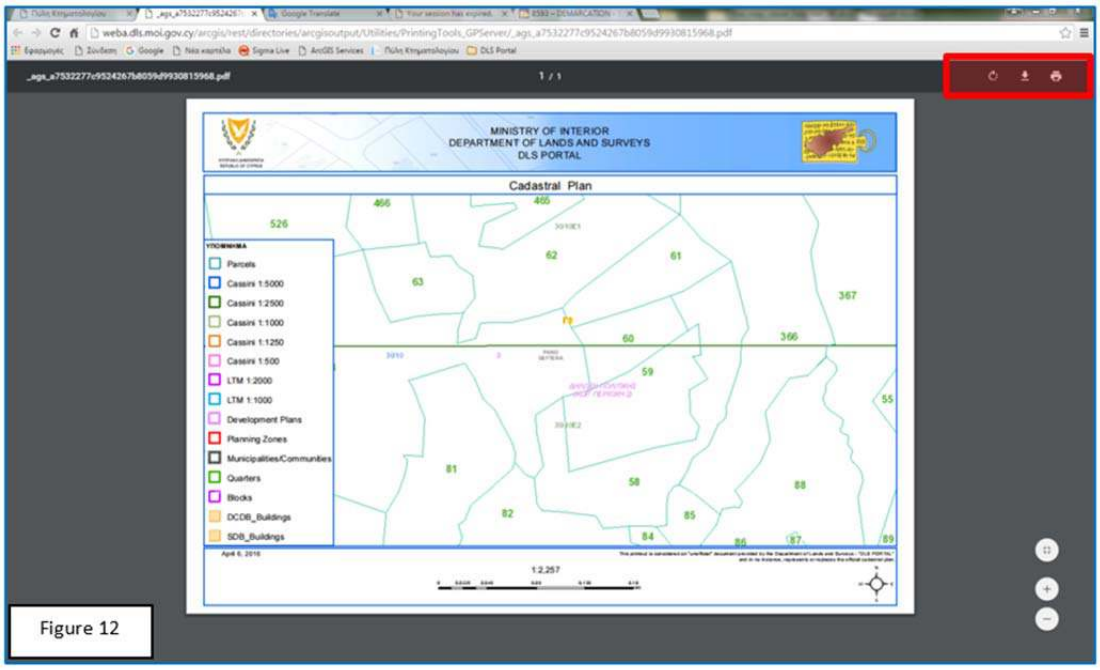
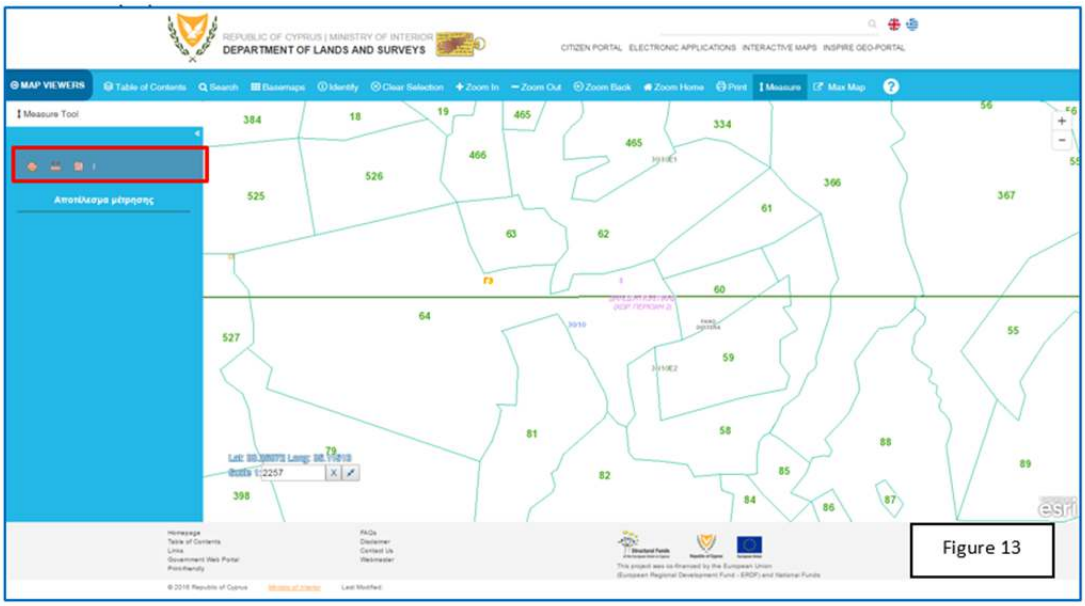


Figure 12

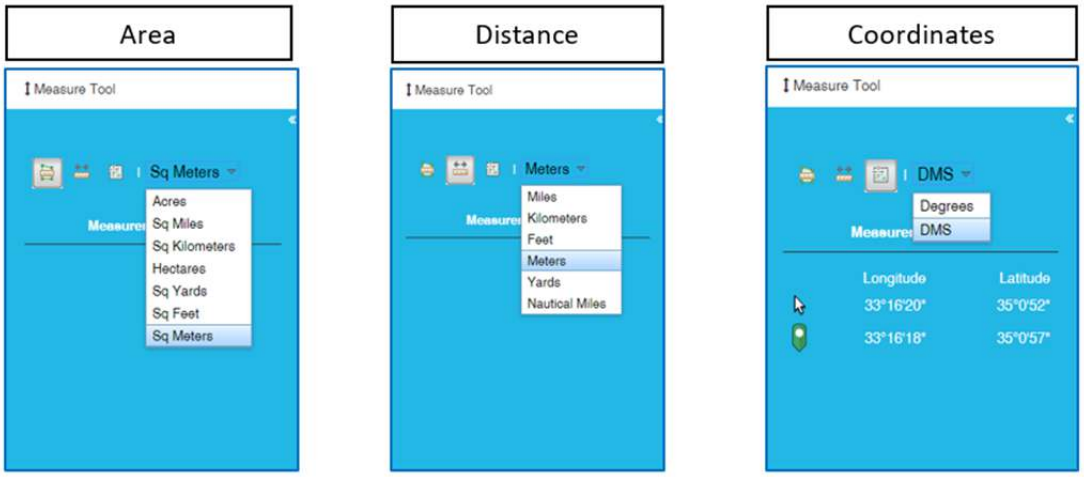
9. Calculation of coordinates, Distances and areas on the map, Tab «Measure»

By using the "**Measure**" tool, the user can make rough measurements on the map. Selecting this tool the system displays the measurement frame, as shown in Figure 13 below.



There are three types of measurements, as follow:

- Measurement of the extent of an area.
- Measurement of a distance.
- Measurement of coordinates, (Longitude and Latitude).



The above images show the available measurement units for each type. The user has to select the type of measurement of his interest in each case and after that he should define on the map the feature to be measured.

1. The points that define the surface for which the user wants to calculate the area, (minimum 3 points). At the last point he should double click on the screen.
2. The points that define the line for which the user wants to calculate the distance, (minimum 2 points). At the last point he should double click on the screen.
3. The point for which the user wants to calculate the coordinates. (single point).

Each time the system performs calculations, the result appears in the bottom of the measurement frame, as shown in the pictures below:

1. Picture 14, for area.

2. Picture 15, for distance.
3. Picture 16, for coordinates.

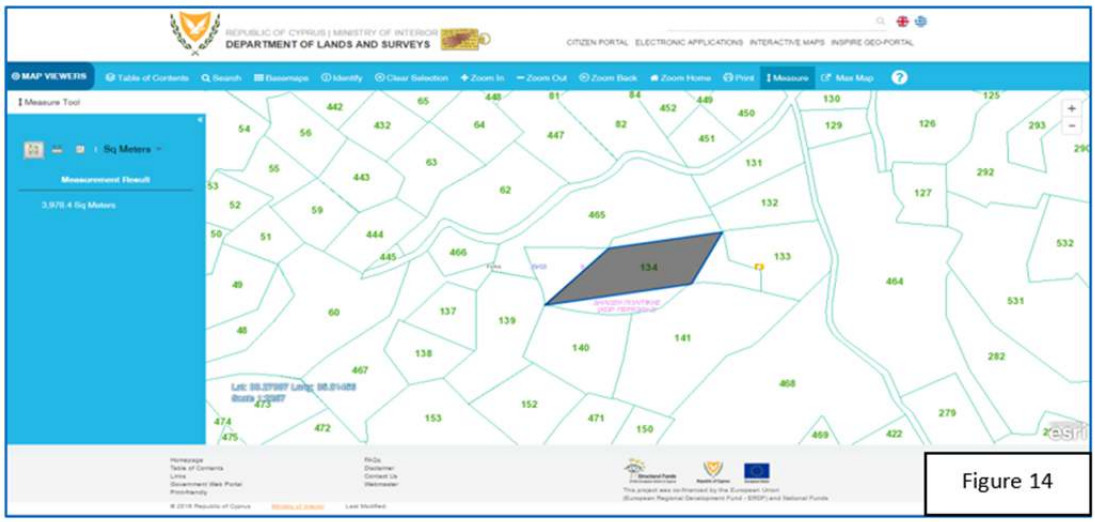


Figure 14

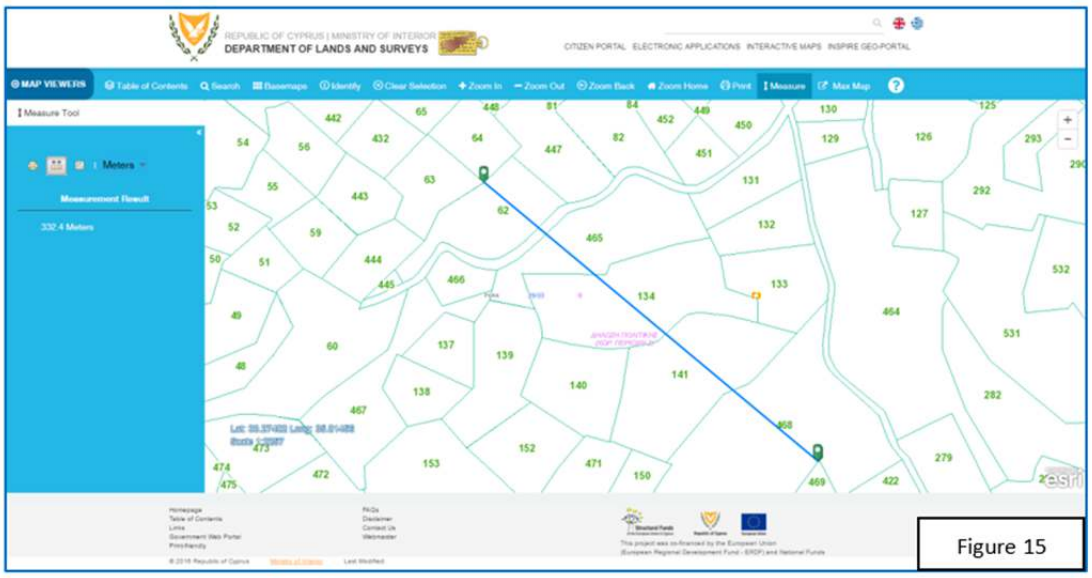


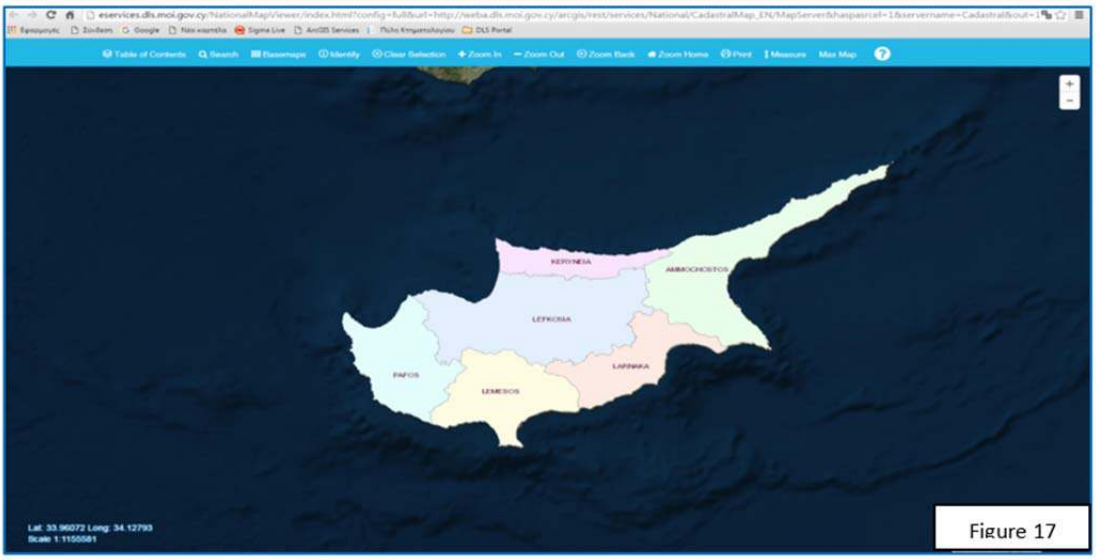
Figure 15

Notes:

1. ***All spatial data, including geographical data layers and basemaps, provided by this application, do not replace the "Official Cadastral Plan" in any instance. Users must consult the "Official Cadastral Plan", regarding the official geographic position of a parcel.***
2. ***Measurements on maps do not replace in any way the survey measurements and data of the Official Cadastral Plans.***

10. Maximizing of a service map, tab «Max Map»

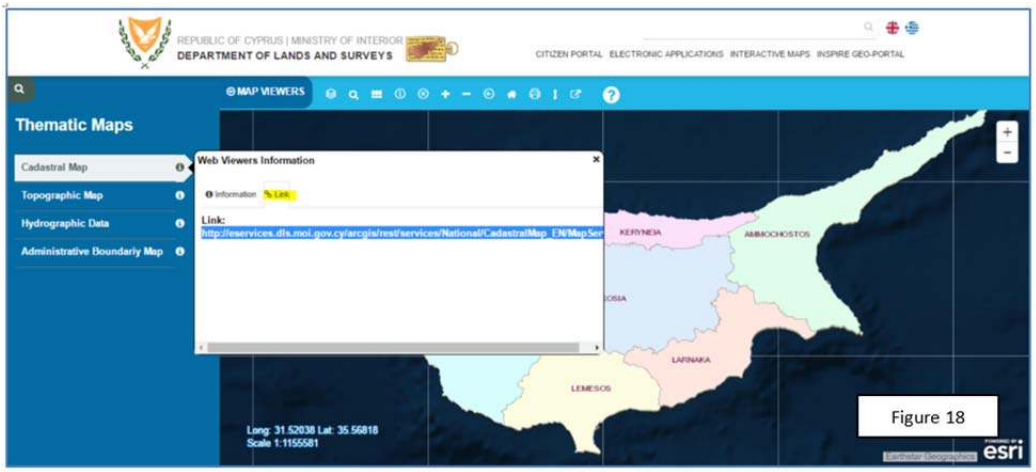
The user using the "Max Map" tab (far right button on toolbar), has the option to maximize the map, opening a new tab in the Browser, which displays ONLY the map with all the tools, as shown in figure 17 below.



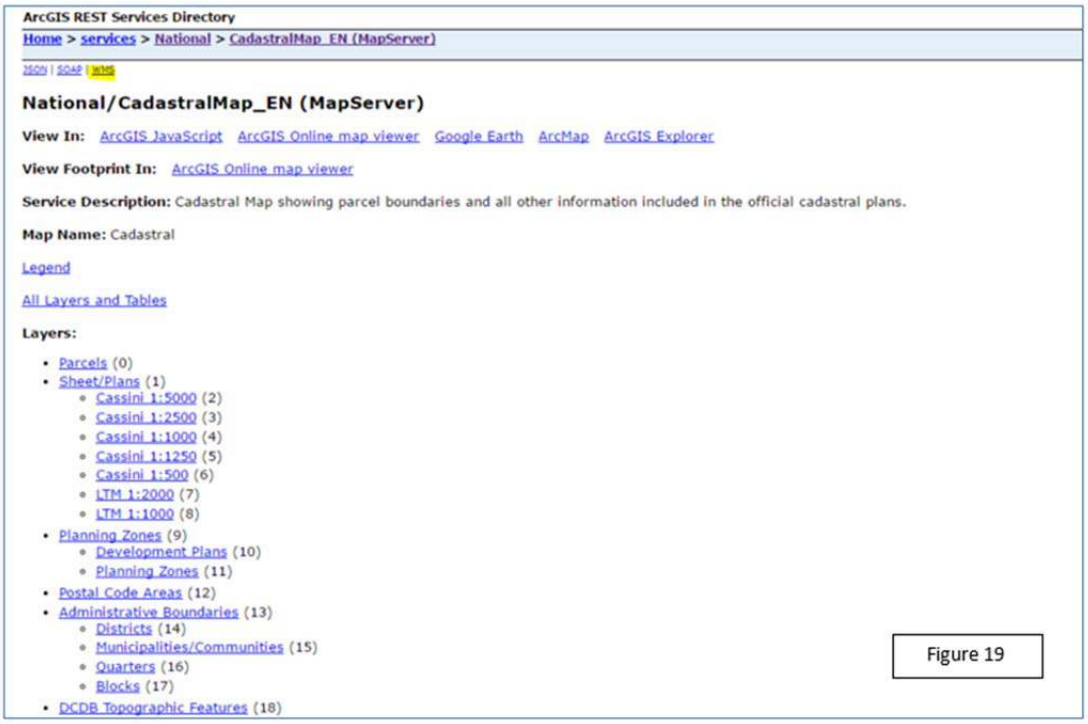
The user can see the map over the range of the whole screen, without showing the Headers and Footers page. He has the ability to open one tab for each service.

11. Use of Link in GIS software

As mentioned earlier in the document, in tab "Link", there is a link the user can use so as to add the thematic map in GIS software. By GIS software the instructions refer to ArcGIS and QGIS. The user should carefully select the whole url as shown in figure 18.



As a next step the user should open a new browser window, paste the url and press enter. The result is shown in figure 19. The user selects WMS (shown in yellow color) and the result is now shown in figure 20.



The user then selects and copies the part of the url up to "……../WMSServer" (as shown in yellow color in figure 20).

- **<u>Use in ArcGIS</u>**

The user access ArcMap/ArcCatalog, ~~and~~ selects "Add WMS Server" (as shown in yellow color in figure 21) and pastes the link in the field "URL". Then selects "Get Layers" and finally "OK".

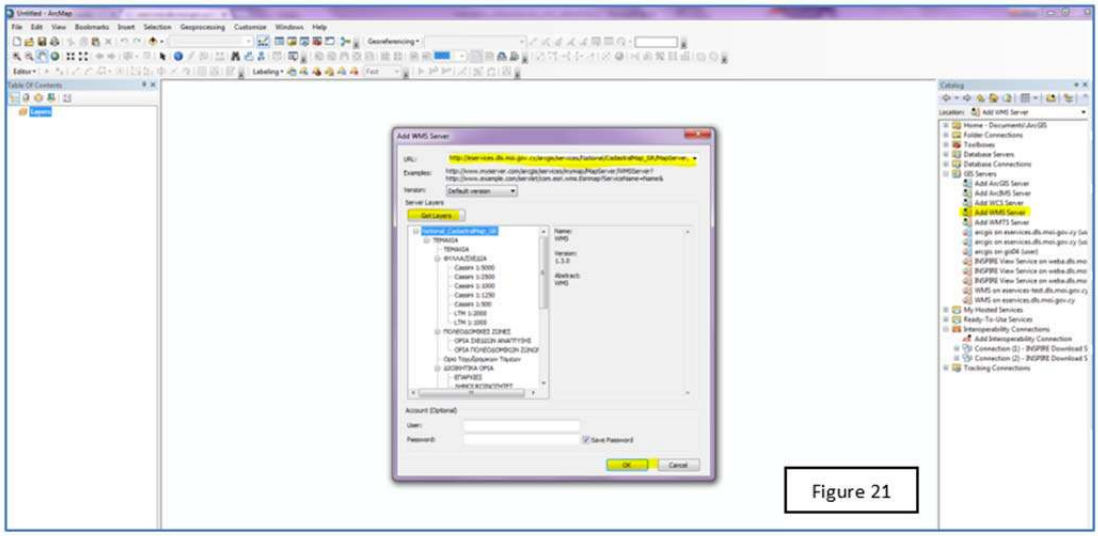


Figure 21

As soon as the user has completed the aforementioned steps, then the connection is available in the ArcCatalog tree (figure 22). The user can add the service in a map document by drag and drop the connection created in an ArcMap document (figure 23). Some layers may appear in gray color (figure 23 highlighted in yellow). These layers have specific scale range, that's why they are not visible. If the user zooms in accordingly, then they will be visible. Some other layers, due to data volume are "Off" by default but the user can just turn them "On".

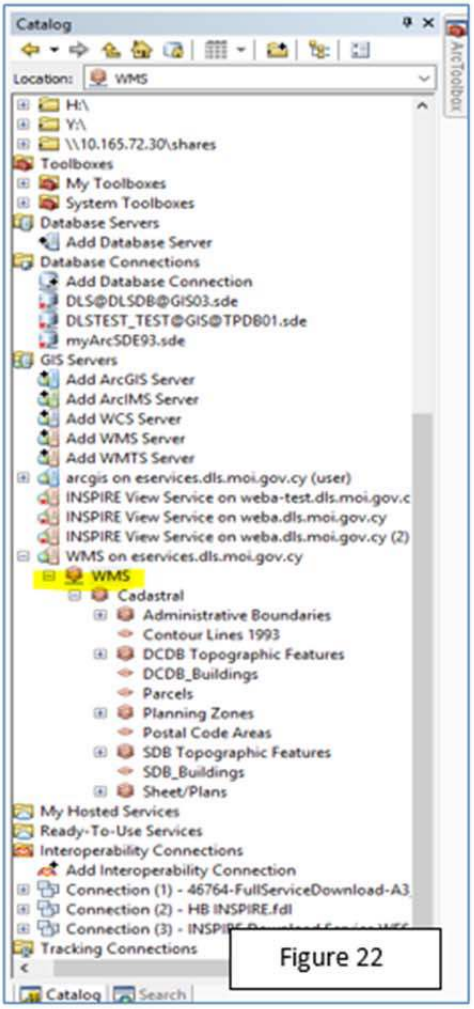


Figure 22

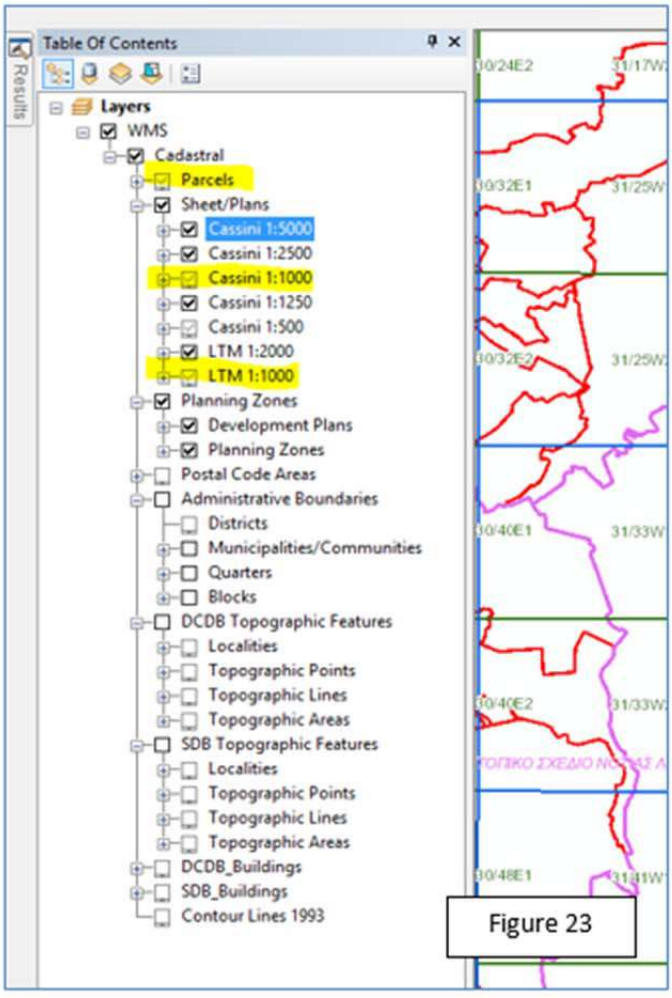


Figure 23

In addition to the aforementioned, the user has the option to add in ArcGIS software, different raster backgrounds (aerial and satellite imagery, hillshading), the owner of which is the Department of Lands and Surveys.

The user has to copy the URL as it shown in Figure 18, then through ArcCatalog has to select "Add ArcGIS Server" (Figure 23A), "Next" and then has to paste the URL in field "Server URL" (Figure 23B). Finally, has to select "Finish".

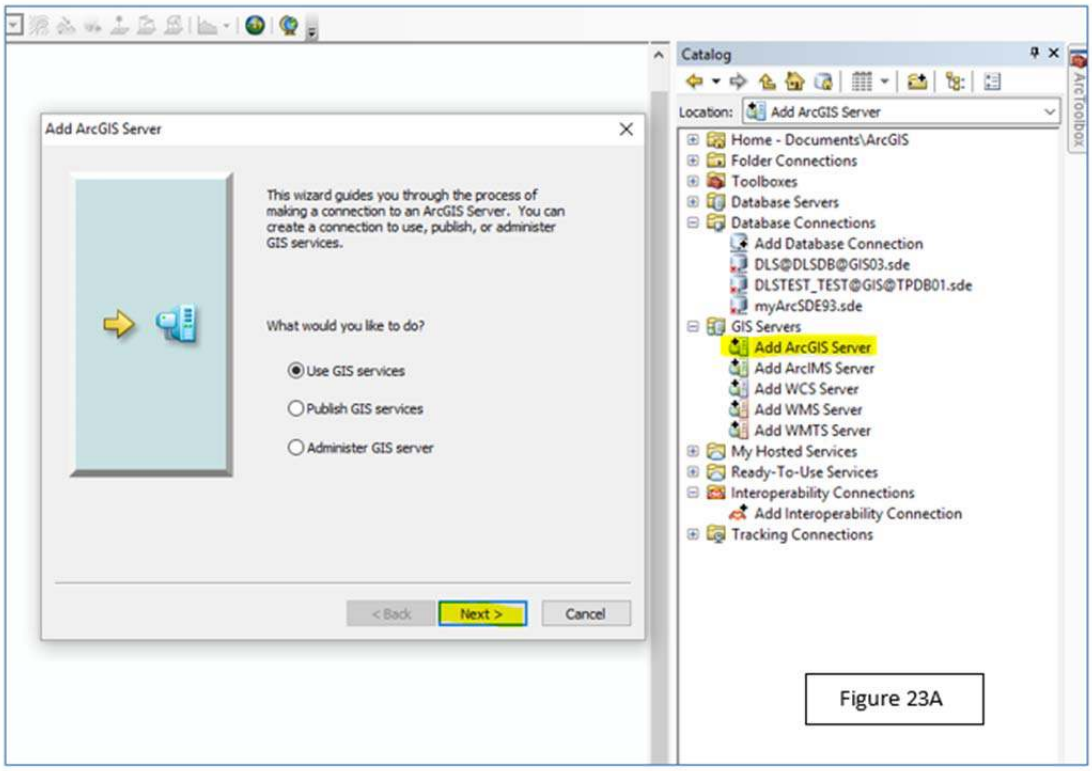
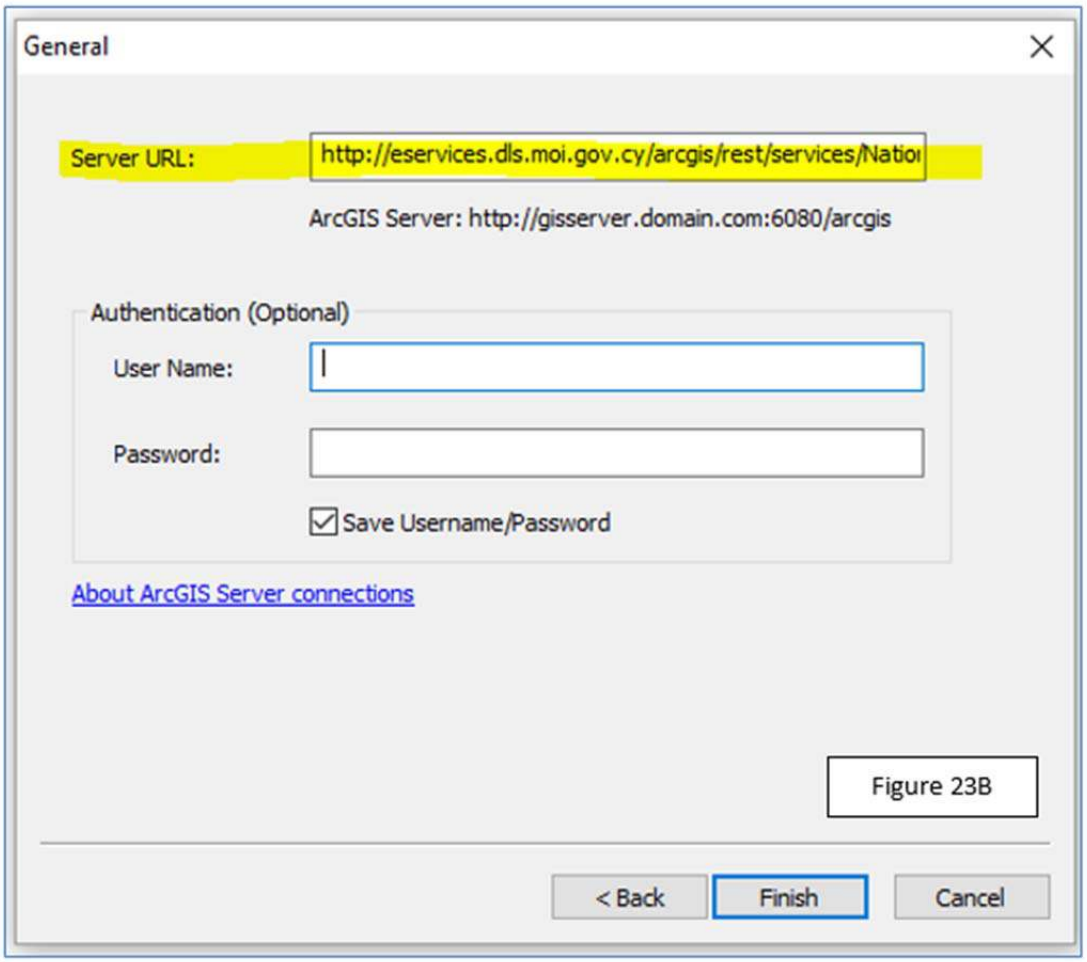
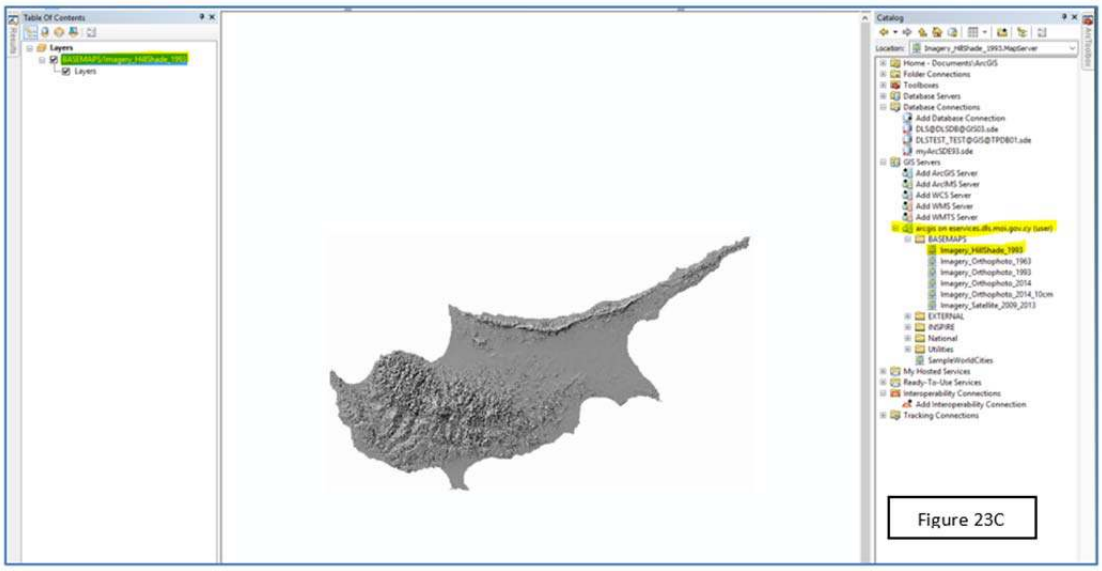


Figure 23A



The connection is available in the ArcCatalog tree as shown in Figure 23C. Then the user can open the folder "BASEMAPS", choose the basemap of interest and then by drag and drop, add it in the "Table of Contents" (Figure 23C).



Note:

1. ***Regardless of the of thematic map Link that will be used, the user will see in ArcCatalog the same result (full content of the REST directory – Figure 23D).***

2. ***The user can also consume the connections that are included in the other folders (INSPIRE, NATIONAL) with the same way. From the folder NATIONAL some of the connections are not available to the user due to the fact that they respond to subscription services (e.g. SALES, PrivateSurveyors, PSM, etc.) or provision services (e.g. Cadastral Data Export, Hydrography Data Download, etc.).***

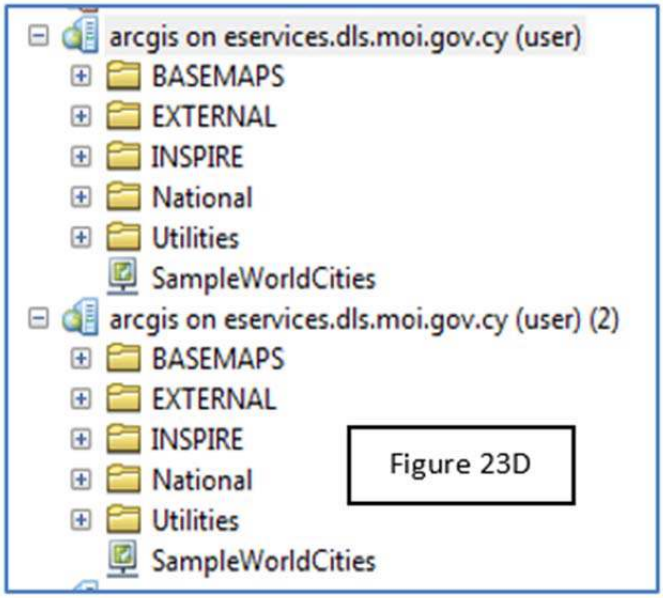
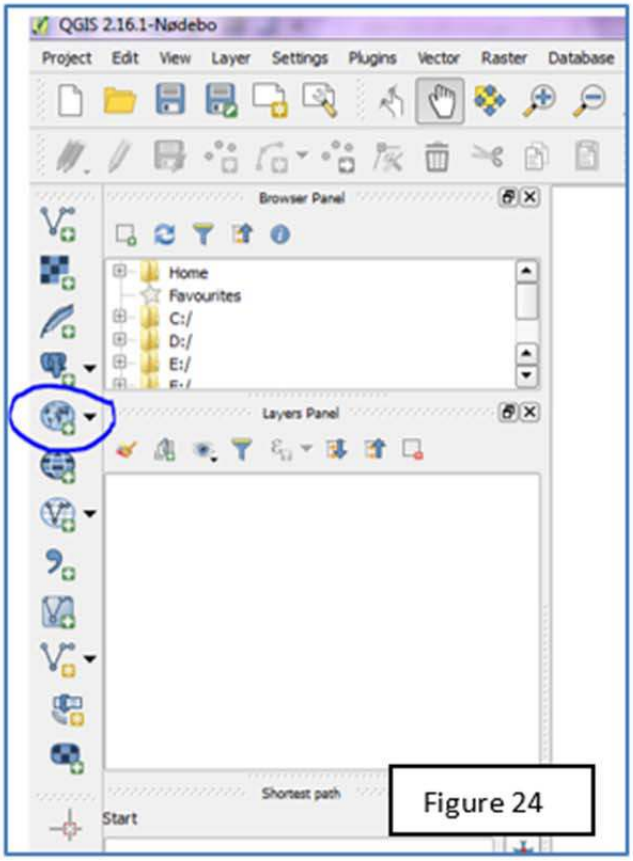
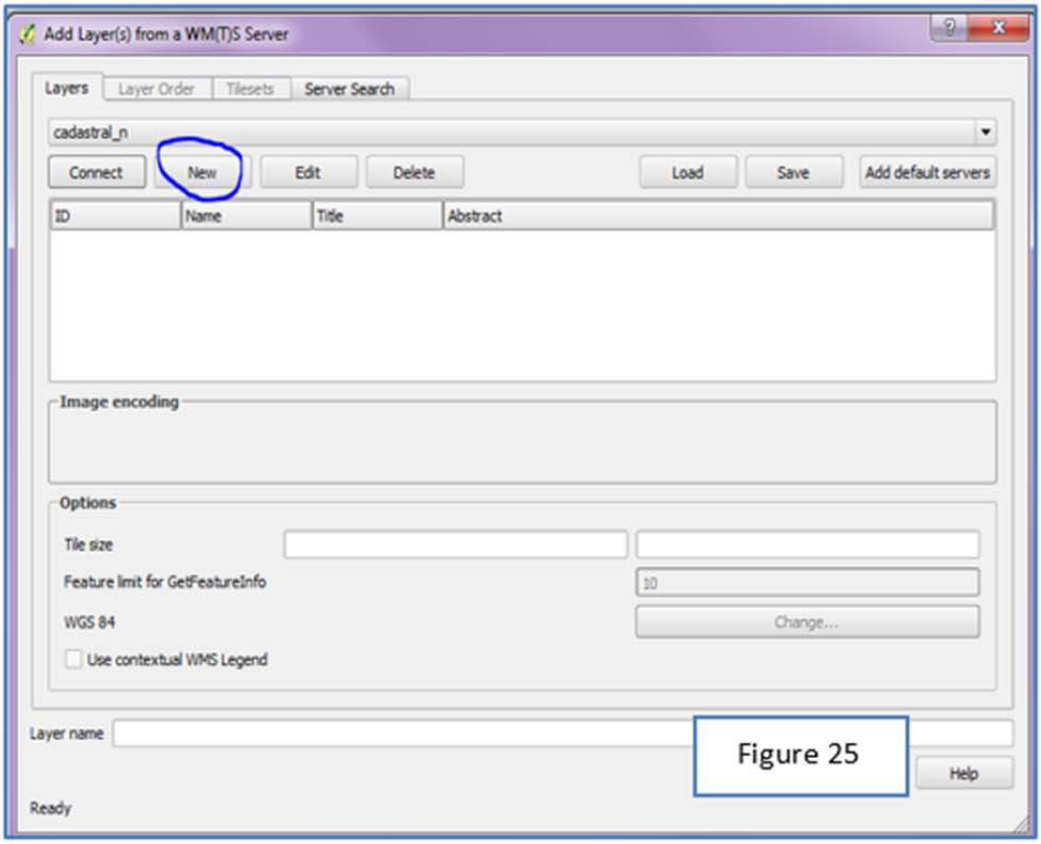


Figure 23D

- **Use in QGIS**

In QGIS, the user selects "Add WMS/WMTS Layer" (Figure 24) and the following form appears (figure 25).





The user selects "New" (figure 25) and gives a name to the connection. Then the url should be pasted as shown in figure 26. From the drop down list the user selects the connection already created and gets the list of layers included in the specific service (map viewer). There is a choice of selecting one by one layer or all together and add them in QGIS viewer using the "Add" button (figure 27). The result is shown in figure 28.

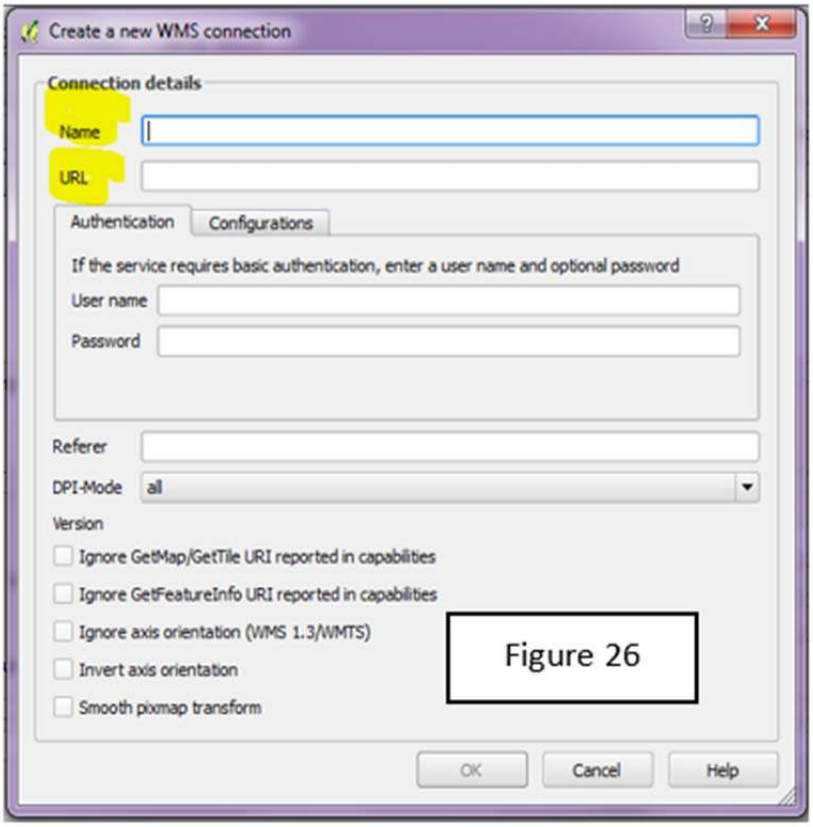


Figure 26

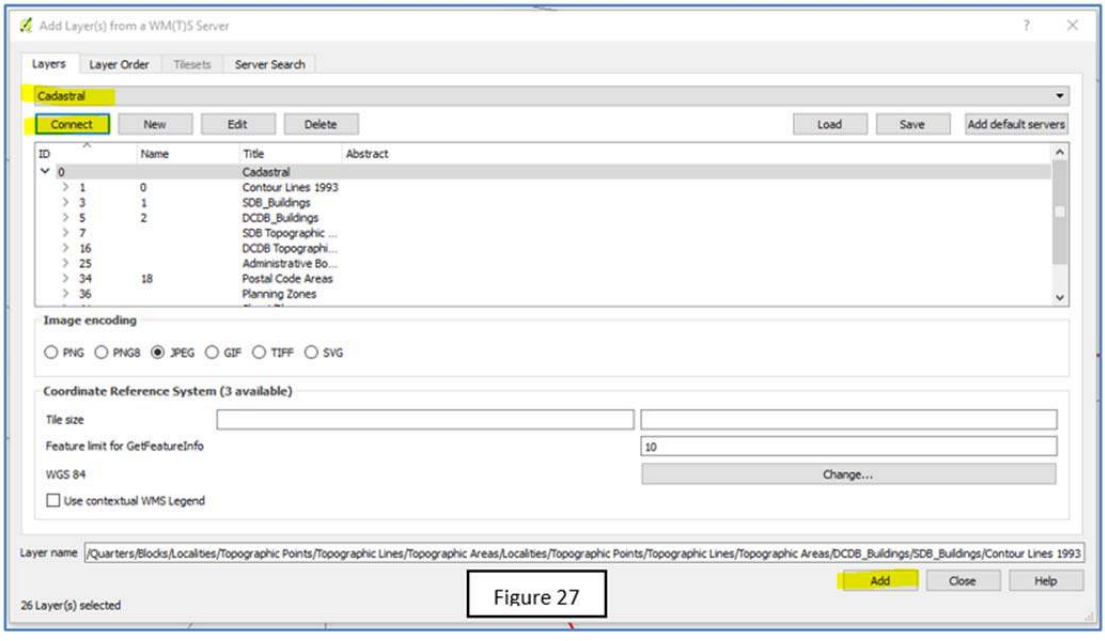


Figure 27

Browser Panel
Home
Favourites
Layers Panel
Shortest path
Start
Stop
Criterion
Length
Time
Calculate
Export
Clear
Help

Figure 28