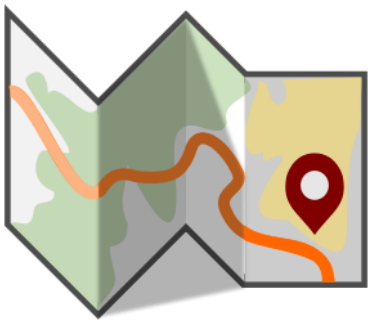
# Creating Heatmaps

## QGIS Tutorials and Tips



Author

Ujaval Gandhi

http://google.com/+UjavalGandhi

Translations by

SongHyun Choi

## ████ ████

█████ ████ ██████ ██ █████ ██████ ██████ ██████. ██████ ████ ██ ██████ ██████ ████ ██ ████ ██████ ██ ████ ██████ ████. *cluster analysis* ██ `hotspot analysis`_ ████████ ██████.

## ██ ██

_ ██████ 2011_ ██ Surrey_ ████████ ████████ ████ _ ████ ████ ██ ████ ██ ████ ████ ██ ██████.

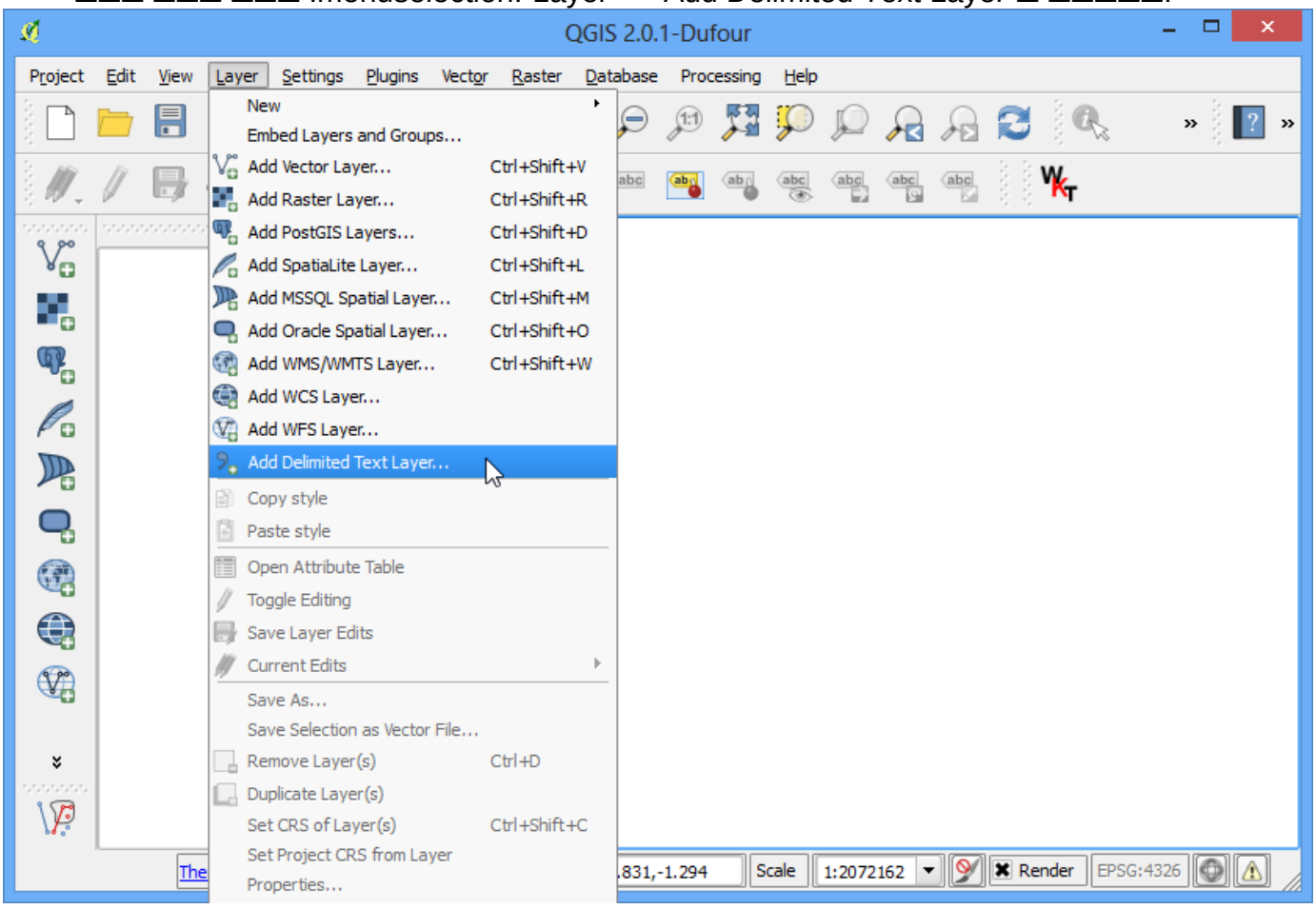
## ████ ██

██ ████████ `raw data from the Police.uk crime mapping website <http://data.london.gov.uk/datastore/package/policeuk-crime-data>`_ ██████.

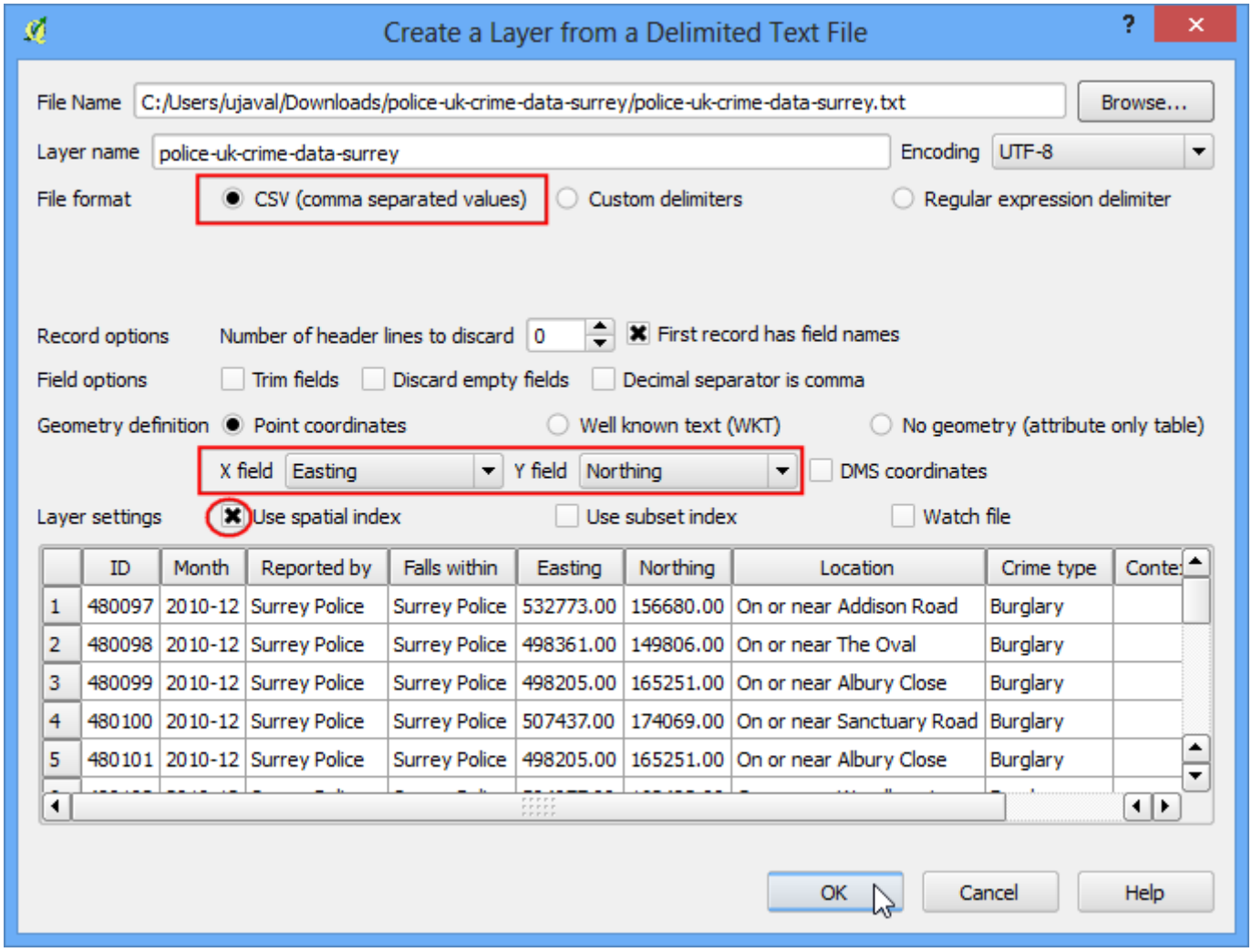
Download the Surrey data.

## ██

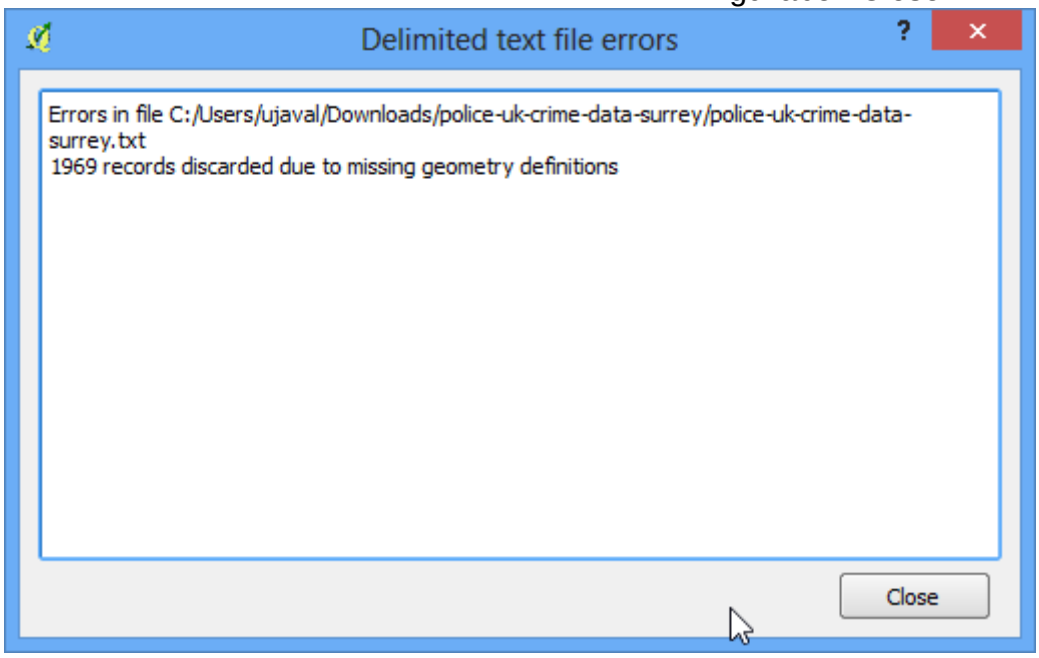
1. ██████ ████ ████ ██████ ██████. ██████ CSV██████ ██ ██████. QGIS_ _ ██████ ██████(████ ████ :doc:`importing_spreadsheets_csv`_ ██████). ██ ████ --> ██████ ████ ████ ████ :menuselection:`Layer --> Add Delimited Text Layer`_ ██████.



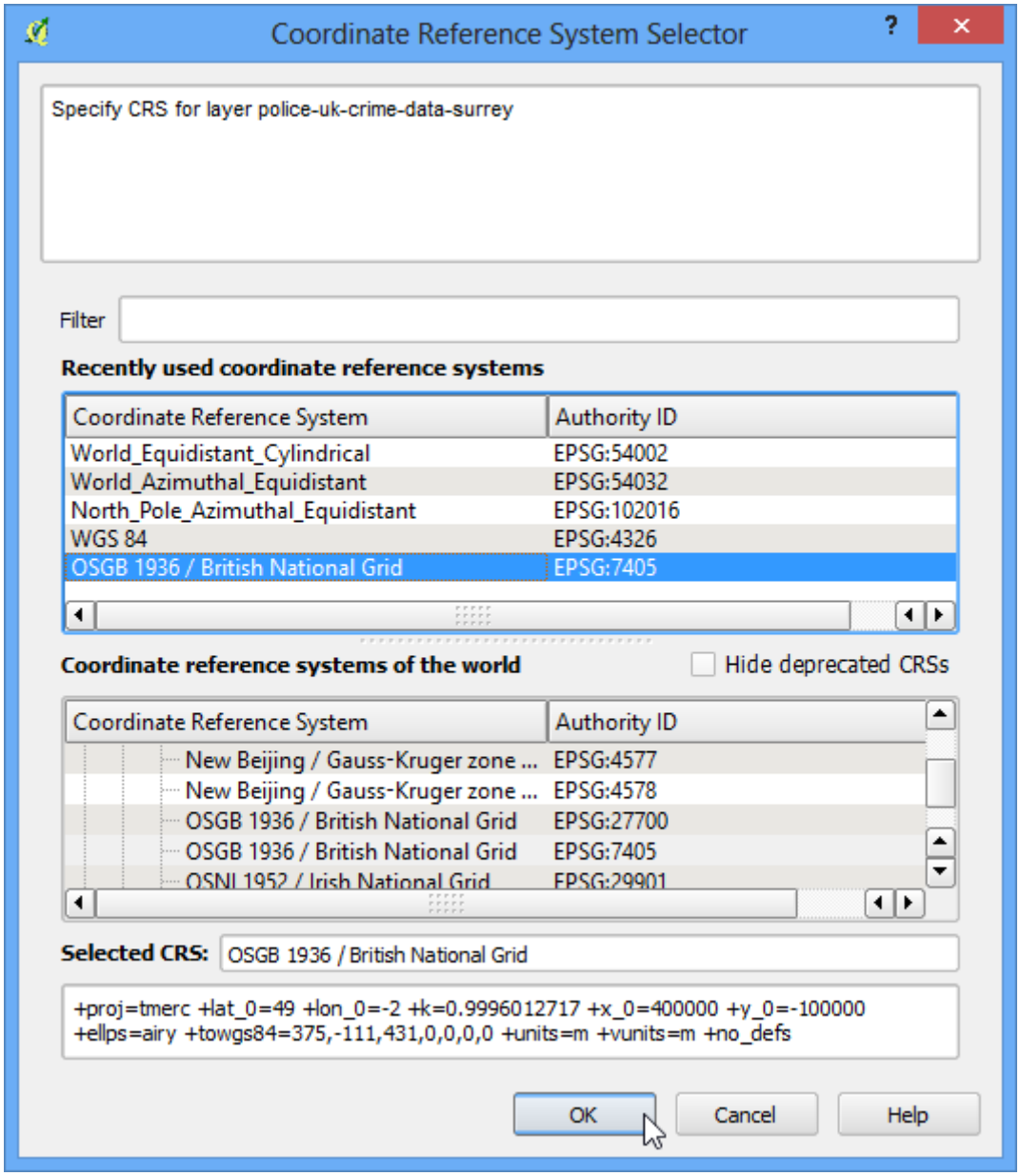

2. ██████ *police-uk-crime-data-surrey.txt`*███ ███ ███. ██ ████ *:guilabel:`CSV (comma separated values)`_ ██████. *Easting*_ *Northing* ██ ██████ X_ Y_ ████ ████ ██ _ _ ████. ████████ *:guilabel:`Use spatial index* ████ ████ ████ ██████. ████ _ ████ ██████ ████ ████. :guilabel:`OK`_ ██████.



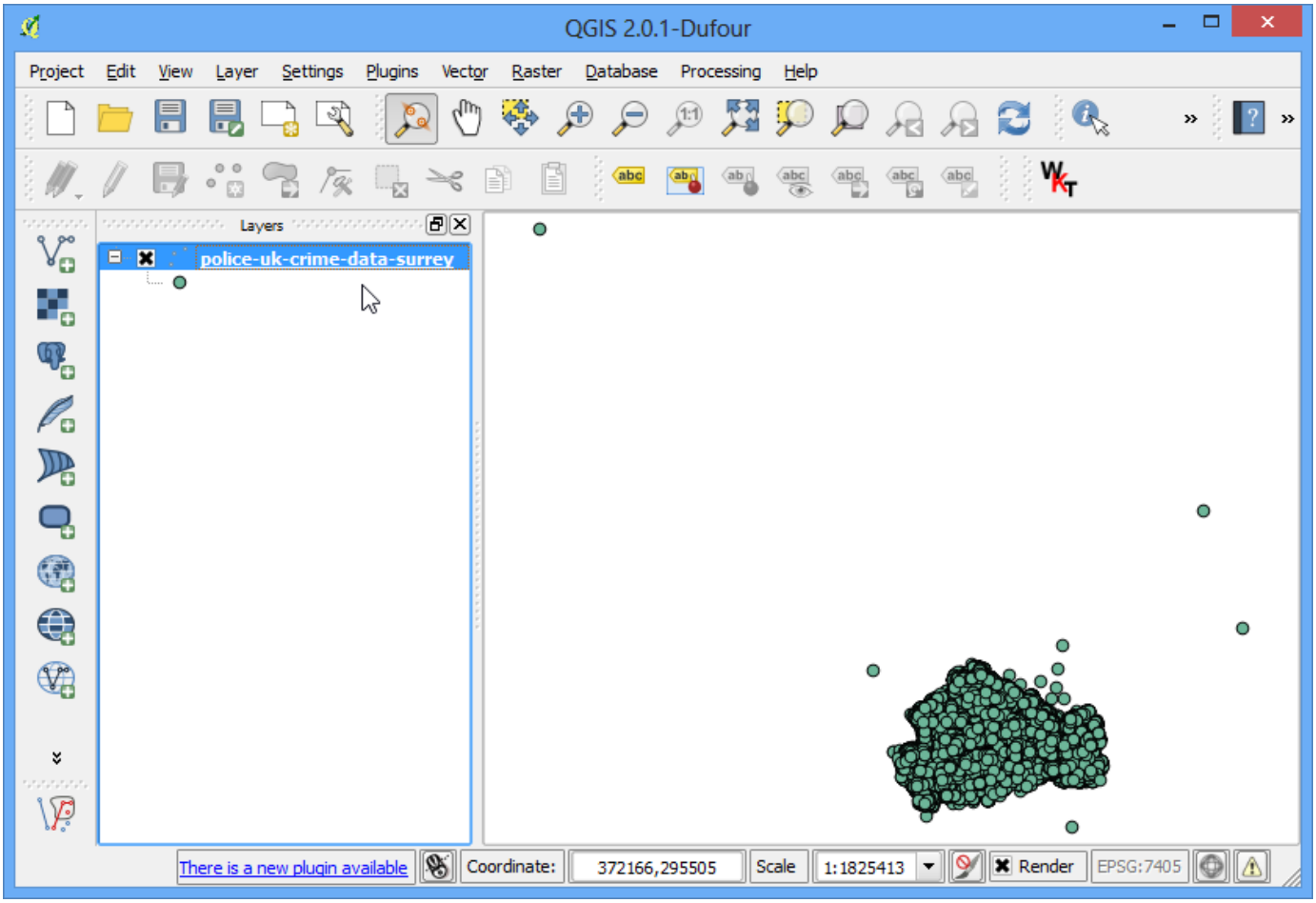

3. ■■■ ■■■ ■■■■■. ■ ■■■■■■ ■■■ ■■■ ■ ■■■■■. ■■ :guilabel:`Close`■ ■■■■■■.



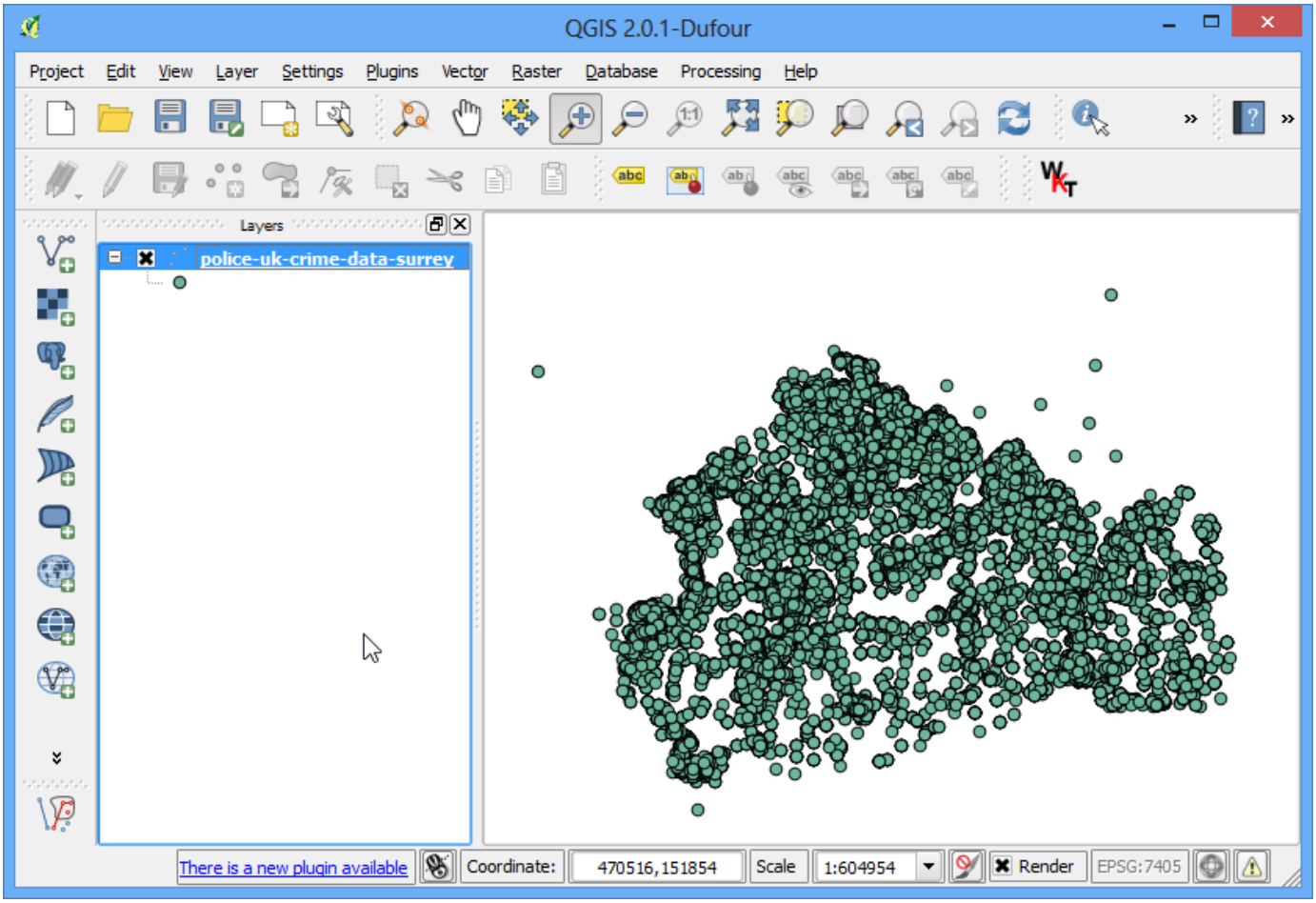

4. ■■, ■■■ `Coordinate Reference System (CRS)`■ ■■■■■■. ■■■■■ ■■ ■■■■ ■■■■ ■■■■ ■ ■■■■■ ■■■■■■ *British National Grid* ■■ ■■■■ ■■■■■. CRS■ :guilabel:`OSGB 1936 / British National Grid`■ ■■■■■■. :guilabel:`OK`■ ■■■■■■.


Coordinate Reference System Selector
Specify CRS for layer police-uk-crime-data-surrey
Filter
Recently used coordinate reference systems
Coordinate Reference System
Authority ID
World_Equidistant_Cylindrical
EPSG:54002
World_Azimuthal_Equidistant
EPSG:54032
North_Pole_Azimuthal_Equidistant
EPSG:102016
WGS 84
EPSG:4326
OSGB 1936 / British National Grid
EPSG:7405
Coordinate reference systems of the world
Hide deprecated CRSs
Coordinate Reference System
Authority ID
New Beijing / Gauss-Kruger zone ...
EPSG:4577
New Beijing / Gauss-Kruger zone ...
EPSG:4578
OSGB 1936 / British National Grid
EPSG:27700
OSGB 1936 / British National Grid
EPSG:7405
OSNI 1952 / Irish National Grid
EPSG:29901
Selected CRS:
OSGB 1936 / British National Grid
+proj=tmerc +lat_0=49 +lon_0=-2 +k=0.9996012717 +x_0=400000 +y_0=-100000
+ellps=airy +towgs84=375,-111,431,0,0,0,0 +units=m +vunits=m +no_defs
OK
Cancel
Help

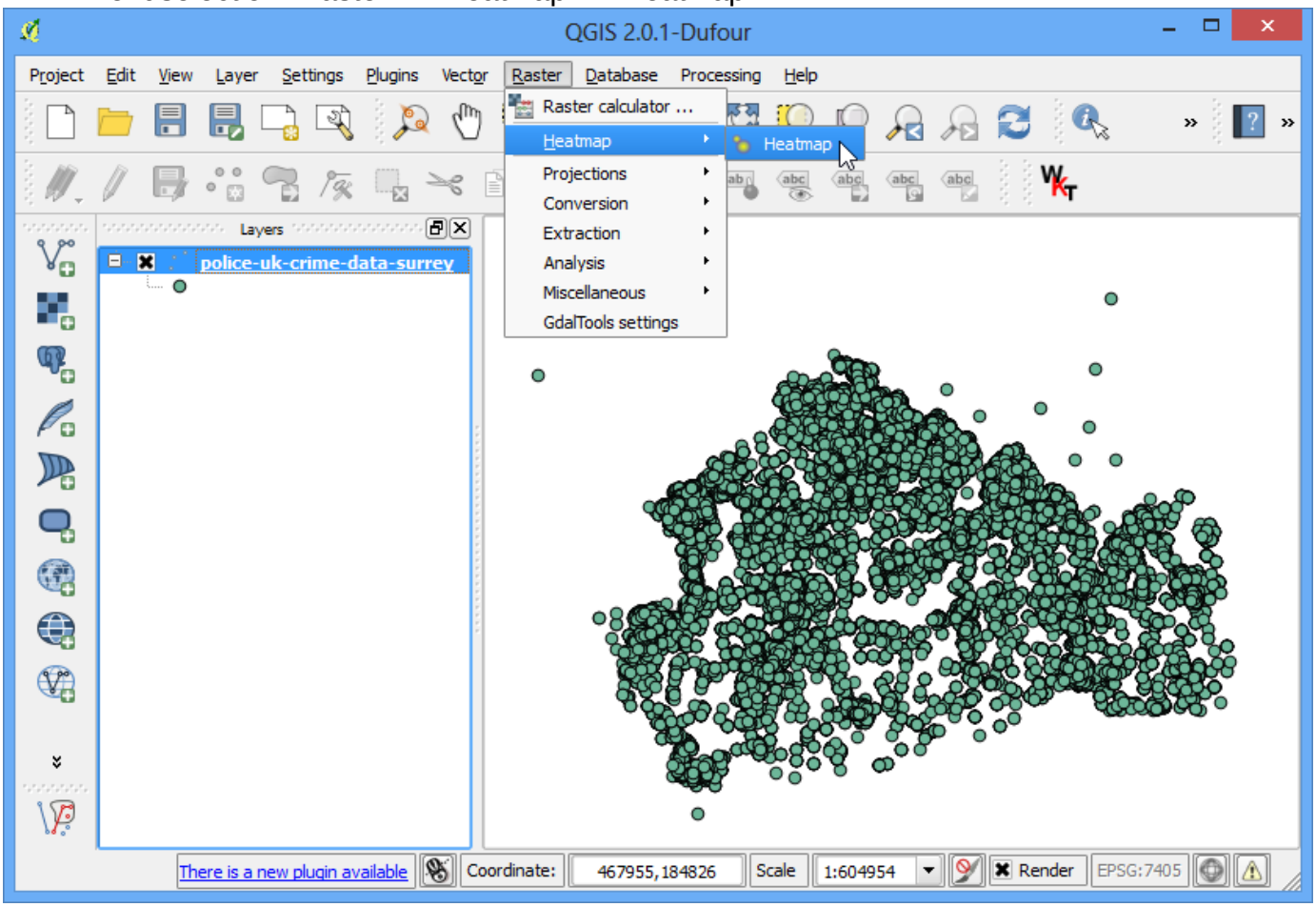
5. ■■ QGIS■ ■■■■ ■■■■■■ ■■ ■ ■■■■.


QGIS 2.0.1-Dufour
Project Edit View Layer Settings Plugins Vector Raster Database Processing Help
Layers
police-uk-crime-data-surrey
There is a new plugin available
Coordinate: 372166,295505
Scale 1:1825413
Render
EPSG:7405

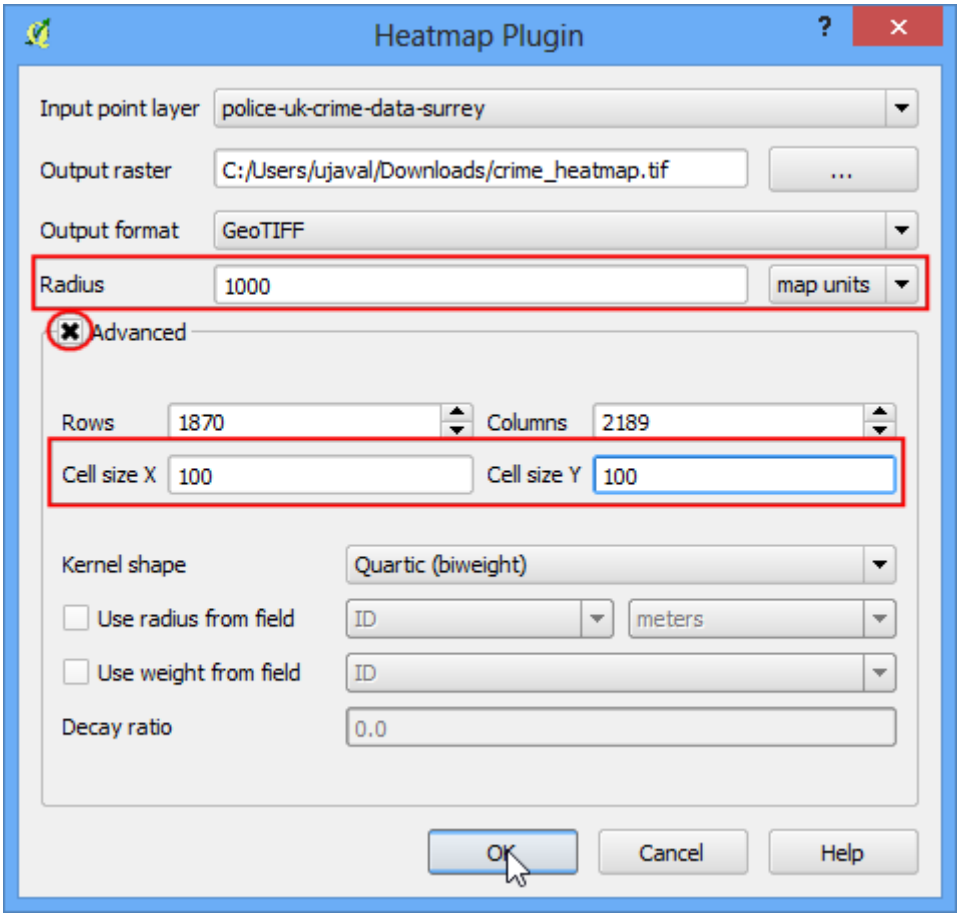
6. [redacted]


QGIS 2.0.1-Dufour
Project Edit View Layer Settings Plugins Vector Raster Database Processing Help
Layers
police-uk-crime-data-surrey
There is a new plugin available
Coordinate: 470516,151854
Scale 1:604954
Render
EPSG:7405

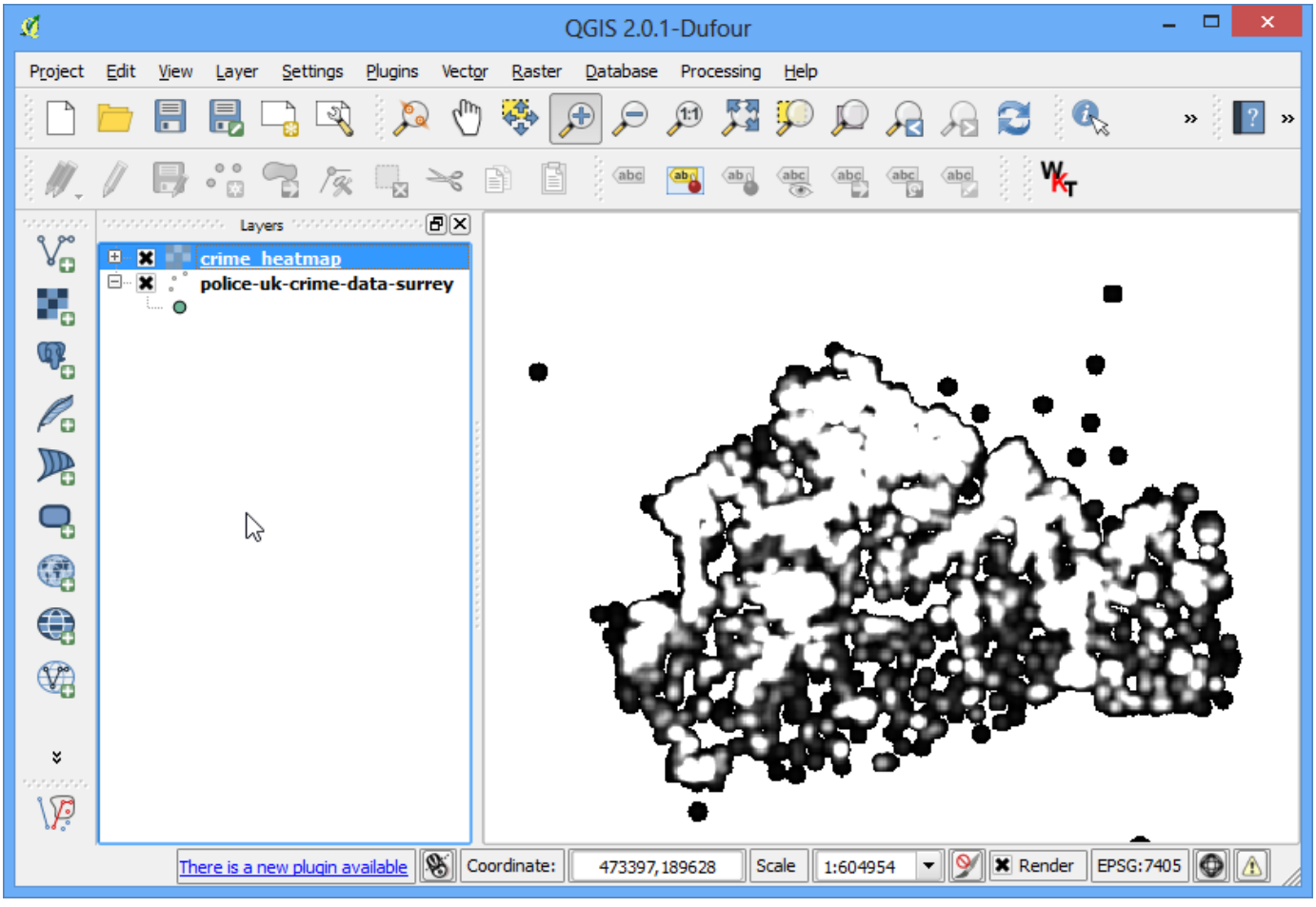
7. ■■■■■ ■■■■ ■■■■ `Heatmap`■■■■ ■■ ■■■■■■ ■■■■■■. ■■■■ ■■■■■■ ■■■■■■■■■ ■■■■ :doc:`using_plugins`■ ■■■■■. ■■ ■■■■■■ ■■■■■■■ ■■ ■■■■ --> ■■■■■ --> ■■■■■ :menuselection:`Raster --> Heatmap --> Heatmap`■ ■■■■■.



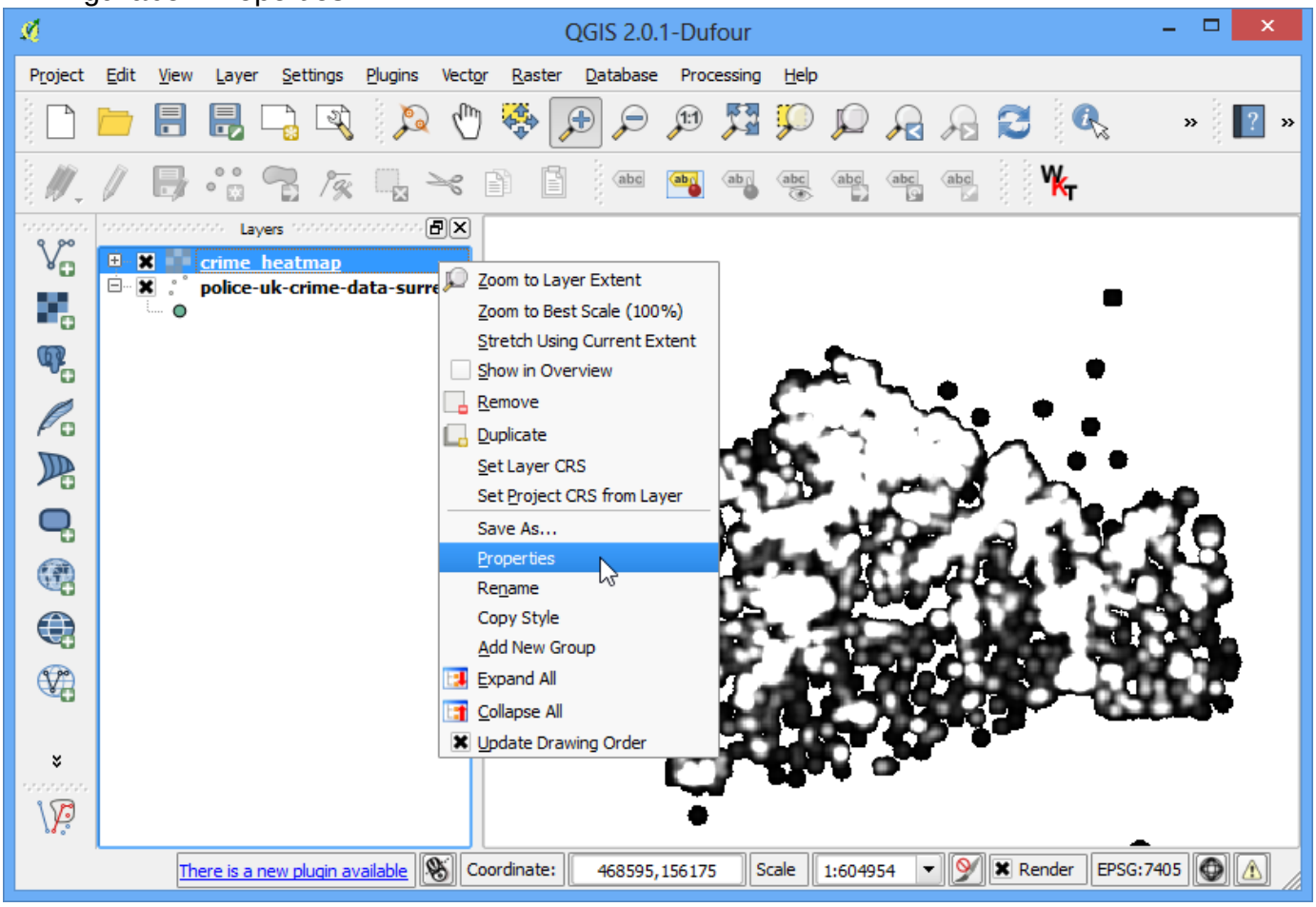

8. ■■■■ ■■■■■ :guilabel:`Heatmap Plugin`■■ ■■ ■■■■ :guilabel:`Output raster`sms ■■■■■■■ `crime_heatmap`■ ■■■■■■. ■■■■ :guilabel:`Radius`■■ `1000`■ ■■■■■■. ■■■■■ ■ ■■■■■ ■■■■■■■■ ■■■■ ■■ ■■ `heat`■ ■■■■■■ ■■■■ ■■■■■. ■■ :guilabel:`Advanced`■ ■■■■■ ■■■■■ ■■ ■■■■ ■■ ■ ■■■■■. ■■■■ X :guilabel:`Cell Size X`■ ■■■■ Y :guilabel:`Cell Size Y`■ `100`■ ■■■■■■. :guilabel:`OK`■ ■■■■■■.


Heatmap Plugin
Input point layer
police-uk-crime-data-surrey
Output raster
C:/Users/ujaval/Downloads/crime_heatmap.tif
...
Output format
GeoTIFF
Radius
1000
map units
Advanced
Rows
1870
Columns
2189
Cell size X
100
Cell size Y
100
Kernel shape
Quartic (biweight)
Use radius from field
ID
meters
Use weight from field
ID
Decay ratio
0.0
OK
Cancel
Help

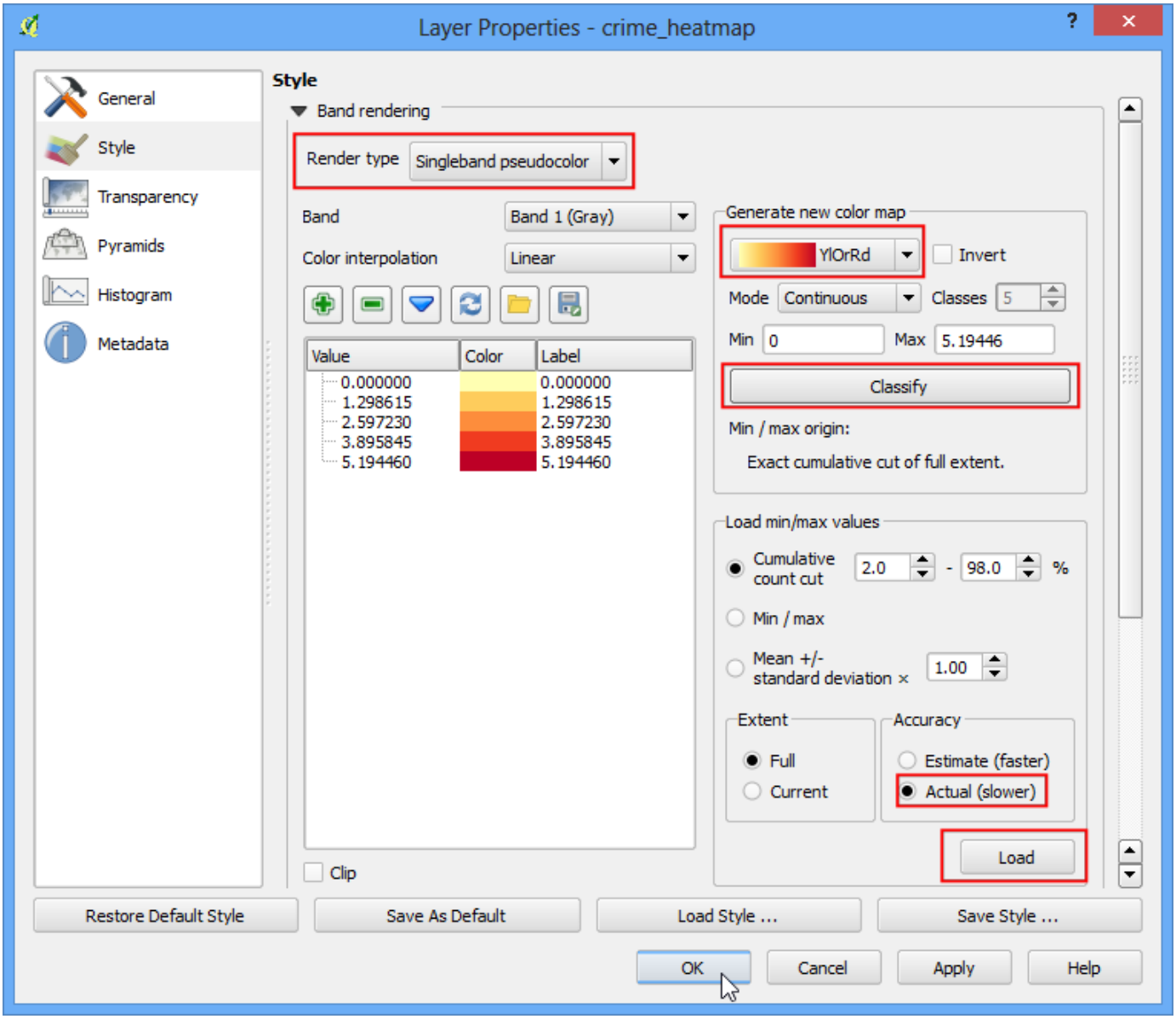
9. ■■ ■■■ ■■■■ ■■■■ ■■ ■■■■ ■■ ■ ■■■■.


QGIS 2.0.1-Dufour
Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Database
Processing
Help
Layers
crime_heatmap
police-uk-crime-data-surrey
There is a new plugin available
Coordinate:
473397,189628
Scale
1:604954
Render
EPSG:7405

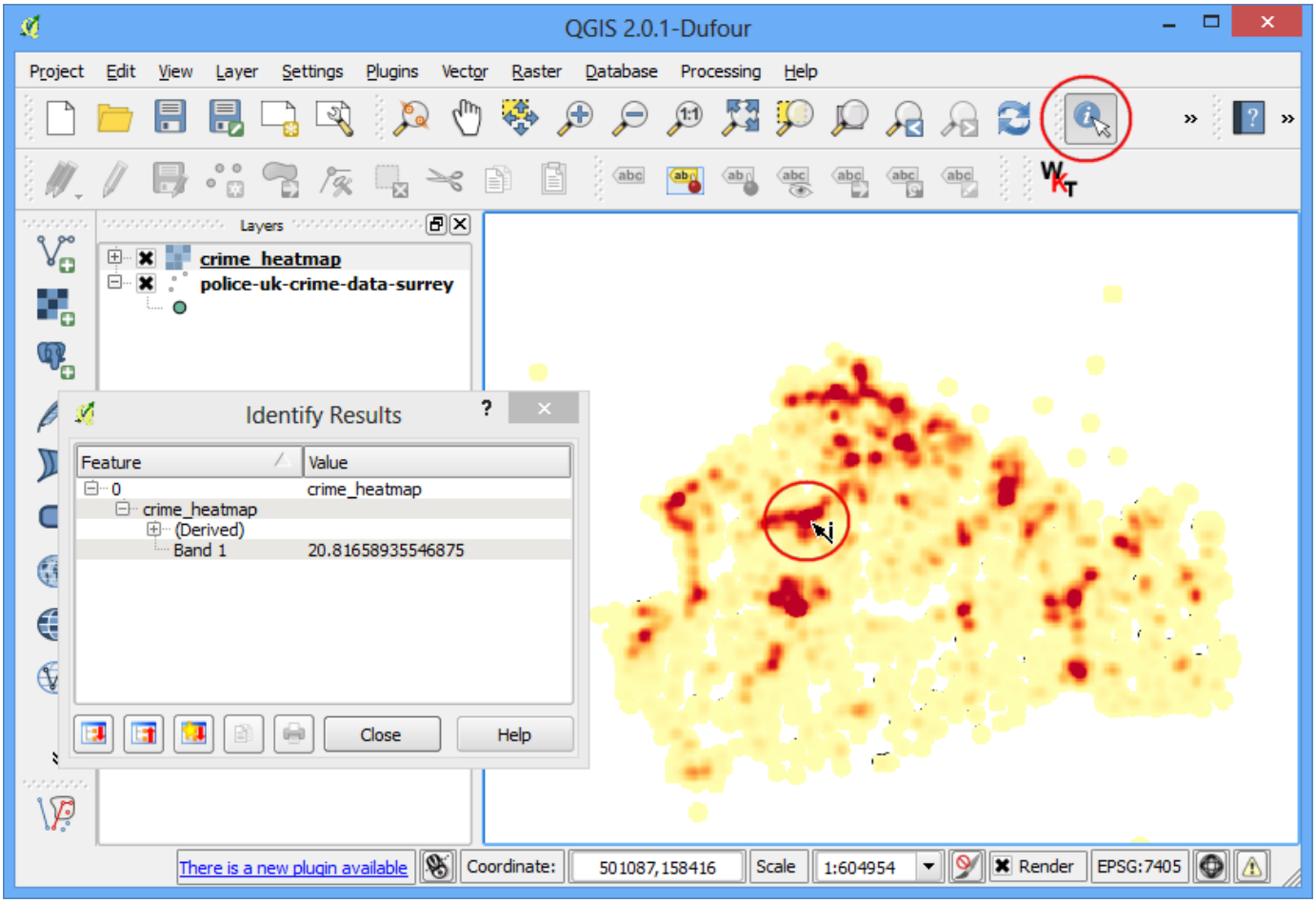
10. ■■■■■ ■■ ■■■■■ ■■■■■ ■■■■■ ■■■ ■■■■■■. ■■■ ■■■■■ ■■■■■■■ ■■ :guilabel:`Properties`■ ■■■■■■.



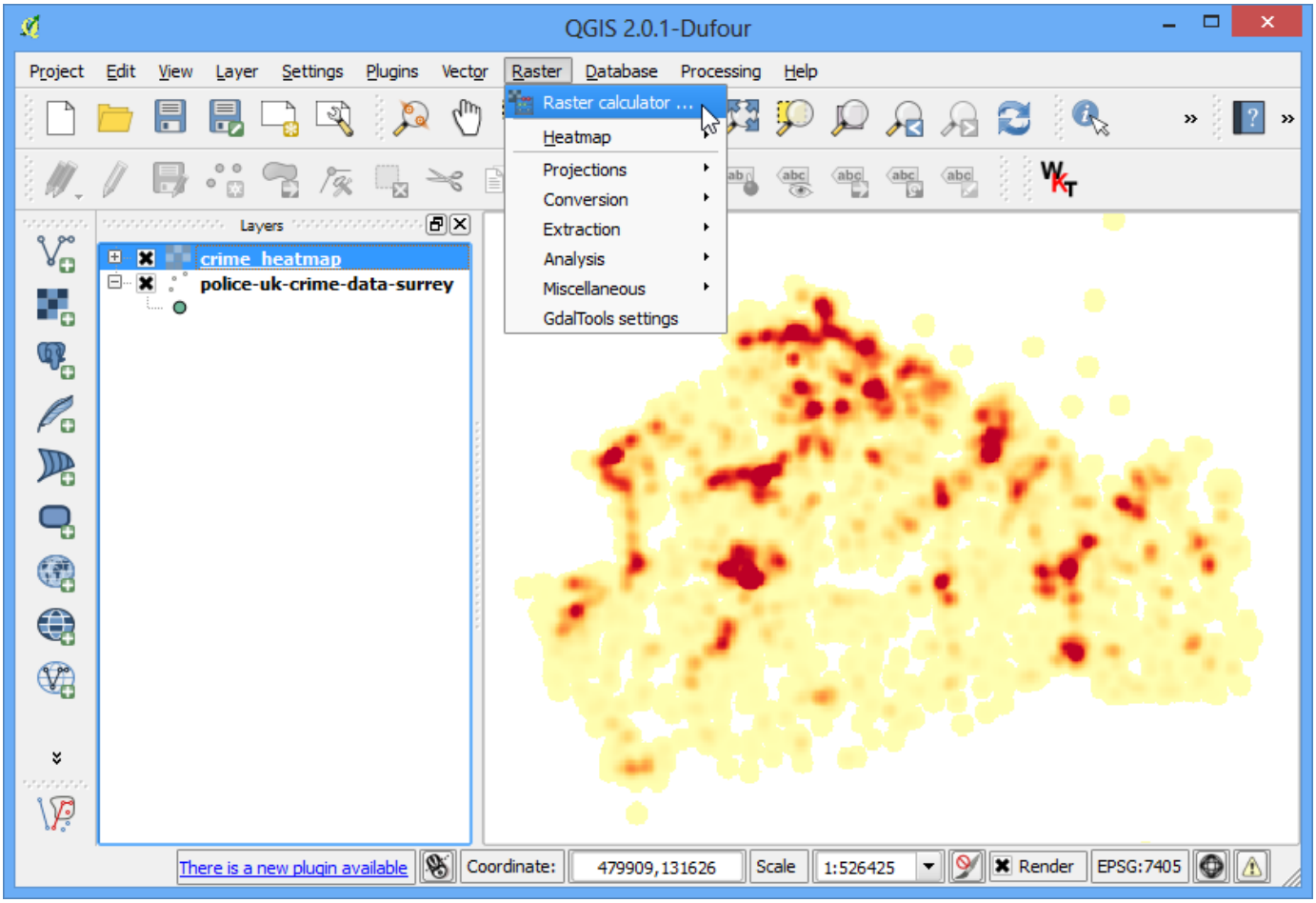

11. ■■■ *Style*`■■■ ■■■■■ *:guilabel:`Render type`■■ ■■■■■ ■■■■■ :guilabel:`Singleband pseudocolor`■ ■■■■■■. ■■■■■, ■■/■■■ ■■■■■ :guilabel:`Load min/max values ■■■■■ ■■■ Accuracy`■ ■■■ ■■ :guilabel:`Actual (slower)`■ ■■■■■ ■■■■■ :guilabel:`Load`■ ■■■■■■. ■ ■■■ ■■■■■ ■■■■■ ■■ ■■■ ■■ ■■■■■ ■■■■■. ■■■ ■■■ ■■■ ■■■■■ ■■■■■ ■■■ ■■■■■. ■ ■■■ ■■ :guilabel:`Generate new color map`■■■■■ ■■■■■ :guilabel:`YlOrRd* (Yellow-Orange-Red)■ ■■■■■ ■■ :guilabel:`Classify`■ ■■■■■■. :guilabel:`OK`■ ■■■■■■.



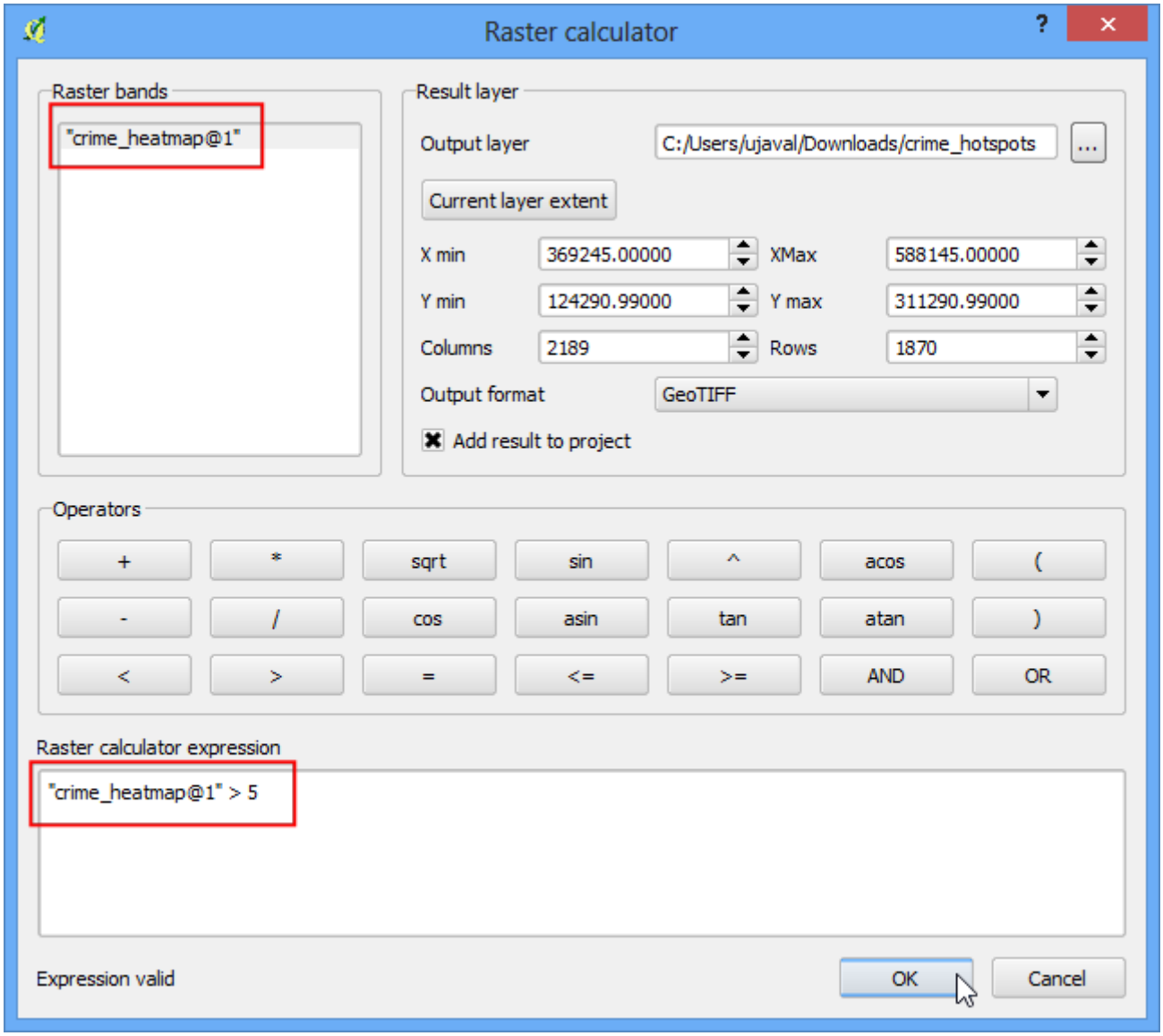

12. ■■ ■■ ■■■■ ■■ ■■■■ ■■■■■ ■■■■ ■■■■■. ■■ ■■ :guilabel:`Identify`■■ ■■■■■ ■■■■■ ■■ ■■■■■ ■■■■ ■■■■. ■■ ■■■■■■ ■■ ■■ ■■■■ ■■■■■. ■ ■■ ■■ ■■ ■■ ■■ ■, ■■■■ ■■ ■(■■■■■■ - 1000m)■ ■■ ■■■■■■■ ■■■■ ■■ ■■■■ ■■■■■ ■■■■■ ■■■■ ■■■■■.



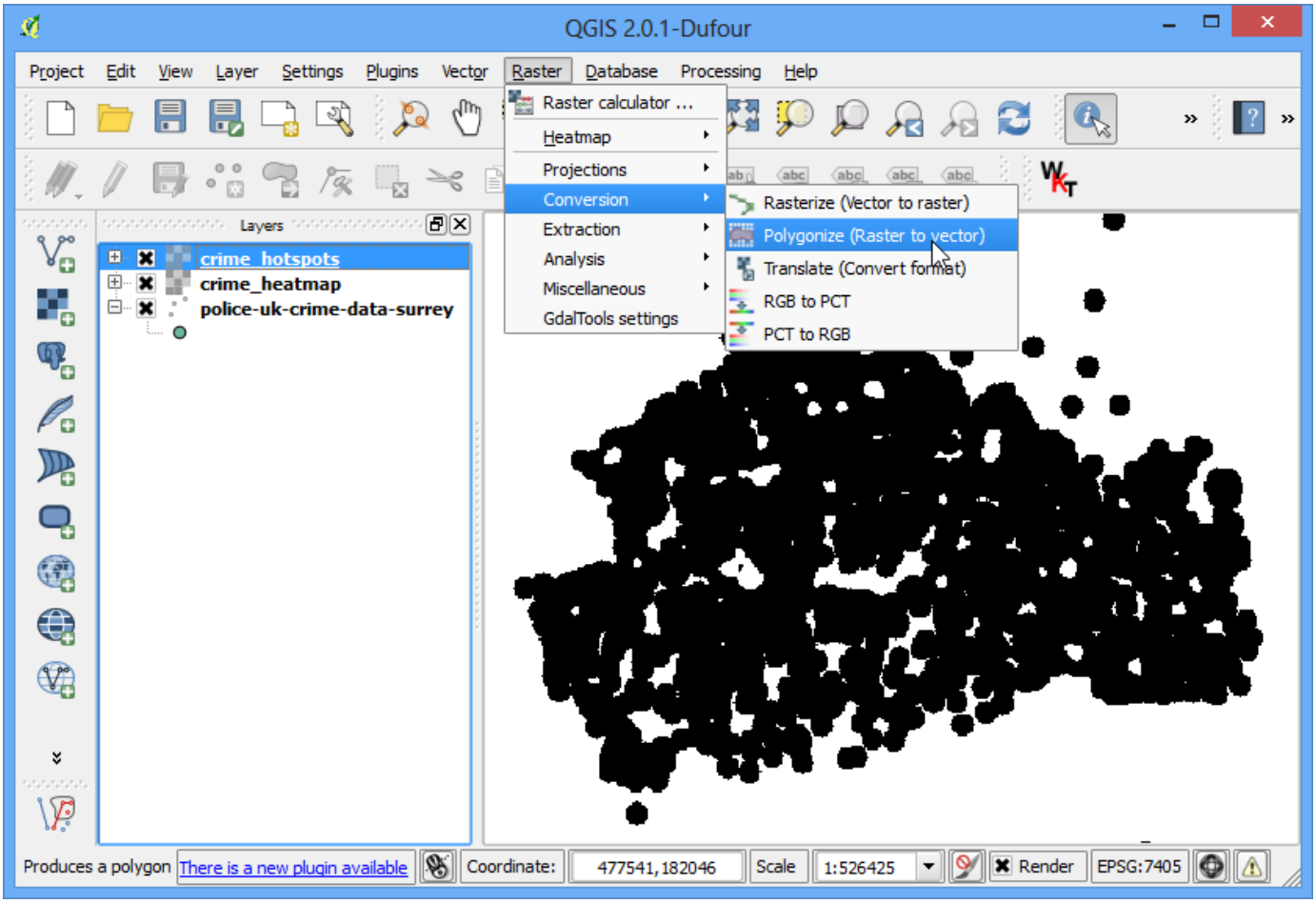

13. ■■ ■■■■ ■■■■■■■■. ■■■■ ■■■■ ■■■■ ■■■■■■. ■■■■ ■■■■ ■ ■■■■ ■■■■■■■ ■■■■■ ■■■■■. ■■■■ ■■ ■■ ■■■■ ■ ■ *hotspots* ■ ■■■■■■ ■■■■■. ■ ■■■■■ ■■■■ *hotspots* ■ ■■■■■■ ■■■■■■. ■■ ■■■■ --> ■■■■ ■■■■ :menuselection:`Raster --> Raster Calculator`■ ■■■■■.



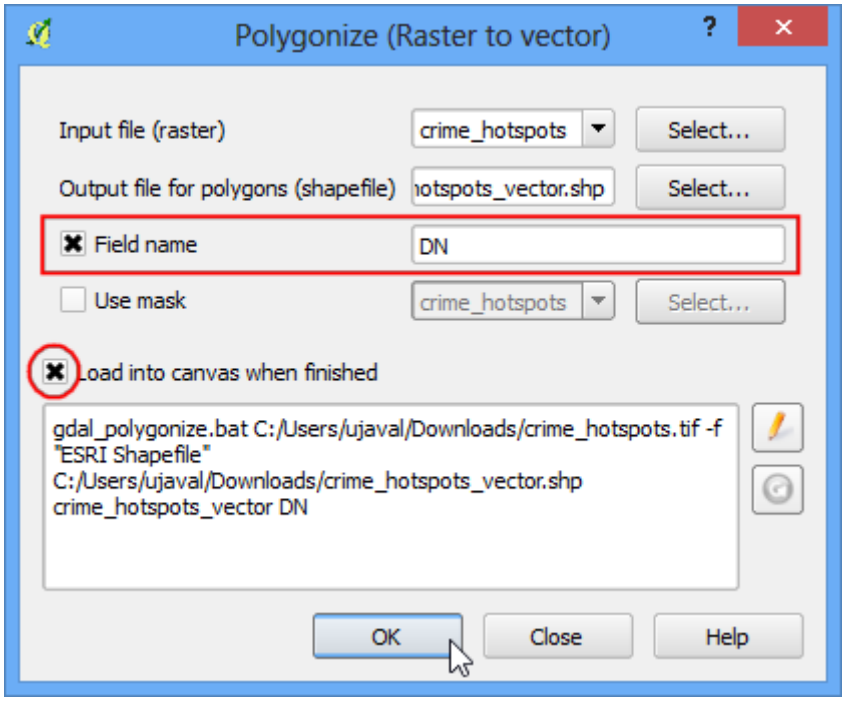

14. ■■■■■ ■■■■■ ■■■■ ■■■■. ■■■■■ ■■ ■■ ■■■■■■ ■■■■■ ■■■■ ■■■■■. ■ ■■■■■■■ 5■ ■■■■ ■■■■■■. ■■■■ ■■■■ *Raster calculator*`■■ ■■ ■■■■■ `*crime_hotspots*`■ ■■■■■■ ■■■■■■. ■■■■■■ *:guilabel:`Raster bands`*■■■■■ *:guilabel:`crime_heatmap@1* ■ ■■■■■■■■ ■■■■ ■■ ■■■■ *Raster calculator expression* ■■■■ ■■■■ ■■■■ ■■■■■. *"crime_heatmap@1" > 5*`■ ■■■■■ ■■■■■■. ■■■■ ■■■■■■ ■■ *:guilabel:`Add result to project* ■ ■■■■ ■■■■■ :guilabel:`OK`■ ■■■■■■.



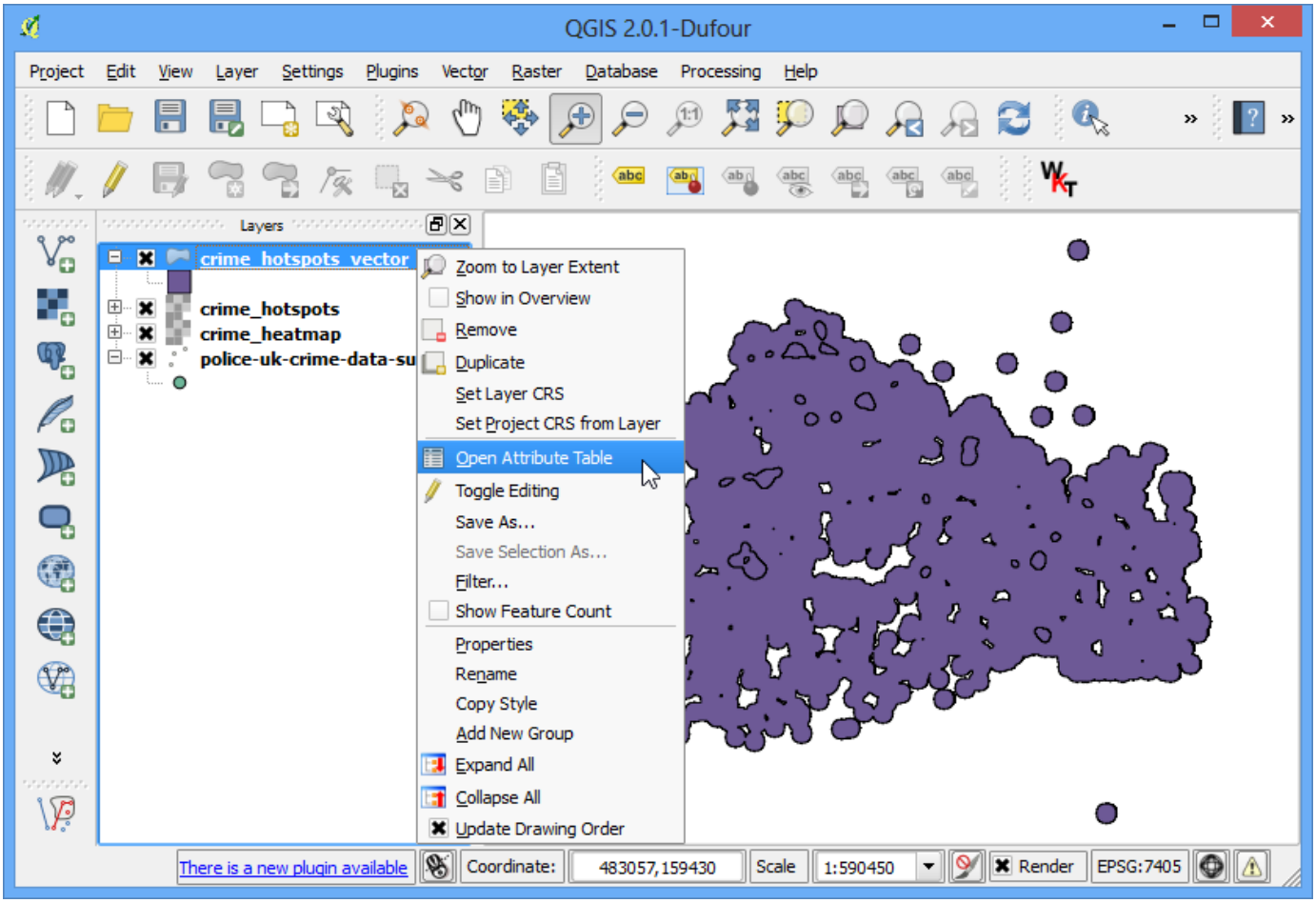

15. QGIS■ ■■■ ■■■■ ■■■ ■■■■. ■ ■■■■ ■■■■ 0 ■■ 1■ ■■ ■■■■. ■■■■ 5■■ ■ ■■■■■■ ■■ ■■■■ 1■ ■■ ■■ ■■■ ■■■■ 0■ ■■■. ■■ ■■■ --> ■■ --> ■■■■ /■■■■ ■■■ :menuselection:`Raster --> Conversion --> Polygonize (Raster to Vector)`■ ■■■.



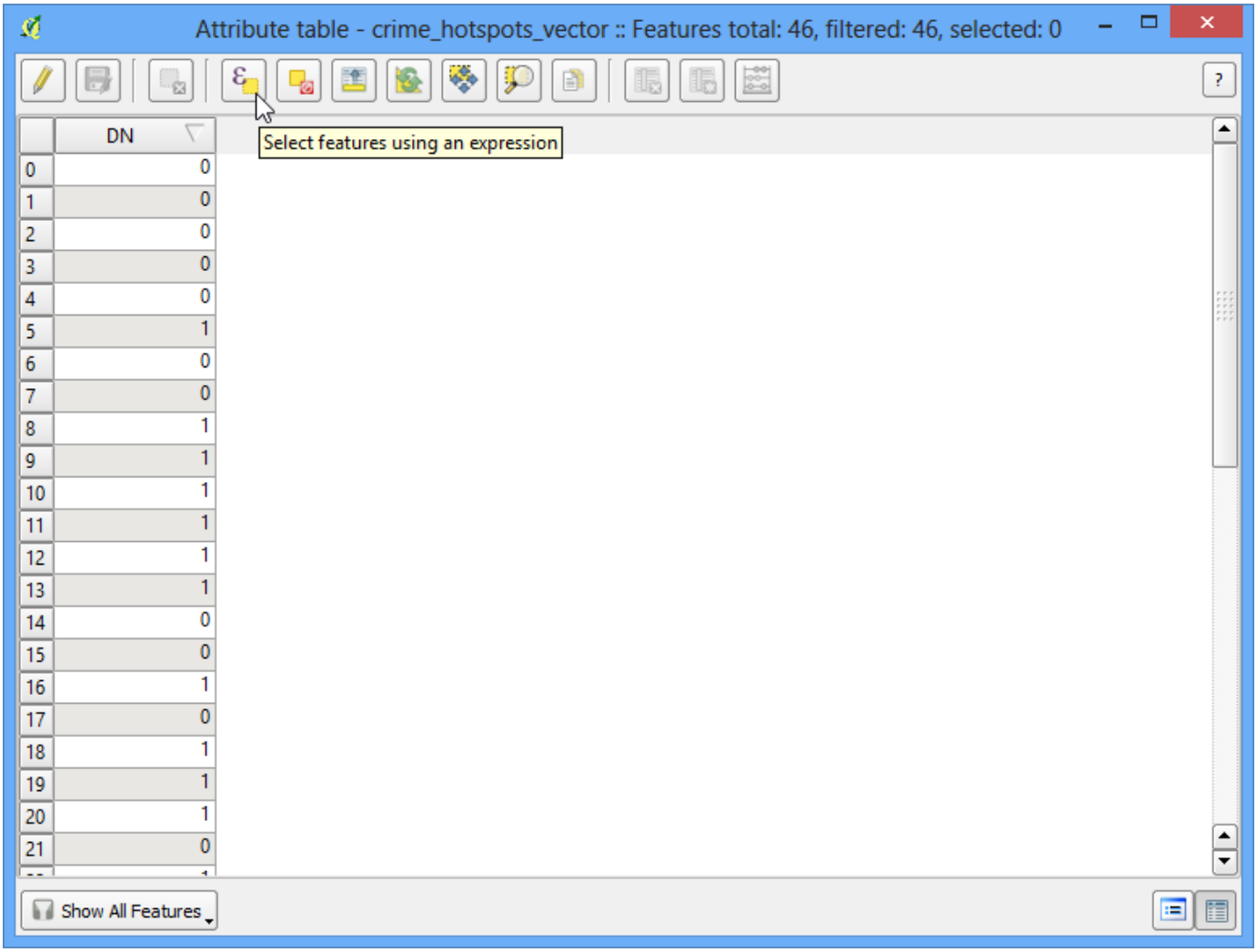

16. ■■ ■■■■ *crime_hotspots_vector*`■ ■■■■■. ■■■■ *:guilabel:`Field name`■■ ■■■ ■■■ ■■■■ ■■■ :guilabel:`Load into canvas when finished* ■ ■■■ ■■■■■. :guilabel:`OK`■ ■■■■■.



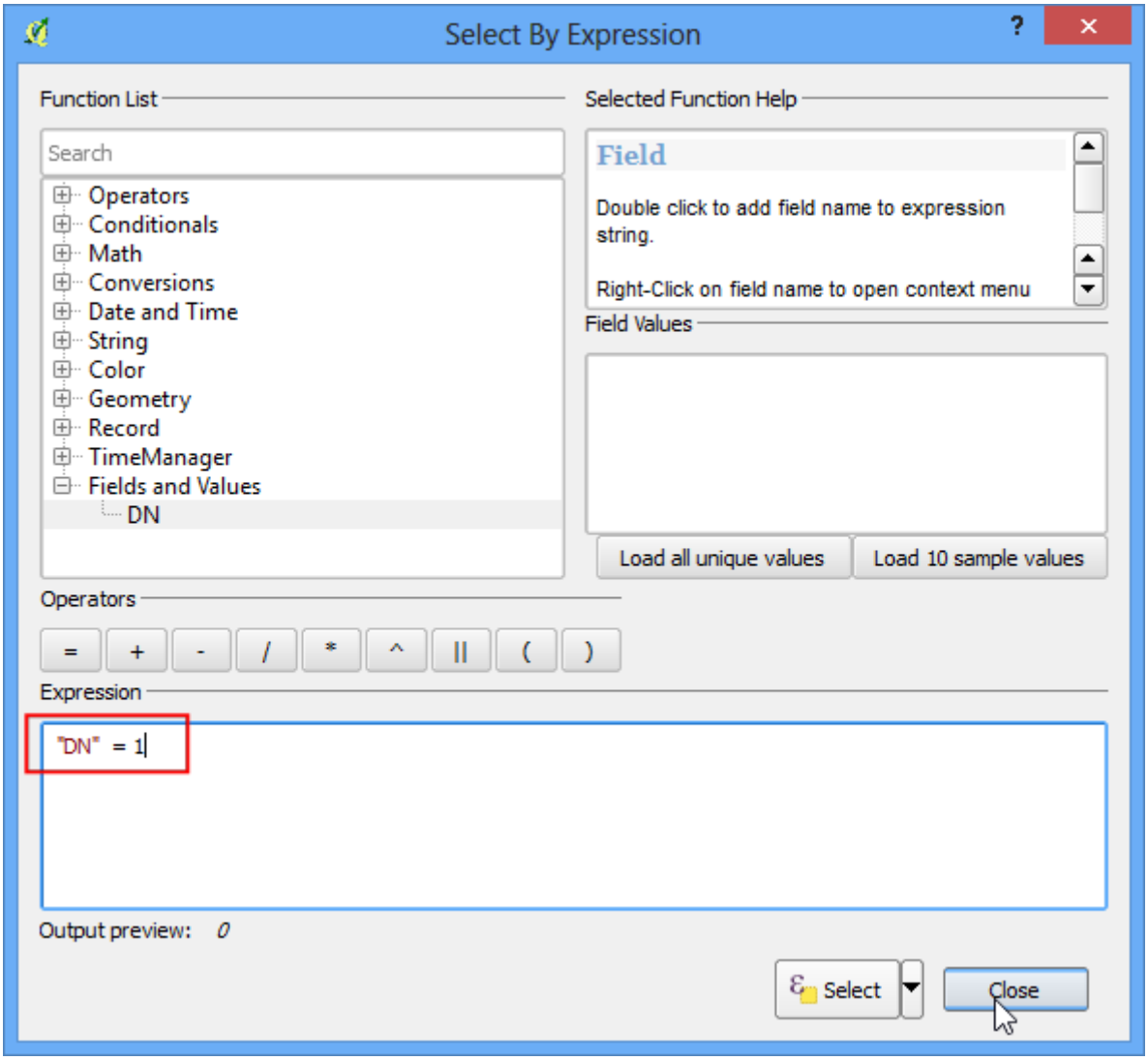

17. ■■ ■■■ ■■■■ ■ ■■ ■■■■ QGIS■ ■■■ ■■■■. ■■■ ■■■■■ ■■■■ ■■■■■ ■■■ ■■■ ■■■■. ■ ■■■■ 0■ 1■ ■■■ ■■ ■■■■■ ■■■■ ■■■■. 0■■ ■■■ ■■■ ■■■■■. ■■■ ■■■ ■■■■■ ■■■■■. ■■■■ ■■■■■■ ■■■■■ ■■ :guilabel:`Open Attribute Table`■ ■■■■■.



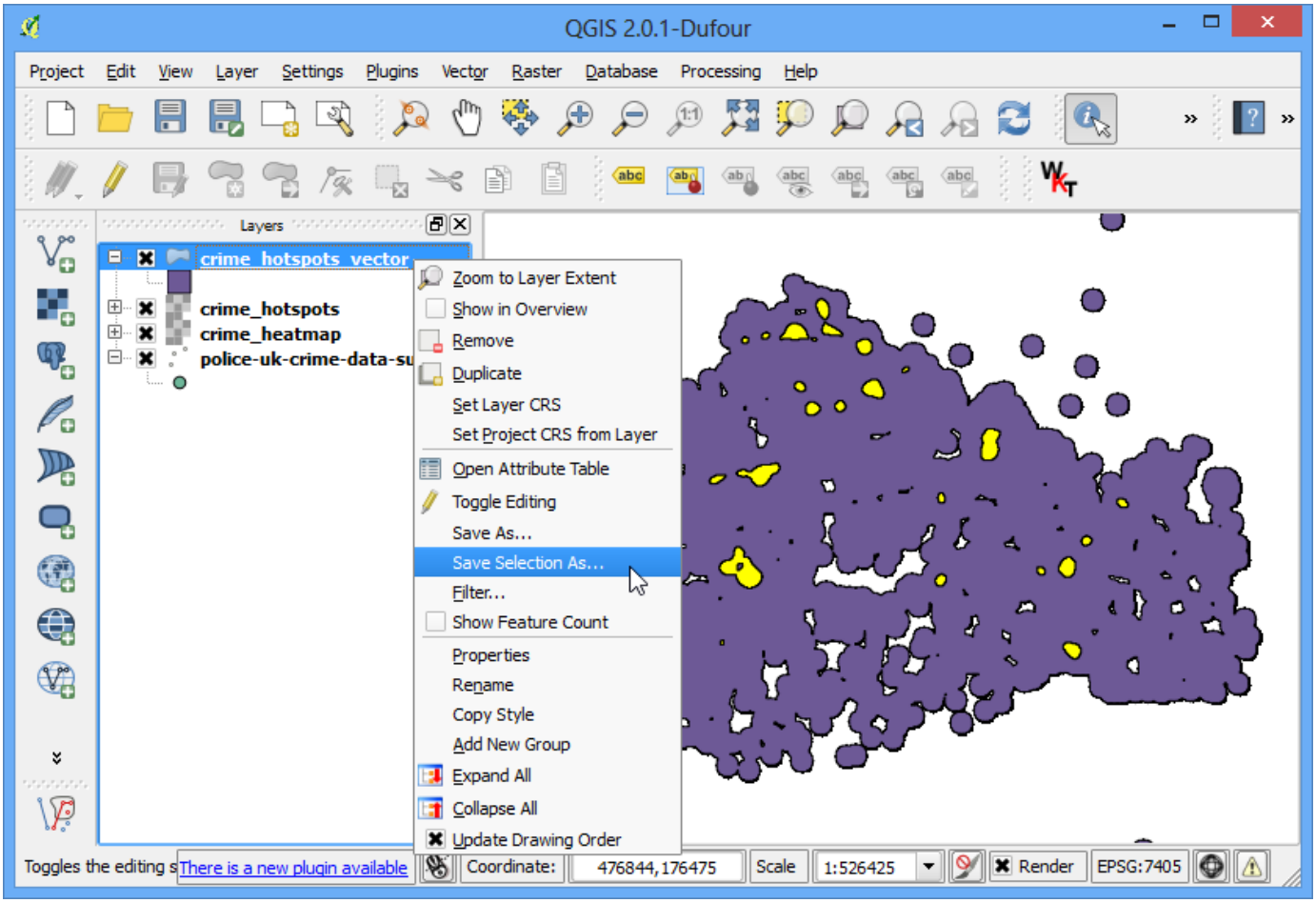

18. ■■ ■■■ :guilabel:`Attribute table`■■ ■■■■ ■■■ ■■ ■■ :guilabel:`Select feature using an expression`■ ■■■■■.



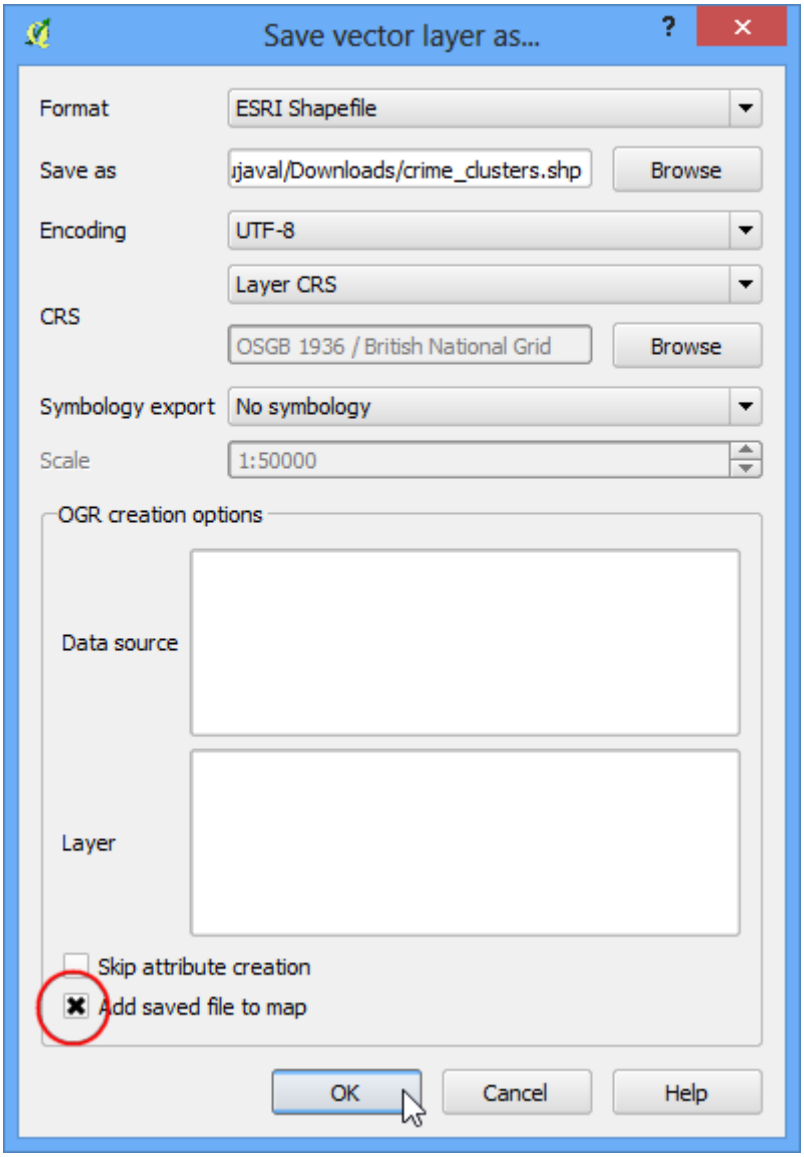

19. ■■■■■ `"DN" = 1`■ ■■■■ ■■ :guilabel:`Select`■ ■■■■■. ■■ ■■ :guilabel:`Close`■ ■■■■■.



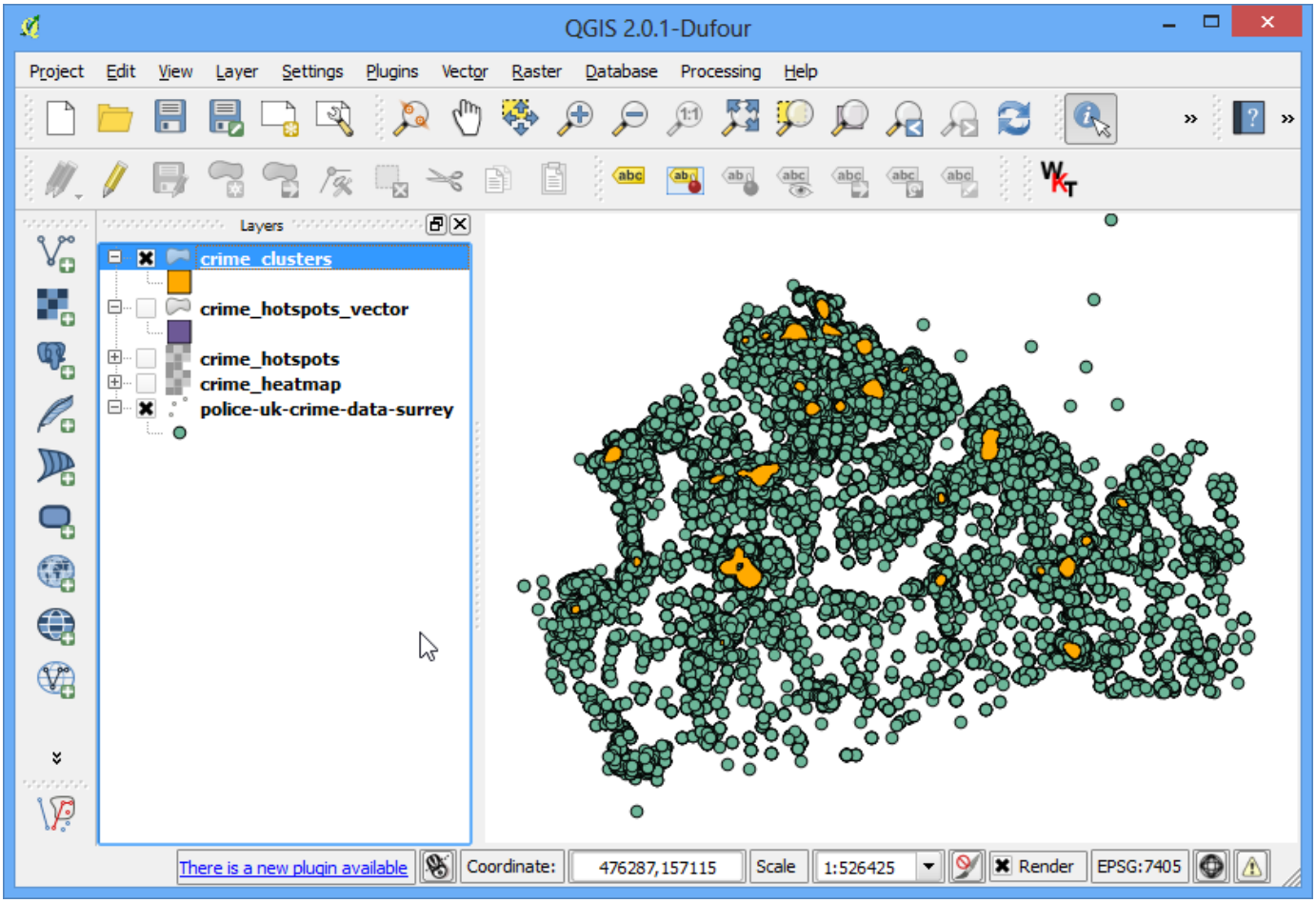

20. QGIS ■■ ■■■ ■ ■■■ ■■■■■ ■■■ ■■ ■■ ■ ■■■■. ■■■■ ■■■ ■■ ■■■ ■■■■■■■. ■■■■ ■■■■■■■ ■■ ■■■■ ■■ :guilabel:`Save Selection As...`■ ■■■■■.




21. ■■ ■■■■ ■■■■■ *crime_clusters`■ ■■■■■. ■■■ ■■■ ■■■ ■■ :guilabel:`Add saved file to map* ■ ■■■ ■■■■ :guilabel:`OK`■ ■■■■■.




22. ████████. ██ ████ ██████ ███ `hotspots`█ ████ ████. █ ██████ ███████ ███ *intelligence*██ ███ ███ ███ ██ ███ ██ ███ ██ ████████ ███ ████.


QGIS 2.0.1-Dufour
Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Database
Processing
Help
Layers
crime_clusters
crime_hotspots_vector
crime_hotspots
crime_heatmap
police-uk-crime-data-surrey
There is a new plugin available
Coordinate:
476287,157115
Scale
1:526425
Render
EPSG:7405