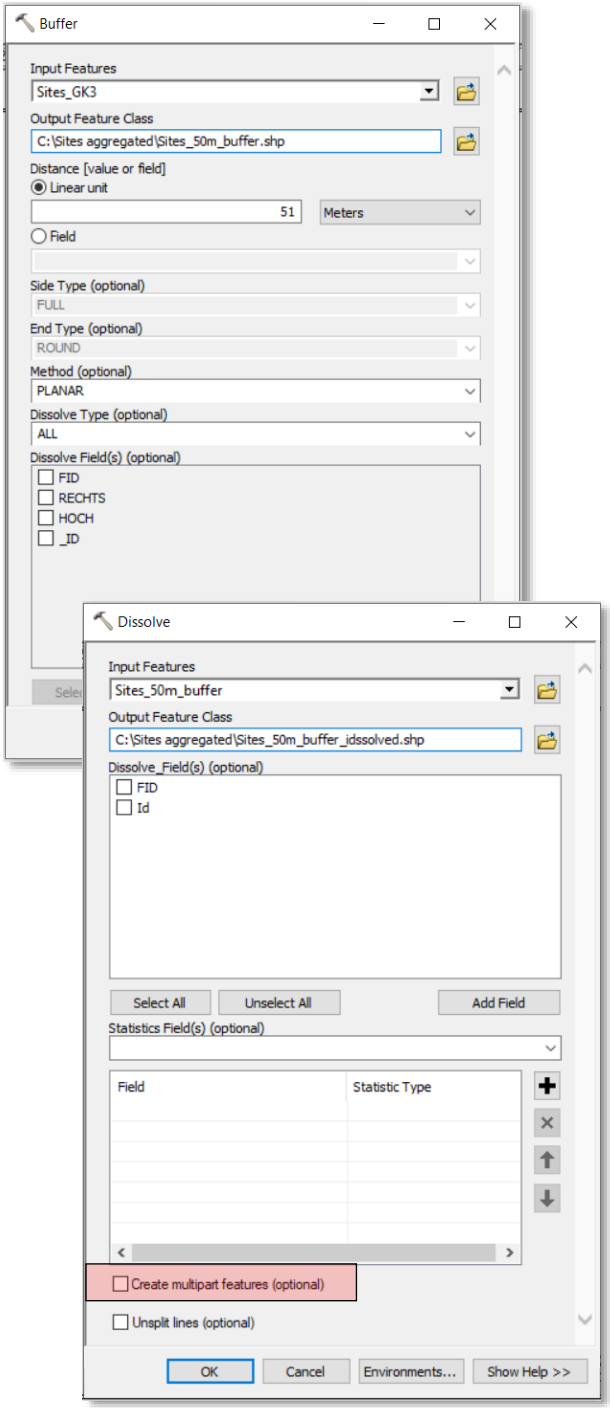
Aggregation of sites within 100m distance

Here, we assume that neighbouring sites within a distance of 100m and less are redundant. In order to avoid over-interpretation of such redundancies in the following workflow, it is advisable to aggregate sites that are less than 100 m apart.

Technically, site aggregation can be performed using a "buffer", a polygon that is created around each site with the shape of a circle and diameter of 50 metres. In case two buffers touch each other, they are dissolved to a single polygon feature with a maximum diameter of 100 metres. This processing step is computed using the tool */Analysis /Buffer*:

- *Input Features*: Sites_GK3
- *Linear Unit*: "51" Meters
- *Dissolve type*: "ALL"



To be sure buffers within 50 m touch each other properly we chose 51 metres here. Furthermore, we assume that Sites_50m_buffer is chosen as *Output Feature Class* name.

Since we let the tool dissolve overlapping buffers into one single feature, the resulting output is a multipart feature, whose attribute table lists only one single row. Now, the feature hidden behind this single line must be split into individual rows, which is done using the tool */Data Management /Dissolve*. By deselecting/unticking *Create Multipart features (optional)*, the resulting buffer layer yields one row per polygon, while several polygons touching each other are kept as one single feature. We assume here that Sites_50m_buffer_dissolved is chosen as *Output Feature Class* name.

The attribute table of the resulting polygon data set Sites_50m_buffer_dissolved should now list all the features. However, the number of polygons (n= 1869) should be less than the number of features in the site point layer Sites_GK3 (n = 2378 archaeological sites).

The resulting buffer polygons can be converted back to a point feature class by using the tool */Data Management /Feature To Point*.

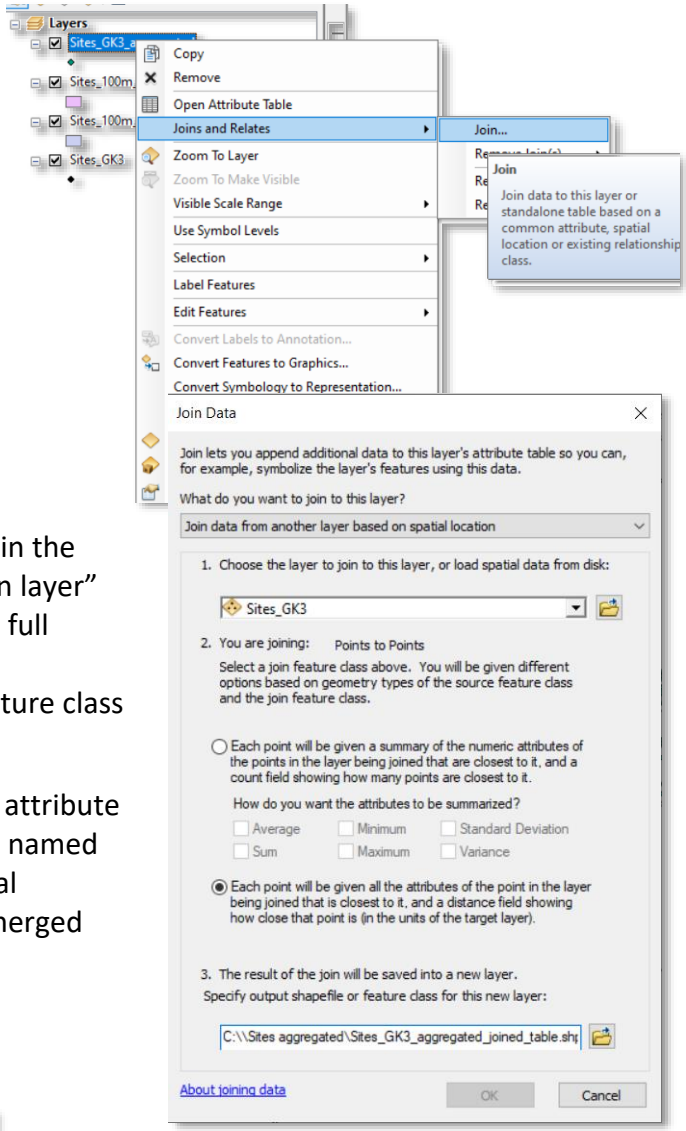
Point features in the resulting layer (here: Sites_GK3_aggregated) should be located at the very same spot as the initial archaeological sites, with the exception of those sites that were aggregated. The latter cases are located at the centre point of the buffers being merged.

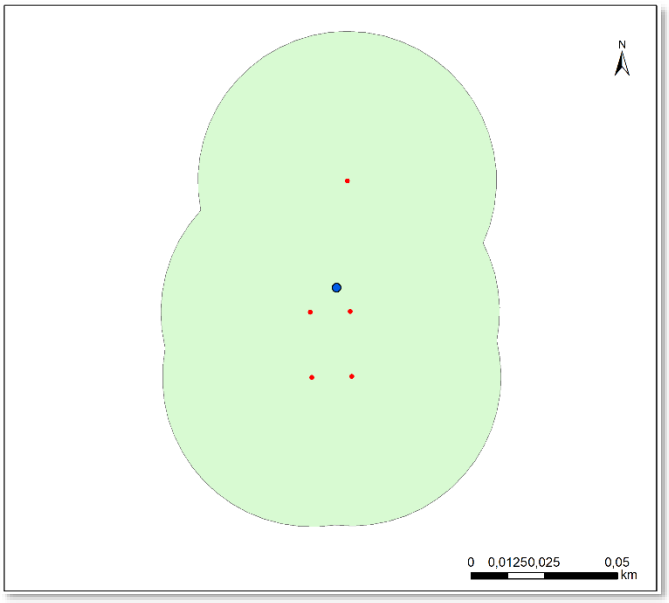
During this process, the attribute table of the site point layer got lost, and it is not needed for the following LEC processing workflow. However, if you need the original table attached to Sites_GK3_aggregated, you can hand it over using a spatial join:

Access *Joins and Relates* via a right mouse button click on the layer Sites_GK3_aggregated in the table contents and choose *Join…*.

In the window now popping up choose *Join data from another layer based on spatial location* in the drop-down on top. Then choose Sites_GK3 as "Join layer" (second drop down), and choose to hand over the full attribute table to (second bullet). Choose Sites_GK3_aggregated_joined_table as output feature class and hit OK.

The resulting point feature should contain the full attribute table of Sites_GK3 as well as an additional column named *Distance* that shows which of the joins are identical (distance = 0), and which are in fact centroids of merged buffer polygons (distance to the joined sites > 0).





The polygon coloured in light green resembles a buffer (merged) drawn around archaeological sites (within 100m distance). The centroid of the polygon coloured in blue acts as the resulting "aggregated site". Original sites are coloured red.