# Chapter 7

Buffering in ArcGIS Pro

Summary: How far away is that? How many are too close? These are some of the most compelling mapping questions journalists can ask, and one of the most useful tools to answer them is the buffer. With ArcGIS Pro, journalists can draw buffers around points such as polluting factories, and see how many other points, such as daycares, are within close proximity. Or they can draw buffers along railways, to see how many homes are within a danger zone, as Jacques Marcoux of CBC Winnipeg did when he compared the locations of railway lines and residential properties.

Skills you will learn: This tutorial will show you how to create buffers in ArcGIS Pro.

Getting started

The buffering tool allows you to draw circular buffers around points, or rectangular buffers on either side of lines or around the outside of polygons. The buffers are created as new shapefiles or feature classes in the project geodatabase. This makes it easier to identify, count or otherwise analyze other features that fall within the specified distance of the point, line or polygon features. For this tutorial, we'll draw circular buffers around Tim Horton's restaurant locations in Halifax, Nova Scotia.

Begin by adding the layer from which you would like to create buffers to the project, and choosing Buffer from the Tools area of the Analysis ribbon.
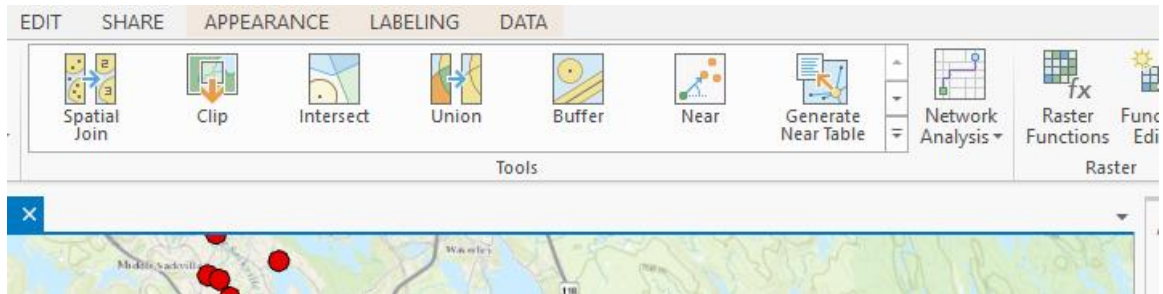
This will open the Buffer pane.
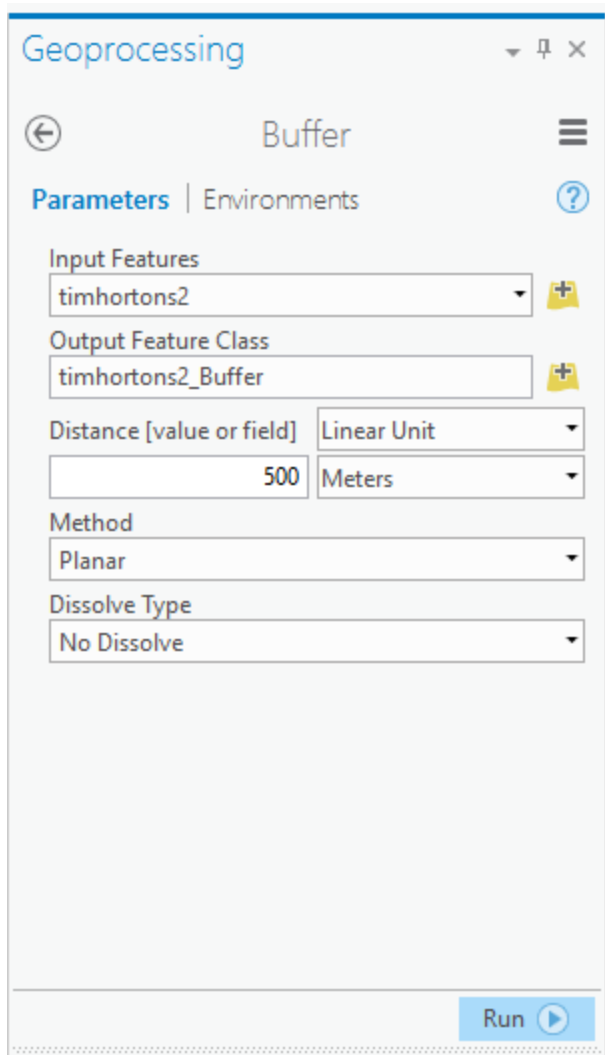
In the Input Features area, choose the layer you are using to create the buffers (around whose features the buffers will be drawn). In the Output Feature Class area, set the name for the new buffer polygons layer that will be created by the tool. This can be a feature class in the project's geodatabase, or a shapefile in a folder.

In the Distance [value or field] dropdown, you have two choices:
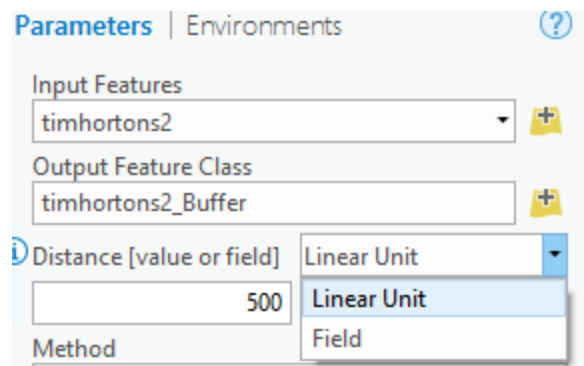
If you choose Linear Unit, you can set the buffers to a uniform size, specified in the distance input box. The dropdown beside the distance value allows you to choose the unit of measurement, for example meters, feet, or decimal degrees.
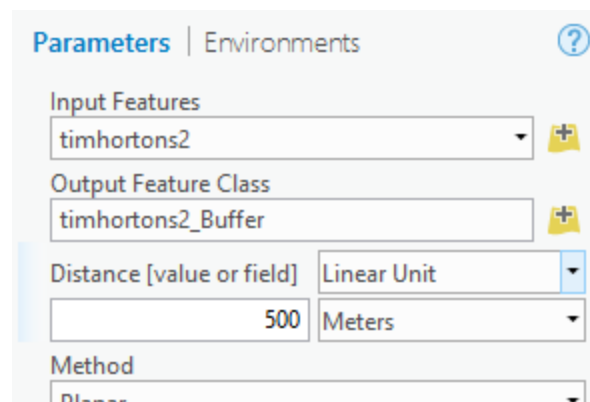

If you choose Field instead of Linear Unit, the pane changes to allow you to choose a field name that contains the buffer distance. The latter method allows you to set different buffer radii/widths for different input features.

There are two possible choices in the Method dropdown. The first, Planar, is the default. This will produce buffers based on measurements on a flat plane, if the layer has a projected coordinate system. If it has a geographic coordinate system with decimal degrees as its unit of measurement, geodesic buffers that take into account the shape of the earth will be drawn. The alternative choice is Geodesic, shape preserving, which creates geodesic buffers that respect as much as possible the shape of the input feature.

If you are drawing very large buffers, you may wish to ensure the input coordinate system is a geographic coordinate system measuring in decimal degrees, to ensure geodesic buffers are drawn. These can be more accurate for large buffers.

If you click on the Environments tab, you can also set an output coordinate system. If you set an output coordinate system that is not projected, geodesic buffers will be created.

The final setting, Dissolve Type, allows you to specify whether you want to create individual buffers around each feature, or dissolve the buffers together into a single feature.
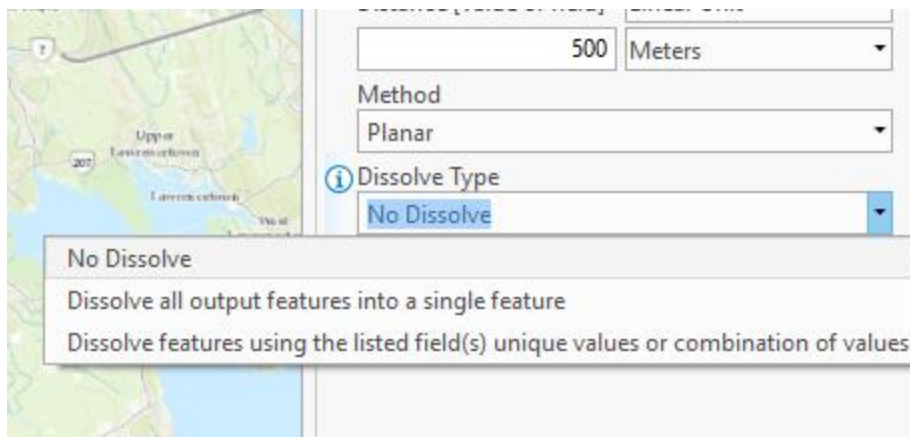
When you have set all of the parameters, click on Run to create your buffers.

The buffers are polygons like any others, and can be used in further analysis, such as in spatial joins. A spatial join could be done to count how many schools are within a kilometre of each Tim Hortons, and the buffer polygons coloured accordingly. See the separate tutorial **Spatial Joins in ArcGIS Pro**.