

Using GIS to manage parks and open spaces Module 1

[00:10] - Brandon Vista

Today, I'll be talking to you about GIS, or Geographic Information System, where we use it for asset management, particularly in managing our parks and open spaces.

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There are so many definitions of what GIS is, but for this presentation, GIS is simply a tool for organising, visualising and analysing spatial data for the purposes of solving simple and complex problems across a wide range of disciplines, and that would include asset management.

Why is it important for us to have some sort of GIS asset data classification when managing our open space assets?

The first one is it helps us to organise and represent assets in a geodatabase. GIS has the ability to arrange data in a thematic layer and in various formats, whether points, lines or polygons.

Secondly, it helps us to visualise our assets spatially. So if you want to know where the location of our assets, how we can produce maps, whether in a printed format or whether online or through the internet, we can be able to do this by using GIS.

Thirdly, to support us in spatial analysis and conducting spatial analysis and decision making. For instance, in your cities, you have some areas where there are gaps in service provision. How do you know which household is not serviced by a park within one kilometre from its location?

So GIS can be used to answer those questions. Or which of your assets will be at risk of sea level rise? Then you can use GIS to analyse those questions and will help you in making climate mitigation and climate adaptation strategies in the future.

[02:19]

I'd like to bring you to our parks in Auckland, and I have a picture here of a park and if you look at the park here, what can you see?

First and foremost, you can see a building, and that building is actually a toilet. You can see a drinking fountain. And also, of course, the land, the land where everything sits.

Then you have a barbecue facility there, you have a light pole and then you have a car park, and then you have a rubbish bin as well.

So this is the types of assets that you see in a park.

This is another one. This is a simple park. You know, you have a signage, you have a path, and then you have the grass area, light poles and picnic tables as well as some trees.

So these are all the assets that you see in a park.

Lastly, this one, this is a playground, but there are components of a playground. You have different types of playground equipment, slides, modular towers, and then you have the playground surface.

These are all the different types of assets in the park. When you plan to have a GIS to manage your parks and open space, you need to understand the diversity of assets that you have in your respective cities, and that will help you in preparing an asset data classification for a wide range of assets that you have.

So in this example, I can just give you an example, and I make it simple. You have a park, you have a reserve, and there is a piece of land: that's the asset.

Within that land, you have a building. That's an asset class, OK? What are the types of building that you have? You may have a toilet, you have a library, you have a shed. It's up to you to decide.

What are the furniture, what are the different furniture assets that you have or fixture in furniture, we call it. You may have seats, tables, bins, barbecues, a drinking fountain, flagpoles, security cameras, bollards, bikes stands, it depends.

So you have to identify what are the types of furniture assets that you have.

And then you have the hard surface, you may have path, you may have car park and other assets that provide access.

So it's about the function of the asset. What's the function of that asset that's located in that particular park?

And then you may have place-based assets. You can have you may have playground, skate parks and the different types of play and skate park equipment.

And then you have the sports assets, you know, sports fields, sports courts, whether it's a basketball court, court hoops, etc.

Most of you probably have some coastal assets somewhere, seawalls, wharfs, boat ramps or jetties. And of course, the vegetation as well. You may have grass, garden, bush, shrubs or trees.

So these are just the examples of the different classes of assets that that you can find in your park.

So you have to think, what are the assets that you have in your park? And from there, you have to decide: how do you represent these assets in a GIS database? It can be a point, line or polygon. So as you can see from this slide, the colour would represent what's the possible representation or GIS typology that you can you can adopt.

[05:32]

So, again, it's up to you. This is the way we do it in Council, but it's up to you.

So let's see, for instance, this park here, the one that I showed a while ago. It's quite simple. And these are the different assets.

So how we represent it in GIS and this is how it looks like for us. So this is how we show it, this is how we capture the assets. So the lights, the signage, is a point and it has that purple colour.

And then we have the light poles as point features as well.

Then we have the path as a polygon and then the picnic table and then we have the grass or the mowing area as a polygon.

And then we have the also the boundary of the park. This is how you can represent your asset in GIS, and from here we are able to show the extent of our areas that we own or we maintain.

So this is an example of one of the parks close to where I live. It's called Tui Glen Reserve, and here you can see the extent that, the orange diagram shows you the extent of the park.

I've seen some examples in your case that you represent a park using a point feature. That may be fine, but again, it doesn't represent the entire land that you look after.

Here, we would represent the different fixtures and furniture that we have. As you can see, we have a lot of light poles. And then you can see we have barbecues and drinking fountain.

Building, we would capture them as polygons. And there is an advantage of doing so. For instance, we have recently done some analysis on the solar radiation potential of our building.

So by capturing the footprint of the building footprint, the polygon as a building footprint, we are able to use that information to generate the area of the potential roof area that we can use for calculating solar radiation.

That's one way to do it. But you can also use point if you just want to refer to their location. But in our case, we would like to represent them as polygons.

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Then we have the hard surface. As you can see, you have the roads, the playground and the path.

And then you have the green assets, the gardens and also the grass area. We capture the grass area because we want to know how much it costs us to mow each and every piece of land.

So that's important for us because each square meter range has a cost.

Our contractors also do trees. We also capture trees and we are able to understand their maintenance, whether we have pruned these trees, whether we have cut these trees before or whether it's a new tree that has been planted on an open space.

So it depends on how you would like to represent your asset in the GIS database, based from the diversity of your asset portfolio.

This will guide you on how you would like to develop the GIS database for your respective local governments.