

CASE STUDY:

Visibility of the Show - Fireworks Viewing Analysis in 3D

OVERVIEW

Every New Year's Eve the City of Sydney (CoS) organises and stages a spectacular fireworks display.

CoS needed to quantify the audience that can potentially view the fireworks display as accurately as possible and also needed to quantify the economic benefits. An innovative approach was devised to "translate geography into audience size".



SITUATION

The City of Sydney GIS Manager, Matt Sund, contacted AAM for assistance. The New Year's Eve management team had presented an interesting request.

They were required to provide attendance crowd figures to the NSW State Government for Sydney New Year's Eve so the economic impact could be assessed. The crowd figures have two components – the number of people outside at event sites, parks and open space; and the number of people in buildings/houses/apartments that can see the fireworks display.

In the past they had estimated the crowd at 1.5 million based on event site tickets sales and census figures for the number of properties they assume can see the display. The NSW State Government had conducted their own study and was of the opinion that the Sydney Fireworks can only be seen from properties that are within 2 streets of the Harbour.

The client felt that the assumptions were conservative, but they needed analytical study based on geospatial science to back up their case.

ACTION

In the first instance, they needed to provide the State with a 2D map of Sydney (all LGAs, not just Sydney) that showed the percentage of buildings that can see the fireworks. But if they supplied the coordinates of the fireworks barges, and the median height of the fireworks, they were keen to find out if they could conduct a view shed analysis using the 3D buildings to determine visibility?

City of Sydney uses the K2Vi 3D GIS solution provided by AAM and they thought it may be able to address what they were trying to achieve – a more accurate measure of the audience size. They requested AAM's 3D expertise.

RESULT

The result of the 3D visibility analysis using the K2Vi 3D GIS was a tabular file which breaks down the visibility from each property parcel to each of the 5 fireworks staging locations (see picture below).

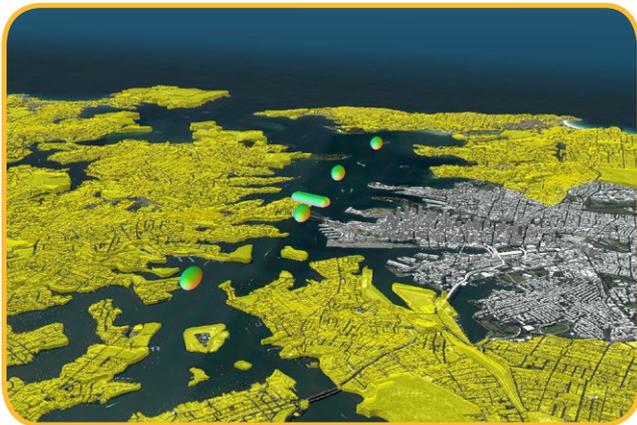


Fireworks staging locations in 3D space

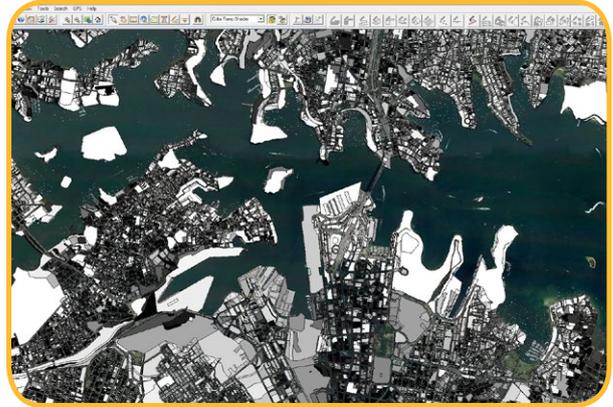
The values provided represented the % visibility of each property with a value of 1 representing complete visibility of a given firework.

In addition to individual return for each firework for a given property parcel a total was also provided representing the overall visibility of all fireworks from that location. The visibility threshold suggested by the client that represented citizen viewing amenity was that they needed to be able to see 3/4 of the fireworks.

The viewing properties were also grouped by Suburb.

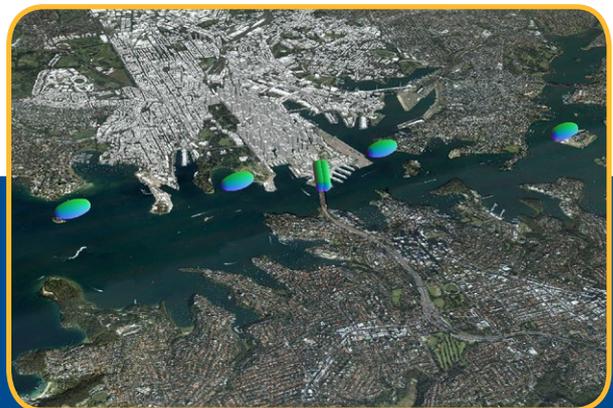
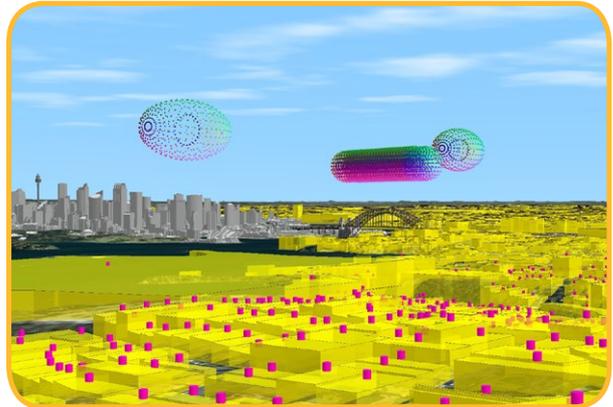


The below image shows the visibility result based on property parcel, ranging from white for very good visibility of all fireworks to black with very poor/no visibility.



The 3D GIS analysis visibility computations involved in the project and producing the results are:

- 204,750,000 calculation points (814 Target Points per Observer point)
- 250,000 observer points
- 125 observer points per hour processed (average)
- 2000 hours processing time
- 83.33 days or 11.9 weeks of computer time.



“Thank you for all the work your team has put into this detailed work. We are very pleased with the results, and have provided the relevant information on to enable our colleagues to use it as part of the Economic Impact Study analysis for the 2012 Sydney New Year’s Eve event.”

Kristen McCleod, Project Manager of City of Sydney.

A series of images of the 3D analysis were provided to help with the client understanding the approach used.

“Awesome images guys!”

Mattt Sund, GIS Manager of City of Sydney.