

BUSINESS AREA: SPATIAL SERVICES

Case Study

NSW Base Maps Vector Tiles

DCS Spatial Services' Base Map is the default on high-profile platforms including the Spatial Collaboration Portal and Spatial Digital Twin. The Base Map required an overhaul to meet contemporary needs of end users, and advancements in the underpinning delivery technology.

DCS Spatial Services sought Spatial Vision's expertise to uplift the traditional Base Map cartography and produce a range of new vector tile map bases. A key deliverable was to establish a production environment to produce a range of vector tile base map styles to satisfy different end users' mapping requirements. The base maps ranged from traditional full colour to custom versions including greyscale and accessibility options.

Vector tiles are considerably more efficient in delivering mapping at multiple scales than the raster tiles that have been used for many years.

As a result, all customers now have an efficient, high quality and cartographically excellent suite of base maps to support a broad range of applications and uses. Vector tile base map options for various use cases included Topographic, Greyscale Topographic, Hybrid, Terrain, Light Mode, Dark Mode and Streets.

Customer Profile

www.spatial.nsw.org.au

Company

DCS Spatial Services

Location

NSW

Industry

Spatial Services and Technology

Products

Surveying, spatial products and services and innovative projects

Solution

To address limitations with New South Wales's suite of raster base maps, Spatial Vision was commissioned by DCS Spatial Services to compliment the traditional raster format suite with a new suite of vector base maps in addition to significantly uplifting the cartography within the raster product.

Benefits

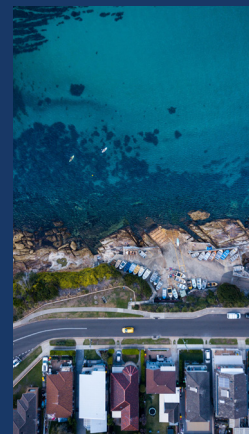
- A significant uplift of the cartography and styling of the NSW Base Map to address significant accessibility issues for visually impaired.
- Production of a variety of new vector tile base maps that meet DCS Spatial Services' business and functional requirements.

The Issue

When the raster type NSW Base Map was first commissioned in the early 2010s to cater for the digitalisation of the agency's delivery platforms, it was considered the most effective and easy to use map type. Indeed, the NSW Base Map has continued to perform over the last ten years.

However, the NSW base map's implementation Service Delivery has also observed a decline in its use by end users who are looking at alternatives such as Open Street Map. Known shortcomings of the current base map included:

- Widescale updates to the base map were a time-consuming activity, due to the raster type format
- Outdated graphical representation, acceptable when first introduced but since been overtaken by other platforms
- Disproportionate text overlays (e.g. intrusive text size, especially at larger scales)
- Cluttered display, limiting the amount of usable information on screen at any one time
- Limited/poor integration with national maps and maps of other jurisdictions



The Solution

While other State's base maps offer options such a topographic, imagery and greyscale, nearly all of these base map options are delivered in raster formats. This project offered all these traditional and new unique map design options in the newer vector format which elevates NSW's base maps to be at the cutting edge of state-wide maps in Australia.

There were a number of benefits of creating vector tiles for this project;

- All vector base maps are designed to be integrated with other datasets, be that raster or vector, within GIS platforms or web environments. Muted colours and dark mode are used to allow other information to stand out and raster hill shading or imagery to be incorporated.
- The main vector tile base map was created for fast tile creation mimicking the raster product and possible replacement. A raster tile product can take from weeks to months to create the whole state, compared to vector tiles that may be created in a matter of hours.
- Faster vector tile creation allows changes in the base to occur quickly and new data added within the vector tile creation or added as an addition layer to the vector tile within a web or GIS environment.
- An equivalent vector tile product file can be around 3GB in size compared to raster tiles in the vicinity of 900GB.
- Fast turnarounds mean multiple map base versions could be easily created depending on the use case.

The NSW Base Maps project assists the NSW government by providing considerably improved Base-map functionality resulting in better customer services to the State and accessibility to a wide variety of users.

If you'd like to know more, [please get in touch.](#)

Accessibility standards and principles were also a priority. Integrated design cues were chosen to not impact people with colour-blindness whilst labelling size and case enhanced readability. Background colour combinations were selected for low light and muted background options facilitated to add information without distracting from the map or making it cluttered and unreadable.

New fonts were used to modernise the base map and enhance labelling placement. This resulted in better figure ground and hierarchical organisation of labels.

The Benefits

The project will assist the NSW Government and various map users in several ways:

- ✔ Maintained existing functionality, as a minimum, whilst establishing more frequent update/refresh cycles to ensure better data currency
- ✔ Position as whole of Government provider of choice, in comparison to other products in the market (e.g. OpenStreetMap, Google Maps)
- ✔ Vector type map with raster map compatibility that continues to be cartographically accurate
- ✔ Contained a range of map styles with high attribute and positional accuracy
- ✔ High-performance, with competitive pan, zoom & refresh rates
- ✔ Satisfied internal (Spatial Services) and external (NSW Government) need for a replaced default base map
- ✔ Ensured the NSW base map can be a reusable component of the NSW Digital Design System.

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