Napier City Council Chooses Bentley Platform to Reduce Costs and Increase Data Reuse

Enterprise License Subscription Enables Council to Save NZD 75,000 per Year on Software Licensing, Training, and Man-hours

Project Summary

Organization:
Napier City Council

Solution:
Government

Location:
Napier, New Zealand

Project Objective:
- Create an infrastructure asset management system with a single authoritative data source for surveying, CAD, GIS, and asset management data.
- Improve data flow between applications so that it is accessible and reusable, while maintaining data accuracy.
- Enable staff to work more efficiently and make better use of the tools and training provided.

Products used:
Bentley Geo Web Publisher
Bentley Map
Bentley Water (now part of Bentley Utilities Designer)

Fast Facts

- The NZD 100,000 project had to be completed in time for data maintenance staff to complete their work prior to year-end financial reporting.
- Bentley Water was configured based on data models for required features and is now used with Bentley Map to maintain data in the Oracle database.
- The common framework for storing consolidated infrastructure asset data has improved data flow and data accuracy.

ROI

- SELECT Enterprise License Subscription for Municipalities provided access to more products without increasing costs, and reduced training costs by NZD 24,000 each year.
- The ability to reuse data throughout the asset lifecycle has saved about 140 man-hours or NZD 9,100 per year so far.
- Software maintenance savings totaled more than NZD 40,000 per year.

Small City Reaps Big Returns

Napier City Council governs the seaport city of Napier, located on Hawke's Bay on the eastern coast of New Zealand's North Island. The Council initiated the NZD 100,000 WorkIT II project to upgrade the city's water, wastewater, and stormwater infrastructure asset management systems. WorkIT II consolidated systems to create a single, authoritative data source for multiple software products. Bentley solutions provided the framework for surveying, CAD, GIS, and asset management data. Standardizing on a common technology platform improved work and data flow throughout the asset lifecycle while maintaining data accuracy. Bentley's Enterprise License Subscription (ELS) for Municipalities gave the Council access to the comprehensive product portfolio and training resources. This project, the first of three phases, generated annual savings of NZD 75,000 on IT costs and staff resources.

Limited Interoperability of Older System Restricts Reuse of Asset Data

Napier City Council is responsible for providing potable water, wastewater collection and treatment, and stormwater management for 58,000 residents. The Works Assets Department used WorkIT to create, manage, and analyze information about the associated infrastructure, which covers approximately 105 square kilometers and includes the 463-kilometer water supply network, 365-kilometer wastewater network, and 216-kilometer drainage network.

Introduced in 1997 to replace a paper-based asset management system, the original WorkIT platform was a heavily customized GIS product, with additional tools based on the CAD functionality of MicroStation. Making changes to data in the system required multiple manual steps, and manual data entry. Data was stored in a SQL database with a proprietary format that required vendor-specific products to maintain. Limited interoperability among the products used in the system made data reuse problematic.

Ian Tidy, GIS developer and analyst for Napier City Council, explained, "Our council operates two main asset management systems, where we store financial data. We wanted to consolidate our data and create linkages between the two main asset systems, and create a single source of truth for all our GIS and asset data." The Council also wanted to improve data flow between applications to make more data available to end users, and maintain data accuracy while also reducing costs.

In addition to these system improvements, the Council set goals for staff resources including the ability to work more efficiently and make better use of the tools and training provided. Finally, WorkIT II had to meet the statutory requirement for annual financial reporting.
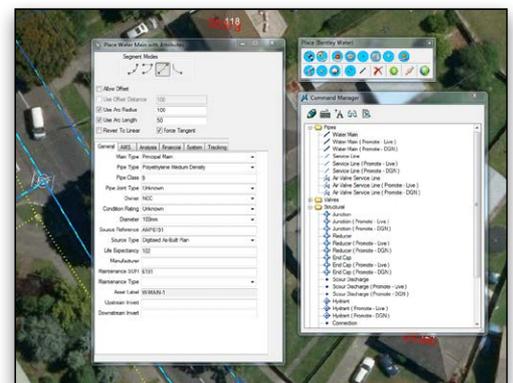
Asset data is easily maintained using Bentley Water.

Bentley Platform Provides Common Framework

Working with a budget of only NZD 100,000 for external consultants, with limited in-house resources and a fixed-time frame – work needed to be completed in time for year-end financial processing – the Council staff needed to work quickly and efficiently.

"We started by reviewing everything," said Tidy. "We looked at our data and our data maintenance policies and procedures. We reviewed all the CAD and GIS and asset management systems that we had, and we looked at competing products and we considered where we wanted to head in the future.

"As a result of our review we choose to standardize our survey, CAD, GIS and analysis software all on the Bentley platform."

Find out about Bentley at: www.bentley.com

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Napier City Council split the project into three phases. The Phase 1 build-out of WorkIT II was based on the water supply network. Phase 2 and Phase 3 will add the wastewater and drainage networks, respectively.

Major pieces of existing software were replaced, including the GIS platform, infrastructure asset management system, and backend database. New software was configured based on data models for all of the city's features, and in such a way that data could be repurposed to work with other software products. Aligning the data models for the asset management system and Bentley Water allowed for seamless data transfer when data was finally migrated to the new system.

An Oracle database provided the single source of truth. Bentley Water and Bentley Map were used to maintain the data within Oracle. Bentley Geo Web Publisher provided web services for other applications to read the data in a number of file formats. Using a common data maintenance framework improved data flow between applications and enabled the management of data for all assets in a consistent manner. With Bentley products as the common framework, data was now reusable.

Bentley Water was used to enforce business rules and prevent unauthorized staff from making changes to financial information. The Oracle database tracked data changes and managed a full audit of all changes, both spatially and non-spatially. As a result, every change was tracked back to the original change request, authorization, and paper documentation. Bentley Map was used as an alternative to the customized GIS product, with Bentley Water providing the additional tools required for managing connectivity between features. The flexibility of Bentley's software allowed the project team to define features in as much detail as desired. Additional functionality required for managing financial information was initially developed by Bentley Professional Services, and further customized by Napier City Council staff.

Standard Framework Simplifies Data Flow

Council staff was able to meet all of their Phase 1 objectives, on time and within their modest budget. "Having a good specification and not changing it enabled our external developers to provide fixed pricing and this enabled us to stay within budget," explained Tidy. Creating a common framework and using a widely used data format improved the flow of data between applications, eliminating the need for manual processes. This also reduced error-prone manual data entry. "We have improved data accuracy both in attribution and spatially, by using a common frame work for data capture and applying business rules against the data before it is updated or added," said Tidy. Staff productivity was also improved, both by the new workflow, and by reducing the number of products staff need to perform their work.

WorkIT II benefited every aspect of infrastructure asset management for the City of Napier. The project provided the software and data that asset managers required for performance modeling and monitoring. Designers received better design tools and more consistent data than in the past. Accountants and auditors gained access to a transparent and auditable financial process. And end users experienced a simplified work flow with access to a single authoritative data source.

In addition, cost savings realized as a result of this project eventually will be passed along to residents in the form of more services. In addition to the completion of Phases 2 and 3, the next step in the evolution of infrastructure asset management will be movement toward 3D data, starting with storing features in 3D, and performing extrusions for visualizations and analysis.

Bentley's ELS Subscription Yields Return on Investment

The Bentley SELECT Enterprise License Subscription (ELS) for Municipalities enabled Napier City Council to pay a predictable annual fee based on the city's population size in order to gain access to the comprehensive product portfolio. This reduced the Council's licensing fees, primarily because the custom GIS product was no longer needed, and gave the city access to more products and training at no additional cost. "The Enterprise License Subscription has enabled us to increase the range of products that we use, the number of licenses we deploy and we have done this without increasing our capital or licensing costs," noted Tidy. "Last year was the first year that we stayed completely within our software maintenance budget in over ten years and we returned a small surplus."

In addition, the ELS gave the Council the opportunity to accurately forecast software expenditures and save an estimated NZD 30,000 per annum in software licensing costs. Savings will be compounded as more of the Bentley solutions are implemented in subsequent years.

The return on innovation for Napier City Council was almost immediate, with gains made in staff productivity and reduced operational costs. During Phase 1 project development and implementation, all data maintenance for water assets was suspended until the new tools were available. The new tools enabled Council staff to complete a full year's worth of data maintenance in fewer than three weeks (120 man-hours), even while addressing minor issues with the system. Over time, WorkIT II reduced the staff resources required to maintain asset data and enabled the Council to redeploy staff from mundane data entry tasks to more strategic activities.

The Council estimated that the ability to reuse data over the whole life of an asset incurs savings at many points. For example, the staff saved a total of 140 man-hours on 70 jobs per year. Depreciation and revaluation processes were reduced from 80 hours to one hour. Reducing the number of products the staff used cut software training and maintenance costs by USD 40,000. Data maintenance time for all three water networks was cut in half, saving 8-10 hours per week.

Working on Phase 1 of the WorkIT II project also developed staff skills required to implement Phases 2 and 3. The limited budget for this project restricted expenditures on external services, so the Council staff undertook tasks such as data modeling and fine-tuning system customizations with assistance from Bentley Professional Services. Based on this experience, Council staff was positioned to develop the wastewater and drainage infrastructure asset management systems without any additional outsourcing and in a much reduced timeframe.

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