



# New Zealand Animal Health Board

## CASE STUDY



### CHALLENGE

To eradicate bovine TB in cattle and deer herds, a pest management agency needed a technological system for sharing geospatial projects previously managed by local councils operating different types of data management systems.

### RESULTS

- Solution brings anticipated savings of at least NZ\$30 million over the next decade.
- Consolidation of processes decreases management and support staff costs.
- Automated data checks eliminate overlaps and other inaccuracies.
- GIS-enabled Web site improves data access and visibility.
- GIS is tightly integrated with operational and financial data.

*"VectorNet is a geospatial tool for designing, planning, contracting, and managing all the activities involved in the TB vector control program. Data collected is used to help make decisions on future operations and refine best practices."*

*William McCook  
Chief Executive, Animal Health Board*

In order to maintain its proud reputation as a supplier of high quality, healthy meat and dairy products, New Zealand implemented a comprehensive nationwide programme to control bovine tuberculosis in cattle and deer. Since the 1970s, New Zealand's government and farmers have spent more than NZ\$1 billion managing the disease. To decrease its incidence and losses in agricultural production, the Animal Health Board (AHB) was created in 1998. It is a nonprofit, incorporated society with representatives from the farming sector and local government. Its current objective is to achieve official freedom from bovine TB in New Zealand by 2013.

The major cause of TB in cattle and deer herds in New Zealand is contact with wild vectors, mainly the introduced Australian brush-tailed possum. Intensive, large scale possum control programmes are therefore needed to prevent transmission of TB from possums to livestock.



*ArcGIS allows AHB to share information about the locations and quantity of possum captures as part of its vector control programs.*

### The Challenge

New Zealand needed to set regional and national targets for TB vector control, but was hampered by a lack of uniformity in capturing activity progress and results. Another difficulty was the fact that activities were scattered over a large area: more than 7,000 projects covering 8.4 million hectares. Before AHB took over the management of the vector control process, more than a dozen regional councils used differing methodologies to try to achieve this task. AHB took the best practices from these councils to develop business rules, procedures, and interfaces for a geospatial approach to vector control. This new approach would incorporate the local knowledge at the regional level and would centralize it at the national level. Operation managers needed to visualize possum densities in different areas, then link this to performance and financial data so they could identify the most effective control efforts. This information, sent by contractors in the field, needed to be uploaded and organized in a standardized manner so that managers could do spatial searches to aggregate data, prepare summary reports, and manage contracts. The solution had to ensure quality data could easily be entered by users to provide accurate results.

Learn more at [www.esri.com/health](http://www.esri.com/health).

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### ESRI SOFTWARE USED

ArcView®  
ArcEditor™  
ArcInfo®  
ArcGIS Spatial Analyst

### OTHER SOFTWARE USED

Microsoft®  
Windows Server® 2003  
Microsoft SQL Server®

### HARDWARE USED

HP® iPaq® 212 with ruggedized  
box and separate GPS receiver

### FOR MORE INFORMATION



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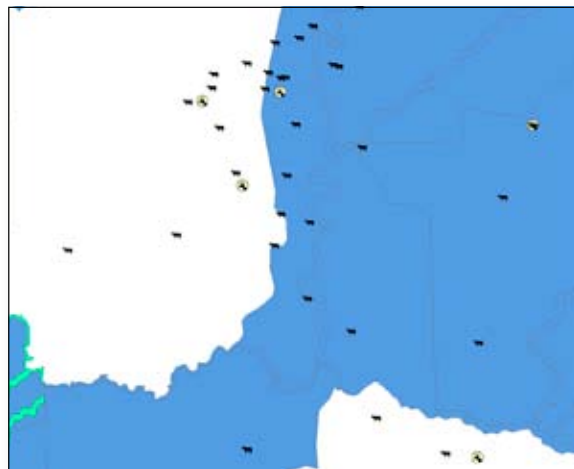
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### The Solution

AHB created VectorNet, an application that uses a map-based interface to access, query, and report on all aspects of AHB's disease and vector control processes. ESRI's ArcGIS® software was tightly integrated into the application, built on .NET 2.0, and securely deployed over the Internet to multiple users. Eagle Technology Group, ESRI's New Zealand partner, provided the software. Functionality was progressively released in just 19 months. VectorNet links more than a dozen previously uncoordinated regional systems, creating consistent, accurate, and easy-to-manage geodatabases. Approximately 40 AHB staff use VectorNet for contract management, strategic planning, and reporting. Individual field contractors have the capability to update the database from the field with GPS-enabled handheld devices, then upload information through a Web browser to VectorNet. The data is validated and added to the geodatabase. Using a statistically based model to measure possum density, VectorNet generates exact locations within specific regions to implement control projects such as baiting or traplines. This geospatial approach, integrated with operational data, creates verifiable processes to better manage current projects and formulate future predictions.

### The Results

Current spending on control of bovine TB is in excess of NZ\$80 million per annum. AHB estimates that VectorNet will save NZ\$30 million in its first decade. AHB also expects a net present value (NPV) of NZ\$1.9 million for the GIS project. "A positive NPV shows that VectorNet is worth the investment of capital. We have calculated a payback period of 3.3 years," says William McCook, Chief Executive AHB, "but that's just the beginning. For instance, we expect a 1 percent [NZ\$550K] efficiency gain on the overall vector program budget through consistent, accurate, complete, and timely information to make better decisions."



*This map shows the geographic distribution of residual trap catch (RTC) results after completion of a vector control operation.*

By making the link between geospatial and textual data and providing this information over the Internet, there is an increased visibility of decisions and improved access to information. This standardization also allows easier sharing of data with other organizations. "The model we have developed is robust and could easily be modified for managing other invasive species or diseases," shares McCook. "Other organizations could benefit from linking geospatial, operational, and financial data." AHB's VectorNet, built on ArcGIS, received New Zealand magazine Computerworld's 2008 Supreme Award for Overall Excellence in the Use of Information and Computer Technology (ICT) and the Award for Innovative Use of ICT. Its value was also recognized at the recent Asia Pacific Spatial Innovation Conference in Canberra.

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