

Case Study

Monitoring Millimetres Across Kilometres



www.aamgroup.com | info@aamgroup.com

AAM spatial scientists designed and executed an award-winning GPS survey across a large portion of Victoria.

Anecdotal evidence existed that subsidence was occurring along the ecologically fragile Gippsland coastline from a range of land use activities. In an effort to obtain scientific evidence to refute or confirm these claims, a precision subsidence monitoring program was commissioned by the Victorian Government. This program comprised three precision surveys beginning in 2004 and completed in 2007.

The competitive tender for this work was won by AAM, managed from its office in Melbourne, whilst drawing on technical expertise from its key technical staff in other states and also working collaboratively with a consultant.

The unprecedented combination of high precision measurement and large area extent required innovative design and use of specialised equipment, rigorous error mitigation in data capture, and sophisticated data processing methods in order to meet the project specifications – truly setting a new national benchmark of excellence in the key area of subsidence monitoring.



Map of the Gippsland Coastline

Complexity, Scope and Size of the Project

With a requirement of centimetre level precision, the monitoring survey needed to achieve its results despite several challenging project characteristics:

Complexity

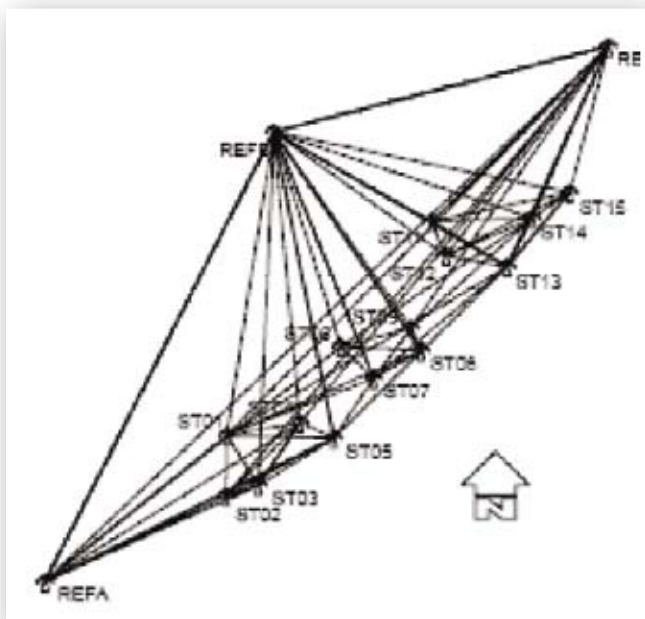
- This level of precision monitoring had not been done before in Australia over such a large area and long timeframe
- The technically accurate and unbiased outcomes of this high profile project were eagerly awaited by both government and industry

Scope

- Reference points up to 165 km apart
- Monitoring required at same sites over a 4 year period
- Task was to determine whether 14 high-stability benchmarks along the Gippsland coast of Victoria are subject to movement
- The survey sought to determine any significant relative movement, over a 4 year period, between these pillars and the individual benchmarks
- 3 campaigns were planned in 2004, 2005 and 2007. The individual campaigns each aimed to determine the heights of the benchmarks, relative to the reference stations, to a precision of $\pm 10\text{mm}$ (1-sigma), although $\pm 6\text{mm}$ was achieved

Size

- Total project area $>1,000$ sqkm



Network of Monitoring Stations

Case Study

Monitoring Millimetres Across Kilometres



www.aamgroup.com | info@aamgroup.com



AAM Monument Points

Project Highlights

Operationally, the execution was flawless with data capture completed on time, without incident or equipment security breach. This was due to the detailed planning undertaken prior to project commencement.

Commercially, the client received their data to budget, to specification and on time.

Technically, the precision exceeded project requirements delivering $\pm 6\text{mm}$ accuracy, while $\pm 10\text{mm}$ was the client specification. Technical collaboration between academic and the private sector was successful.

Professionally, the project, technology and survey were explained and documented in depth to the client and interested participating agency, DSE. The results benefited industry and the community by providing definitive results about the lack of subsidence activity between 2004 and 2007 in the Gippsland area.

A Multi-Award Winning Project

This project completed by AAM won two awards, the Victorian Spatial Excellence Award and the Asia Pacific Spatial Excellence Award.

The judges commented that “The project demonstrates the increasing demand for highly accurate measurement within the environmental domain and the levels of accuracy that are able to be achieved. The project involved rigorous and careful design, execution and processing of GPS data that achieved very stringent accuracy specifications required by the client.”



AAM – continuing a 50 year tradition of successfully delivering technically challenging large-scale projects that exceed client expectations