



# SPATIAL INFORMATION DAY 2011

and the

## SOUTH AUSTRALIAN SPATIAL EXCELLENCE AWARDS

Adelaide Convention Centre | FRIDAY 5 AUGUST 2011

### Spatial Information Day 2011 Abstract

**Title:** Using GIS to design Adelaide's water security: a cost/benefit analysis

**Session:** 6 – Evidence through Geography

**Author:** SA Water and WaterLink

**Presenter:** Matt Brown – WaterLink

**Abstract:**

#### Introduction

As part of the long-term strategic plan for water in Adelaide, the SA Water Network Water Security Program aims to deliver an integrated solution for water transfer and distribution until 2050.

A key component to this program, the North South Interconnection System Project (NSISP) will upgrade the existing metropolitan Adelaide distribution network infrastructure through interconnectivity between the northern and southern water supply networks. The project aims to meet estimated water demand by directing water from the Adelaide Desalination Plant into metropolitan Adelaide's water supply system. The solution will be integrated with the existing metropolitan water treatment plant assets. The WaterLink JV (a joint venture consisting of associated partners Parsons Brinckerhoff, MWH and Tonkin Consulting) was selected to deliver the infrastructure design services consultancy, operations management and control design.

Throughout all stages of the project geographic information systems (GIS) was used for decision making, budgeting, data management and visualisation.

#### Methodology

Throughout the different design phases of the project, spatial analysis methods were used to investigate and determine the most suitable practical route corridors and land sites for identification of the most appropriate transfer pathways across the three main distribution networks in Adelaide. This involved performing proximity analysis to selected sites of interest and helped support the detail design phase to locate and display existing services such as electrical cables, water and gas mains and existing water infrastructure.

To aid collaboration and assist in all infrastructure packages, an innovative GIS mapping product was developed for project team members to access the project's spatial and non-spatial data. This allowed all infrastructure packages to have the ability to make more informed costing and quicker decisions, which ultimately will assist in achieving a more accurate construction budget and planning of the construction schedule.





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### Results

Due to the accelerated start to NSISP, GIS was able to save project time by using datasets, analysis tools and mapping for members of the project team and infrastructure packages. It provided cost savings and enabled the project to be ahead of schedule. Utilising GIS on a large infrastructure project has allowed NSISP to reduce hiring extra staff, site visits and resources, which could delay the progress of the design/construction and increase the project's budget. GIS has been a significant contributor to the success so far achieved by NSISP, given the importance, size and nature of this project.

### Conclusion

The North South Interconnection System Project is an excellent example of how GIS can play an important role from concept design to delivery on a major infrastructure project. It has also shown how geospatial tools can be a significant data sharing contributor between client, consultants and contractors. Ultimately and most importantly, GIS helped SA Water achieve their outcome more efficiently and accurately in a timely/cost effective manner than would have otherwise been possible using traditional methods and resources.

