# Case Study

## PAI for utilities: Landmark Solutions & South West Water Ltd Working in partnership

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Large-scale mapping is seldom perfect, and the Ordnance Survey's Positional Accuracy Improvement (PAI) programme reinforces this fact. Maps are merely a representation of real world features and, therefore, were often compiled on the basis of assumptions, generalisations and mathematical rules. The increased usage of GPS in surveying has highlighted inaccuracies, which have resulted from these earlier approximations, and the new technologies now available have made the absolute accuracy of map data, with respect to its real world location, more important than ever.

The PAI programme, which OS are currently carrying out on all 1:2500 scale mapping, will mean that many features on their base mapping will "shift" by several metres and in a pseudo-random manner. The effect of this becomes apparent when user data is overlaid on the post-PAI mapping, highlighting the discrepancies between the pre- and post-PAI versions of the map.

This poses a problem for utilities, as the majority of commercially available PAI toolkits transform the data based only on pre and post OS Link file location coordinates. There is no facility to 'move' parent and child together or to maintain relationships.

### The challenges

South West Water (SWW), which supplies water to more than 1.5 million homes and businesses in the West Country, maintain thousands of miles of pipelines throughout their operating area, which covers nearly 4,300 square miles. Of these, a significant volume (more than 70%) is affected by PAI.

SWW's entire pipe network has been digitally mapped and is GI-enabled using OS Land-Line for capture and real world reference. SWW initially conducted an analysis to look at handling PAI internally, as part of their daily processes, but the results showed the exercise to be too resource intensive, time consuming and expensive for it to be viable as a business case.

### The solutions

SWW then decided to explore outsourcing the entire PAI operation to an external solutions provider. In a competitive evaluation exercise Landmark Solutions, working with their offshore partner RMSI, were the only service provider to successfully complete a pilot study to SWW's high quality standards and within their timelines and were, therefore, selected as their sole PAI partner organisation.

Landmark Solutions and RMSI have been studying PAI since its inception. RMSI have been involved with realignment work in the US with utility and other network based datasets for the past 4 years, and their experience has reinforced the view that an auto realignment PAI toolkit is unlikely to provide an adequate solution by itself.

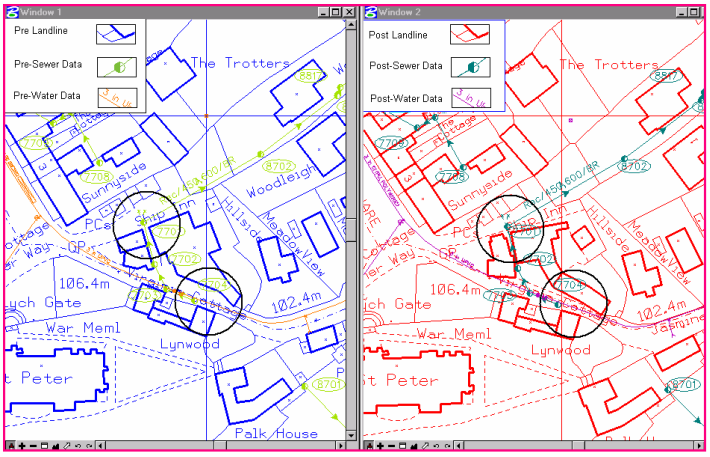
#### 1. Pre-alignment study

As SWW's data is held in a combination of proprietary and commercial GI systems and databases, a preliminary pre-alignment study was conducted on the existing data models to formalise the realignment procedures. In association with SWW, Landmark has developed a customised methodology for the interactive repositioning of utility network features against OS background base mapping.

#### 2. Implementation

Landmark has implemented a customised methodology for the interactive repositioning of utility network features against OS background base mapping. The consolidated solution includes:

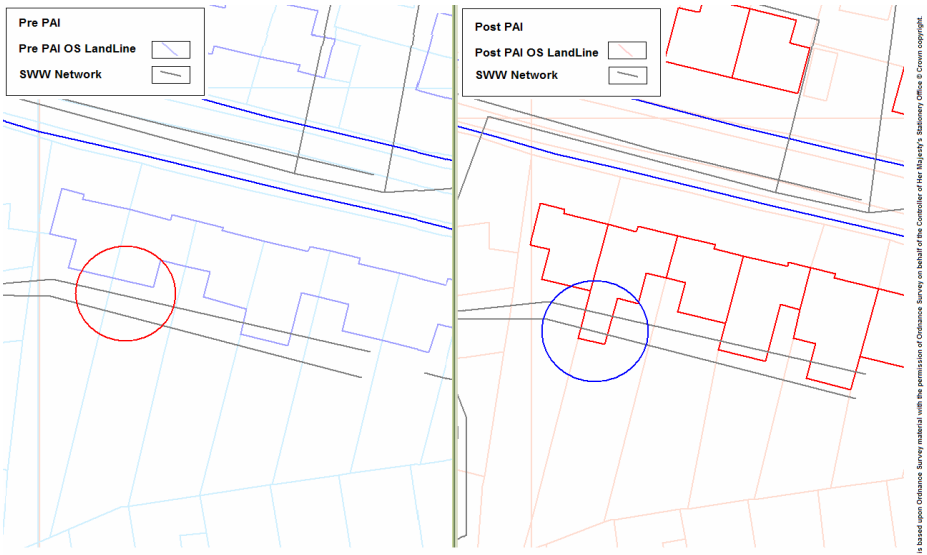
- An initial automated realignment of the SWW's existing network features.




- A specially developed workflow management system to assign realigned data, in manageable

chunks delineated by OS tile boundaries, to the GI Data Technicians for visual confirmation.

- Use of custom-built interactive GI editing tools to review each feature individually for anomalies and correction / adjustment, based on pre-defined business rules for manual adjustment.
- Use of a comprehensive audit trail for every realigned feature allowing client validation based on customised confidence codes.




Real world change coupled with PAI. Note how an overlay of the network feature with post-PAI OS Land-line® highlights that the feature may actually be lying under a building extension.

SWW's GI enabled systems allow their data owners to filter and select network features based on Landmark's realignment confidence codes. These in turn will provide them with flexible options ranging from verifying only high risk features to a comprehensive feature by feature check if necessary.

## The benefits

- Landmark's specially developed QA suite, with its custom designed algorithmic and interactive checks, ensures that the realigned output is of the highest quality and provides a complete verification trail and lineage. They have also developed an automated work management system for work distribution, work and skill-set tracking, and real time project monitoring to make the entire procedure more streamlined, efficient and cost effective.

- Another benefit of Landmark's PAI Strategy is multiple options for receiving inputs and shipping outputs. This in turn not only allows SWW the freedom to allocate data for PAI when convenient but also allows the option of increasing of decreasing the volumes based on their requirements.

- The current delivery cycle for SWW has been developed to allow them to continually work on their GI data without any disruption to their daily operations. Landmark's large resource base allows a fortnightly rotation plan that ensures that no features are locked in SWW's systems awaiting PAI for more than 2 weeks. In addition, the workflow management system at Landmark is intuitively designed and is capable of entertaining ad hoc requests as well, should any particular data chunk need priority PAI.

- As a result of this entire process, SWW will receive an up-to-date and positionally accurate pipe network dataset with a comprehensive audit trail. Landmark's automated workflow management system means that real-time project monitoring and tracking will always be available and will also help in the timely delivery of the project. This updated dataset can be used to issue maps to field teams, ensuring that excavations etc. are carried out based on accurate location information, minimising the risk of wasted efforts and costs.

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