Atkins

Customer Success Story

Autodesk ® Topobase™
Autodesk MapGuide® Enterprise
AutoCAD® Map 3D
Autodesk Consulting

The Highways Drainage Management System, based on Autodesk Topobase, means drainage condition inspection information is now at our fingertips. The ability to more quickly and accurately assess the impact of pollution spills on the highway means our engineers can better safe guard local watercourses and protect the environment.

— Barry Hall
Senior GIS Consultant
Atkins

Managing Highways Smarter

Atkins is using Autodesk Topobase to help manage highways drainage and trace pollution incidents online

Image courtesy of Atkins

The Firm
Atkins is one of the world's leading engineering and design consultancies, focused on enabling customers to respond to the complex challenges of the world's major infrastructure projects and carbon critical design. Established in 1938, Atkins has topped the league of UK engineering consultancies for the last 12 years (New Civil Engineer, Consultants File 1994-2009). With a turnover of more than £1.5bn and 20,000 staff worldwide, Atkins is ranked as the largest multi-disciplinary consultancy in Europe and fourth largest in the world.

Managing Highways
In England, the Highways Agency (HA) is responsible for managing the network of motorways and trunk roads. The HA uses Managing Agent Contractors (MACs) to maintain these highway assets.

On 1 June 2008, Atkins became the HA's MAC sole provider for Area 6, which covers most of East Anglia. As part of their highways maintenance role, Atkins is responsible for managing the drainage network.

Highway Inspectors must continuously inspect and assess the condition of the drainage network, plan and execute routine maintenance works and investigate incidents that may affect the drainage network.

The Challenge
Atkins Drainage Asset Inspectors must check and maintain more than 1,250 km of road network in Area 6. To do this, Inspectors need access to accurate information about the location and condition of the drainage network.

Previously, Inspectors had to manually search through hundreds of 'as-built' plans to locate assets, while condition information was stored in spreadsheets. Finding a specific asset was a time-consuming task and made the job inefficient. Furthermore, any modifications identified in the field would need to be re-digitised and plans re-printed, leading to additional work and wasted resources.

The specialist team, Atkins Geospatial, captured more than 100,000 highway asset features from As-Built drawings to the HA's Drainage Data Standard (DMRB Vol.4 - **HD43/04**). Features were captured using AutoCAD Map 3D and linked to condition information held in a standalone database via feature identifiers.

Atkins Geospatial quickly recognised that the drainage information could be more efficiently managed, analysed and accessed by inspectors, if the highway asset data was stored in the company's Spatial Data Infrastructure (SDI).

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The Solution
Atkins Geospatial had built SDI platform on an Oracle® database with a MapGuide Enterprise browser viewer. After attending Topobase Fundamentals training delivered by Autodesk Consulting, the Geospatial Team realised that Autodesk® Topobase™ Web software could provide a more effective platform for managing highways assets based on the HA's drainage data standard.

Atkins Geospatial set about building a Drainage Data Management System based on Autodesk Topobase. A drainage asset data model was configured based on the HA's data standard using Autodesk Topobase Administrator. A key element of the data model was topological connectivity for the drainage network. Autodesk Topobase Forms were also built to present attribute data via a structured and user-friendly interface.

Specific maintenance workflows were developed, with support from Autodesk Consulting, to enable inspectors to edit the drainage network whilst maintaining topological connectivity. Other specific workflows were built to enable network tracing on the drainage network and to produce specific drainage reports.

The captured as-built drainage data was migrated to Autodesk Topobase and quality controlled against detailed Ordnance Survey MasterMap mapping. Road scheme and other highway asset gazetteers were constructed to support site navigation.

Atkins Geospatial now hosts the Highways Drainage Management System for their Area 6 Highways Asset Team, and provides support to Inspectors and other users.

The Results
Atkins' Highways Drainage Management System, built on Autodesk Topobase, helps provide Inspectors and designers with access to the whole drainage network in Area 6. The gazetteers enable Inspectors to search by scheme, asset features and road name, so they can more quickly navigate to the area they need to investigate.

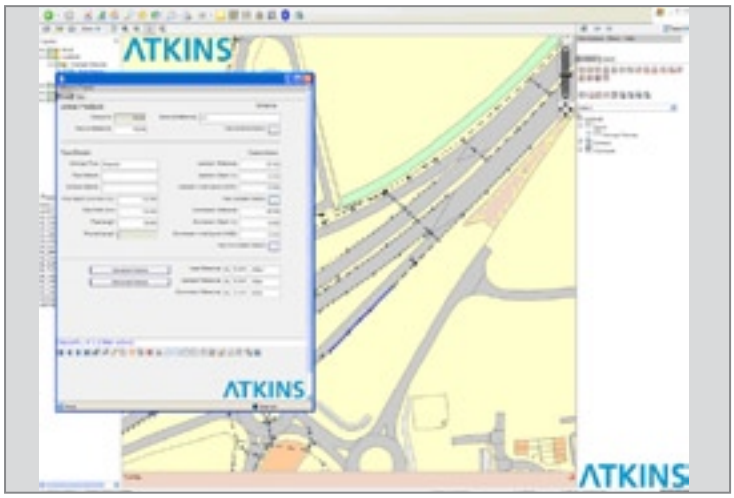
The web-based editing tools enable inspectors to update asset conditions and modify the drainage network in accordance with field observations. Changes are saved directly into Autodesk Topobase and are more quickly available to the rest of the Highway Asset Management Team, helping them to base their decisions on more accurate, real-time information.

As Autodesk Topobase is built on industry open IT standards and stores data in SDO geometry, the drainage asset data can be directly exported for delivery to the HA in the Drainage Data Management Standard.

Inspectors can now conduct more rapid assessments of upstream and downstream impacts of highway incidents, using the Autodesk Topobase network tracing tools. For example, it is possible to assess the route of pollution spills on the road surface through the drainage network, and thereby enable more rapid management decisions to be taken to help safeguard against run-off to local watercourses.

For more information, visit **www.autodesk.com/topobase** and **www.autodesk.com/consulting**

Screenshot of Network Trace results shown in Topobase Web



Drainage condition data is accessed by selecting the feature and opening the Topobase Form

The Topobase Web provides users with powerful GIS capabilities in a browser environment. This allows Drainage Inspectors, with no previous experience of GIS, to update the drainage network based on field observations and conduct investigations of the route for potential pollution spills on the road network.

—Anne Kemp
Director, Communications
Atkins

Image courtesy of Atkins

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