

# Automation increasing timeliness and quality of ecology survey data for LM

Case Study: Laing Murphy (LM) JV

**Industry** Infrastructure & Transportation

**Customer** Laing Murphy (LM)

**Challenge** Inconsistent quality of data from ecology survey contractors causing cost and time inefficiencies

**Solution** Allow suppliers to upload data into a portal that automates, validates and cleans data

## Key Benefits:

- Confidence in data from system checking 100% of data
- Significant time and associated cost savings from automated assurance
- Reduced risk of causing delays to HS2 works and incurring fines
- Greater ability for ecology experts to focus on their areas of technical expertise
- Responsibility for data validation transferred across the supply chain

Two of Europe's leading engineering and construction companies – Laing O'Rourke and J. Murphy & Sons Ltd – are working together in joint venture to prepare the route for phase one of HS2, Britain's new high-speed rail line. As a tier 1 supplier, LM engages a complex supply chain of functional specialists to undertake diverse enabling works.

A core element of the works involves commissioning high volumes of Environment and Ecological Impact Assessment surveys to minimise harm to biodiversity, including protected species such as bats, badgers and great crested newts. The outcomes of these surveys drive LM's ability to secure licences from Natural England to allow woodland winter clearance works to make way for the track.

Issues affecting the timeliness or quality of data necessary to obtain these licences could result in delays to the clearance, which could impact the entire HS2 programme due to seasonal constraints.

### The Challenge

LM completed around 10,000 ecology surveys across the 2017, 2018 and 2019 seasons. In 2020, LM was instructed by HS2 to undertake around 9,000 surveys in a single season to enable more than one million square metres of winter clearance.

Prior to 2020 there had been a convoluted and inefficient system for the collection, assurance and provision of ecological survey data to HS2. Surveyors would complete monthly Excel-based pro formas, a small proportion of which were checked manually by LM's Ecological Assurance Team. If the data passed, a GIS file was created for submission to LM's electronic document management system. Once passed, the survey data was accepted.

This lengthy process risked LM missing the window to obtain licences, so a work-around was devised. The LM GIS team converted the Excel pro formas to GIS ahead of any assurance, and uploaded them to the LM Spatial web GIS system for use by the ecology team for licencing and other purposes. The different approaches used by multiple contractors meant that conversion to GIS was labour-intensive and time consuming. Some of the data was incorrect, missing or too poor quality to convert, sometimes for reasons as basic as invalid date formats or too many characters to fit into the required database fields.

### Benefits

- Builds confidence in the quality of data, since all submissions are checked
- Saves significant time, cost and effort by identifying data assurance issues at source, ahead of submission
- Enables the Ecology Assurance Team to focus on their areas of technical expertise rather than on correcting basic data issues, freeing up capacity to undertake the significantly larger volume of surveys required
- Allows data to be available for analysis by LM's ecology

At the end of the 2019 season LM recognised a pressing need to check data earlier in its lifecycle, to ensure consistency between submissions from different contractors and to automate the process to increase capacity, efficiency and data quality, enabling faster provision of data to decision makers.

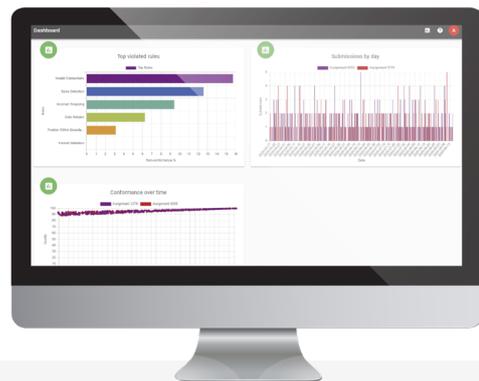
### The Solution

LM worked with 1Spatial to develop the Ecology Survey solution using 1Data Gateway and 1Integrate, allowing quality assurance before submission, rather than after. Automated, predefined data validation rules check 100% of the data 100% of the time - a marked improvement from the previous manual approach that checked only a sample of submissions. Allowing supply chain partners online access to the data validation rules transfers responsibility to contractors to ensure the quality of their data prior to submission.

Submissions are entered directly into LM's Enterprise Geodatabase, allowing them to be added to existing data sets and removing the need to consolidate data from multiple deliveries prior to analysis. The assurance process also changed. Previously, data assurance issues were recorded in a comment sheet attached to the submission in the electronic document management system. Now this takes place in the LM Datahub, where the data is shared. The system also allows the GIS and ecology data assurance to be undertaken in parallel, saving time.

The status of the submissions is shared between LM Datahub and their Enterprise Geodatabase, and immediately goes into LM Spatial (a web GIS system), giving visibility to the wider team.

Finally, extractions from the Enterprise Geodatabase are submitted to HS2 on their eB platform for acceptance.



- licencing team within 24 hours, rather than up to two weeks after submission
- Shifts responsibility for data quality to supply chain partners, removing processing time from the workloads of LM's GIS team and allowing them to use their expertise to resolve issues that cannot be addressed by the system
- Enhances confidence that LM can complete the winter clearance works within the planned timeframe, reducing the risk of costly delays