# Fortescue automates environmental data compliance.

**Case Study: Fortescue Metals Group**

*"An ethos of our team is to automate tasks and workflows wherever possible and FME is a big part of that. This was a case where we could build something to manage the interface with the environmental consultants, giving us more confidence and better data integrity while reducing the internal workload required to check the data and processes involved."*

Andrew McGonagle, Lead Geospatial Analyst, Fortescue Metals Group

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| **Industry** | Mining and Natural Resources |
| **Customer** | Fortescue Metals Group, Australia |
| **Challenge** | Ensure efficient compliance with environmental approval conditions and commitments |
| **Solution** | A web-based self-service solution configured in FME to automatically validate & submit data submissions, and FME workflows to authenticate users, scan submitted files, accept submissions and integrate them with its spatial database. |

**Key Benefits:**

- Adherence to standardised data model ensures data integrity and environmental compliance
- Web-based self-service solution means consultants can correct environmental submissions on the spot
- Automated validation solution saves data custodians time previously spent manually checking data
- 1Spatial facilitated the integration of stringent security controls including authentication and file scanning
- Solution is flexible, dynamic and easy to maintain with validation rules configured in Excel

# Fortescue Metals Group

## Overview

Fortescue Metals Group, based in  Australia, is recognised for its culture, innovation and industry-leading development of infrastructure and mining assets. Its iron ore business comprises integrated mining, rail, shipping and marketing teams working together to export over 180 million tonnes of iron ore annually.

Fortescue's commitment to technology and innovation ensures it remains one of the world's lowest-cost iron ore producers and continues to guide its pursuit of green energy opportunities. Together with Fortescue Future Industries, its 100 percent renewable green energy and industry company, Fortescue is establishing a portfolio of green hydrogen and green product operations to position itself at the forefront of the global renewable hydrogen industry.

To ensure efficient compliance with its environmental approval conditions and commitments Fortescue worked with 1Spatial Australia to create a Web-based self-service solution configured in FME Server. The solution allows consultants to automatically validate and upload environmental data submissions. FME workflows also allow Fortescue to authenticate users, scan submitted files, accept submissions and integrate them with its spatial database.

## Challenge

Fortescue employs consultants to report on flora and fauna in the field, provide mapping information, and submit health and condition assessments of the environment. This data, submitted as shapefiles, is central to the company's compliance with environmental approval conditions and commitments. Despite providing consultants with detailed templates and instructions, adherence to Fortescue's standardised data model was difficult to enforce.

The company's data custodians spent much of their time reviewing data submissions, checking for errors and communicating with consultants. Because this was a manual process with a large number of checks, there was an increased risk that incorrect data would be uploaded to the company's geospatial database. This could potentially contribute to an environmental compliance breach.

***"Mining is based on compliance with approval conditions and commitments, so data integrity is very important," said Andrew McGonagle, Lead Geospatial Analyst, Fortescue Metals Group. "If there were issues missed in internal checks that flowed through to the database, that could have implications. With incorrect data, there is the potential for a Swiss cheese alignment of holes that could lead to a compliance breach."***

## Solution

Fortescue's geospatial team identified FME Server as the ideal platform for a new Web-based self-service solution – known as the Portal for Environmental Data Submissions (PEDS) – to ensure the integrity of its environmental data.

While the team already used FME for automating workflows, they lacked experience with FME Server and went to market looking for assistance. "Through the FME World Tour events and our relationship with 1Spatial we knew they had great capability for the PEDS project and they made the best proposal to implement it," said McGonagle.

1Spatial configured FME Server to validate the many rules that consultants need to follow in their environmental data submissions. This included checking the geometry of spatial data and ensuring environmental features and observations followed the correct naming conventions and range values, as well as being in the right area. These rules were captured in an Excel spreadsheet, allowing new rules and naming conventions to be easily added and incorporated.

1Spatial also created the Web interface for PEDS, enabling consultants to log into the Web service and upload their environmental data submissions. Any errors in the submission are highlighted in an HTML report that allows consultants to correct and resubmit their data on the spot. This is a great improvement on the previous process where repeated interactions with Fortescue's data custodians were often required.

One of the complexities of the project was security, said McGonagle.

***"From a cybersecurity point of view, there were some issues that we didn't envision. When we started building the solution – which was for a select group of consultants that had mostly worked for Fortescue in the past – we didn't peg them as a high-risk group for uploading things that could cause issues. This is where 1Spatial really stepped up to the plate. They handled this curve ball really well."***

To meet the company's stringent security requirements, 1Spatial integrated FME Server with Fortescue's corporate user authentication system to check the authorisations of consultants logging in. It also built an integration with Fortescue's file scanning solution to screen submitted files before being loaded into the company's staging area. There, they are reviewed by the company's data custodians for final acceptance. Finally, 1Spatial configured a workflow in FME to integrate the accepted shapefiles into Fortescue's Esri ArcSDE production database.

***"With an automated solution, you get better data integrity. The standardised data model has been fed into FME which performs the validation against submitted data. That is always going to be more reliable than human checks alone, where there is potential for things to be missed."***

***"We subsequently had the security of the PEDS application assessed by a penetration testing company. They were happy that it was secure and they didn't identify any major issues or flaws."***

*– Andrew McGonagle, Lead Geospatial Analyst, Fortescue Metals Group*