# Material Tracking with Custom Geospatial Solutions

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**SUMMARY**

NGIS was engaged to developed a custom geospatial solution to address the challenges of tracking material movements for a large-scale site investigation and rehabilitation project. The need for an integrated system capable of handling vast volumes of material data was identified early on, and our solution combines geospatial technology, data management, and user-centric design to streamline planning and operations. The project started with a 6-8 month proof-of-concept phase, during which multiple user groups were consulted to ensure that the solution would align with operational needs. The core functionality includes the ability to create and update a comprehensive inventory of materials, plan and track material movements, and maintain an auditable record of these movements for future reporting and compliance. The application features a geospatially integrated ledger that tracks the material's status, type, and volume, and allows users to monitor the inventory in both grid and map view interfaces. Additionally, we've built in validation checks to ensure the proper disposal or end-use of materials. Field data capture was integrated via Survey123, enabling field teams to collect and update material information offline. The system then synchronises this data once an internet connection is available, eliminating manual entry errors and improving data accuracy. The system architecture uses a combination of Angular for the frontend, .NET for the backend, and MSSQL for relational data storage, while ArcGIS is leveraged for storing, managing and querying geospatial data. This solution not only improves data accuracy and operational efficiency but also supports data-driven decision-making and environmental compliance. With scalable architecture and the ability to adapt to future requirements, the platform will continue to serve as a key tool in managing site remediation projects, ensuring transparency and accountability across all stages of the process.

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