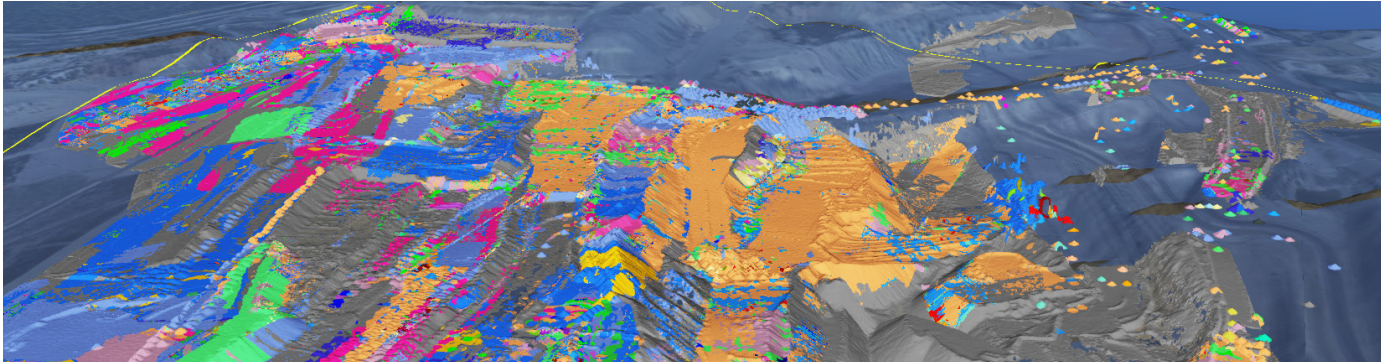




## Tracking Material Placement

Stanwell Meandu mine is implementing Maptek near real-time material tracking to monitor and report on coal, waste and rejects placement to achieve compliance.



*Visual reporting through MaterialMRT enables Meandu to monitor compliance*

Meandu Mine is 25 km southeast of Kingaroy in southern Queensland. BUMA Australia operates the mine as contractor to TEC Coal, a subsidiary of government-owned Stanwell Corporation.

Meandu Mine was established to deliver coal solely to Tarong power stations, via a 1.5 km overland conveyor line, with the power stations only taking deliveries from Meandu. The Tarong power stations are among Australia's most efficient, and together supply around 20% of Queensland's energy needs. Tarong and Meandu celebrated 40 years of continuous operation in 2024.

BUMA provides a complete pit-to-product coal service to Stanwell, operating under stringent safety and environmental conditions. Meandu open cut strip mine currently has four working pits. Overburden is removed with a large dragline, and four excavator and truck fleets. Coal is mined from three gently dipping seams varying in thickness from 2m to 20m, with two principal seams at 30m and 60m depth.

Meandu has progressively rehabilitated land since the start of operations in the early 1980s. This has enabled the active mining area to be minimised, and the mine can be effectively returned to post

mining use at any time. The standard achieved and success of rehabilitation to return mined land to native open eucalypt woodland, similar to the adjoining Tarong State Forest, is widely recognised in the industry and by regulators.

Stanwell's Meandu Progressive Rehabilitation and Closure Plan (PRCP) was approved by government in January 2024. Following extensive community consultation, the dominant eucalypt woodland rehabilitation has been supplemented with beef cattle grazing and water storage to create a final landform sympathetic to the surrounding land uses.

Part of the PRCP approval includes specific material type placements within specific spatial areas within specific timeframes in the waste dumps and selective placement of subsoil and topsoil types, providing for safe, stable, non-polluting and sustainable landforms that support the intended land use.

Meandu has invested in Maptek™ MaterialMRT to track placement into waste dumps, truck load by truck load, with reference to material characteristics of each load, enabling response to out of horizon waste placements.

The interrogative reporting tool allows monitoring of final landform construction to design and demonstration of compliance.

While Meandu has an existing Fleet Management System (FMS), it does not provide for the extent of tracking, modelling and more complete data capture and tagging on a truck load by truck load basis.

The current site process involves operational dump designs with waste selectively placed in respective stockpiles. The FMS tracks and records the source and dump locations of every load. Waste dumps are surveyed as part of the month-end process.

Production data is checked by the BUMA Technical Services team. Manual validation of weekly FMS data and actual survey against approved designs is prone to error and extremely time consuming. Before MaterialMRT was deployed, additional technical and administrative resources were required for manual tracking, reconciliation and reporting.

## Real-time waste tracking

MaterialMRT is new cloud native software to automatically manage and track material movements in mining operations. The solution incorporates material classification, modelling of material flows and accurate real-time tracking from source through to stockpiles and dump location.

Material properties are accurately tracked so encapsulation within defined bounds can be ensured to meet compliance objectives for Environmental Authority (EA) and PRCP rehabilitation commitments.

MaterialMRT enables 3D visibility and interrogation of variable material composition within constructed dumps and stockpiles. It increases inventory and material composition accuracy, and links these back to their origin to measure performance and compliance.

The system provides material inventory transparency and sharing of material classification information between mine planning, mine operations, processing and logistics models and actual operations data. It also integrates with other systems for sourcing production data, as well as reporting and reconciliation.

---

MaterialMRT provides an automated, streamlined solution with a significantly less time-consuming and labour-intensive process.

---

The system delivers greater visibility of waste dump construction and ROM coal stockpiles through 3D modelling and quality aggregation of dumped material, with properties sourced from the resource model attributed to every truck trip.

Transparency in close to real time in the recording and reporting process will assist in demonstrating compliance and interrogation by the regulator and independent auditor in ad hoc and routine 3-yearly PRCP audits. Minimising rehandling through improved material allocation compliance leads to reduced costs compared with a labour-intensive manual process.

MaterialMRT helps ensure that potentially acid forming material is placed appropriately and minimum requisite capping requirements as defined in the EA and PRCP are achieved. Coal quality management is improved by allocating coal quality parameters instead of a weighted average material type, tracking of ROM stockpile dumping and withdrawals, and determining quality variation across stockpiles to plan for ROM coal blending and CHPP batch processing.

Maptek worked with Meandu to identify operational challenges and constraints, and collaborated with various stakeholders to ensure that the new system is accepted widely by the user group. Maptek improved MaterialMRT capability, enabling the operations team to track material for every truck load to respective stockpiles while sourcing the attributes from the resource model. This helps the Stanwell team monitor compliance and ensure material placement requirements can be met, as committed in the PRCP.

'Maptek has made the application more user friendly. This also helps Maptek develop practical features and functionality for wider industry use,' said Karthik Nadarajan, Senior Mining Engineer, Stanwell.

MaterialMRT automatically pulls spatial data from the FMS and material classification from the resource model. This system serves as a single source for modelling and monitoring waste and coal material placement, and inventory reporting on qualities of associated stockpiles.

'While we are advancing the roll-out to the wider Mining Operations team, the application has reporting functionalities and features that will benefit various stakeholders in their day to day tasks,' said Nadarajan.



*Progressive rehabilitation returns land to open forest, grazing and water storage*

Environmental and Technical Services teams will benefit from early in-shift warnings of incorrect material placement. MaterialMRT reports have been used to query plant rejects placement and identify an incorrect placement. This allowed the Mine Operations team to fix identified problem areas early.

Maptek has worked with Stanwell since day one, and through new challenges along the way. They have developed an application that will remain competitive and advantageous to evolving industry requirements,' added Nadarajan.

The biggest value driver is visual reporting of material placement in stockpiles in close to real time, and querying material properties.

MaterialMRT addresses an industry wide challenge—tracking near-live data and modelling as-built dump shapes using resource model attributes. Meandu is one site already seeing the advantages. Further value will be realised when other available features, such as lab data integration, mine schedule compliance tracking, coal quality management and stockpile quality management are rolled out.

*Thanks to  
Karthikeyan Nadarajan  
Senior Mining Engineer  
Stanwell Corporation*