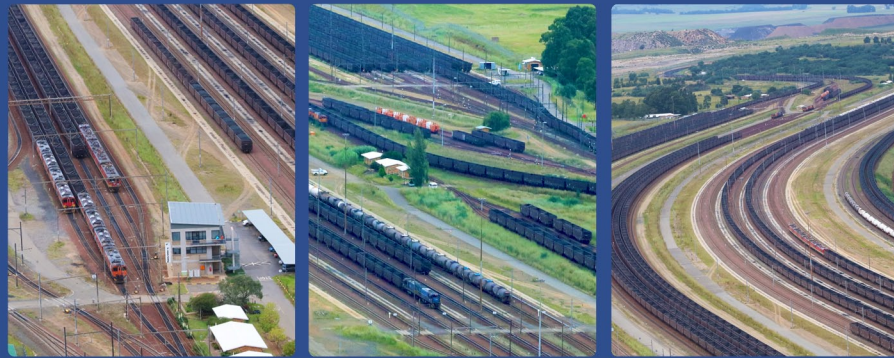


Transnet Freight Rail

Davel Consolidation and Distribution Yard:
Train Operating Simulation and Yard Modelling



Background

Project Value: R1.7bn | Duration: July 2014-February 2015

Transnet Freight Rail's (TFR) proposed re-modelled Davel Yard is intended to form the interface for trains between the planned new Swaziland Rail Link (SRL) and the broader TFR network. RCE Consultants were appointed to develop

and simulate an operating model for the yard under different traffic and functional conditions. The optimum functional yard rail infrastructure design was informed by the simulated and verified model.

Key Features

Detailed operational yard processes were developed and used as input to create an integrated simulation model. Simulation optioneering including several different traffic and yard flow scenarios.

The models and assumptions had to be validated against user requirements and tested and refined through stakeholder engagements, detailed designs and site visits.

Factors of critical importance to the operational modelling and simulation are the expected traffic volumes and ramp-up, train compositions and traction, yard movement and control philosophy, safety of designed processes, yard inter-connectivity as well as rolling stock maintenance and related technical activities. The latter included development of the most efficient method of locomotive in-service fuelling involving different train lengths.

Services Provided

The services provided for the Davel Consolidation and Distribution Yard study includes the following:

- + The detailed process development and design of an operating model for Davel Yard
- + The creation of a simulation model reflecting the operating model
- + Complete Yard re-design and refinement of functional layout from FEL-2 level proposals
- + Improvement of overall Yard operating efficiency as informed by the process design and simulation outputs
- + Yard capacity assessment and determination of other critical operational metrics under different traffic scenarios (including domestic requirements) and installed infrastructure using simulation
- + Assisting in identifying / verifying the suitable positioning of other Yard facilities (buildings, fencing, security, parking, etc.) once the rail operational footprint was finalised

Outcome

The functional yard layout design produced fulfills the traffic requirements for both SRL and domestic traffic for the expected first 25 years of operation. It also satisfies all stakeholder requirements as established during the course of

the project. The performance of the layout under perceived operating conditions was also tested through simulation (performed by RCE's strategic simulation partner).