Outline

- Background
- Simulation objectives
- Simulation model
  - Mines
  - Blend plan
  - Plant Stockpiles
  - Stackers and Reclaimers
  - Coal Screening
- Lessons learnt
- “sustainability”
Coal Value Chain Process

- **Secunda Collieries**
  - Middelbult
  - Brandspruit
  - Bosjespruit
  - Twistdraai
  - Middlings
  - Syferfontein

- **Sasol Coal Supply**
  - Stockpile yard 1
  - Stockpile yard 2
  - Stockpile yard 3
  - Stockpile yard 4
  - Stockpile yard 5
  - Stockpile yard 6

- **Sasol Synfuels**
  - Coal Processing
  - Gas Production
  - Steam

The diagram shows the flow of coal processing and production from the Secunda Collieries to the Sasol Synfuels facilities, including stockpile yards for storing coal before processing.
Mines
Sasol Coal Supply
Coal Processing
Synfuels

Coal Production forecast
Maintenance Plan
Input Sheet

Planning Model
Simulation Model

Scheduling Model

Plant Monitor

Gas load requirement

Operational info

Tonnes & Quality

Weekly Blend

Blend feasible?

Yes
Weekly Blend

No

Synfuels Planning Model

Steam Gas Production
Simulation objectives

- Set of tools to facilitate optimisation of Coal Value Chain
- Integrated, optimised Coal Value Chain
  - Focus on maximising coal to gas yield
  - Supply optimum coal quality
  - Optimise operations at Sasol Coal Supply and Coal Processing
  - Exploit opportunities of real-time information
- Simulation model
  - Blend feasibility
  - Infrastructure utilisation
  - Capacity and philosophy changes
Simulation Model

- Mines
  - Produce coal
  - Different properties
  - Store coal
Simulation Model (Cont.)

- **Blend Plan**
  - Mines produce coal with different properties
  - Mix coal
  - Uniform product

- **Plant Stockpiles**
  - Stacker
  - Reclaimer
  - Heaps
  - Live, dead-live and dead
Stockpile heap
Simulation Model (Cont.)

- **Stacker**
  - Stack coal
  - Feed rate
  - Rate of moving

- **Reclaimer**
  - Pick-up coal
  - Rate of moving
Simulation Model (Cont.)

- Front End Loaders
Simulation Model (Cont.)

- Coal Screening
  - *Separating fine coal from coarse coal*
  - *Conveying to Gas Production*
On Conveyors to Gas Production
Lessons learnt

- Don’t underestimate the required detail involved
- Construct logic flow diagrams for operational rules before you start modelling
- Have a close relationship with your client
“sustainability”

- From then to now
  - Updates on old distributions
  - Data through integrated input sheet with variations
  - Update model to current situation
  - Testing scenarios
  - Expanding on Coal Screening model