Conference and Workshop

Impact on Infrastructure and Logistics on the Coal Industry in South Africa

Eskom Coal Transportation

30 SEPTEMBER 2015
ESKOM COAL TRUCKING WOES IN 2008

“The big challenge is the growth [in road freight transport] … and until we can sort out the issue of congestion on the roads, we are going to have a problem.”
Mail&Guardian, September 2008

“we also have to tackle the urgent problem of the condition of the roads in the Mpumalanga area…the road network between the mines and the power stations has been severely damaged”
Polity, August 2008

“Turning to logistics, Schutte said the use of trucks to transport rising volumes of coal to Eskom’s power stations by road was having a “devastating effect on road infrastructure.””
Miningmix, September 2008

“Eskom…took all of the 1,500-plus trucks that supply its power stations with coal off the road for the day, after 16 people died in 55 accidents over the last month. “
Engineering News, August 2007

“Eskom estimates that about 900 additional trucks would be needed, and substantial road repairs would be required to facilitate this.”
Mail&Guardian, September 2008

“Criminally, Eskom has not maximised its old cost-plus or fixed-price coal contracts with the major suppliers, favouring instead a host of small contractors who supply via congested and deteriorating roads”
UCT Graduate School of Business Newsline, May 2008

"Just as the problems in our electricity supply are causing economic havoc within our country, so too our rapidly deteriorating provincial and municipal road network will have severe consequences for our economic and social life."
Business Report, March 2008

Source: Eskom coal logistics team; Press search
• The current status of transport of coal to power stations, with ~30% by road, is costly and socially unacceptable:
  – The transport of coal has directly and indirectly resulted in fatalities over the years.
  – Eskom has paid an estimated R1.7Bn for coal haul road repairs. This funding mechanism still continues.
  – The situation is further complicated by limited skills and resources to manage the scale of this logistics operation.

• Through an Implementation Vehicle and Programme, there is substantial savings that can be accessed by Eskom through value drivers identified in its logistics operation presently with specific focus on security of supply, cost optimisation and safety.

• It is important that the programme is implemented in time and key success factors identified for each step of the implementation.
The Coal Logistics Strategy resulted in a concerted effort to move bulk fuel transportation from road to rail.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Details</th>
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<tbody>
<tr>
<td><strong>Security of supply</strong></td>
<td>• Put the appropriate and relevant logistics solutions into place to ensure that power stations are supplied with coal from the targeted sources&lt;br&gt;• Where possible, build in the ability to switch modes of transport/or sources of supply in the event of supply problems</td>
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<tr>
<td><strong>Cost optimisation</strong></td>
<td>• Ensure that the transport of coal is done in the most cost optimal manner i.e. conveyor or rail&lt;br&gt;• Limit road transport due to high cost, and unacceptable safety/social impact and risk&lt;br&gt;• Minimise additional cost of road repairs</td>
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<tr>
<td><strong>Safety and social responsibility</strong></td>
<td>• Ensure that all coal logistics are done in a safe and socially responsible manner&lt;br&gt;• Minimise adverse environmental impact of coal transport&lt;br&gt;• Involve BEE participants, where possible&lt;br&gt;• Where possible, accelerate reduction in trucking</td>
</tr>
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In order to respond to the objectives of the Coal Logistics Strategy, the Road to Rail Migration approach to move from road to rail transportation was initiated.
What does the operation look like…

- PED logistics is made up of **conveyor, rail and road transport**

- At present 60% coal is transported by conveyor, 30% on road and 10% on rail

- Per annum an average of approximately **40 Mt of coal** is transported via road (**15 Mt via FCAs and 25 Mt via DEL**) and **13 Mt via rail**

- **Rail services** include both **open top wagons** and **flat bed** (containers)

- To date, Eskom has contracted **58 coal road transporters** (FCA’s), to the **value of R 7 bn**, with a fleet of over 800 trucks.

- It should be noted that **coal road transporters** are paid a rand per tonne rate based on an a dedicated **Coal Haul Rates Model**.

- Safety for road transport remains the highest risk due to **fatalities and our highest priority in line with ZERO HARM objectives**.

- A review was concluded in June 2015. The Review implementation, now deemed **the Logistics Transformation Programme**, has commenced mid September 2015 with its first phase extending to March 2016.
We are at the end of the value chain and are dependent on everybody upstream. Road Logistics impact:
- Public and third party safety
- Road Conditions
- Environment
- Offers the flexibility in coal transportation
Rail import and off-loading facilities are being planned at many sites.
Logistic strategy targets for road to rail migration have changed due to a changing environment.

### The Coal Logistics Strategy resulted in the Road to Rail Migration approach

- The Eskom Coal Logistics Strategy was initiated in 2008 with the following objectives
  - **Security of coal supply** to stations
  - **Cost optimisation** of coal transportation
  - **Safety and social responsibility** of coal logistics

- A direct result of the strategy was the concerted effort to move *bulk fuel transportation* from road to rail.

- In light of this, Eskom committed to transporting **32Mt per annum of coal via rail by 2018** and this was approved by the Eskom Board in April 2009.

### The changing environment has resulted in the targets set for the Road to Rail Migration not being met

- There have been a number of **changes in the factors** that underpinned the initial road to rail migration approach.

  - These factors include:
    - Some of the rail projects identified originally are **not financially viable** anymore due to the **weak economic benefit**
    - Capex constraints have resulted in a **halt to the capacity upgrade projects**

- Due to these factors, and if there are **no changes in the status quo**, the rail capacity is expected to reduce from **32Mt** to **23.6Mt by 2018**.

### Some recommendations have been put forward to bridge the gap

- The Logistics department in PED has explored solutions with Transnet Freight Rail (TFR) that will **increase the 2018 rail capacity** to **32Mt and beyond**:

  - These solutions include
    - Collaboration with TFR to capitalise and manage a **tippler solution at Tutuka**
    - Provision by TFR of a **container solution at Grootvlei**
    - Reinstating of Arnot rail infrastructure by TFR
    - Maintenance of all Eskom rail infrastructure by TFR

- TFR has been requested to submit proposals for rail solutions for Hendrina and Kendal power (Waterberg) stations, these projects will increase the rail deliveries to power stations to beyond **32mtpa**.

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1 Commitment is to provide rail infrastructure capacity to allow movement of 32Mt per annum. Actual increase in coal tonnages being moved by rail will be obtained through operational efficiencies, resourcing, maintenance, and continuous improvement.

Source: PED, Team analysis.
Options are being investigated to bridge the rail capacity gap from 23.6 to 32 Mt in FY2018

### Power station rail capacity plans
Million tonnes (Mt)

<table>
<thead>
<tr>
<th></th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
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</thead>
<tbody>
<tr>
<td>Arnot</td>
<td>15,5</td>
<td>19,5</td>
<td>20,5</td>
<td>23,6</td>
</tr>
<tr>
<td>Grootvlei</td>
<td>0,2</td>
<td>2,5</td>
<td>3,5</td>
<td>3,5</td>
</tr>
<tr>
<td>Tutuka</td>
<td>2,8</td>
<td>3,5</td>
<td>3,5</td>
<td>3,5</td>
</tr>
<tr>
<td>Camden</td>
<td>9,0</td>
<td>10,0</td>
<td>10,0</td>
<td>13,1</td>
</tr>
<tr>
<td>Majuba</td>
<td>3,5</td>
<td>3,5</td>
<td>3,5</td>
<td>3,5</td>
</tr>
<tr>
<td>Expected change</td>
<td>0,2</td>
<td>2,5</td>
<td>3,5</td>
<td>3,5</td>
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1. **TFR** is providing a **container solution** to handle and receive 5Mtpa on rail at **Grootvlei**, permanent solution to be in operation in November 2016.

2. **TFR** will reinstate the **Arnot** rail infrastructure and provide a bottom discharge rail solution by June 2016, resulting in additional **2MT**.

3. **TFR** is evaluating the option of investing in a **tippler solution** at **Tutuka** power station to increase the rail capacity to **7.5Mtpa**, will submit proposal in June 2016.

These collaboration projects with TFR will increase the **total annual rail capacity** from 23.6 to 32Mt.

Source: PED, Team analysis
Rail performance has improved from 4.2 Mt in FY09 to 12.5 Mt at present.
## Road Logistics Strategic Objectives

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Action</th>
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| Reduce road transportation in line with R2RM | • Support rail siding volumes requirements to meet train commitments.  
• Optimised fleet management of contracted trucks.  
| Ensure an optimal degree of flexibility in coal transportation | • Even as rail volumes increase and conveyor remains the preferred mode, road must be able to provide availability during planned and unplanned shut downs of road and conveyor.  
• Maintain a pool trucks/extra trucks option within the operation |
| Manage the exposure to safety challenges especially vehicle accidents involving public and third parties | • Reduce the number of safety incidents  
• Eradicate fatalities  
• Create a safety culture  
• Implementation of the Logistics Transformation Programme  
• Established a cross functional Safety Steering Committee and participate in external forums. |
| Ensure efficiency in the operations that leads to savings, safety, environmental and shared value benefit | • Short term - Plugging the leakages in the Lead Logistics service provision  
• Long term - Investment in capital projects (Systems etc..)  
• Implementation of the Logistics Transformation Programme |
Logistics Transformation Programme is currently underway in three phases, with phase 1 being implemented over the next six months.

<table>
<thead>
<tr>
<th>Area</th>
<th>Scope</th>
<th>Deliverable</th>
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<tbody>
<tr>
<td>Leakage</td>
<td>Unpack the achievable saving targets into tangible goals</td>
<td>Strategy/Implementation plan which details how to achieve savings</td>
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<td>Systems</td>
<td>Source and implement a system for logistic planning, scheduling, dispatching, controlling and coal yard management</td>
<td>Identify and train staff to manage software, Reduce people reliance, Establish command and control centre</td>
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<tr>
<td>Structure</td>
<td>Design and implement an optimal logistic structure which includes Eskom and Roshcon</td>
<td>Implementation of an optimal logistic structure, Define roles and responsibilities, Identify duplication of profiles, Assist in labour engagements</td>
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<tr>
<td>Contract &amp; performance management</td>
<td>Define KPI’s for contract and performance management, Define a contract management process</td>
<td>Implementation and training on contract management process, Dashboard to monitor KPI’s</td>
</tr>
<tr>
<td>Rates &amp; shared value</td>
<td>Identify rate model shortcomings and implement required changes, involve Eskom personal</td>
<td>Rates model which drives efficiency and shared value</td>
</tr>
<tr>
<td>ILS implementation</td>
<td>Revise ILS strategy and include alignment to PED overarching strategy</td>
<td>Detailed implementation plan, Ensure initial measures are in place for implementation/role modelling</td>
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</tbody>
</table>
Thank you for your attention

Zero Harm
We can make it happen!

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Thank you