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transport

Department:
Transport
REPUBLIC OF SOUTH AFRICA

prasa
PASSENGER RAIL AGENCY
OF SOUTH AFRICA

THE CASE FOR RAIL IN LIMPOPO PROVINCE
PASSENGER RAIL PLAN DEVELOPMENT

Shosholoza Meyl
A pleasant experience

PRASA LIMPOPO PASSENGER RAIL PLAN
OBJECTIVES AND MANAGEMENT OF STUDY

1. To confirm/advise on the feasibility of rail passenger corridors/services, and/or alternative mode deployment options, for Limpopo, through demand profiling within an integrated supply model framework.

2. Prioritise passenger rail/integrated public transport projects and to develop Business Plans and Business Cases for selected projects.

MANAGEMENT OF THE STUDY

- Provincial/PRASA MOU (PRASA to complete study – R2m reimbursement by Province).
- Steering Committee (Technical Committee).
- Limpopo Technical Committee for evaluation of priorities.

OUTPUT REQUIREMENTS

- Advise on the feasibility of passenger rail services.
- Confirmation of the development nodes and major transport corridors.
- Demand modelling.
- Analysis of the current rail network.
- Identification of corridors within which rail could support the passenger demand.
- Identification of corridors that could be developed by using the current infrastructure.
- Identification of rail projects that will require new infrastructure development.
- Identification of rail freight opportunities to enhance rail passenger operations.
- Assessment of the efficiency and cost impact of current road based passenger services.
- Development of a prioritising model.
- Prioritise the different proposals.

PROJECT APPROACH

- Assimilation of Data
- Data Analysis
- Transport Modeling
- Develop Criteria to assess possibilities
  - Existing Rail lines/services
  - Possible new rail lines
- Develop Passenger Rail Transport Possibilities
- Assess the efficiency of the current services
- Analyze Possibilities
- Prioritize Possibilities
- Develop Business Case/s
- Develop Business Plan/s

REVIEW OF DOCUMENTATION

- Feasibility Study on Rail Development in Limpopo Province – 8/ 2006.
- Limpopo PLTF.
- Limpopo Growth and Development Strategy.
- Limpopo in Motion.
- IDP's Limpopo District Municipalities.
- ITP's Limpopo District Municipalities.
- SDF's Limpopo District Municipalities.
- SARCC documentation.
- Transnet – Strategic planning.
- NATMAP.

DEMAND ASSESSMENT STRONG FOCUS OF STUDY: PASSENGER TRIPS MODELLING

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1. BASE DATA & GROWTH

- 2005 Household Survey
- Population growth
- Land use
- Spatial development
- 2010, 2030 and 2050

2. REASONS FOR TRIPS

- Work
- Business
- Migrant
- Holiday

3. ZONES

- 156 National Zones
- 20 Passenger Zones in Limpopo Province

PASSENGER TRIPS MODELLING

4. INCOME GROUPS

- Low: Less than R3000 pm
- Medium: R3001 – 6000 pm
- High: More than R6000 pm

5. MODES OF TRANSPORT

- Walk
- Private Vehicle
- Taxi
- Bus
- Train
- Air

6. OD MATRIXES

- Trips Produce & Attracted from and to each zone
- Summaries

A) EXISTING RAIL NETWORK IN LIMPOPO PROVINCE

1. **Musina – Makado – Groenbult – Polokwane – Mokopane – Mookgophong – Modimolle Bela Bela – Gauteng**

   Branch lines

   - Mookophong – Zebediela
   - Modimolle – Vaalwater
   - Pienaarsrivier – Marble Hall

2. **Polokwane – Groenbult – Tzaneen – Hoedspruit – Kaapmuiden**

   Branch Lines

   - Hoedspruit – Phalaborwa

3. **Lephalale – Thabazimbi – Rustenburg – Gauteng**

   Branch Lines

   - Northam - Middelwit

SHOSHOLOZA MEYL: LIMPOPO PROVINCE

1. **Johannesburg – Musina**
   - Train 78089: Daily except Saturdays - R90 in 2008.
   - Special trains to Makado & Musina on Friday at month end and on special occasions .
2. **Musina - Johannesburg**
   - Train 78090: Daily except Saturdays - R90 in 2008.
   - Special trains on Sundays at month end and on special occasions from Makado & Musina.
3. **Johannesburg – Hoedspruit**
   - Train 78153: Fridays – R100 in 2008.
4. **Hoedspruit – Johannesburg**
   - Train 78151: Sundays – R100 in 2008.
5. **Kaapmuiden – Hoedspruit**
   - Train 88154: Mondays to Fridays – R30 in 2008.
6. **Hoedspruit – Kaapmuiden**
   - Train 88151: Mondays to Fridays – R30 in 2008.

1. MUSINA – GAUTENG CORRIDOR

PASSENGER TRIPS TO AND FROM MUSINA

- Total daily Passenger trips in 2010: 175 from Musina and 229 to Musina.
- Daily work trips in 2010: 91 from Musina and 39 to Musina.
- Rail travelling time between Musina and Makhado much longer than road.
- Current Shosholoza Meyl services cater for long distance passengers to and from Musina.

1. MUSINA – GAUTENG CORRIDOR

PASSENGER TRIPS TO AND FROM MAKADO

PASSENGER RAIL AGENCY OF SOUTH AFRICA

1 To Polokwane & South

- Total Daily trips: 992 from Makado and 138 to Makado.
- Daily work trips: 766 from Makado and 24 to Makado.
- Travelling time by rail 2:40 & to and from station.
- Travelling time by road 1:10.
- Shosholoza Meyl provides service for non work trips.

2 To Tzaneen

- Total Daily trips: 65 from Makado and 8 to Makado.
- Daily work trips: 56 from Makado and 5 to Makado.

1. MUSINA – GAUTENG CORRIDOR
PASSENGER TRIPS TO AND FROM POLOKWANE

PASSENGER RAIL AGENCY OF SOUTH AFRICA

1. To Mokopane

- Total Daily trips: 27 652 from Polokwane to Mokopane and 22 255 from Mokopane to Polokwane.
- Daily work trips: 17 960 from Polokwane to Mokopane and 15 717 from Mokopane to Polokwane.
- Travelling time by rail 1:00 & to and from station.
- Travelling time by road 0:40.
- Shosholoza Meyl provides service for non work trips

MUSINA – GAUTENG CORRIDOR

PASSENGER TRIPS TO AND FROM POLOKWANE

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2. To Bela Bela

- Total Daily trips: 35 073 from Polokwane & other stations to Bela Bela and 30 316 from Bela Bela and other stations to Polokwane.
- Daily work trips: 23 337 from Polokwane & other stations to Bela Bela and 21 307 from Bela Bela and other stations to Polokwane.
- Travelling time by rail 3:10 & to and from station.
- Travelling time by road 1:30.
- Shosholoza Meyl provides service for non work trips.

MUSINA – GAUTENG CORRIDOR

PASSENGER TRIPS TO AND FROM POLOKWANE

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3. To Pretoria

- Total Daily trips: 52 507 from Polokwane & other stations to Pretoria and 35 999 from Pretoria and other stations to Polokwane.
- Daily work trips: 32 852 from Polokwane & other stations to Pretoria and 21 617 from Pretoria and other stations to Polokwane.
- Daily work trips: 7 576 from Bela Bela to Pretoria and 282 from Pretoria and to Bela Bela.
- Travelling time by rail 4:40 & to and from station.
- Travelling time by road 2:30.
- Travelling time Bela Bela – Pretoria by rail: 1:20.
- Travelling time Bela Bela – Pretoria by road: 1:00.
- Shosholoza Meyl provides service for non work trips.

2. POLOKWANE – KAAPMUIDEN CORRIDOR

PASSENGER TRIPS TO AND FROM TZANEEN

- Total Daily trips: 10 858 from Polokwane to Tzaneen and 23 296 from Tzaneen to Polokwane.
- Daily work trips: 7 013 from Polokwane to Tzaneen and 18 210 from Tzaneen to Polokwane.
- Travelling time by rail 3:50 & to and from station (Around the mountains).
- Travelling time by road 1:20.
- No passenger rail service at present.

2. POLOKWANE – KAAPMUIDEN CORRIDOR

PASSENGER TRIPS TO AND FROM PHALABORWA

- Total Daily trips: 3 111 from Polokwane & Tzaneen to Phalaborwa and 4 706 from Phalaborwa to Tzaneen & Polokwane.
- Total Daily trips: 1 826 from Phalaborwa to Kaapmuiden and 2 965 from Kaapmuiden to Phalaborwa.
- Daily work trips: 2 109 from Tzaneen to Phalaborwa and 3 251 from Phalaborwa to Tzaneen.
- Daily work trips: 1 337 from Phalaborwa to Kaapmuiden and 2 403 from Kaapmuiden to Phalaborwa.
- Shosholoza Meyl provides Weekdays shuttle service between Kaapmuiden and Phalaborwa.
- Shosholoza Meyl provides Weekend service between Gauteng and Hoedspruit.

3. LEPHALALA – GAUTENG CORRIDOR

PASSENGER TRIPS TO AND FROM THABAZIMBI

- Total Daily trips: 3 441 from Lephalale to the South and 1 348 from the South to Lephalale.
- Total Daily trips: 10 302 from Thabazimbi to the South and 1 809 from the South to Thabazimbi.
- No passenger rail service from Gauteng to Rustenburg.

B) OPTIONS FOR NEW RAIL CORRIDOR IN LIMPOPO PROVINCE

PASSENGER RAIL AGENCY OF SOUTH AFRICA

1. Makhado – Thohoyandou
2. Makhado – Lephalale
3. Polokwane – Mankweng – Moria
4. Polokwane – Seshego Extension
5. Polokwane – Tzaneen (New Direct Line)
6. Polokwane – Pretoria (New High Speed Line)
7. Polokwane – Lephalale
8. Polokwane – Zebediela – Jane Furse
9. Polokwane - Burgersfort
10. Burgersfort – Lydenburg
11. Burgersfort – Roos Senekal
12. Northam – Polokwane
13. Matlabas – Mabatlane – Modimolle
14. Moloto Corridor – Jane Furse - Burgersfort
15. Lephalale - Mahalapye

PASSENGER RAIL TRANSPORT PLAN EVALUATION CRITERIA

Filter 1 - Strategic Merit Test (SMT):

- Meeting the transport system objectives, policies and strategies
  barriers to the possibility (e.g. risk, dependence on other possibilities or projects)
- Realistic achievability, cost

Filter 2 - Rapid Appraisal

- rapid benefit-cost analysis
- an indicative assessment of the main benefits and costs, without a high level of accuracy.

Prioritisation

TO AND FROM MAKHADO

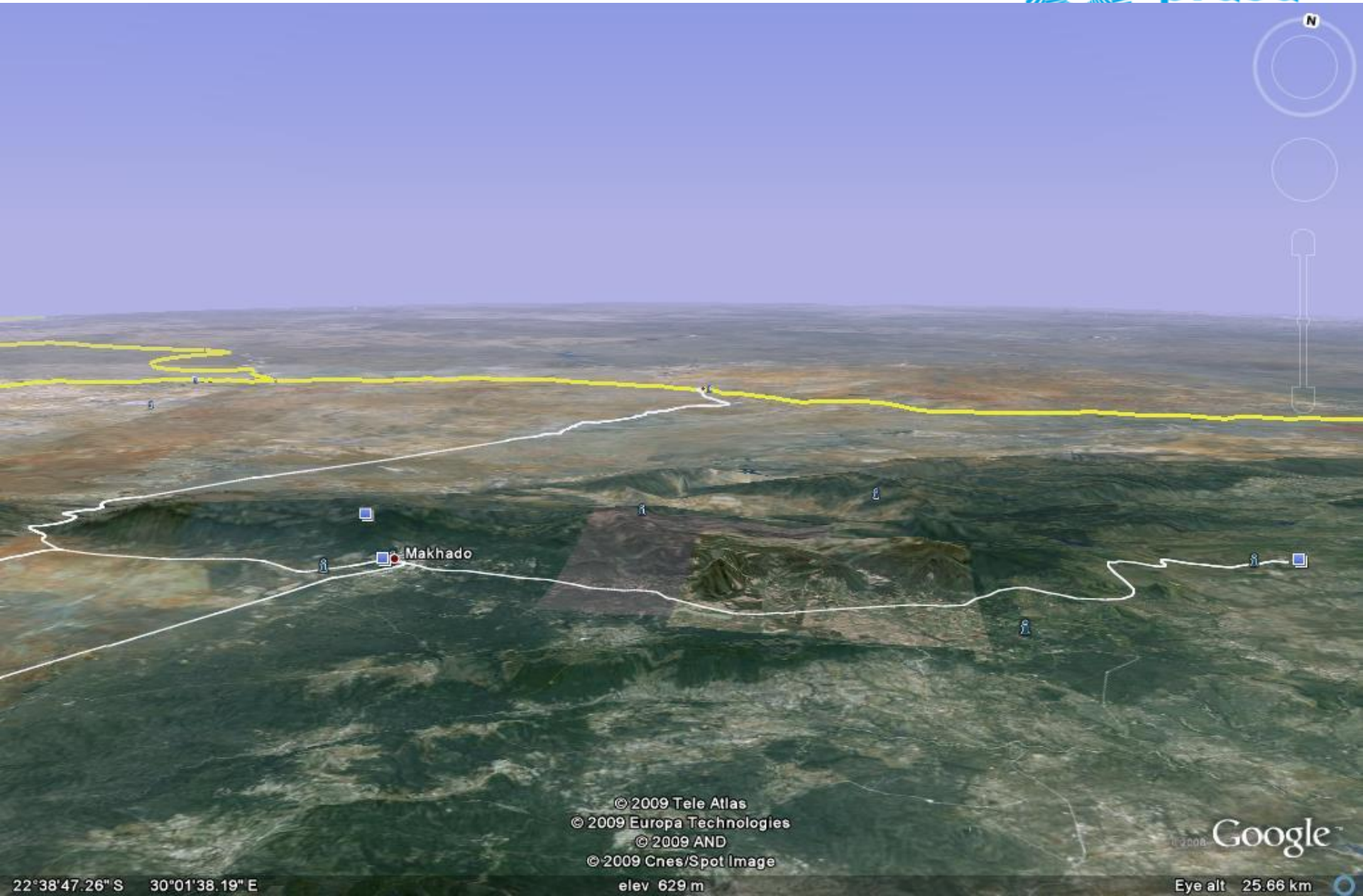
1. Makhado - Thohoyandou

- Length of rail line: 75 km (Hilly, alongside mountains)
- Possible Traction: Diesel
- Indicative cost of rail line: R1 196m
- Passenger trips in corridor: 1 636 from Makhado; 849 to Makhado
- Filter 1: Don't Proceed for passenger service

2. Makhado – Lephalale

- Length of rail line: 240 km (Flat open country)
- Possible Traction: Diesel
- Indicative cost of rail line: R3 220m
- Passenger trips in corridor: 66 from Makhado; 63 to Makhado
- Filter 1: Don't Proceed for passenger service

MAKADO - THOHOYANDOU



3. POLOKWANE – MANKWENG – MORIA

3A. Polokwane - Mankweng

- Length of rail line: 26 km (City and residential areas)
- Possible Traction: 25 kV AC
- Indicative cost of double rail line: R3 726m
- Passenger trips in corridor: +/-60 000 to Polokwane
- Filter 1: Proceed to Filter 2

3B. Mankweng - Moria

- Length of rail line: 12 km (Residential areas & hilly)
- Possible Traction: 25 kV AC
- Indicative cost of rail line: R233m
- Passenger trips in corridor: +/-10 000 to Polokwane
- Filter 1: Don't Proceed. Phase to follow phase 3A

4. POLOKWANE – SESHEGO EXTENSION

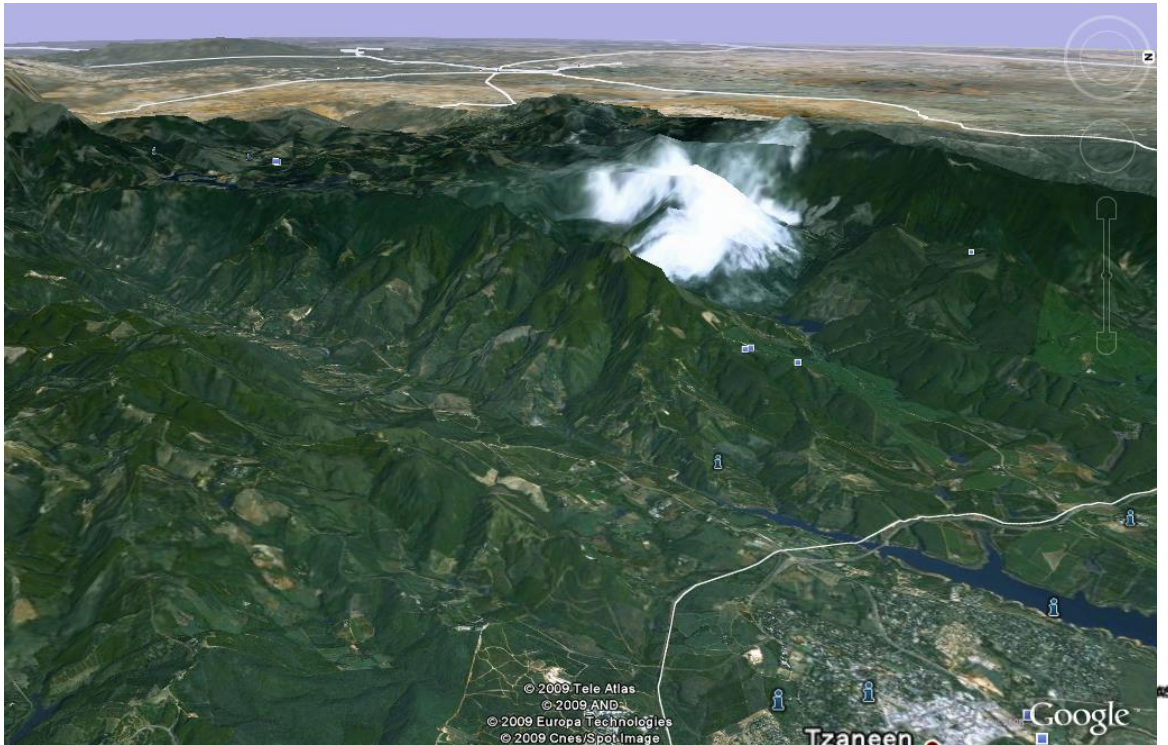
- Length of rail line: 15 km

  (Industrial & Residential areas. Route can follow mainline to Makado & industrial sidings pass airport).

- Possible Traction: 25 kV AC.
- Indicative cost of double rail line: R790m.
- Passenger trips in corridor: +/-50 000 to Polokwane.
- Filter 1: Proceed to Filter 2.

5. POLOKWANE – TZANEEN
(NEW DIRECT LINE)

- Length of Rail Line: 100 Km (Mountainous).
- Possible Traction: 25 kV AC.
- Indicative cost of single rail line: R6 225 m.
- Passenger trips in corridor: 33 481 to Polokwane and 17 346 from Polokwane.
- Filter 1: Don't Proceed.



6. POLOKWANE – PRETORIA
(NEW HIGH SPEED LINE)

- Length of rail line: 290 km (Industrial, Residential, farm land).
- Possible Traction: 25 kV AC.
- Indicative cost of single standard gauge rail line: R8 660m.
- Cost of one high speed train set: R120m .
- Passenger Main Line trips in corridor: 19 106 to Pretoria & 14 040 from Pretoria.
- Passenger Work trips in corridor: 36 133 to south & 21 617 to north.
- Filter 1: Proceed for passenger service.

7. POLOKWANE - LEPHALALE

- Length of rail line: 210 km.
  (Mainly farm land.)
- Possible Traction: Diesel.
- Indicative cost of single rail line: R4 130m.
- Passenger trips in corridor: 157 from Polokwane and surrounding zones & 1 916 to Polokwane and surrounding zones.
- Filter 1: Do not proceed for passenger service.

8. POLOKWANE – ZEBEDIELA – JANE FURSE

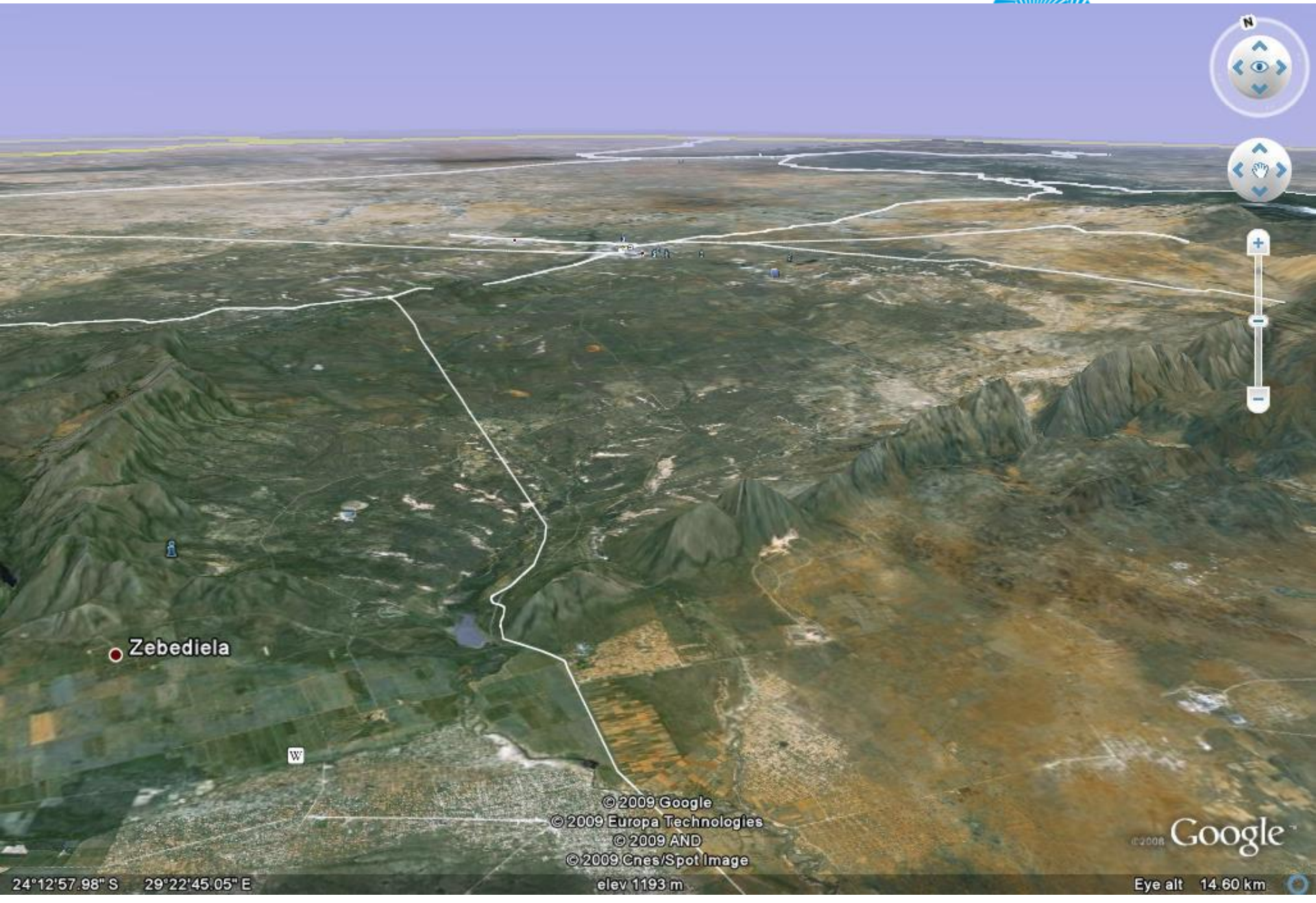
8A. Polokwane - Zebediela

- Length of rail line: 55 km (Can follow main line for 19km, farm land & residential areas, mountain range).
- Possible Traction: 25 kV AC.
- Indicative cost of single rail line: R1 220m.
- Passenger trips in corridor: 16 632 to Polokwane & 5 611 from Polokwane.
- Filter 1: Proceed for passenger service.

8B. Zebediela – Jane Furse

- Length of rail line: 95 km (Residential areas & hilly).
- Possible Traction: 25 kV AC.
- Indicative cost of single rail line: R2 140m.
- Passenger trips in corridor: 2 321 to Polokwane & 176 from Polokwane.
- Filter 1: Do not proceed. Phase to follow phase 8A & Moloto Corridor.

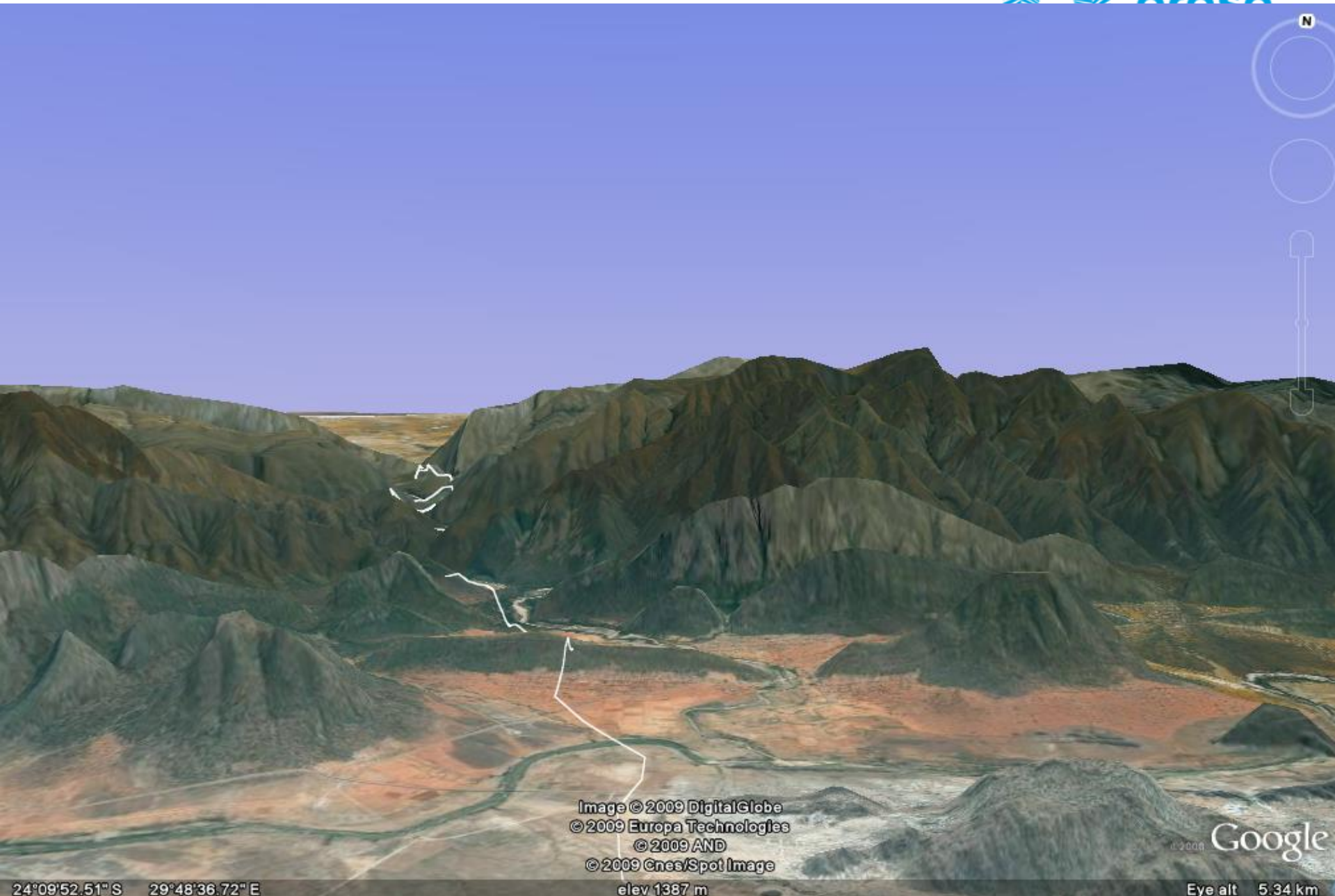
ZEBEDIELA - POLOKWANE



9. POLOKWANE - BURGERSFORT

- Length of rail line: 140 km (Farm land, Residential, mountainous).
- Possible Traction: Diesel.
- Indicative cost of single rail line: R3 360m.
- Passenger trips in corridor: 495 from Polokwane and surrounding zones & 925 to Polokwane and surrounding zones.
- Filter 1: Do not proceed for passenger service.

POLOKWANE - BURGERSFORT



10 & 11. BURGERFORT EXTENSIONS

10. Burgersfort - Lydenburg

- Length of rail line: 68 km (Mountainous, 18 km tunnel).
- Possible Traction: Diesel.
- Indicative cost of single rail line: R4 700m.
- Passenger trips in corridor: very little.
- Filter 1: Do not proceed for passenger service.

11. Burgersfort – Roos Senekal

- Length of rail line: 75 km (Mountainous).
- Possible Traction: Diesel.
- Indicative cost of rail line: R3 270m.
- Passenger trips in corridor: +/-7 600 from Burgersfort & 1081 to Burgersfort.
- Filter 1: Do not Proceed for passenger service.

12. NORTHAM - POLOKWANE
13. MATLABAS – MABATLANE - MODIMOLLE

12. Northam - Polokwane

- Length of rail line: 130 km (New line from Northam to Bela Bela to join main line. Total distance to Polokwane 325km).
- Possible Traction: Diesel.
- Indicative cost of single rail line: R2 800m.
- Passenger trips in corridor: 2 363 to East & 1 658 to West.
- Filter 1: Do not proceed for passenger service.

13. Matlabas – Mabatlane – Modimolle

(Proposal by Transnet as alternative route for export coal)

- Length of new rail line: 80 km.
- Length of line to be rebuilt: 74 km.
- Possible Traction: 25 kV AC.
- Indicative cost of rail line: R2 600m.
- Passenger trips in corridor: 2 263 to East and 1 229 to West.
- Filter 1: Do not Proceed for passenger service.

14. MOLOTO CORRIDOR - JANE FURSE – BURGERSFORT

Phase 1 of Moloto Corridor

- Standard gauge line from Pretoria to Moloto & Siyabuswa
- Double Decker Coaches with push-pull Locomotives
- 160 km/hour
- R6 626m for infrastructure & R1 927m for train sets (2007 money)
- Future extensions

1. Moloto – Groblersdal

- Length of double Line: 85 km
- Infrastructure cost: R3 800m

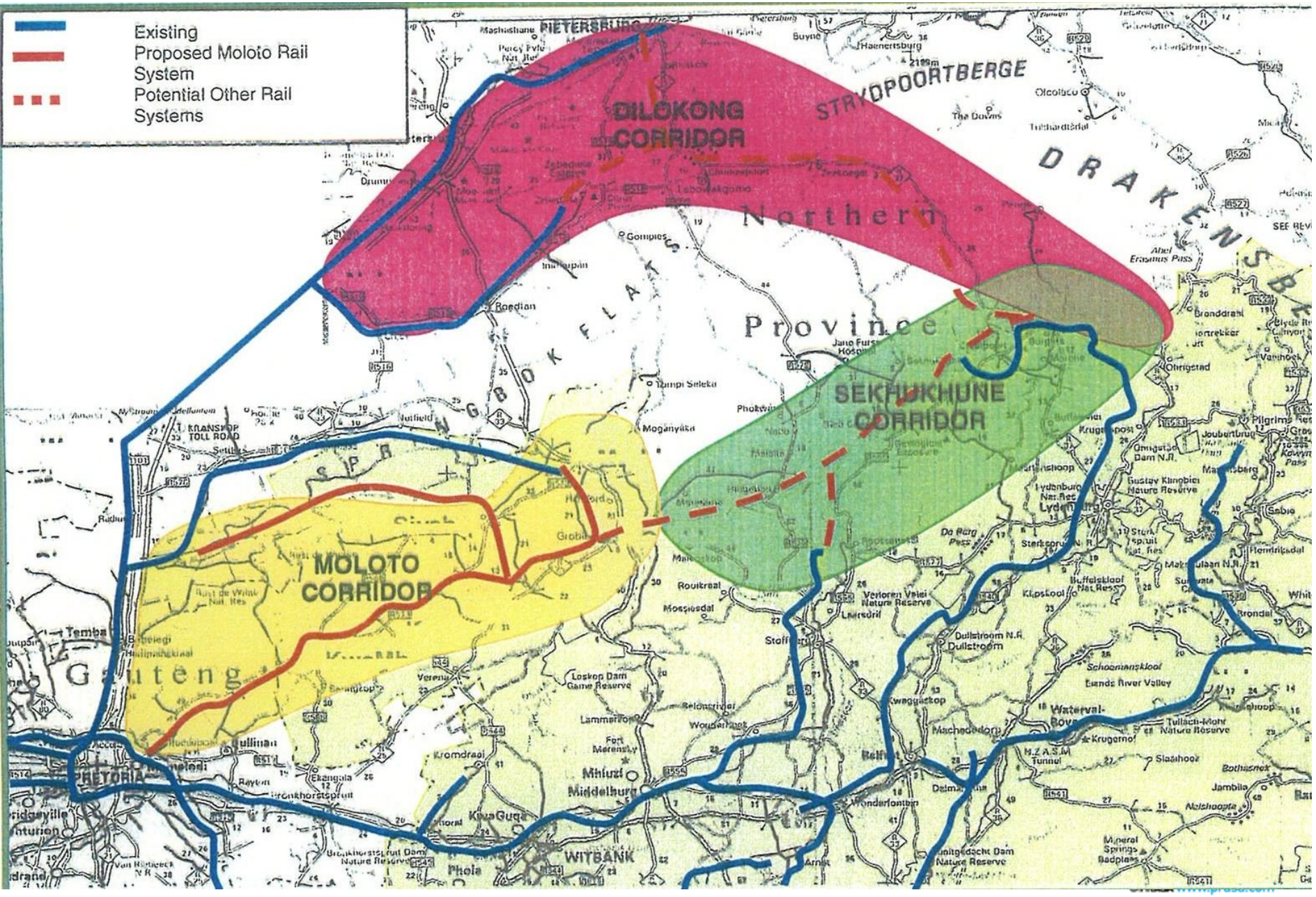
2. Groblersdal – Jane Furse

- Length of single Line: 85 km
- Infrastructure cost: R2 900m

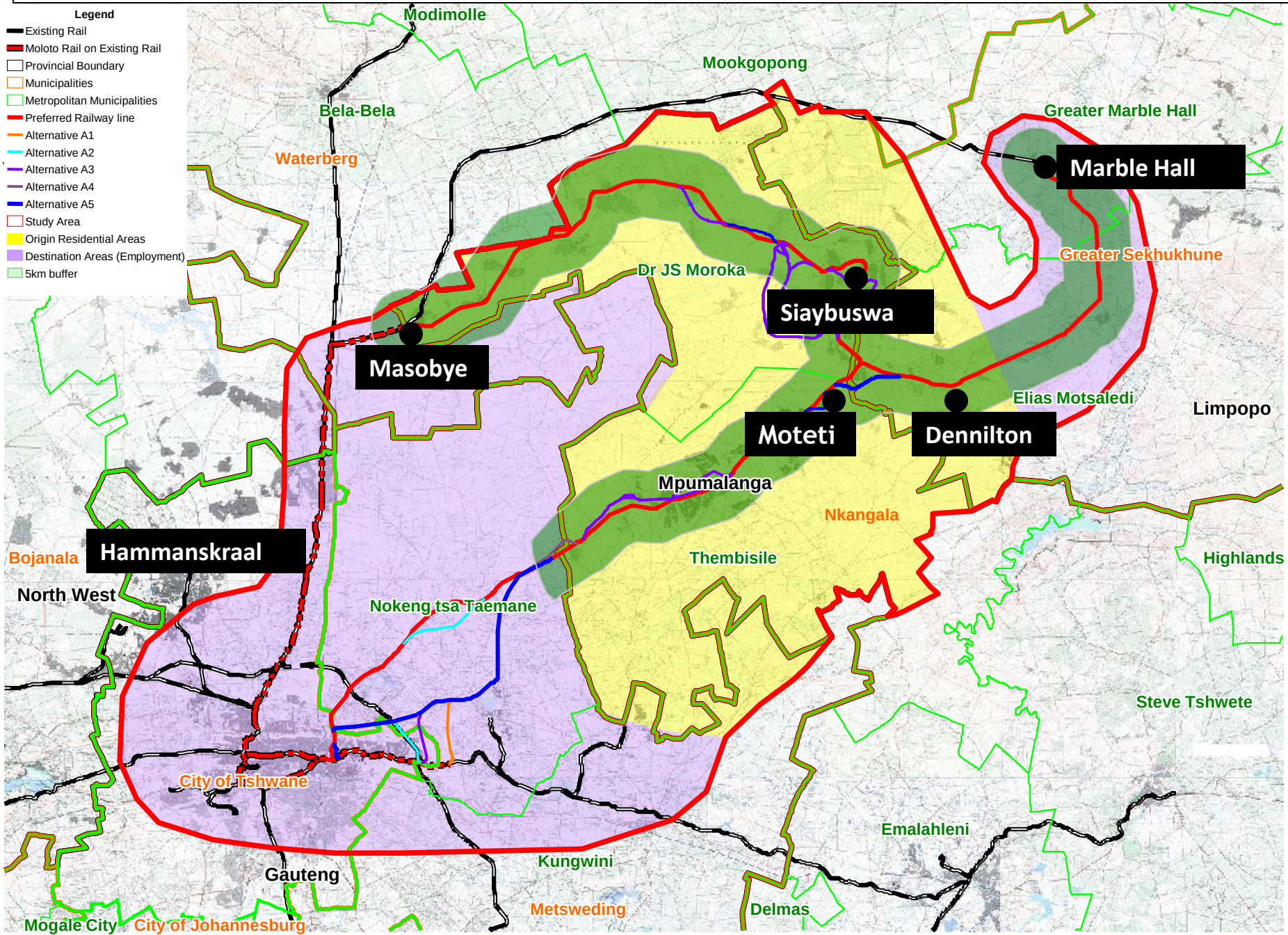
3. Jane Furse – Burgersfort

- Length of single line: 50 km
- Infrastructure cost: R2 100m

MOLOTO CORRIDOR IN REGIONAL CONTEXT



ORIENTATION - STUDY AREA AND RAIL CORRIDOR



15. LEPHALALE - BOTSWANA

An Option identified by Transnet to link to Botswana Coal Fields with Transnet Export Lines as well as a possible connection to the future Kalahari Corridor to Walvis Bay

NEXT STEPS

- Provincial assessment workshop – Prioritisation
  - All development, transport and planning departments of Province required to evaluate all options.
  - Prioritise and categorise options.
  - Determine approach to categories of options.
  - Apply rail/transport technology framework on options not viable for heavy rail.

Conclusion

- There is a need for the Province to prioritize the rail networks given its economic growth points, social needs and development
- Budget should also be put aside to be able to mobilize funding on a rand to rand basis
- EXCO needs to be mobilized in order to secure buy-in and funding
- PRASA should include the Provincial Rail Plan into its 10 Year National Plan
- The Plan should also be canvassed with the National Cabinet and the National Department of Transport
- Critical Stakeholders in the province should be mobilized to support the plans