

6th CSIR Conference: Ideas that work for Industrial Development **Infrastructure Innovation: Case Study of the Gautrain**

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A: Introduction



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Introduction

- Mega Infrastructure Projects
 - On average these types of projects take 14 years for completion, from the day the project is conceptualised until the President or Premier cuts the ribbon.
 - These projects usually have multiple required outcomes (objectives) to justify the large amounts invested in them.
 - The argument is usually not on the quantum of the project itself but what alternative priorities could be addressed with the allocated funds



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B: South Africa's Political Imperatives



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Political Imperatives

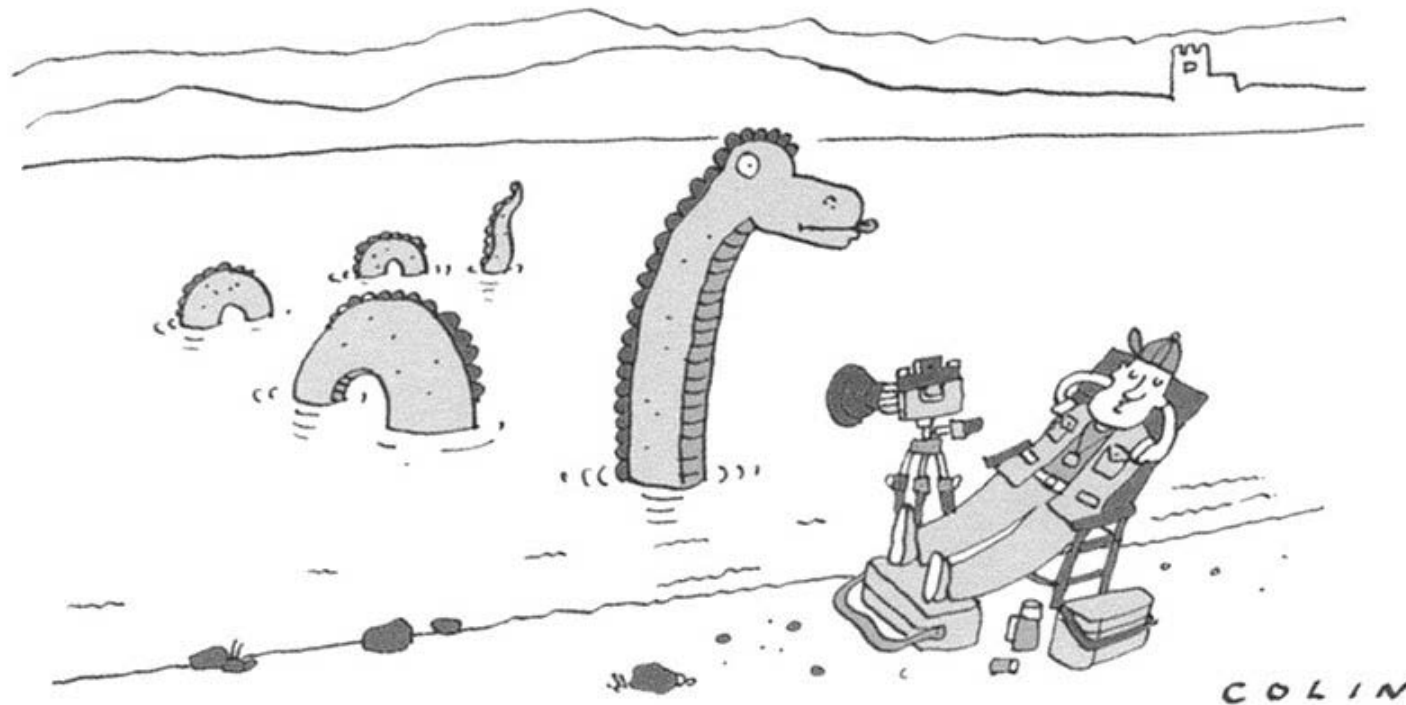
- South Africa has two main challenges that will determine the focus and priorities in the country for the next 20 years:
 - Fighting poverty; and
 - Fighting unemployment
- The strategy adopted by Government to address these two challenges is the roll-out of the National Development Plan (NDP)

NDP: Key Components required for Successful Execution

- Understanding time frames & the magnitude of the task
- Contract form
- Roles & Responsibilities
- External factors
- Governance
- Risk Identification, allocation & Mitigation
- Life cycle costing
- Central negotiating team
- Fraud & Corruption
- BBEE Challenges
- Budget allocation
- Dispute resolution process
- Monitoring & reporting
- Insurance
- Forward cover
- Consultation & Community Buy-in
- Single point of contact
- Knowledgeable client
- RSA Inc.

Opportunity always knocks at the least opportune moment.

No. 11 Ducharme's Precept



C: The Gautrain Rapid Rail Link Project (Past)

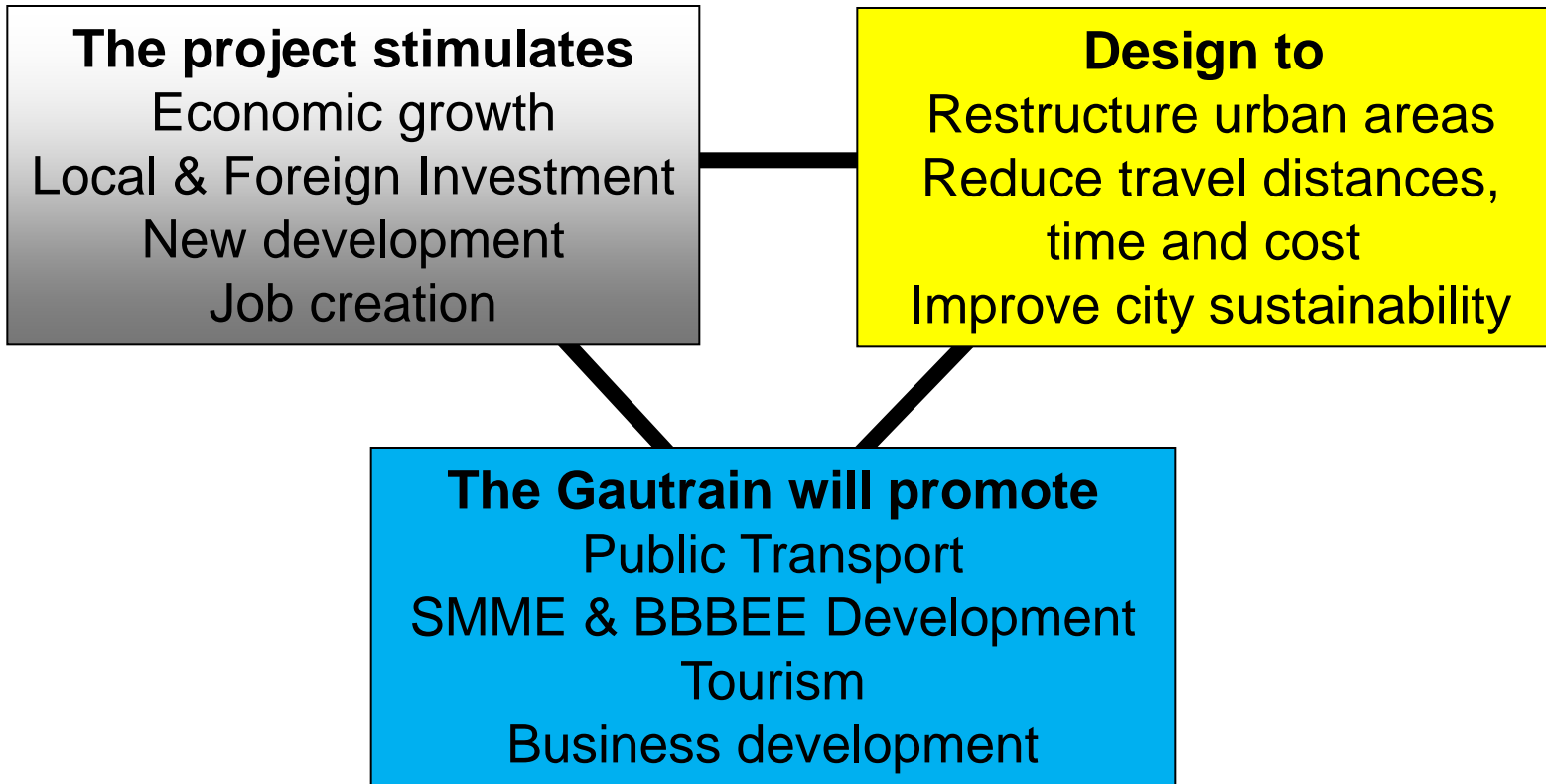
Implementation Process



- Four pillars
 - Political will & commitment
 - Viable project (base case design)
 - Technical
 - Financial
 - Legal/Institutional
 - Funding (for Infrastructure & Operations)
 - Government's portion
 - Private Sector's portion
 - Community acceptance & buy-in
 - Socio-economic benefits
 - Power of expropriation

D: Objectives of the Gautrain Project

Gautrain: More than Just Another Transport Project



E: PPP Requirements

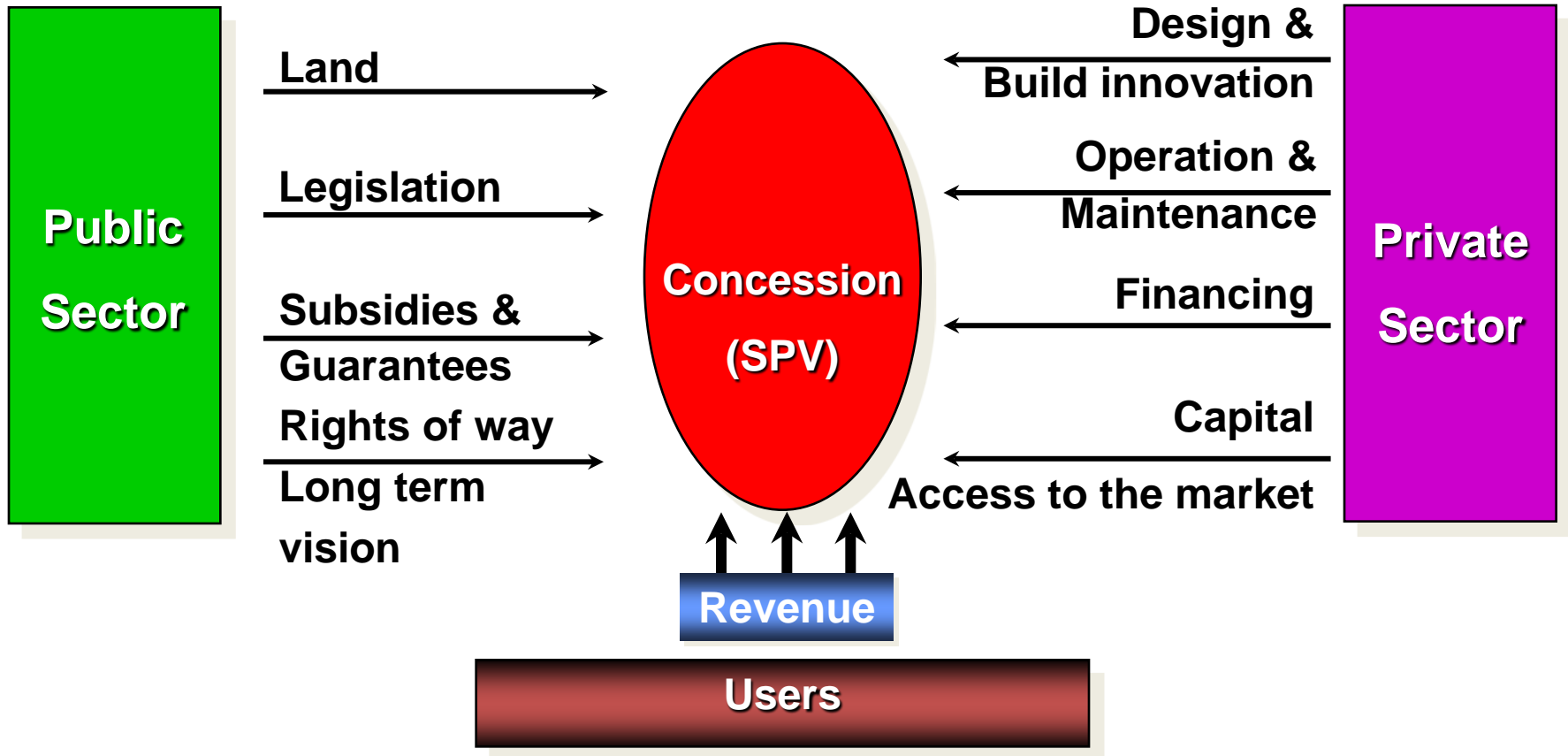
PPP Requirements (PFMA)



- Feasibility:
 - Value for money
 - Public Sector Comparator (PSC)
(What will it cost if Government does the work through the normal procurement process; and including completion and integration risk and cost)
 - Affordability
 - Total cost of project, expressed in Net Present Value (NPV)
 - Yearly cost to the province (contingent liability)
 - Maintain the 80/20% ratio in social vs. rest split in budget
 - Risk transfer
 - Identify, cost and allocate various risks to the role players best equipped to mitigate and manage them

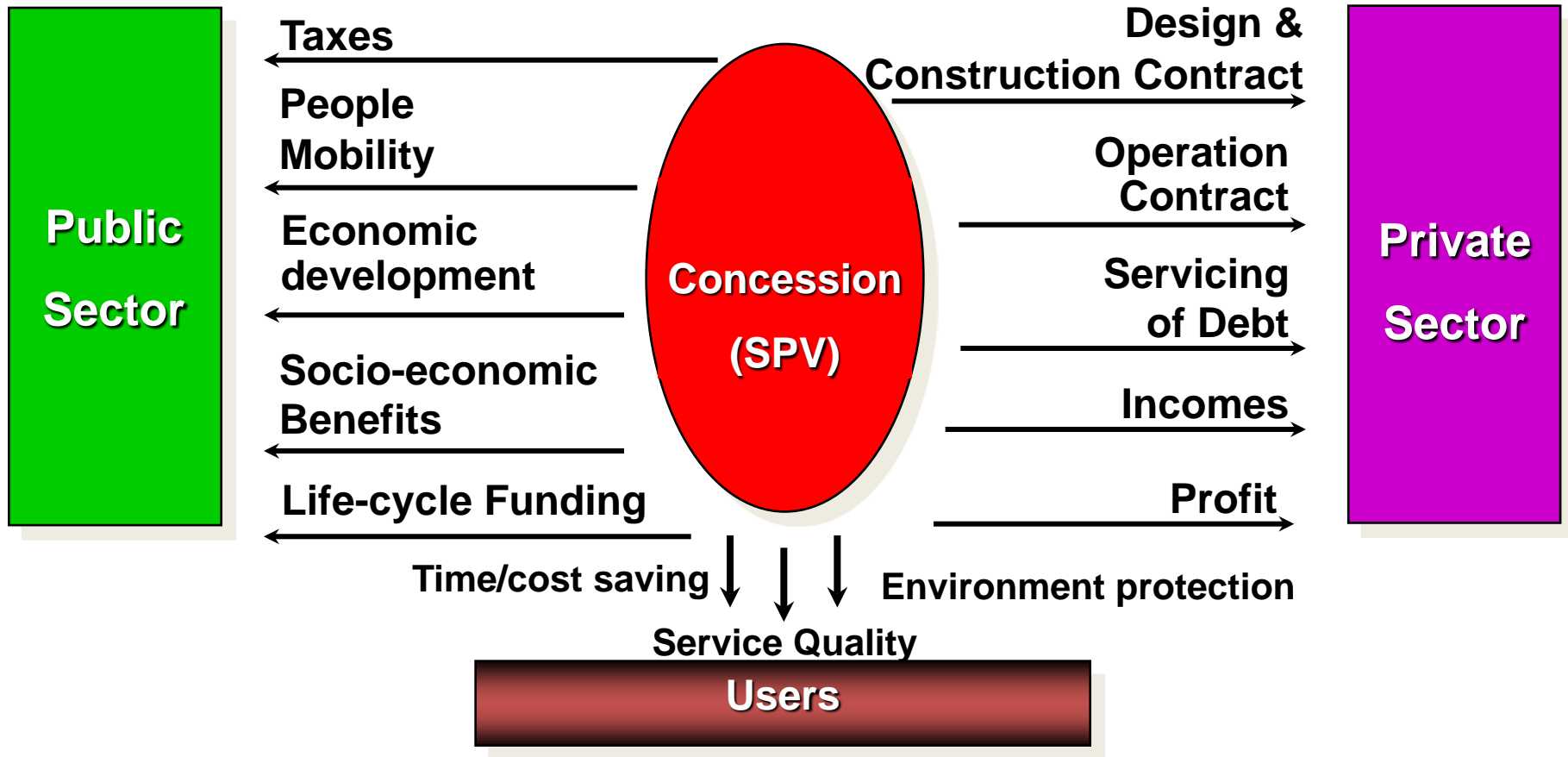
PPP Advantages (1)

- What each party brings to a PPP



PPP Advantages (2)

- What each party gets from a PPP



F: Process Sequence

Process Sequence

- Project identification & consultation
- PPP Legislation, process & approval
- Tender planning (RFQ, RFP)
- Selection of Preferred & Reserve Bidder
- Commercial negotiations & Financial Close
- Construction
- Operations & maintenance (concession period)
- Handover

Parallel Processes

- Decision making & authorisation (Governance)
- Legal processes (Litigation on content & process)
- Continuous communication, consultation & public relations
- Environmental (EIA) process
- Third party involvement, co-operation and buy-in
- Socio-economic Development (SED) requirements
- External pressures
- Land requirements (GTIA process)
- Continuous funding – for multiple MTEF periods



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G: The Deal



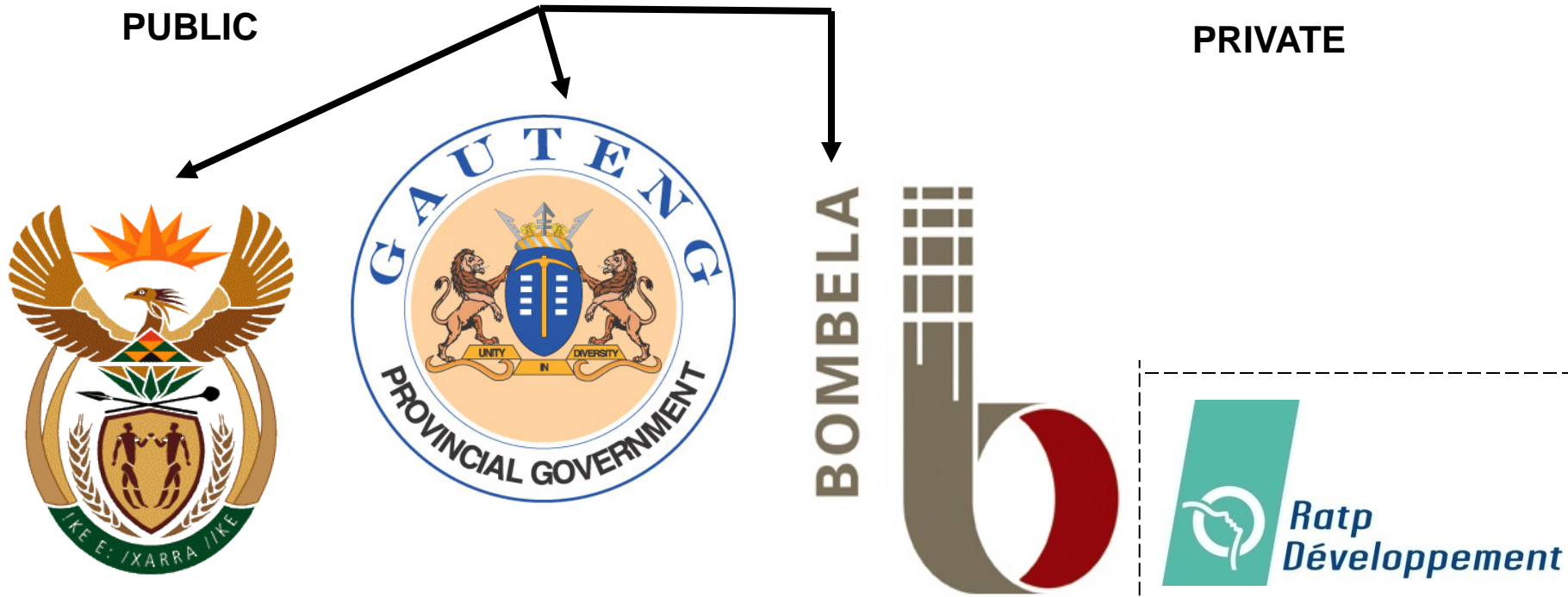
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PPP - Project partners: Equity

PUBLIC

PRIVATE



(25%) 33%



25%

(25%) 17%

BOMBARDIER



(25%) 17%



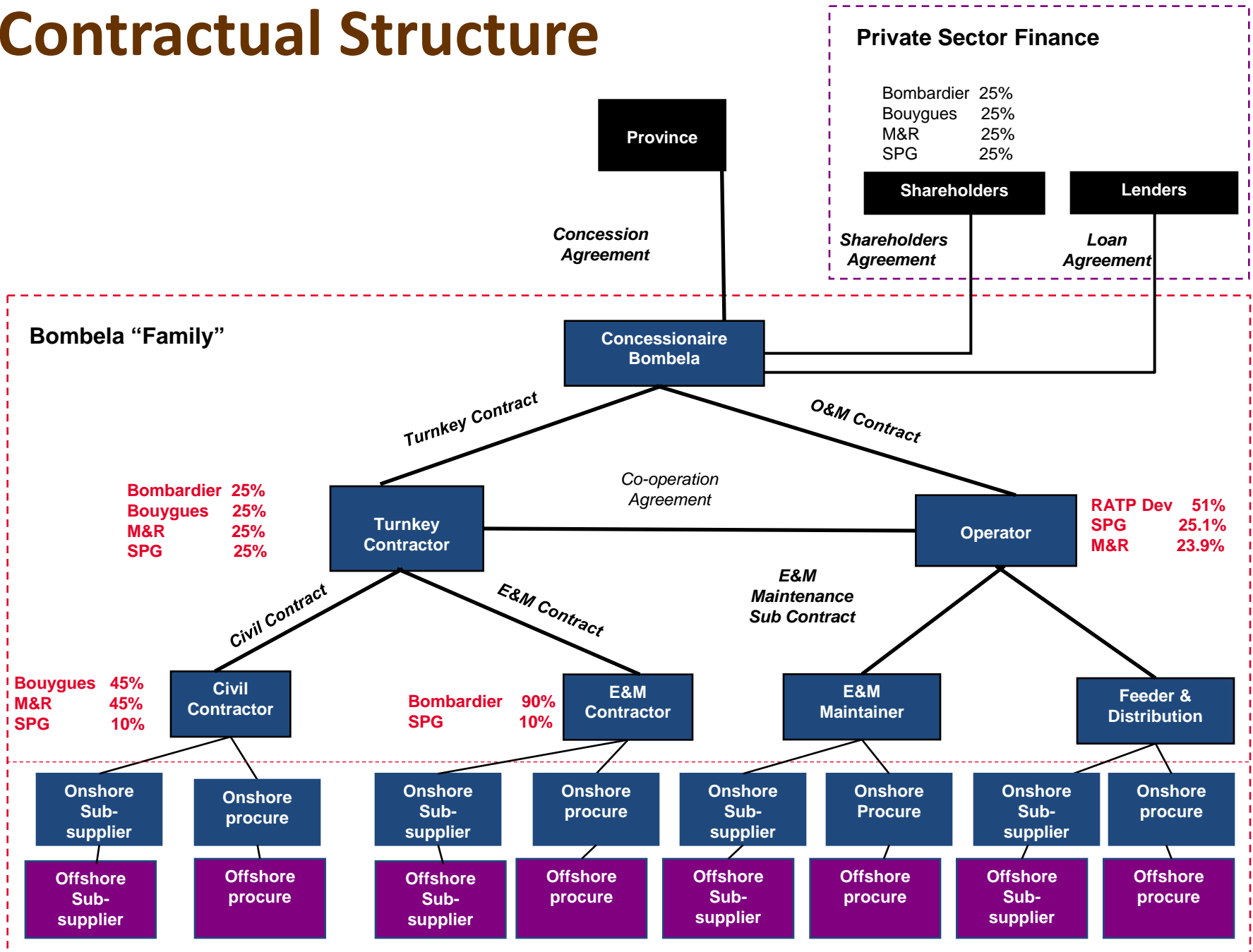
(0%) 8%
J & J GROUP



0%

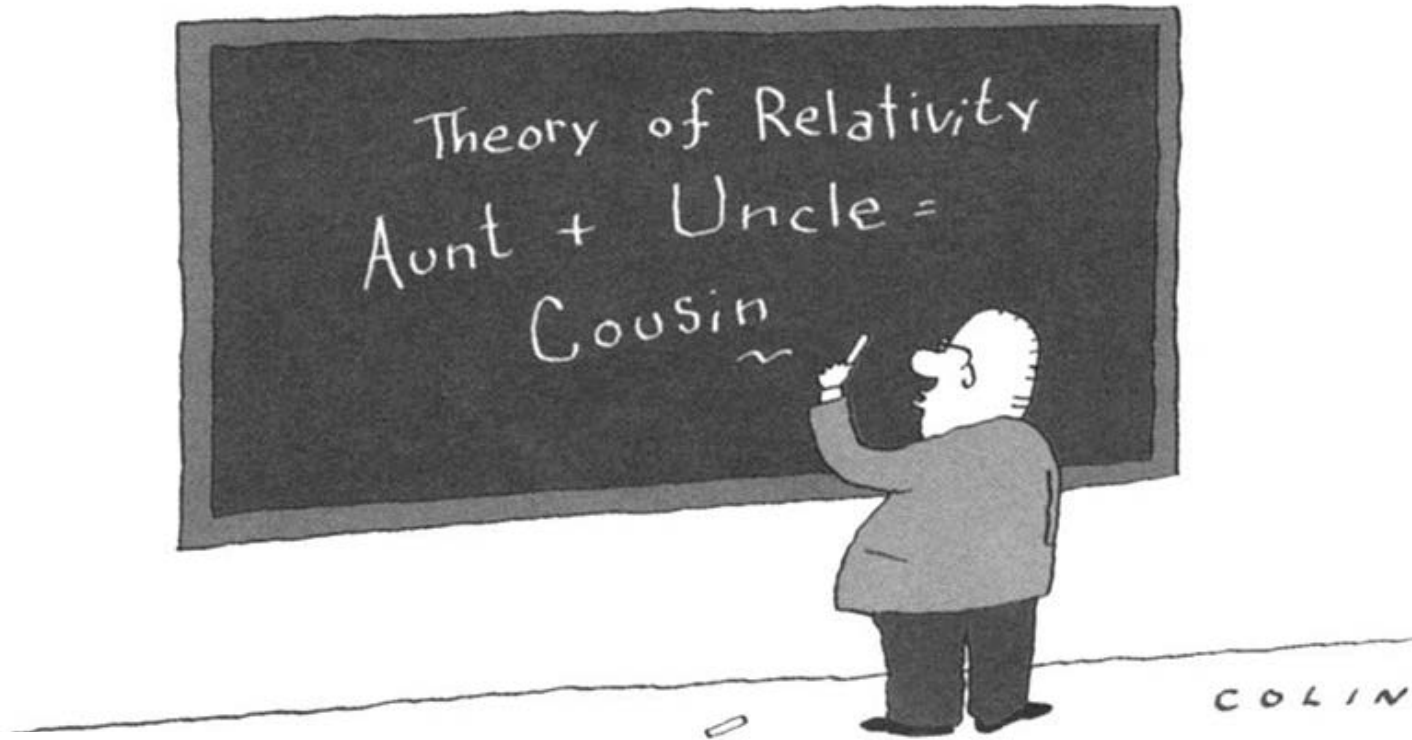
Today, tomorrow, together.

Contractual Structure



Complex problems have simple, easy to understand, wrong answers.

No. 4 Grossman's Misquote





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H: Funding



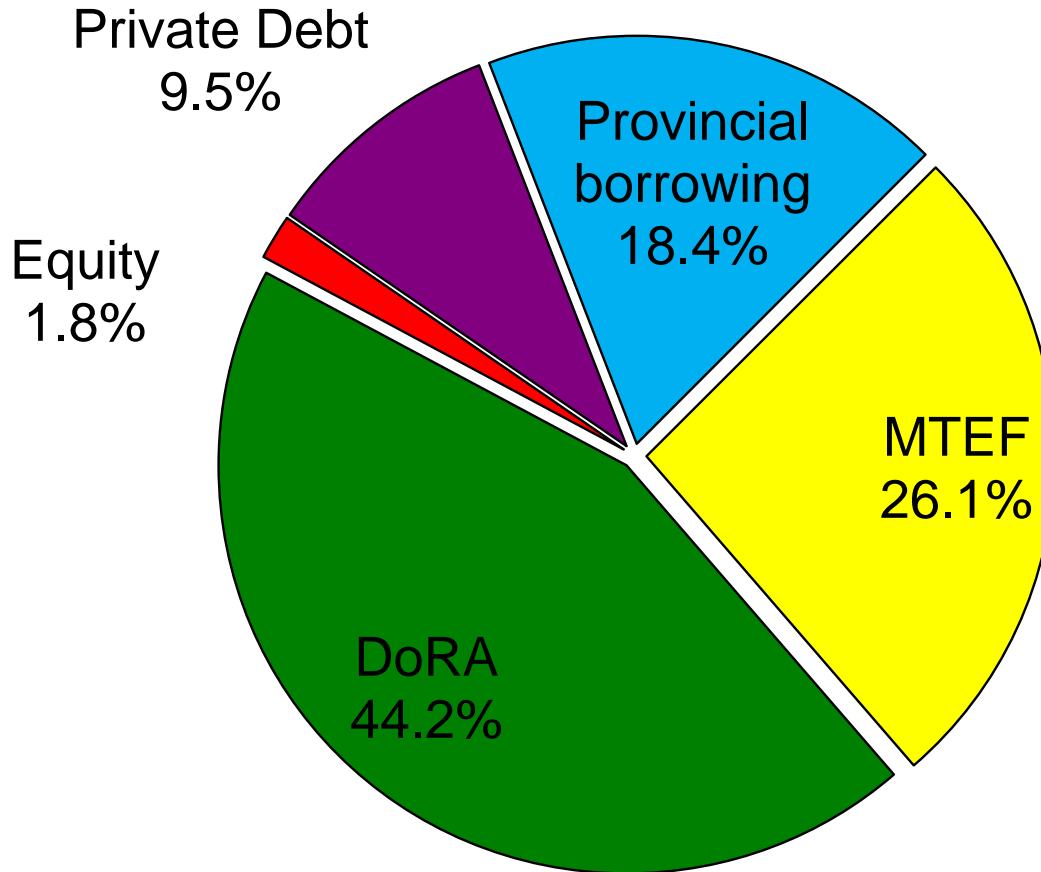
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Funding

- Gautrain has 5 sources of funding
 - DoRA (Division of Revenue Act) money from central government via the Department of Transport (only for construction - CAPEX)
 - MTEF (Medium Term Expenditure Framework) from Gauteng Provincial Government
 - Private Sector Equity
 - Private Sector Borrowing
 - Provincial Borrowing

Project Financing

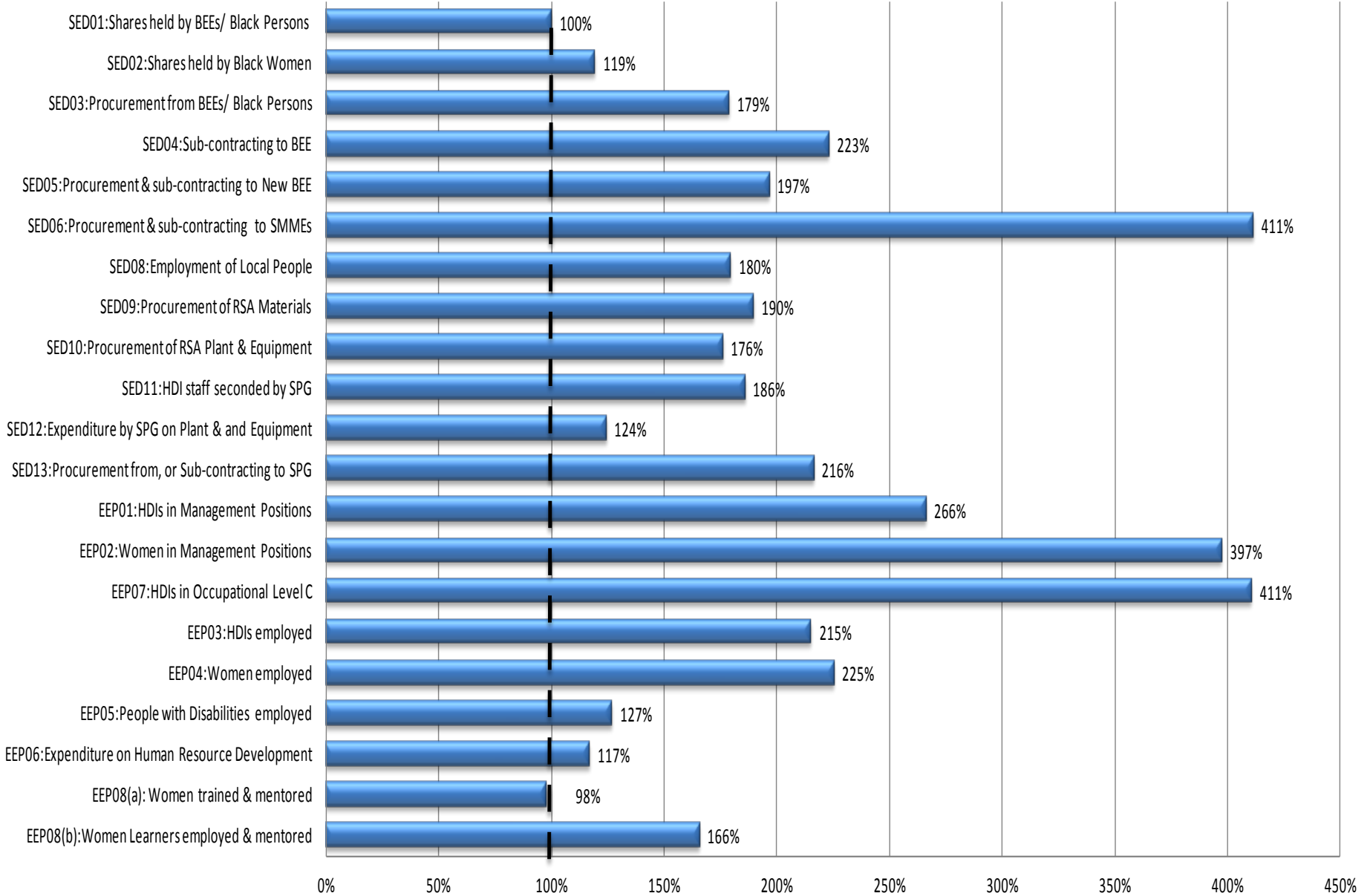


I: Socio-Economic Development (SED)

SED Commitments

- The SED strategy contains 21 SED elements based on the broad-based SED objectives of Government, grouped into the following 6 Clusters:
 - Procurement and sub-contracting
 - Local Content
 - Black Enterprise and Equity Participant
 - Participation in management
 - Direct Employment; and
 - Training
- The competitive bidding process was used to solicit Bombela's commitment to each of the SED elements

Verified % Compliance



J: Economic Impact (Present)

OUR JOURNEY TO A BETTER GAUTENG



Socio-Economic Impact of Gautrain

Economic Impact

- After five years of operations GMA appointed KPMG to assess the Economic Impact of the Gautrain system.
- The study was centred around:
 - Gautrain's contribution to Gauteng's long term economic development;
 - Gautrain's contribution to public transport becoming the mode of choice; and
 - Gautrain's contribution to Gauteng's improved spatial development

Economic Impact

- Gautrain's contribution to Gauteng's long term economic development:
 - Current impact:
 - R20 billion total GDP impact during construction;
 - 34 800 direct and 87 000 indirect and induced jobs created
(78% skilled and semi-skilled and 22% unskilled jobs)
 - Each year of operations R1,7 billion added to the provincial economy
 - 922 direct and 5 200 indirect and induced jobs created and sustained during 15 years of operations
 - R617 million of the R3,2 billion household income generated from Gautrain's CAPEX and OPEX contributes to poverty alleviation in Gauteng

Economic Impact

- Gautrain's contribution to Gauteng's long term economic development:
 - Future Impact:
 - 0.73 Total GDP multiplier for the construction phase of Gautrain;
 - 5 jobs per R1.0 million spent for the expansion of Gautrain
 - 0.96 total GDP multiplier for operation phase of Gautrain
 - 4 jobs per R1.0 million spent during 15 years of operations

Economic Impact

- Gautrain's contribution to public transport becoming the mode of choice:
 - Current Impact:
 - Clear move towards quality public transport;
 - 24 200 fewer cars on the road, at least 13 fewer fatal crashes per year and 14 fewer fatalities
 - Timesaving of between 10 to 12 working days per year
 - Reduction of carbon footprint by 52% for Gautrain commuter

Economic Impact

- Gautrain's contribution to Gauteng's improved spatial development:
 - Current Impact:
 - R46 billion total GDP impact added to the Provincial economy through property development induced by Gautrain;
 - 245 000 total jobs were created as a result of property development (85% were skilled and 15% were unskilled jobs)
 - R4.9 billion of the R28 billion household income generated from property development contributes to poverty alleviation
 - 1% - 3% faster growth in residential property value in close proximity to stations and 100% higher office rental rates
 - R10 billion retail property development close to stations

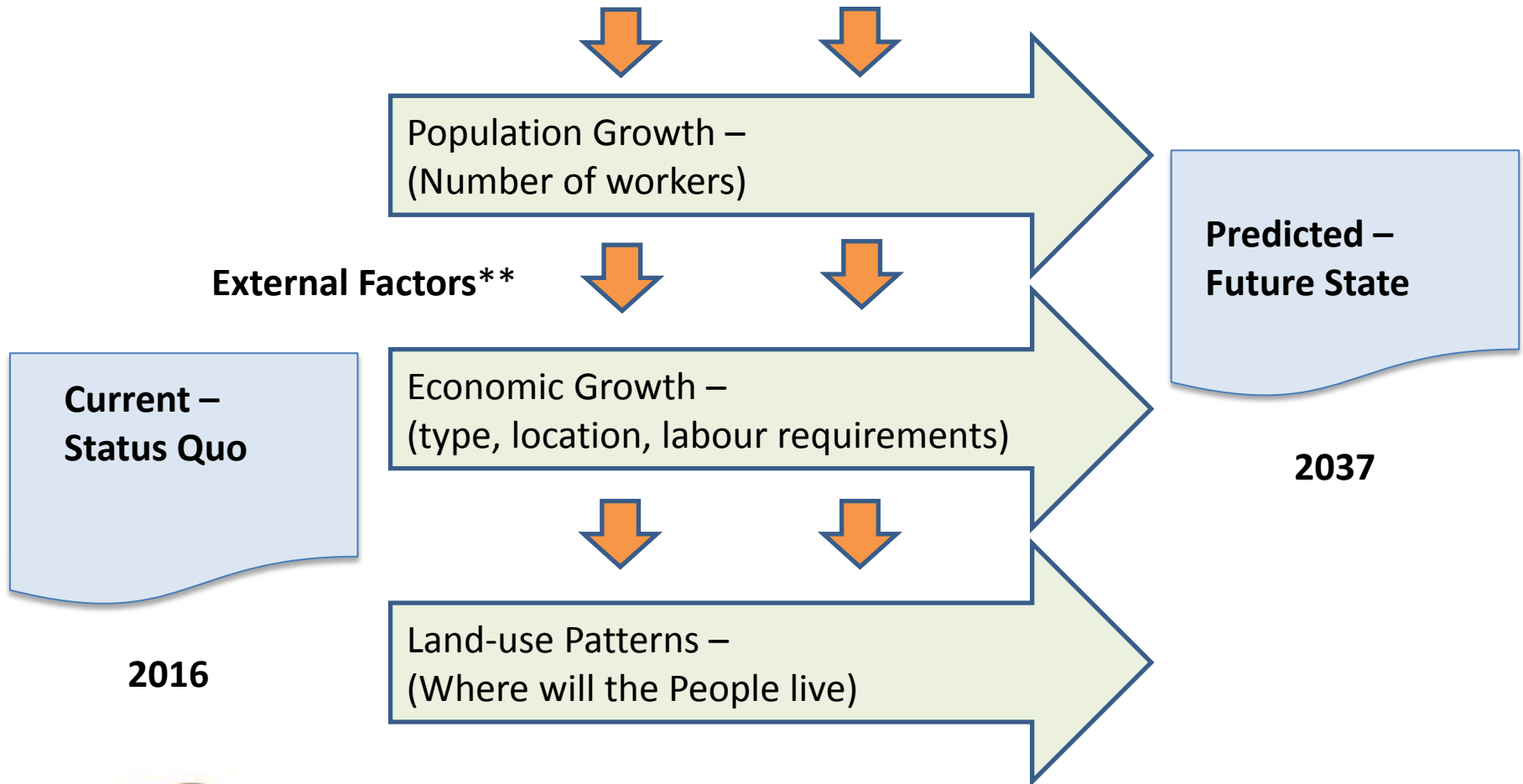
Economic Impact

- Gautrain's contribution to Gauteng's improved spatial development:
 - Future Impact:
 - 1.91 total GDP multiplier for property development around Gautrain stations;
 - Additional investment in property development around stations will create 10 jobs for every R1 million spent
 - 17% of additional household income generated from property development will flow to poverty alleviation

25 Year Integrated Transport Master Plan (ITMP25)

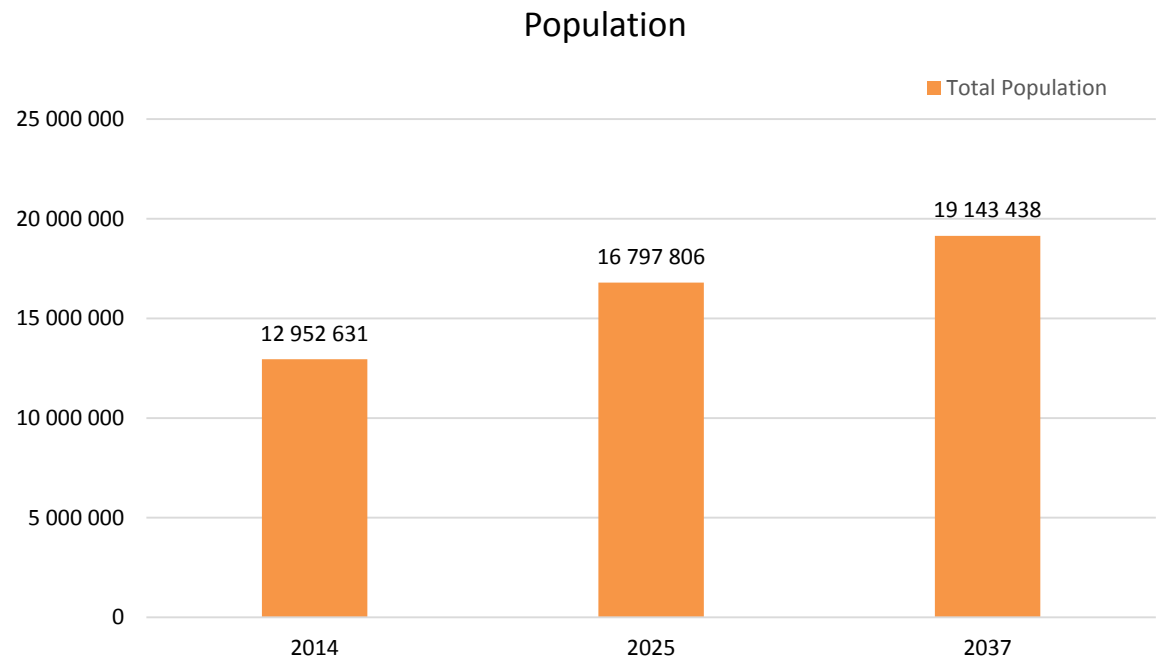


Transport Planning



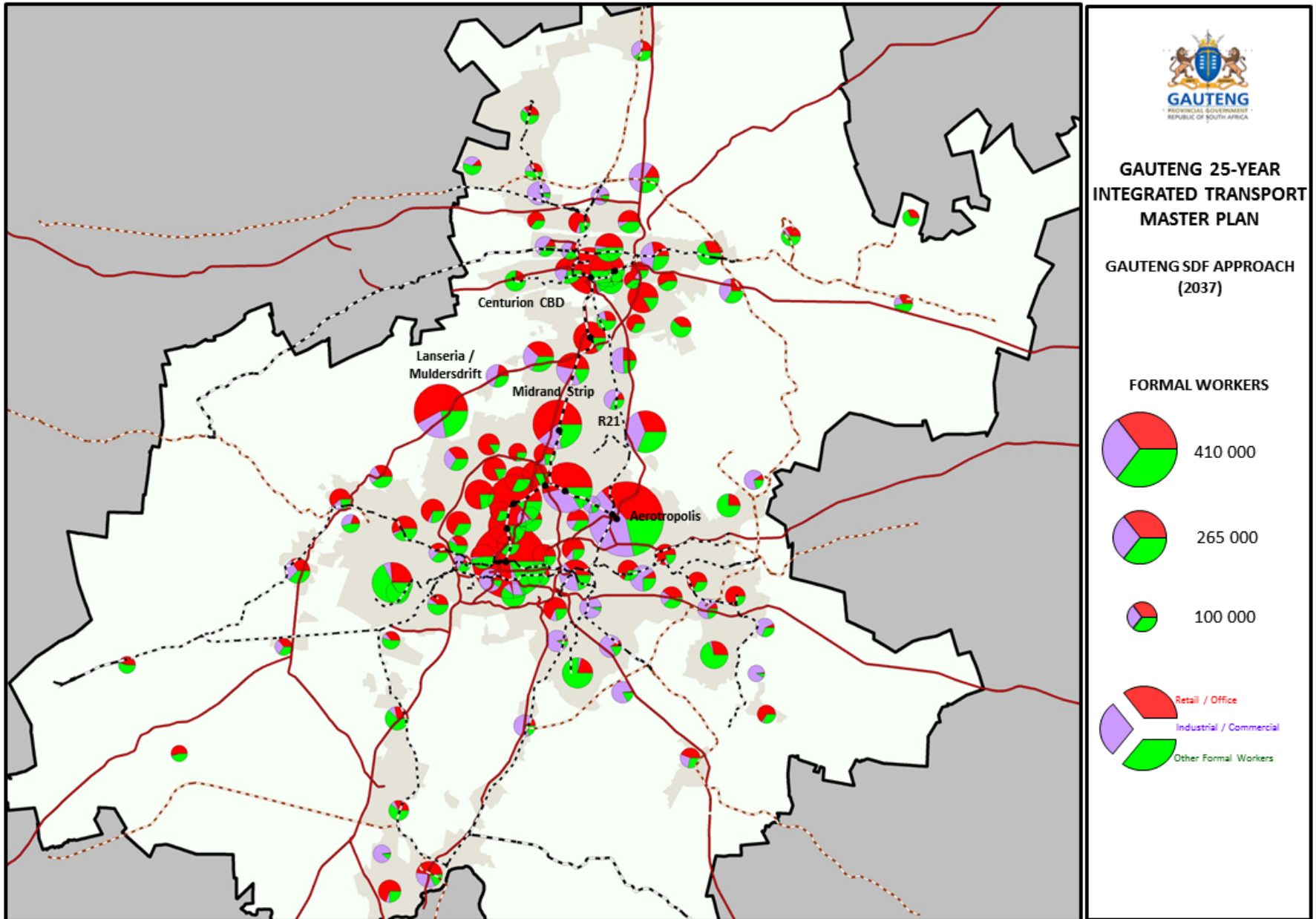
Population Growth

- Gauteng's population is estimated to increase by 48% by 2037

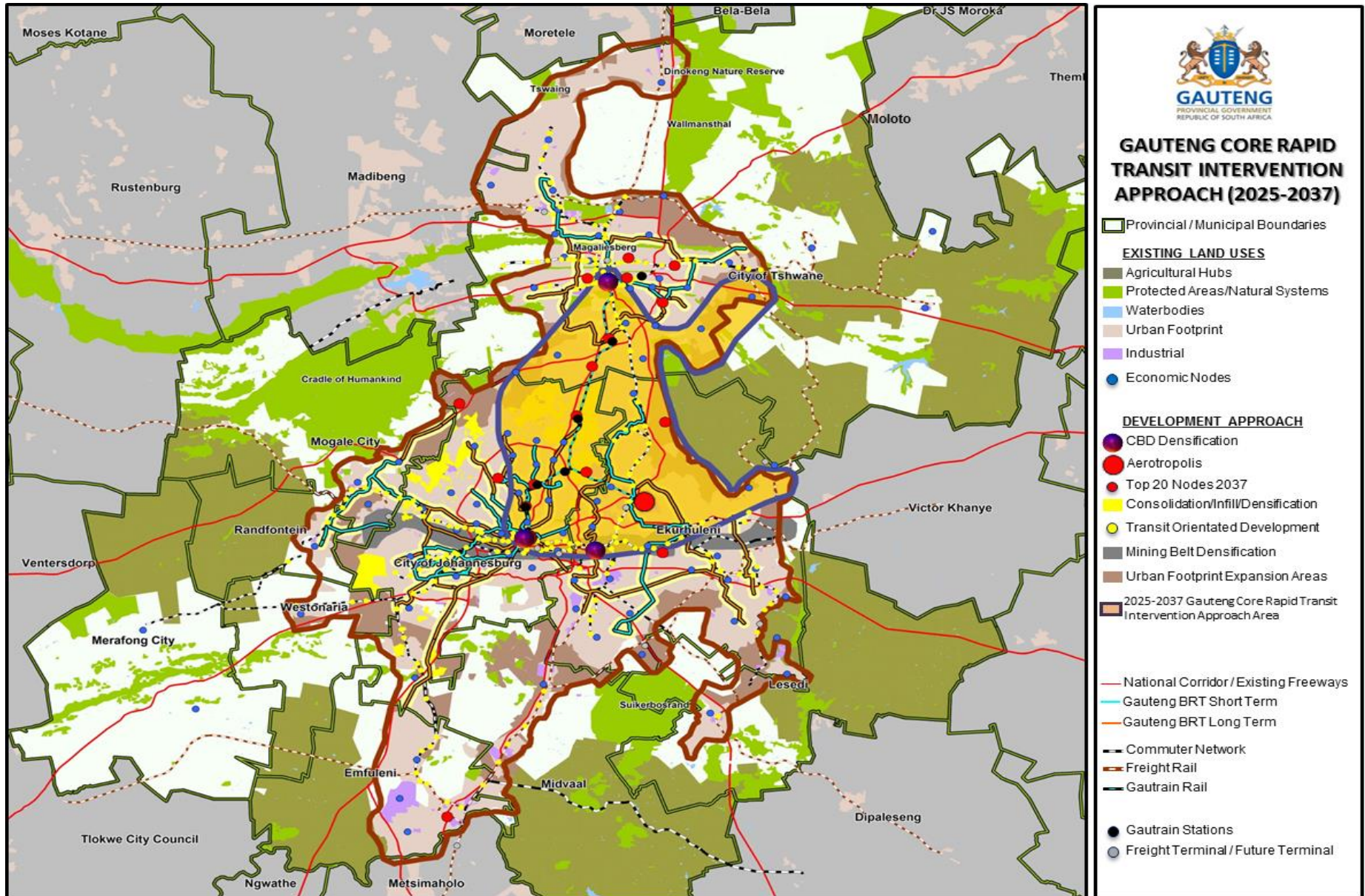


Source: GRRIN Transport demand model : Land use projections from Metro land use data

Job Opportunities: Formal Workers



Gauteng SDF Based Approach vs. Core Transit Intervention (2037)






Sustainable Transport

- **Reduce travel:**

- Change travel patterns
 - Regularity & extent of travel in peak periods, trip lengths, etc.

- **Shift in modes:**

- Shift from: Motorised  Non-motorised transport
- Shift from: Private  Public transport
- Shift from Road  Rail

- **Technology:**

- Environmentally friendly technologies
- Intelligent Transport Solutions (ITS)

Conclusions :“The Cost of Doing Nothing”

- Analysis of the transport situation in 25-years’ time, shows that the consequences of “doing nothing” will be severe, i.e. ***if current trends continue***
- Vehicle population predicted to grow from 3.9 mil. to 8.6mil.
- Peak hour person trips to grow from 2.0mil. to 3.2mil.
- Average peak hour road network speed will reduce from 41km/h to 26km/h in 2025
- Average peak hour road network speed will reduce from 41km/h to 23km/h in 2037 over a spread 3 hour peak
- Congestion, with the transport network, the economy and the natural environment choking
- Major interventions are required to avoid this scenario

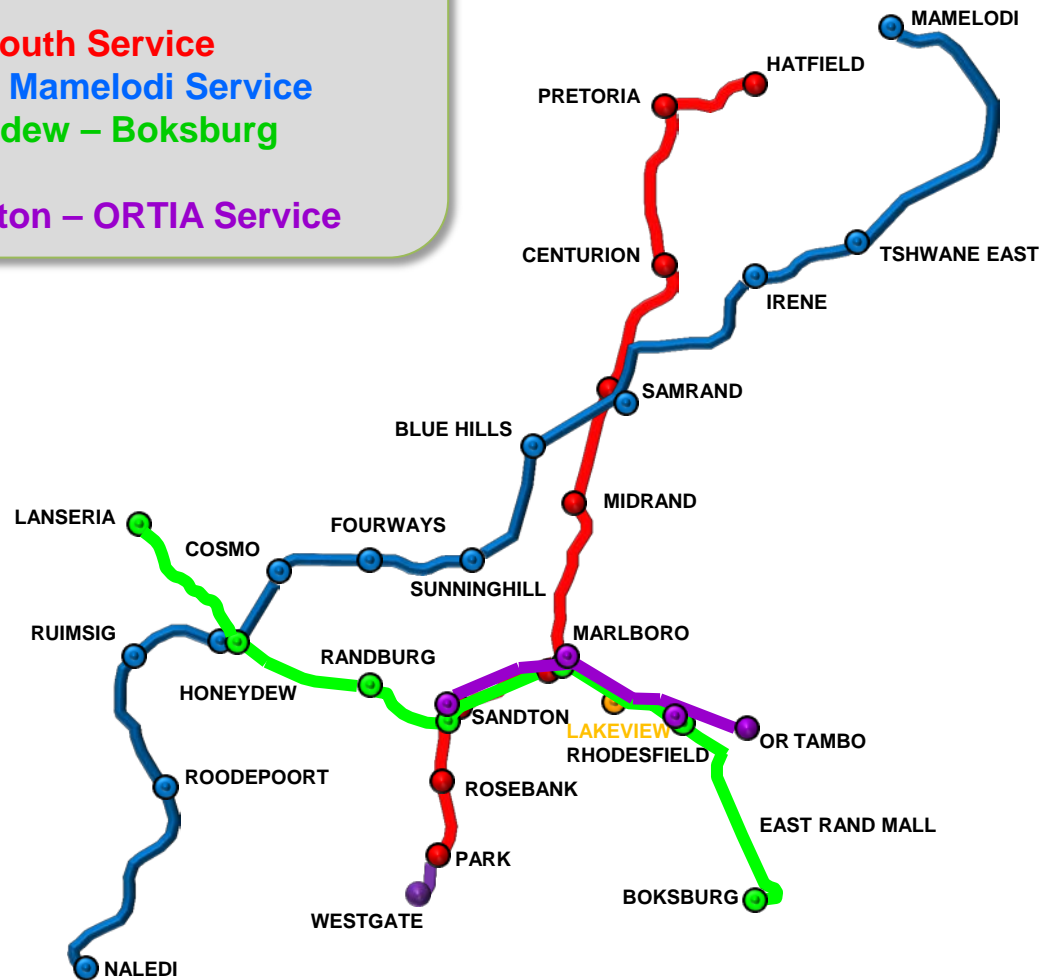
Ultimately four Services:

RED: North – South Service

BLUE: Naledi – Mamelodi Service

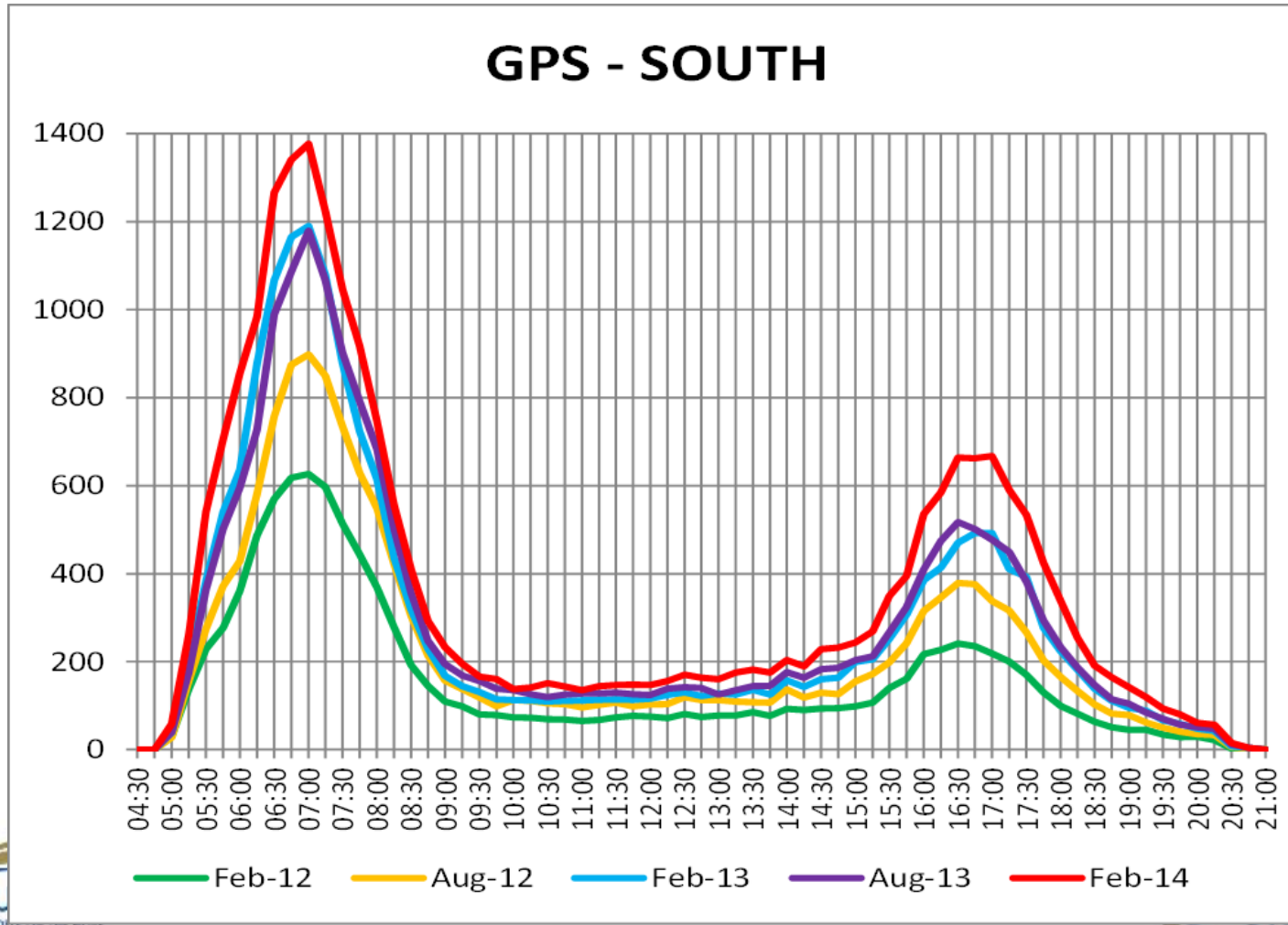
GREEN: Honeydew – Boksburg Service

PURPLE: Sandton – ORTIA Service



K: Additional Rolling Stock (The Future)

Capacity Constraints – Gautrain



Need For Additional Capacity

- Province has identified a latent demand and capacity constraint in relation to the Gautrain Rapid Rail Link system
- The actual passenger demand on the Gautrain system has exceeded realistic expectations and predictions
- To manage the provision of capacity, Province will require a total of 48 new coaches (12 Train sets)

Need For Additional Capacity (continue)

- The Procurement of Additional Rolling Stock Project comprises of:
 - the acquisition of new rolling stock;
 - expansion of depot facilities to maintain the new trains;
 - upgrades to the existing signalling system; and
 - Possible additional traction power
- Done as a Variation to the Concession Agreement

Financing Structure

Essential Attributes

- DBSA will provide up to R4 bn in debt funding for the rolling stock assets, signaling and depot facilities.
- Other related infrastructure assets will be funded by GMA through available cash reserves.
- A Trust will be created as a legal vehicle through which:
 - Financing will be structured; and
 - The rolling stock will be made available on the Gautrain System for the benefit of the Project.



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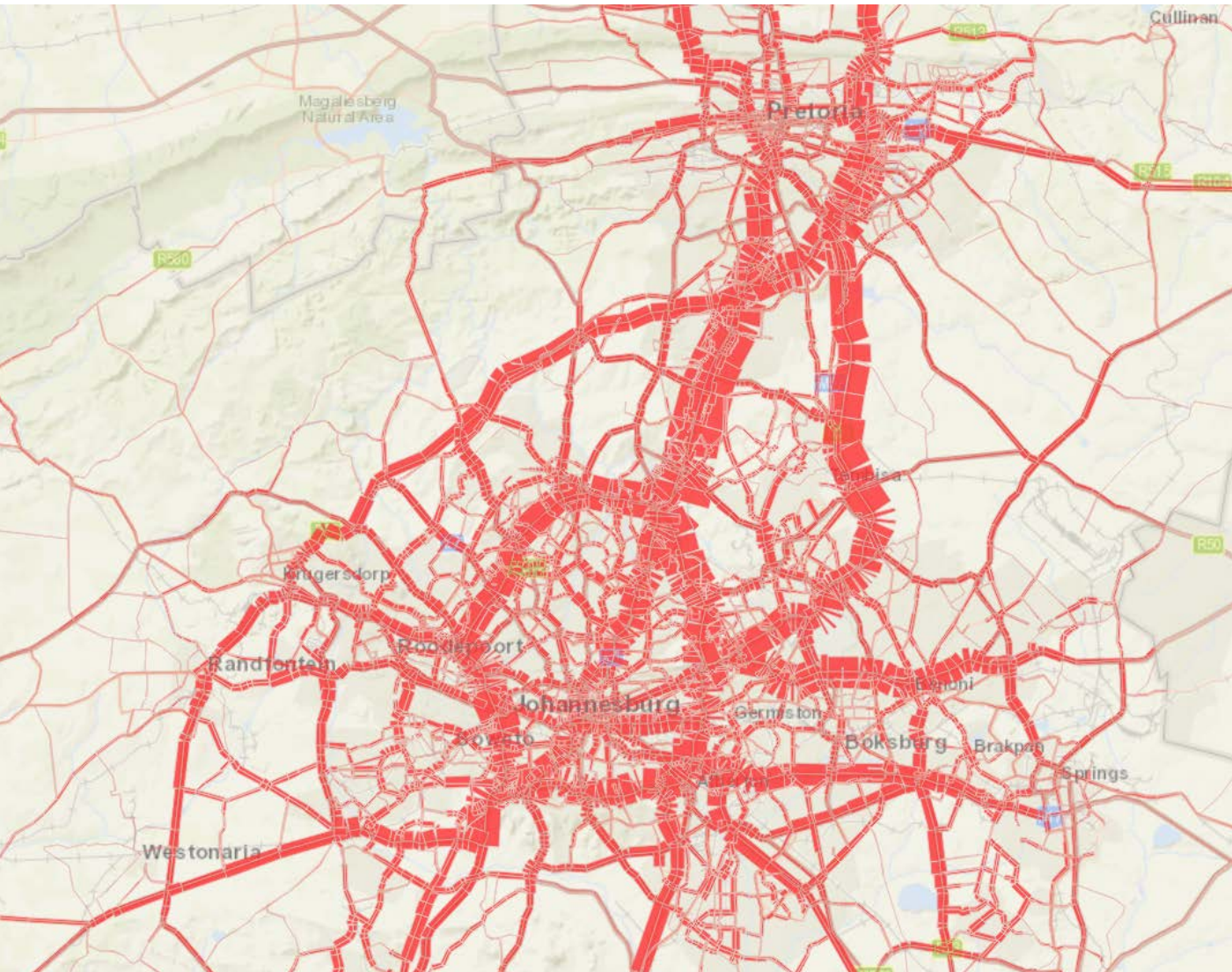
L: Gautrain II (Gauteng Rapid Rail Integrated Network (GRRIN))



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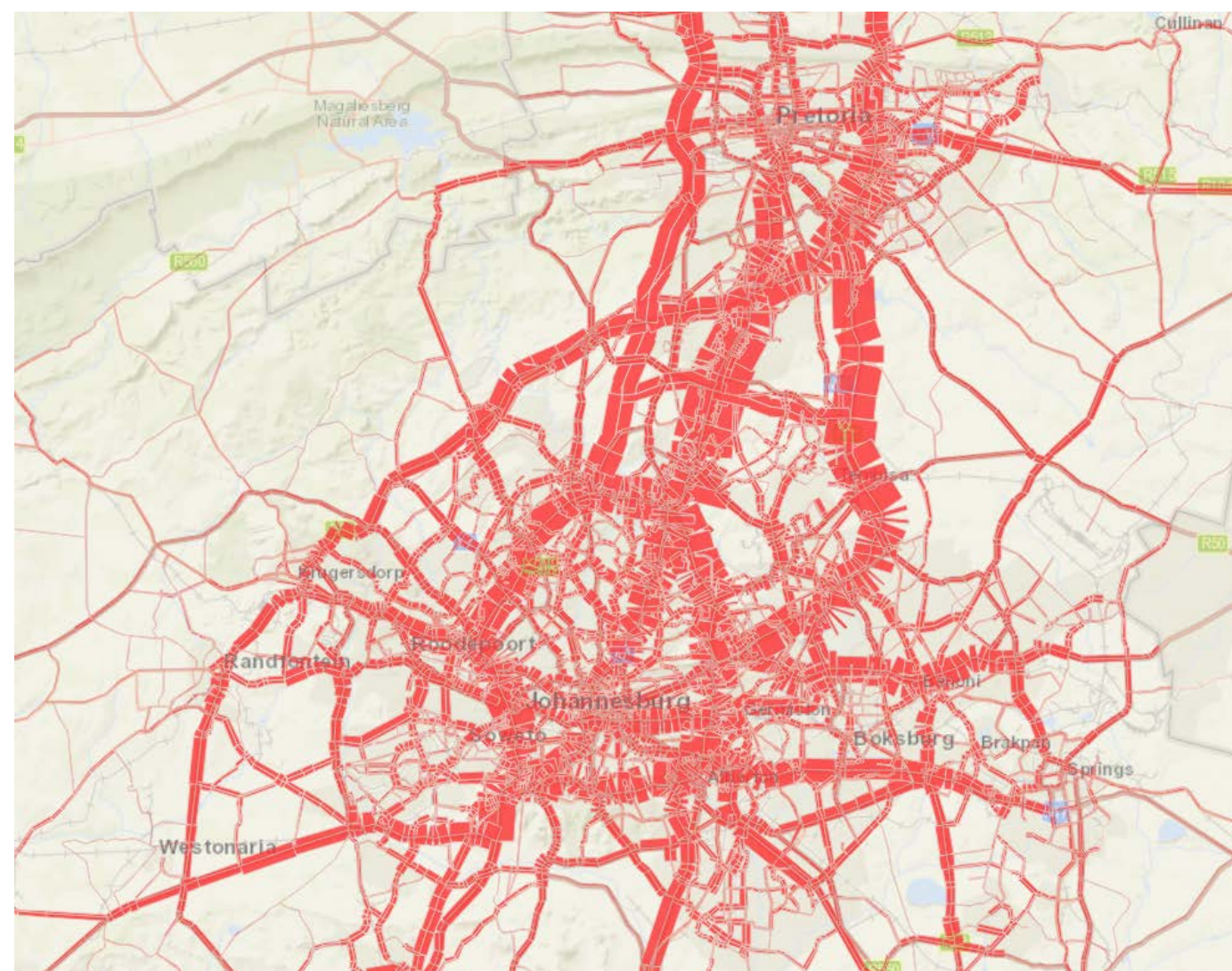


Travel speeds without GRRIN 2025



- Existing road network is operating close to capacity
- Current average network speed 41 km/h (peak and contra-peak directions)
- Will reduce to 26 km/h in 2025 with an key road journey time 1-3 hours.

Travel speeds without GRRIN 2037



Peak Hour Road Traffic

- Assume
- 1 000 km additional freeway capacity
- 1 500 km additional dual carriageway capacity
- All road improvements currently planned are built
- Average key road network speed reduces to 23 km/h (peak and contra-peak directions) spread over 3 hours
- 10km/h in peak hour if no peak spreading

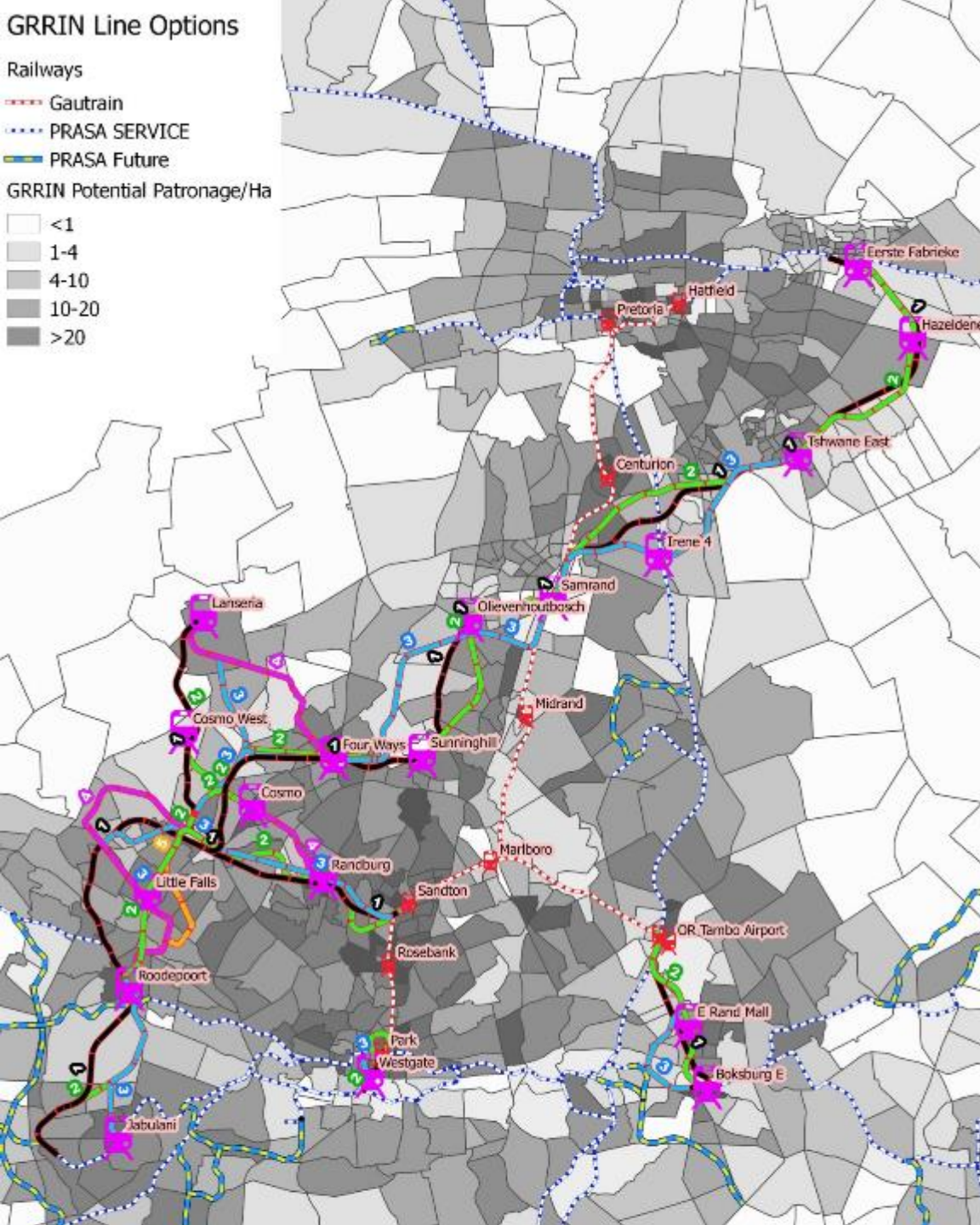
GRRIN Line Options

Railways

- Gautrain
- PRASA SERVICE
- PRASA Future

GRRIN Potential Patronage/Ha

- <1
- 1-4
- 4-10
- 10-20
- >20



36 Various route options considered

Alignment length (km),

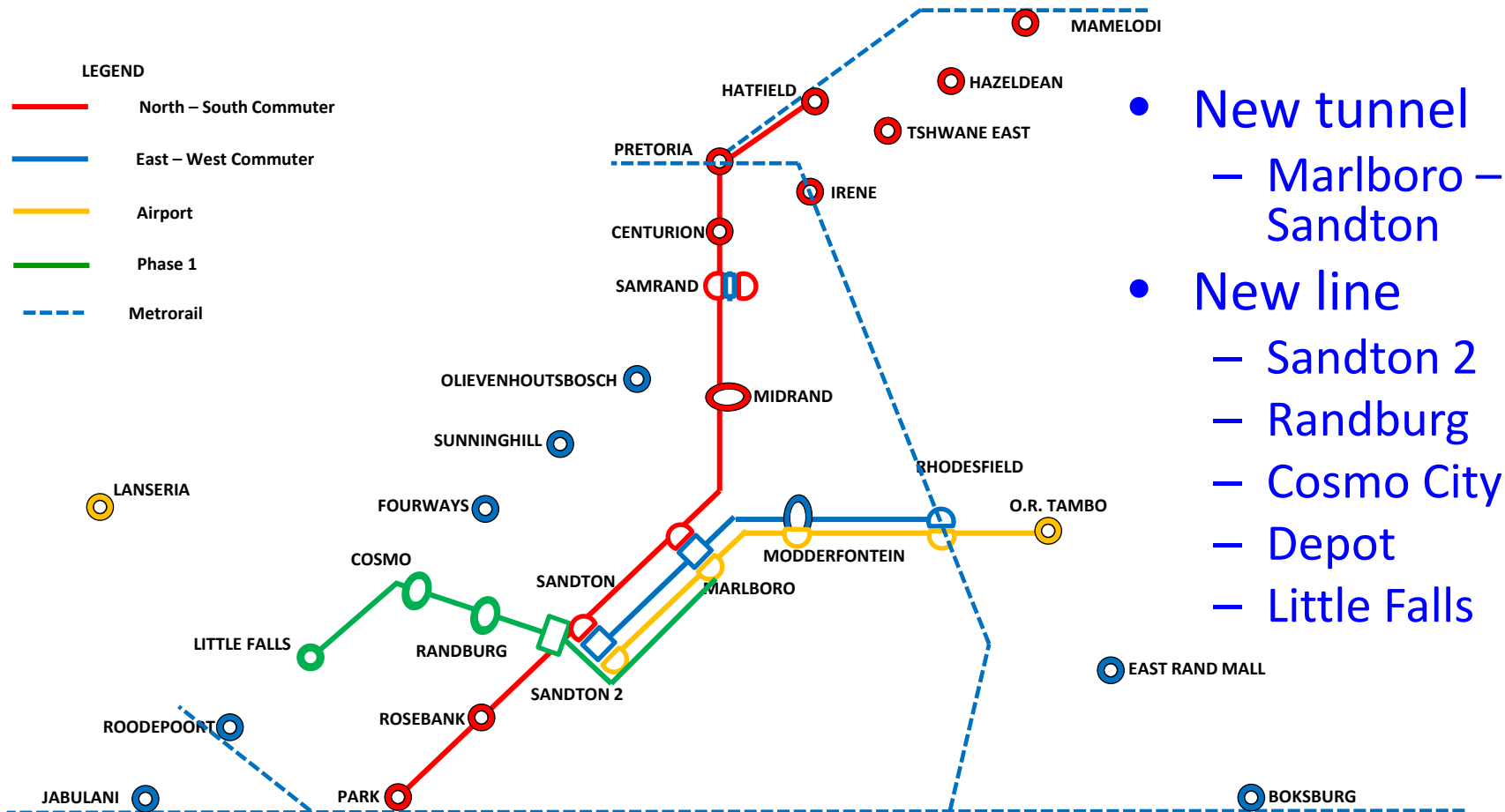
Property Impact,

Construction cost,

Environmental and heritage issues

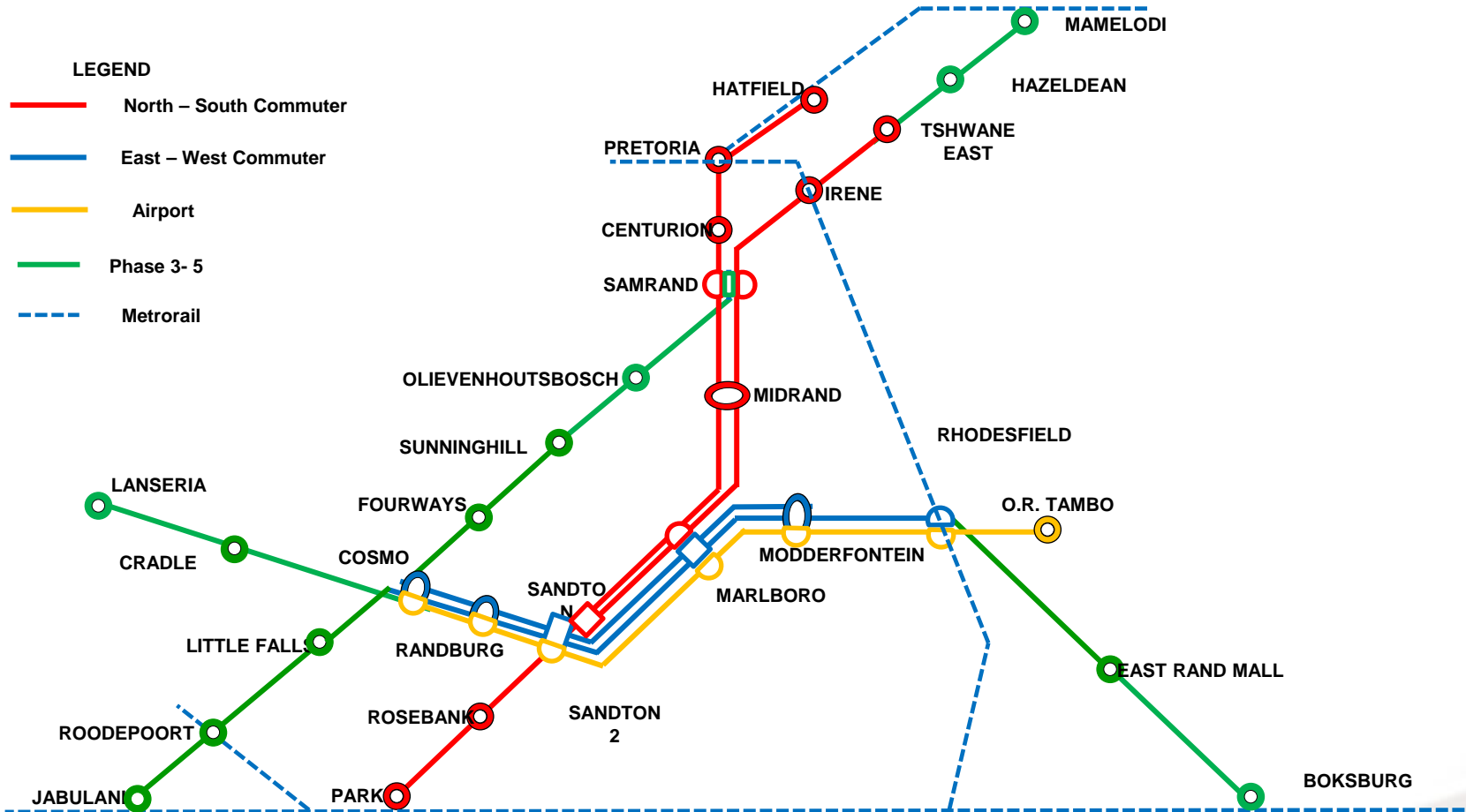
Constructability in terms of accommodation of traffic, undermining, utilities and services and expected social impact.

Description of Phase 1



- New tunnel – Marlboro – Sandton
- New line – Sandton 2 – Randburg – Cosmo City – Depot – Little Falls

GRRIN Extensions: Phase 2-5





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M: Closure



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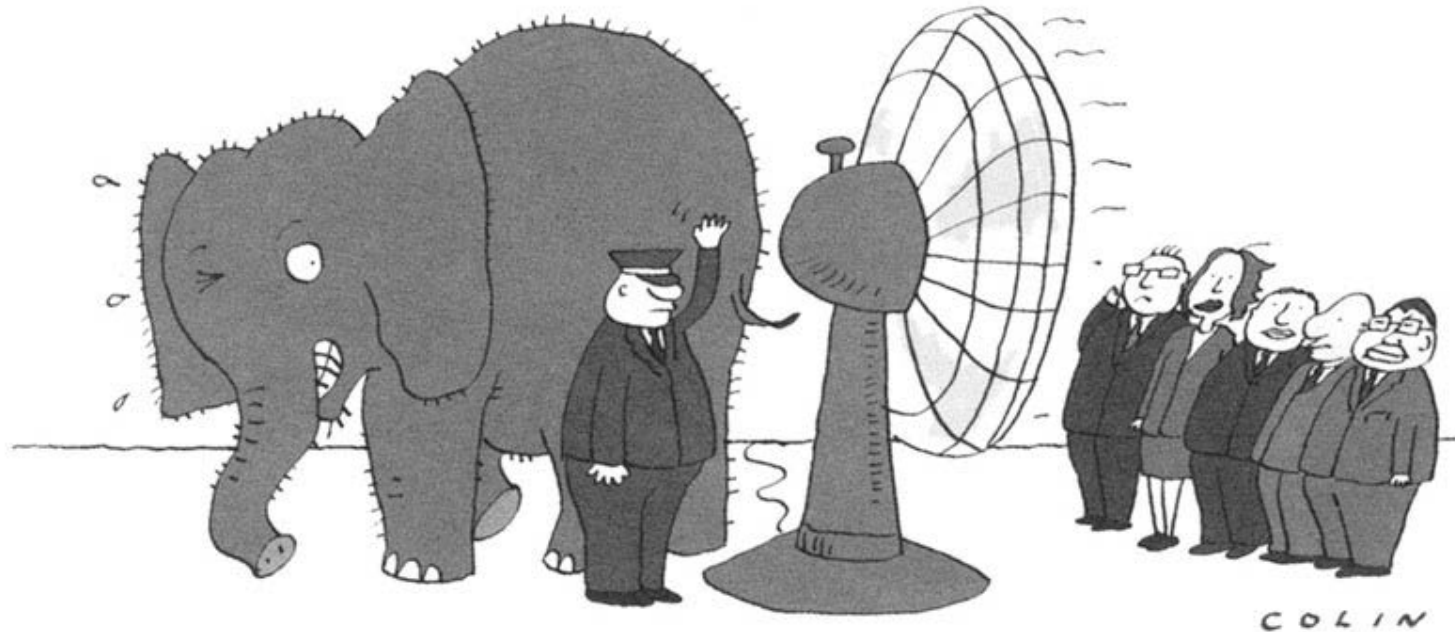


The Seven Stages of a PPP Project

- Enthusiasm
- Promises & Programmes
- Disillusionment
- Panic
- Hunt for the guilty
- Punishment of the innocent
- Reward for those who had nothing to do with it

Whatever it is that hits the fan will not be evenly distributed.

No. 2 Law of Probable Dispersal



“The philosophers have only interpreted the world, the point however is to change it”

Karl Marx

The Future is not for the faint hearted.”

R Reagan

Thank You



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