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REPORT

ECONOMIC SCENARIO PROJECTIONS FOR THE NATIONAL TRANSPORT MASTER PLAN FOR SOUTH AFRICA 2005-2050

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1 Executive Summary

1.1 Introduction

Global Insight Southern Africa (PTY) Ltd. and the Bureau for Market Research (BMR) at the University of South Africa (UNISA) were approached by Department of Transport (DOT), to develop future demographic and economic scenarios for South Africa. These scenarios are to serve as inputs in the development of a transport model for the country, which will feed into the preparation of a National Transport Master Plan for South Africa.

The client requires the formulation of three macro economic scenarios as well as three demographic scenarios: a baseline, a high road and a low road, which will be incorporated into the transport model. The details underpinning these three scenarios were discussed in detail at several assumption workshops. Population projections and economic sector projections by province and local municipality also form part of the deliverables.

A word of thanks to the members of the Economic and Population working group that provided valuable feedback and suggestions in the compilation of this report.

1.2 Modelling Methodology

The study is based on Global Insight's South African macroeconomic modelling approach, while the regional analysis is based on the Global Insight Regional eXplorer framework. The macro-econometric model is underpinned by developments on the demand side of the economy, but incorporates a supply side constraint. Unlike the sub-national analysis, this model considers both the direct and indirect economic linkages of various macroeconomic variables, utilising the dynamic relationships between the different variables. The Regional eXplorer framework, which focuses on the likely sub-national economic forecasts, is static in the sense that it only considers the direct impacts of economic variables on the sub-national economy.

1.3 Economic Outlook

1.3.1 Global Economy

The long-term growth prospects of the world economy remain generally favourable. The latest detailed forecast of the world economy projects an average annual trend GDP growth rate of nearly 3.1% for the period through 2050—roughly in line with the average global growth for the past 30 years. The key economic assumption underlying the long-term forecast is that the productivity gains from new technological advances will moderate the impact of the secular, long-term slowdown in factor accumulation.

1.3.2 Domestic Economy

A stable, investment-friendly political background is assumed to exist over the forecast period.

The current government's growth initiative, as outlined in the Accelerated and Shared Growth Initiative for South Africa (ASGI-SA), will shape economic policy over the medium term.

Assuming a sound mix of fiscal and monetary policy, inflation is expected to remain within the target range of 3-6% over the medium term, moving toward the midpoint of the target

over the longer term. After 2014, private-sector investment is expected to have taken the cue from government, and will continue to be the driver of economic growth over the longer term. Continued expansion in total domestic demand is expected to drive real GDP growth to above 6% over the medium term, where afterward it will settle on a longer-term growth path of between 5.5% and 6%. This will be supported by annual employment and productivity growth of around 2.5%, as well as fixed capital growth of above 4% per annum. Fairly strong global demand and above-trend commodity prices will help boost exports, but rising imports stemming from investment demand means that the current account is forecast to remain in deficit, at above 5% over the medium term. Over the longer term, a continued weakening in terms of trade will help to improve the deficit. The current-account deficit is expected to be primarily funded by portfolio inflows, where a steady growth in earnings on the back of the expected strong investment growth will ensure foreign-investor interest and an increase in foreign direct investment.

The economic challenges facing the country include its ability to sustain economic growth in volatile global markets, broaden participation, strengthen industrial development and trade performance, and accelerate the pace of job creation. Two additional scenarios were explored. Three variants are shown with regard to the growth in total domestic demand over the period 2005 to 2050. The middle variant taken from the macro-economic forecast postulates that the percentage growth in total domestic demand will differ in a narrow band between about 5 % and 7 % during the forecast period and will decline somewhat towards the end of this period driven by some demand saturation. It appears from input-output modelling as well as Monte Carlo forecasting that high variant growth in total domestic demand of 8 % or more could be achieved during the period 2025 and 2050 given sound economic policies, sustained growth in employment and average compensation, higher levels of foreign direct investment in South Africa as well as lower levels of HIV/AIDS impacts on population growth. However, it could come about over the forecast period that job creation remains at lower levels, that higher levels of direct investment in the economy are not being achieved, that compensation grows at lower levels and that future economic policies and practices lead to economic stagnation giving rise to lower levels of growth in total domestic demand resulting in negative economic growth by 2050.

The conclusion drawn from the alternative economic scenarios suggests that through addressing critical skill shortages, infrastructural impediments and structural imbalances in the economy a highly efficient, fundamentally well managed market orientated economy could render even higher levels of confidence and very well result in a higher growth path than suggested by the baseline forecast.

These scenarios set the economic scene against which The National Transport Master Plan for South Africa can be developed.

2 Introduction: Approach and Methodology

2.1 Background

For the purposes of this project Global Insight will utilise its macro econometric model for the South African economy and the Regional eXplorer (ReX) for sub-national estimates. The national projections will be distributed down to national sectoral level estimates based on the international industry and Regional eXplorer (ReX) methodologies. Finally the national level sectoral estimates are distributed down to a sub-national level based on various methodologies incorporated in Global Insight's ReX.

Considering the approach of presenting a set of national and sub-nationally consistent estimates, it is important that both national macro-economic and demographic assumptions are formulated. The BMR at UNISA has been tasked to provide estimates on population; the economically active population; formal and informal employment as well as unemployment; and, household income by various income categories. A number of these estimates to be provided by the BMR will be used as inputs into Global Insight's economic models.

The macro-econometric modelling approach utilises economic theory, statistical techniques and time series data to measure and test specific empirical relationships among different economic variables over time. These relationships are combined in a consistent econometric modelling framework, which is then used to evaluate and/or analyse different projects over time.

Following the first part of this document, which provides an executive summary and some insight into the modelling approach an overview of the macro economic assumptions underpinning the baseline macro economic is given. This is followed by a detailed analysis of the baseline forecast. The methodology underlying the risk scenarios is then discussed followed by a detailed analysis of the two risk scenarios. National and regional demographic analyses form the last part of the report.

3 Assumptions Underlying South Africa's Medium and Long Term Outlook[1]

In order to generate medium and long term forecast for the South African economy the model requires assumptions to be made on certain global and domestic variables, which serves as essential inputs in the model. These variables are not estimated through stochastic equations but form an essential background to the South African forecast.

[1] Assumptions and forecast figures were finalised by 31 October 2007

3.1 Global Medium-Term Outlook

The medium-term forecast for the world economy assumes that monetary authorities expect current inflationary pressures to subside in 2007, therefore not necessitating overly-restrictive monetary policy. In fact, given the lagged effect of the monetary tightening of the last few years, the aggregate world inflation should decline over the course of 2007. The forecast therefore envisages only modest amounts of additional monetary tightening for the remainder of 2007. The net result will be that the global economy's ongoing soft landing will remain rather mild and aggregate global growth should rebound before the end of 2007. Moreover, the soft landing has boosted the sustainability of the global economy's current expansionary cycle, which is now more than 70 months old.

Average world GDP growth is expected to slow from 4.0% in 2006 to 3.7% in 2007. Nevertheless, the ongoing softening is rebalancing the global economy sufficiently to allow above-trend growth for the next several years. World GDP growth is expected to maintain a robust pace for the remainder of this decade. The projected, average annual growth rate for the upcoming five years (2008-12) is 3.4%, which is significantly higher than the 3.1% average for the past 10 years (1997-2006). Over the medium term, the U.S. and Chinese economies are projected to maintain their leadership among developed and developing economies, respectively.

3.2 Global Long-Term Outlook

The long-term growth prospects of the world economy remain generally favourable. The latest detailed forecast of the world economy projects an average annual trend GDP growth rate of nearly 3.1% for the period through 2050—roughly in line with the average global growth for the past 30 years. (Unless noted otherwise, all world and regional GDP growth rates are based on country GDP numbers converted to U.S. dollars at market exchange rates)

The key economic assumption underlying the long-term forecast is that the productivity gains from new technological advances will moderate the impact of the secular, long-term slowdown in factor accumulation. (By factor accumulation, is meant increases in quality and quantity of labour and capital stocks.) In other words, a combination of capital and labour productivity improvements—resulting from technological breakthroughs, incremental advances in production processes, and improvements in business organization and management techniques—would, in the long term, compensate for the slowdown in labour supply growth (due to demographic trends) and capital stock growth (due to a lower global savings and investment rates).

The other major assumption underlying the long-term forecast is that the post-World War II global trends will remain intact over the entire forecast horizon. More specifically:

- Aggregate world-population growth will continue its gradual, secular long-term decline, from 1.1% annually in recent years to 0.5% in 2036.
- Domestic-saving rates will increase as incomes rise in the early stages of economic development, but they will moderate and decline in the later stages.
- The world economy will not face any extended, severe petroleum shortages in the next 30 years.
- Crude oil prices will decline from their current high levels in the next 10 years, but their real-price-trend line remains well above its long-term historical average in real terms (which is US$18-25 at deflated 2005 prices, depending on what deflator one uses).

- The global economy will not fall into a deflationary trap. The current pockets of deflation will disappear during the next few years as the world recovery advances.
- The major industrialized countries do not allow their commercial disputes to frustrate global trade liberalization or to degenerate into a major, competitive trade war. In short, incremental trade liberalization will continue.
- After completing their current recovery, non-oil primary commodity prices will resume their secular, long-term decline in inflation-adjusted (or real) terms.
- Most emerging markets will not backtrack on their economic reforms on any large scale, but instead will continue the trend toward greater openness, deregulation, and privatization.
- The global trend towards more flexible exchange-rate regimes and greater capital mobility will continue without any major backtracking.
- Most industrialized countries will not completely shut their doors to immigration, but will become more selective in their immigration policies.
- No global calamity—such as a world war, plagues or pandemics, giant meteor strike, or other planetary-scale disasters—will depress world population or capital stock, or lead to a prolonged depression in world output.

The projected regional pattern of growth is very similar to that of the last 20 years. Among industrialized regions, North America will remain the growth leader thanks to a combination of favourable demographic factors, abundant natural resources, efficient financial institutions, a high rate of immigrant absorption, huge market size, science and technology leadership, and a tremendous capacity for innovation and entrepreneurship. Another key factor will be North America's relatively dynamic political and social institutions, particularly at the grassroots level. Thanks to these advantages, North American long-term economic growth will easily outpace that of Western Europe and Japan, and the region will remain the primary oil importer in the world.

3.3 Crude Oil Outlook

3.3.1 Background

“Crude oil prices are the result of the balance of the demand for oil and supply thereof in the international market. Over the long term, the demand for oil is determined primarily by rates of economic growth in the major regions of the world, as well as by energy-related technological developments such as efficiency gains or newfound uses for oil. Such structural determinants tend not to change rapidly. The supply side of the crude oil market comprises of output from OPEC and non-OPEC producing countries, whose production decisions hinge on geological, economic and political factors In the long term, oil supply depends on the rates of extraction, depletion and new discoveries, as well as developments in extractive technologies which allow enhanced recovery of oil. In the short term changes in OPEC production quotas and temporary supply disruptions due to technical or political factors or natural disasters can have important consequences for supply and hence oil prices. The impact of such factors depends in turn on the extent of spare production capacity (most of which has resided in Saudi Arabia), as well as oil inventories – most notably the United States (US) Strategic Petroleum Reserve. In addition to these fundamentals, expectations and speculation about future demand and (especially) supply conditions – which in turn are stimulated by economic and political conditions – play a large part in the determination of crude oil prices on the futures and spot markets, particularly when inventories are low. Being a relatively minor net oil-importing country, South Africa is a price taker on the international oil market “. (The impact of oil price

shocks on the South African macro economy: History and prospects – JJ Wakeford – SARB Conference 2006)

3.3.2 Medium Term Demand and Supply Fundamentals

3.3.2.1 Demand

The subprime problems in the United States will have a substantial impact on U.S. 2008 GDP growth, reducing it from 2.5% to 2.0%, and that this will spill over into European and Asian economies, albeit the impact there will be much more limited. While the U.S. Federal Reserve has moved aggressively to cut interest rates in order to support economic growth, the credit squeeze and falling house prices in the United States will still reduce consumer spending. The housing sector is also slowing rapidly, with more layoffs in the associated industries set to come. Available data now indicate that third quarter demand in the United States was lower than initial expectations, and this trend may reflect a demand impact from prices, although it is too early to definitively draw this conclusion. Elsewhere in the OECD, demand is also rather lower than initial expectations; partly a consequence of milder than usual weather over the June-August period, but this has been more than compensated for by the continued strength of non-OECD demand. Price subsidies in China, other Asian economies and the Middle East mean that the higher fuels costs are not being passed on to consumers. Consequently, there is no sign of a demand response in non-OECD countries to prices above US$80/barrel, and no indication that subsidies will ease.

Despite the recent global equity market jitters, and concerns for the U.S. economy due to the credit crunch prompted by subprime problems for large financial institutions, higher overall demand growth in 2008 than 2007 is forecasted. Much of the reason for this is unexpected weather conditions in 2007, and increasingly, weather is playing an important and unpredictable role. The mild winter and cool summer of 2007 have been unusual, and certainly contributed to the far lower demand growth outcomes in OECD countries than were initially expected. Although accounting for just fewer than 60% of total global demand, OECD demand growth is now relatively slow, and not as closely tied to GDP growth as non-OECD oil demand is. With seasonal demand cycles in the OECD also prominent, mild or extreme conditions can have a big impact on the overall demand level. The mild weather that has reduced 2007 growth is not anticipated for 2008, in which is assumed to be a return to "normal" weather patterns. The simple fact of this assumption generates significantly more demand than would otherwise be the case, with the current year's mild conditions merely exaggerating the anticipated growth levels in 2008 should weather patterns revert to the mean. In non-OECD countries, where fuel prices are widely capped by the government and more closely connected with rapidly growing GDP, the seasonal impact is reduced, hence the higher non-OECD growth in 2007. Consequently, while there are certainly downside risks to demand as a result of growing concerns for the strength of the U.S. economy, more extreme weather conditions could significantly increase demand growth.

3.3.2.2 Supply

3.3.2.2.1 Non-OPEC Production

A relatively benign hurricane season in the U.S. Gulf of Mexico (GOM) meant that overall production levels for non-OPEC countries came in at a relatively robust level for August. Overall non-OPEC supply is likely to be slightly higher in the third quarter. Russian production also appears to be growing strongly with strong growth in natural gas liquids (NGL). The export tariff increase on Russian oil exports that came into force from August

1 appears to have had little impact on overall export levels. The knock-on effects to Mexican production from Hurricane Dean proved to be less significant than previously anticipated, with overall Mexican production levels returning to pre-hurricane levels through September and maintaining output. North Sea maintenance also appears to have had only a minimal effect on output volumes in the United Kingdom and Norway, and the early start-up of Ormen Lange (gas condensate), helped keep production levels stable. Elsewhere there were further operational problems for Petrobras, which reported lower-than-expected production volumes for September, down some 38,000 b/d from August. The outlook is somewhat brighter for Brazil next month, however, as the Piranema field came on stream in October, at an initial volume of 10,000 b/d, and other, larger, fields are due on-stream in the fourth quarter. Overall non-OPEC production was relatively steady, with output problems balancing the additions.

3.3.2.2.2 OPEC Output and Capacity

Saudi Arabia is still on course to bring Khursaniyah on-stream by the end of the year. The field will produce 500,000 b/d of Arab Light crude and represents the most significant addition by OPEC in coming months, although smaller additions are due from Angola. Overall spare capacity remains unchanged at approximately 2.7 million b/d. Although initial data indicate that OPEC was able to increase production by 250,000-300,000 b/d overall in September, this was largely due to increasing Iraqi output. The organization is set to increase production from November 1, and tanker data point to a rise in October liftings. With the additional production, most likely coming almost entirely from Saudi Arabia, OPEC spare capacity will drop slightly, but then recover when Khursaniyah comes on-stream in December. It is likely that the Saudis will shut in heavier grades and replace with the new Arab Light. That move will maintain overall spare capacity, but not lighten the available grades. Essentially, effective spare capacity is far lower than the nominal 2.7 million b/d, as the vast bulk of that is heavy Saudi crude that is struggling to find buyers in the current market. Further OPEC capacity additions are scheduled to come on-stream next year. Should non-OPEC production meet current expectations, and with demand showing some signs of slowing in the OECD, OPEC is likely to regain some effective spare capacity next year.

OPEC Meetings and Politics

OPEC was relatively quiet in the wake of its September meeting, with member governments resisting calls to raise production ahead of the planned quota increase of November 1 as prices continued to ascend to record levels. Despite OPEC's conciliatory commitment in September to watch the markets closely, and respond if necessary to ensure adequate supply, it appears clear now that OPEC will not be taking any steps to further increase output at least until November 17-18, at the OPEC heads of state summit in Saudi Arabia. That meeting precedes the regular OPEC meeting scheduled for December 5 in Abu Dhabi, which, given the timing, is set to be rather uneventful. Judging from comments by OPEC members and officials, it seems very unlikely that the organization will in fact seek to raise production at these meetings in any event. OPEC has been quite consistent in 2007, and that consistency extends to the comments made by member states over the past month. OPEC members have continued to bat away requests to increase production in order to bring prices down, arguing that there is very little OPEC can do to force prices lower. Rather than an admission of a lack of spare capacity, OPEC's argument is that geopolitics and speculative activity are behind the run-up in prices. There is certainly some truth in this argument. Turkey was a very significant price driver in October, Iran's dispute with the UN over uranium enrichment continues to play out in the background, and there

have been some large capital inflows into crude markets increasing the net long position of non-commercial players. While the supply-demand balance is unquestionably tight, and tightening as a result of seasonal factors, commercial crude inventory levels as they stand in September/October are actually at the top of the five-year range. There are regional variations, but overall stock levels are not disastrously low. OPEC has argued that increasing production will not have much effect in this market environment, and this is probably correct, at least in the short term. Longer term, OPEC is still eyeing the risks of a possible slowing in the global economy, strong non-OPEC production growth through 2008, and the consequent potential for a sharp price correction if OPEC allows inventories to remain at or near current levels. OPEC officials stated in October that they felt US$90/barrel was too high and they would prefer prices to come down. There is certainly some ongoing concern within the organization over the potential to destroy demand if prices go high enough. The dilemma is that with each new price surge there have been few signs of any impact on demand. If demand is not being affected at higher prices, then there is no real reason to try to pull prices back down, beyond the threat posed by making alternatives to oil economic to exploit. OPEC members are also eager to maintain their purchasing power. With oil revenues dollar-denominated, and the dollar remaining weak, but a substantial share of imports from euro or yen regions, a steadily rising dollar price target is a necessity for most OPEC members. These two factors underline OPEC's position regarding prices and output. The price target has not been explicitly stated by OPEC since it abandoned the US$22-28/barrel price band in 2004, for the simple reason that it will be constantly changing due to the dollar weakness, although recent statements pointed to a preference for prices in the $60-80/barrel range. OPEC is probably less willing to volunteer that it is also interested in seeing how high crude prices can go before demand is put at risk. For these reasons and also, as the organization *does* state, the nature of the current key price drivers in the crude market, OPEC is likely to remain hawkish on prices and unwilling to boost supply unless there is simply no alternative. Continued price rises on the back of speculative capital inflows into crude markets may force OPEC's hand at $95/barrel or $100/barrel, but any weakening in prices from the October peaks will certainly allow OPEC to keep current quotas in place.

3.3.2.3 Inventories

3.3.2.3.1 Total OECD Commercial Inventories and the Global Balance

Top-down data points to a global stock draw of around 0.5 million b/d in the third quarter. Bottom-up data point to a similar conclusion. Although this is counter-seasonal, and compares with an average third quarter stock *build* of 0.8 million b/d over the past five years, nevertheless the drawdown is much less severe than appeared likely a few months ago. The change compared with earlier expectations is attributable to further downward adjustments to demand in the third quarter, coupled with backdated upward adjustments to supply. End-third-quarter days' cover in OECD is now estimated at 52.4 days, sharply down on last year's very high figure but not too far out offline with preceding years, and certainly much higher than had been expected. Of principal concern currently is the low level of crude oil stocks in Asia. As the region most dependent on the Middle East for supplies, Asia has been hardest hit by OPEC's production restraint, and so should benefit disproportionately from increases in OPEC output over coming months. The loss of 0.7 million b/d of Abu Dhabi production, almost all of which normally flows east, will offset increases from elsewhere, however, while regional refinery runs will rise by nearly 1 million b/d between October and December. Global crude supply is inevitably going to fall short of the demand for crude over coming months, inevitably leading to a further stock draw in the fourth quarter and competition between regions for available supplies. New

fourth quarter output could provide some relief, but generally, new fields appear to be running behind schedule.

3.3.3 Crude Price Forecast

Although the fourth quarter will see a stock draw, OECD stocks in days cover are not expected to be drawn to levels below the lows that have been reached over the past several years. Moreover, given expectations of slowing demand growth next year and with reasonable prospects of increases in non-OPEC output, as well as a substantial increase in OPEC NGL, days' cover next year are expected to rise towards 52 days from 51 days at the end of December. The call on OPEC crude is not expected to rise much next year, but OPEC capacity should rise by at least 0.5 million b/d as Saudi Arabia commissions its Khursaniyah development, beginning in December 2007. Further smaller increases are expected in other members as well, notably Angola. OPEC spare capacity should therefore rise next year, easing concerns about lack of spare capacity. In addition, upgrades to refineries will improve the global ability to handle the heavy sour grades that have made up most of spare capacity and have been difficult to place. The belief is thus that fundamentals point to a softening of prices. In addition, in most years the end of the U.S. hurricane season is accompanied by a fall in the net long position of non-commercials on NYMEX, undermining prompt price support. On the other hand, geopolitics continues to exert upward pressure on prices, with worries about a Turkish military incursion in to Iraq being behind the recent run-up to near $90/barrel. In addition, changes of key personnel in the Iranian nuclear confrontation point toward a harder line, suggesting that worries on that score may be revived. Moreover, most recent data from the Commodities and Futures Trading Commission (CFTC) point to a sharp rise in the net long position of non-commercials on NYMEX, suggesting an expectation of further rises in price, while anecdotal reports speak of rising investments in oil futures outside the exchanges, as the dollar continues to weaken. Although at the time of writing an assault on $90/barrel on NYMEX appears to have been deferred, it is likely only a matter of time before another assault is mounted. Such upward pressures need not exclude fundamentals either. Renewed threats from MEND in Nigeria, low Asian product stocks, low U.S. gasoline stocks, and a continuing market fear that the balance has more chance of remaining tight than becoming significantly looser could all add to pressure for higher prices. On balance, the recent high prices have been due to geopolitical worries against a background of a third quarter stocks draw. As we move into the fourth quarter when a stocks draw is seasonally normal, and with stocks not expected to fall to worryingly low levels, and as net long positions in futures markets are expected to be liquidated in line with well established seasonal patterns, fundamentals are expected to become the dominant feature. Hence prices should soften from recent high levels back to around $80/barrel. Alternative cases have to be considered, however. Although a low case cannot be ruled out, it currently appears that the probabilities are biased more towards the upside than the downside. Factors that could bring about alternative outcomes are listed below:

• Continuing strong demand growth, notably in those countries where the weakness of the dollar results in a moderation of high prices for the consumer, or where governments choose to maintain subsidy regimes, despite the cost, as in China and India.

• Further disappointments in non-OPEC output.

• Indications of an aggressive stance by OPEC, possibly indicated by an actual cut in advance of the second quarter of next year.

3.3.4 Long Term Crude Oil Outlook

The world economy is not expected to face any extended, severe petroleum shortages in the next 43 years albeit that a tighter balance between supply and demand is expected.

The rise in demand from China and India will mean that in the medium-term to long-term, oil prices will remain high in real terms. But they will eventually begin to decline as new energy efficiency technologies begin to take effect (after 25 years) and as alternative fuels become more plentiful (both in response to high prices). Nominally oil prices are however expected to stay well above the $60-70/barrel range.

New technologies and policies to address climate change will likely accelerate the decline in real oil prices in the very long-term (after 25 years). In our baseline, we assume energy efficiency increasing substantially in the years to come.

Likewise the rise of China and India will affect real commodity prices to about 2025 and then resume their secular, long-term decline in inflation-adjusted (or real) terms.

Table 1 : Main Global Assumptions

Forecast from 2007	Average Growth Rate									
	2001	2006	2011	2016	2021	2026	2031	2036	2041	2046
INTERNATIONAL ASSUMPTIONS	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Prices										
Japan: CPI, 2000=100										
% Change	-0.5	0.8	1.7	1.8	1.8	1.7	1.6	1.6	1.6	1.6
United Kingdom: CPI, 2000=100										
% Change	1.5	2.1	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9
USA: CPI, 2000=100										
% Change	2.5	2.3	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0
European Union: CPI, 2000=100										
% Change	2.2	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7
Monetary Policy										
USA: Nominal Fed rate,%	2.2	4.8	4.6	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Exchange Rates										
Exchange rate: $/euro	1.1	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7
Exchange rate: $/Sterling	1.6	2.0	1.9	2.0	2.1	2.2	2.2	2.3	2.3	2.3
Exchange rate: Yen/$	116.2	108.1	93.8	94.1	96.9	99.7	102.2	104.2	104.3	104.3
Commodity Prices										
Gold price, $	360	676	803	942	1,084	1,245	1,467	1,728	2,028	2,379
% Change	10.0	11.1	3.2	3.2	2.6	3.0	3.5	3.3	3.2	3.2
Platinum price, $	701	1,281	1,525	1,788	2,058	2,364	2,786	3,281	3,849	4,516
% Change	11.1	9.5	3.2	3.2	2.6	3.0	3.5	3.3	3.2	3.2
Oil price, $	34	71	73	73	72	72	78	87	96	106
% Change	15.8	6.9	-0.7	0.2	-0.6	0.7	2.2	2.0	2.0	2.0
Real Economic Activity										
Real GDP : USA (US$ bn's)										
% Change	2.3	2.5	2.4	2.7	2.6	2.6	2.5	2.5	2.5	2.5
Real GDP in G7 countries (Index 2000=100)										
% Change	1.8	2.3	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9
ADDENDA										
Exchange rate: euro/$	0.9	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6

Source: Global Insight calculations

3.4 Domestic Assumptions Underlying the South African Medium and Long Term Outlook

Domestically, the forecast will be shaped by macro-economic policies applied by the government of the day. The political stage is expected to be characterized by a

democratically elected and stable government. The government's approach to economic transformation will be dominated by the understanding that economic changes will not emerge spontaneously from the market but needs active strategic intervention from the state. This is described as a developmental state and encompasses continued ownership of entities in the energy and national transport sectors as well as acting as a catalyst towards the broader development of the economy. The private sector is however expected to play an active and integral role in the economy. Any new leader of the ruling party is expected to continue to keep an investment-friendly mind set thereby facilitating an environment conducive to the inflow of foreign direct investment as well as domestic capacity generating investment spending.

The current government's growth initiative, as outlined in the Accelerated and Shared Growth Initiative for South Africa (ASGI-SA), will shape economic policy over the medium term. This policy will focus on halving unemployment by 2014 and accelerating growth to a sustainable 6% by 2009 through higher public spending on infrastructure. Where after private sector investment will be sufficient to replace depleted stocks as well as add to productive capacity.

The government will continue to focus on education, social upliftment, and health, reforming labour legislation, improving service delivery, and promoting black economic empowerment.

Government is expected to stick to its conservative fiscal stance of recent years keeping the budget deficit below 3% as a share of GDP as the sustainability of future growth hinges on sound macro-economic policies.

Monetary policy will remain focused on containing inflation, as measured by the consumer price index excluding interest rates on mortgage bonds (CPIX) by adhering to the inflation targeting regime.

Foreign policy will underscore the objectives of the New Partnership for Africa's Development (Nepad) in which the interest of poor African countries will be optimised through trade links with those countries. South Africa is also expected to strengthen and maintain its ties with Asia and the Middle East as set up in the 'New Asian-African Strategic Partnership' of April 2005.

4 Baseline Forecast: South Africa's Medium and Long Term Outlook

4.1 Economic Growth

Although growth slowed somewhat in the first half of 2007, the production side (especially construction) of the economy still posted robust growth, boding well for the expansion of capacity over the longer term[2]. Supply-side growth, although exerting extra pressure on the already-strained current-account deficit, through the importation of capital and skills—which are in short supply in the economy over the short term—will structurally expand the economy's capacity in future. Government infrastructure spending plans, a weaker currency, and tight monetary conditions will all contribute to a more balanced growth picture in the future than the previous consumer demand-dominated growth.

Over the short term interest-sensitive sectors of the economy will continuously feel the pinch of higher interest rates but despite a definite slowdown in these sectors in the first in 2007 continued growth in construction and transport and communication is expected to fill the gap left from the softer demand-side growth and is the impetus for sustained growth from 2009 onwards.

South Africa's long term growth potential is heavily reliant on the quality and quantity of the main production factors namely labour and capital. Reflecting governments Accelerated and Shared Growth Initiative (ASGI-SA) investment spending, at first from government and parastatals an later joined by private sector investment, on infrastructure is expected to play a determining role in elevating growth to a level of 6% and sustaining it at that level. The structural shift of the economy away from primary sector growth towards secondary and tertiary sector dominance however underlines high economic growth's inability to cut unemployment sufficiently to half the unemployment rate by 2014. The economy is generating "skilled jobs" in environment of a scarcity of skills and a growing pool of unskilled unemployed people. This situation underlines the reliance on capital accumulation to sustain growth in future and highlights the urgent need for improved education and training.

Continued downward pressure on the current account is expected on the back of high import requirements stemming from infrastructural investment over the short to medium term. Concern surrounds the fact that growth is still very dependent on local rather than export demand. This fact will weigh heavily on the current account of the balance of payments. However, exports are expected to recover from very slow growth in, due to a

[2] In economic terminology short, medium and long term usually refers to:

Short term: Immediate to 12 months

Medium term: 12 to 60 months

Long Term: Longer than 60 months

more competitive currency, which will benefit the mining and manufacturing industries from 2007 onwards. The current-account deficit has been primarily funded by portfolio inflows into the equity market. This is expected to continue on the back of the stable investor outlook, awarded to South Africa by international sovereign risk grading companies. A steady growth in earnings on the back of the expected strong investment growth will also ensure foreign investor interest in future, albeit increasing future dividend payments to foreigners, which could put some added strain on the balance of payments.

Table 2: Economic Growth

	Average growth rate									
Variable	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	2026 2030	2031 2035	2036 2040	2041 2045	2046 2050
Real Household consumption	4.7	5.6	4.9	5.0	5.2	5.3	5.4	5.5	5.5	5.5
Real Government consumption	5.1	4.8	4.9	5.1	5.3	5.4	5.5	5.6	5.6	5.6
Real Gross fixed capital formation (GFCF)	7.0	11.6	9.3	7.7	7.2	7.5	6.6	6.0	5.6	5.6
Real change in inventories (R bill)	8.2	11.1	11.9	12.3	11.5	12.1	11.5	12.1	12.8	13.5
Real gross domestic expenditure (GDE)	5.2	6.5	6.0	5.8	5.9	6.0	5.8	5.7	5.5	5.5
Real exports	2.9	7.1	6.5	6.9	6.8	6.8	6.7	6.2	5.6	5.6
Real imports	7.8	11.0	6.6	6.2	6.2	6.5	6.5	6.1	5.6	5.6
Real GDP	**3.9**	**5.2**	**5.9**	**6.0**	**6.0**	**6.0**	**5.8**	**5.8**	**5.8**	**5.8**

Source: Global Insight calculations

4.2 Consumer Demand

Consumer demand has been the root of faster growth in the economy, but the decision to raise interest rates by a cumulative three and a half percentage points since 2006 as well as some more stringent credit rules is starting to have an impact. Household consumption had been particularly robust in the recent past because of strong increases in real disposable income. Real wages benefited from falling inflation and structurally lower interest rates while wealth rose as property prices appreciated to reflect improved economic fundamentals. Household consumption expenditure is, however, projected to slow from the 6.6% in 2005 and the 7.3% in 2006 to a more sustainable level of 6.2% in 2007, as growth in government transfers to households stabilizes at lower levels, real wage growth moderates, and, consequently, real disposable income slows. Also, slower growth in property prices is likely to discourage household borrowing at the 2006 pace to fund consumption. Over the longer term, growth in household consumption expenditure is to revert to more sustainable levels of around 5.0% per year, in line with employment growth of about 2.5% per year and productivity-related real wage increases of around 2.5% per

year. The recent rise in consumption also reflected a decrease in saving. Nevertheless, with the rise in interest rates during 2006 and 2007, this decrease in saving is unlikely to continue. Increased consumer spending has also recently been associated with a rising debt portfolio, which, in the long run, is unsustainable, and reflects the growing imbalances in terms of consumers living beyond their means.

Table 3: Outlook For Real Household Consumption Expenditure

	Average growth rate									
Variable	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	2026 2030	2031 2035	2036 2040	2041 2045	2046 2050
Private sector real wages	0.0	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Private sector employment	1.8	2.2	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5
Real disposable income	**4.5**	**5.7**	**5.4**	**5.2**	**5.2**	**5.3**	**5.4**	**5.5**	**5.5**	**5.5**
Real household consumption	**4.7**	**5.6**	**4.9**	**5.0**	**5.2**	**5.3**	**5.4**	**5.5**	**5.5**	**5.5**
Household consumption as % of GDP	64.0	67.1	65.0	61.9	59.2	57.1	55.5	54.6	53.7	52.8

Source: Global Insight calculations

4.3 Capital Investment

The government has set a target for the investment-to-GDP ratio of 25% by 2014. In the second quarter of 2007, this ratio stood at 21%, up from the 17% recorded in 2005. Given an annual employment and productivity growth of around 2.5%, fixed capital stock will have to show a growth of around 4% per annum to achieve and sustain the 6% potential economic growth rate over the forecast period. This means that the capital-labour ratio more than doubles across the forecast period, which highlights the urgency of significant labour market and educational reform. It is therefore expected that the ratio of fixed investment to GDP will improve in the coming years to reach the 25% target by 2014 and 35% by 2050, as huge investments are made in electricity, transport, non-gold mining, and social infrastructure. The government has pledged 482 billion rand to general infrastructural spending over the medium term. Latest investment figures show that the government as well as public corporations have stepped up their investment projects. Public-sector investment is expected to crowd in private-sector investment from locals, as well as from abroad. Future rand developments, however, will be crucial, especially for manufacturing growth, as it affects the sector in several ways. An improvement in the competitiveness of the rand, through the weakening of the exchange rate against South Africa's major trading partners, stimulates manufacturing activity, especially in the export-orientated sectors. Barring short-term volatility, we do expect the rand to continue its long-term depreciating trend on the back of continued current-account weakness, while monetary policy tightening is expected to curb input costs from the second half of 2007 onwards. Some concerns centre around the low level of domestic savings as a source of funds for future investment growth. The discrepancy between the ratio of gross domestic

savings to GDP and the gross investment to GDP is expected to continue due to the low savings propensity in the South African economy, making the country increasingly dependant on foreign funds. Market opportunities created by large infrastructure projects and the country's favourable international investment ratings are expected to stimulate foreign direct investment.

Table 4: Outlook For Real Gross Fixed Capital Formation

Variable	Average growth rate									
	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	2026 2030	2031 2035	2036 2040	2041 2045	2046 2050
Real government investment	3.6	11.6	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Real public corporations investment	9.7	12.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Real private investment	7.4	11.6	11.2	8.7	7.9	8.1	6.9	6.7	6.7	6.7
Real gross fixed capital formation (GFCF)	**7.0**	**11.6**	**9.3**	**7.7**	**7.2**	**7.5**	**6.6**	**6.0**	**5.6**	**5.6**
Gross fixed formation as % of GDP	16.2	21.4	26.2	29.2	31.0	33.0	34.7	35.4	35.3	34.9

Source: Global Insight calculations

4.4 Labour Markets

Employment creation continues to be one of the most critical and politically sensitive issues in South Africa. Deeply rooted structural problems, including rigid labour law and a large lack of appropriate skills, keep unemployment high despite stronger economic growth. Recent economic growth has not been particularly labour absorbing due to the structural shift in employment creation away from the primary sectors, toward the services sector. This is unsurprising, given the services-sector dominance in the economy and the fact that economic growth was led by consumer spending. According to the macro econometric model the employment elasticity with respect to GDP growth is around 0.51. This means that for every 1% increase in economic growth; private sector employment only increases by 0.51%. Given steady economic growth of close to 6% per annum employment creation is expected to grow at a steady rate of 2.5% per year, which translates to around 400,000 new jobs per annum and only leads to a gain of around 15% on the unemployment rate[3] by 2014—a far cry from the 50% gain targeted by government. Strategies devised to stimulate economic growth, such as infrastructure development and

[3] Expanded definition: Including discouraged workers

other initiatives, are expected to be supportive of the government's goal albeit not necessarily labour intensive. In addition, the government's Accelerated and Shared Growth Initiative for South Africa (ASGI-SA) is expected to address some of the structural difficulties of the labour market as well as skills development. Some of these strategies include The Joint Initiative on Priority Skills Acquisition (JIPSA) and the Expanded Public Works Programmes (EPWP). It is only by continuously growing at a sustainable 6% coupled with before mentioned initiatives that the economy will eventually manage to half the unemployment rate by 2030 and half it again by 2050. It is important to bear in mind that employment gains do not directly translate into a lower unemployment rate due to the continuous growth in the economically active population. Manufacturing and construction are also expected to be big gainers on the employment front in future, on the back of the government's infrastructural development plans.

Table 5: Labour Indicators

	Average growth rate									
Variable	**2001 2005**	**2006 2010**	**2011 2015**	**2016 2020**	**2021 2025**	**2026 2030**	**2031 2035**	**2036 2040**	**2041 2045**	**2046 2050**
Private sector employment	1.8	2.2	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5
Unemployment rate	38.6	36.7	32.4	27.9	23.3	18.4	13.2	9.2	9.1	9.3

Source: Global Insight calculations

4.5 Inflation

Second-round inflationary pressures are expected to keep consumer prices higher for longer. Food prices both at agricultural and manufacturing level portrays tight supply conditions in the market and will continue to place upward pressure on prices both at producer and retail level. Future movements in the currency and oil prices will play a determining role in the direction of prices. Producer prices are however expected to drift downward towards year-end, albeit just because of technical factors resulting from a higher base calculation. Severe capacity constraints in the form of a shortage of raw materials and energy in the economy will lead to upward pressure and prices over the medium term as especially the national energy supplier moves to raise prices to fund its capex program and suppress demand from consumers. Critical skill shortages in the industries related to infrastructural development will keep average real-wage growth at around 2.5% over the short-to-medium term, adding to sustained pressure on prices. CPIX inflation is thus expected to stay near the upper band of the inflation target over the short to medium term albeit softening somewhat towards the end of 2008.

CPIX inflation is however expected to revert back to the midpoint of the inflation-targeting band over the longer term as additional production capacity is generated through sustained high investment. Lower capacity-utilization rates following from the increased economic potential, through infrastructural expansion, as well as the gradual depreciation of the rand against South Africa's major trading partners will keep CPIX inflation around the midpoint of the inflation-targeting band over the medium to longer terms.

Table 6: Inflation

Variable	Average growth rate									
	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	2026 2030	2031 2035	2036 2040	2041 2045	2046 2050
Total remuneration of employees (Nominal)	9.0	10.1	10.2	10.1	10.1	10.1	10.0	10.0	10.0	10.0
Real GDP	3.9	5.2	5.9	6.0	6.0	6.0	5.8	5.8	5.8	5.8
Unit labour cost (ULC)	4.9	4.7	4.1	3.9	3.8	3.8	3.9	3.9	3.9	3.9
Import prices	6.3	8.0	6.2	5.8	4.7	5.1	5.4	4.7	4.7	4.7
PPI	5.6	7.1	4.9	4.6	4.2	4.3	4.5	4.2	4.2	4.2
CPI Food	6.8	6.9	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
CPIX	6.2	5.1	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5
GDP deflator	6.7	6.7	4.6	4.5	4.5	4.5	4.5	4.7	4.7	4.7

Source: Global Insight calculations

4.6 Exchange Rates

Over the short-to-medium term, geopolitical uncertainties, emerging-market sentiment, and the Euro/U.S. dollar exchange rate movements will affect the rand/U.S. dollar exchange rate. The U.S. dollar should decline further over the short to medium term, as the Federal Reserve (Fed) is more likely to cut interest rates, while European central banks are more likely to raise them. Global growth is healthy, with the United States for once lagging rather than leading—which adds downward pressure on the U.S. dollar as well. The US current-account deficit has likely peaked at US$811 billion (6.1% of GDP) in 2006, as 2007 should see the first narrowing of the gap to around US$747 billion but will continue to put downward pressure on the U.S. dollar.

Over the longer term, however, the movements in commodity prices and the stance of the current-account deficit, coupled with the level of international reserves will determine the level of the rand. In this respect, commodity prices are to show some moderation on the back of a global cyclical slowing. Continued strong demand, especially from China and India, should however support non-oil commodity prices going forward. It is the forecast increase in the current-account deficit that would contribute largely to an expected depreciation of the rand/U.S. dollar exchange rate. The depreciation will however be somewhat cushioned by the steady accumulation in reserves underpinning foreign investor interest. The international liquidity position improved steadily from a deficit at the end of 2001 to US$22.98 billion at the end of December 2006 and is continuing throughout 2007. We expect the rand to average 7.19 in 2007 and 7.53 against the U.S. dollar in 2008. From 2009 onwards, the rand is expected to continue to depreciate in line with inflation differentials with South Africa's major trading partners.

Table 7: Exchange Rate

Variable	Average growth rate									
	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	2026 2030	2031 2035	2036 2040	2041 2045	2046 2050
Rand per US$										
	7.9	7.6	9.5	11.1	12.6	14.2	16.0	18.0	20.3	22.9
% change	0.4	5.7	4.1	2.8	2.4	2.4	2.4	2.4	2.4	2.4
Real effective exchange rate	2.8	-3.5	-1.2	-1.1	-0.3	-0.1	-0.2	0.0	0.0	0.0

Source: Global Insight calculations

4.7 Monetary Policy

Monetary policy will remain focused on containing inflation, as measured by CPIX (consumer prices excluding mortgage costs), within the official target range of 3-6% per year, set by the South African Reserve Bank (SARB). Going forward, the monetary stance will be greatly influenced by future movements in the currency, consumer demand's resilience to interest-rate tightening and underlying inflation trends as influenced by labour-market demands and company pricing which could increase inflation expectations. Barring short-term volatility, the rand is expected to continue on its weakening trend on the back of continued current-account weakness. This weakening trend could moderate as rising interest rates usually lead to currency strengthening. A downward bias in several high-frequency demand indicators in the first and second quarters of 2007 points to a reduction in consumers' purchasing power. This trend is strengthened by the new credit laws introduced on June 1 2007. Continued external shocks, in particular crude oil prices and food, have between them significantly pushed core inflation higher. Oil prices are however expected to come off their highs but stay above their long-term trend, while international grain shortages and drought conditions in South Africa are expected to keep pressure on inflation, albeit softening somewhat, throughout 2007, keeping the monetary authorities vigilant. A stable monetary-policy stance is expected for the rest of 2007 on the back of a notable slowdown in the manufacturing sector, together with restrictive fiscal policy which will provide some counterbalance to excesses in the monetary arena. The expected downward trend in inflation evident from the second quarter of 2008 will justify a loosening of monetary policy from that quarter onwards keeping real prime rates at 6% over the longer term.

Table 8: Interest Rates

Variable	Average growth rate									
	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	2026 2030	2031 2035	2036 2040	2041 2045	2046 2050
Repo rate	9.8	8.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Prime rate	13.2	11.9	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Real prime rate	7.0	6.8	6.1	6.0	6.0	6.0	6.0	6.0	6.0	6.0

Source: Global Insight calculations

4.8 Fiscal Policy

The fiscal stance is expected to complement monetary policy over the medium term and could be described as counter cyclical. The fiscal stance is expected to complement monetary policy over the medium term and could be described as being counter cyclical. The current phase of the economic cycle also requires fiscal policy to complement monetary policy as to not further stimulate domestic demand putting further upward pressure on interest rates. According to recent government forecasts, which are supported by our own, expenditure growth will slow somewhat to render fiscal surpluses for the next four years. A fiscal surplus of about 0.8% of GDP in fiscal 2007/08 is expected, followed by small surpluses in the next three years. This surplus follows the deficits of -1.5% for the 2004/05 fiscal year and the -0.4% for the 2005/06 fiscal year and the surplus of 1.0% for the 2006/07 fiscal year. Over the longer term, prudent fiscal policy will keep the budget deficit as a share of GDP below 3% despite increased fiscal spending. A budget deficit of these magnitudes will be easily funded through a mixture of foreign and domestic debt, and thus no undue pressure on long-term interest rates is expected. Increased infrastructure spending is of paramount importance to elevate and sustain economic growth. Some concerns however still centre on state departments and local authorities' capacity to spend the allocated amounts as a serious shortage of skills remains over the short to medium term. However, the government has set aside funds to finance capacity-building initiatives, which is expected to bear fruit over the longer term.

Table 9: Budget Deficit

	Average growth rate									
Variable	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	2026 2030	2031 2035	2036 2040	2041 2045	2046 2050
Budget deficit as % of GDP deficit	-1.4	-0.1	-1.9	-2.1	-2.2	-2.3	-2.4	-2.5	-2.6	-2.7

Source: Global Insight calculations

4.9 External Sector

A current-account deficit of above 6.0% is expected for 2007on the back of strong import demand following from the infrastructural spending drive in the economy. Over the medium term, we expect the deficit on the current account to remain near to 6% as a ratio to GDP, despite the prospect of possible lower oil costs and the fact that the softer rand will inhibit imports and encourage exports. If the large number of investment projects announced by the government is considered—which is also likely to contribute to private investment spending—and a large proportion of the capital equipment that will be required by these projects will have to be imported, it stands to reason that the current-account deficit will have to widen. We are currently not overly concerned about the size of this deficit, as a current-account deficit caused by the import of capital equipment should be quite sustainable.

Notwithstanding the aforementioned, South Africa remains dependent on foreign portfolio flows to finance its external imbalances. Domestic savings are extremely low and are not forecast to improve significantly due to a low savings propensity in the South African economy. Although capital inflows in recent years have been more than sufficient to cover the current-account shortfall, the nature of the capital flows remains problematic. Another concern centres on the growing dividend payments to foreigners which are likely to push

the invisible balance further into the red. Foreign-exchange controls still impeded domestic investors to invest fully abroad whereby future dividend outflows could be countered by dividend inflows.

Table 10: External Sector

	Average growth rate									
Variable	**2001 2005**	**2006 2010**	**2011 2015**	**2016 2020**	**2021 2025**	**2026 2030**	**2031 2035**	**2036 2040**	**2041 2045**	**2046 2050**
Terms of trade (incl gold)	1.7	4.0	0.1	-0.3	0.0	-0.3	-0.3	0.3	0.3	0.3
Real gold exports	-7.7	-3.4	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Real merchandise goods (excl gold) exports	2.9	8.1	7.2	7.4	7.2	7.2	7.1	7.0	7.0	7.0
Real services exports	9.4	5.8	4.9	5.0	4.9	4.9	4.7	4.7	4.7	4.7
Real exports of goods and services	2.9	7.1	6.5	6.9	6.8	6.8	6.7	6.2	5.6	5.6
Exports as % of GDP	26.7	28.1	29.6	30.5	31.8	32.8	34.2	35.3	35.2	34.9
Real merchandise goods imports	7.9	12.2	6.7	6.2	6.2	6.6	6.5	6.6	6.6	6.6
Real services imports	7.6	4.5	5.9	6.0	6.0	6.0	5.8	5.8	5.8	5.8
Real imports of goods and services	7.8	11.0	6.6	6.2	6.2	6.5	6.5	6.1	5.6	5.6
Imports as % of GDP	26.6	36.7	40.1	40.2	40.8	41.4	42.5	43.5	43.3	42.9
Balance on current account (% of GDP)	**-1.4**	**-6.7**	**-6.0**	**-4.7**	**-2.9**	**-2.0**	**-1.5**	**-0.9**	**-1.0**	**-1.0**

Source: Global Insight calculations

Note: Currently Europe is South Africa's largest trading partner as around 35.6% of total SA trade is with Europe. This is both on the import and export side as imports from Europe make up 35.9% of total SA imports and 35.4% of all SA exports has Europe as destination. Following Europe is Asia compromising 27.1% of all SA trade and then North America (9.7%) and Africa is SA's forth largest trading partner making up 9.2% of all SA trade. Currently 13.3% of SA exports go to Africa, while around 5.7% of SA's imports come from Africa.

Interesting to note is that South Africa's imports from Asia has increased by 127% between 2002 and 2006, while exports have increased by 27% over the same period. Over the same period South African imports from Africa has jumped by 200% and exports have grown with 20%. Imports from Africa is dominated by mining and quarrying products while exports are mainly manufactured goods, while both exports to and imports from Asia is dominated by manufactured goods and some mining and quarrying exports.

South Africa is expected to strengthen and maintain its ties with Asia and the Middle East as set up in the 'New Asian-African Strategic Partnership' of April 2005. Therefore South Africa will continuously increase its trade relations with Asia, especially China while China is increasingly investing in infrastructure in Africa. In this sense the supply of manufactured goods in Africa both from a domestic and a Chinese origin is continuously increasing and could become a potential source of manufactured imports for South Africa.

While it is not expected that Africa will become South Africa's major trading partner over the medium and even longer term, Africa could be playing a more important role in South Africa's trade with the help of China. Asia could well become more important as a trading partner for South Africa's over the medium term, both on a direct and indirect (through Africa) manner making the rand's movement against the Asian currencies more important. The US dollar is however still expected to be the mayor reserve currency internationally, making movements in all the currencies vis-à-vis the US dollar still extremely important.

5 Alternative Scenarios

5.1 Background

Having provided the above background about the South African economy the focus in the next part of this section will be on possible economic futures for South Africa. This will be done by means of two econometric models and by using the results of the macro-economic model as baseline ('business as usual'). An optimistic and pessimistic economic scenario for South Africa for the period 2005 to 2050 will be constructed. The models to be used are an input-output model to determine the economic impacts of future risks to the economy and a Monte Carlo probabilistic model to generate future economic growth paths. More details about these models are provided below.

5.2 Modelling Methodologies and Assumptions

As indicated above, three econometric models were used to arrive at economic scenarios for the period 2005 to 2050, namely a macro-economic model as well as input-output and Monte Carlo modelling.

For the purposes of this study a 2005 input-output model was used. This model was constructed by Statistics South Africa on the basis of a variety of results obtained regarding GDP, the labour market, economic activities, compensation of employees, household surveys and income and expenditure surveys. The structure of this model is as follows:

Figure 1: Structure of Input-Output Model

	Intermediate consumption	Final consumption			
Supply of goods	Economic sectors	Households	Government	Exports	Inventories
Economic sectors					
Value added	Employment, profit-type income, capital consumption allowances, compensation of employers and taxes	Gross national product			

Source: BMR

For the purposes of this study a number of potential economic impacts were studied, namely:

- the future economic impact of global and regional economic prospects;
- the future economic impact of changes in oil prices;
- the future economic impact of HIV/AIDS;
- the future economic impact of skills availability.

By means of input-output modelling the likely future impact of each of the abovementioned factors on the future South African economy was determined. As the basis of such modelling the following data was used:

- a total of 5.5 million individuals are presently HIV-positive and reside in 3 million households. It is expected that the number of HIV-positive individuals will decrease continuously during the forecast period due to a growing number of AIDS-related deaths per annum and fewer new infection gains;

- about 36 % of South African's fuel requirements are met by synthetic fuels produced in South Africa from coal and natural gas, while products refined from imported crude oil make up the other 64 % of fuel requirements. For the purposes of this study it was assumed that synthetic fuels, together with bio-fuels, will provide a maximum of 40 % of future fuel requirements, making South Africa largely dependent on the availability of Brent crude oil. In the case of high international oil prices or shortages it can be expected that synthetic fuel production will be increased to cater for a larger percentage of South Africa's fuel requirements. It was also assumed that during the forecast period hybrid technologies will lead to higher levels of fuel efficiencies and that alternatives to fuel would emerge and would be applied as replacement energy sources;

- it was assumed that world economic output growth will remain at levels of about 3 % to 4 % as experienced during the period 2001 to 2006, and may even be somewhat higher than 4 % due to the economic impact of China and India dramatically increasing their productive capacities and output; and

- it was assumed that the percentage of people in South Africa 20 years of age and older with a matric qualification will increase further from 21.1 % of the population in 2002 to 23.9 % in 2006, to about 26 % by 2010 and to about 35 % by 2050. It was also assumed that the current high levels of skills flight will continue.

By means of input-output modelling the following average annual conjoint aggregate demand impacts of the abovementioned risk factors were obtained:

Average annual aggregate demand impact (%)

Consumption expenditure

(1) HIV/AIDS	0.0110

Investment

(1) Skills	0.0240
(2) Oil	0.0150

Government expenditure

(1) HIV/AIDS	0.0040

Exports

(1) Global growth	0.0120

Imports

(1) Oil	0.0107
Total impact per annum (%)	**0.0767**

Apart from the above variables whose impact on aggregate demand was determined by means of input-output modelling for inclusion in the generation of economic scenarios, there are a number of other variables that will probably have some future economic impact, but of which the economic impacts cannot be readily quantified and therefore cannot be fully included in the input-output model used for the purposes of this study. Such variables include:

- environmental aspects such as global warming;
- the introduction of new technologies;
- the introduction of new energy sources;
- the availability of sufficient coal reserves for the production of synthetic fuels.

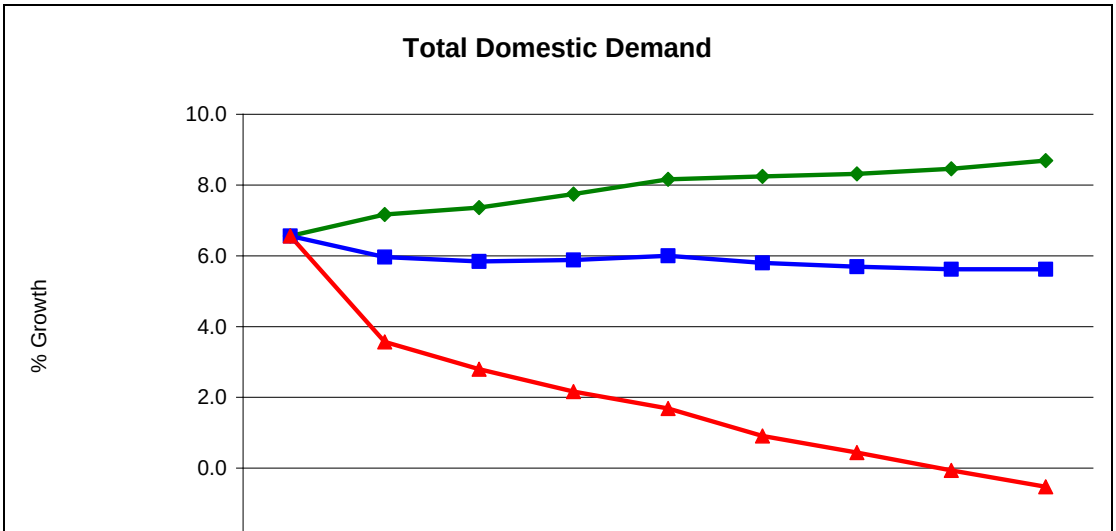
Although such variables could not be included directly into the input-output model, they were taken into account when describing the various economic scenario outcomes.

By means of Monte Carlo modelling techniques the impact results derived through input-output modelling were brought in relation to the forecast results of the macro-economic model in order to generate future economic scenarios. The term ‘simulation’ refers to any analytical method meant to imitate a real-life system. By means of Monte Carlo modelling not only a single simulation per year is possible, but literally millions of simulations per year based on available computing power. For the purposes of this study a total of 65 000 simulations per year were generated in order to produce economic scenarios. The term ‘scenario’ refers to possible futures that take into account different futures of greatest likelihood, while taking into account various variables enhancing and/or depressing the likelihood that specific futures will realise. The results of the scenarios generated for the purposes of this study are given in the next section.

5.3 Economic Scenario Results

It is difficult to produce long range forecasts regarding future economic performance due to the numerous variables that could impact on future economic success or failure in South Africa. It is especially difficult to foresee phenomena such as new diseases impacting on human resources in South Africa, future economic policies that could either be facilitative or detrimental towards economic growth, future droughts and capital flight, future multipliers and leakages in the South African economy as well as the decisions made by entrepreneurs to either invest or disinvest in South Africa. The results shown in this section with regard to high variant, middle variant and low variant economic scenarios are based on macro-economic forecasting, input-output modelling as well as Monte Carlo scenario modelling in order to derive scenarios of greatest likelihood given current knowledge of the economy and foreseen future economic, socioeconomic, political, social and technological trends.

Figure 2: Growth in Total Domestic Demand, 2005 To 2050

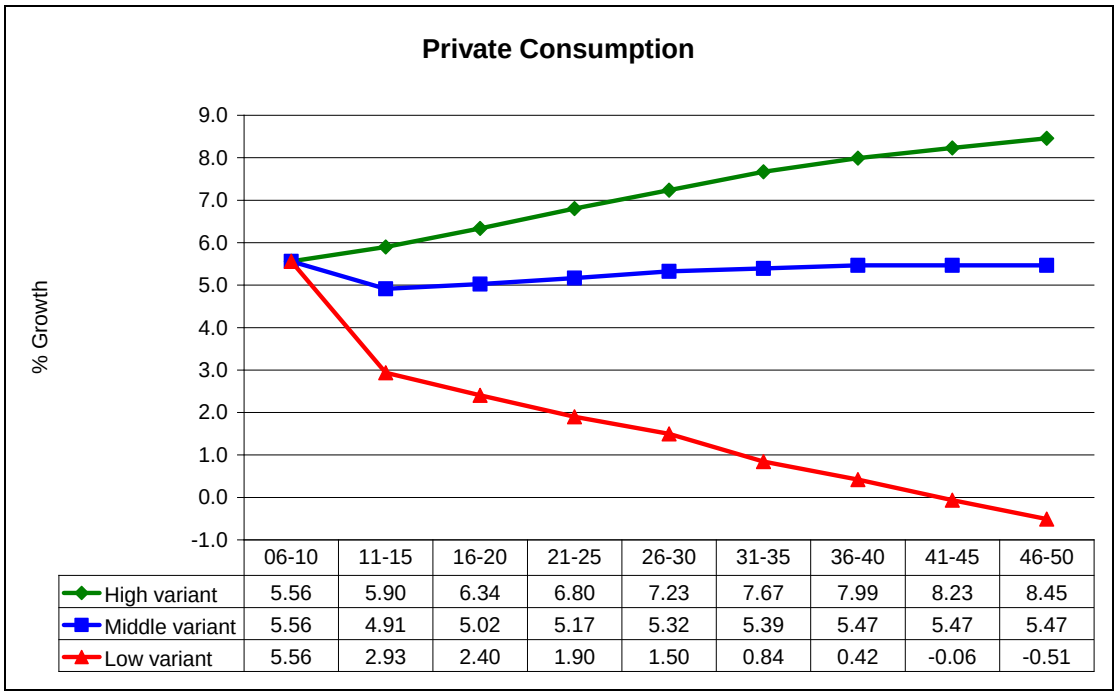


	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	6.56	7.16	7.36	7.74	8.16	8.24	8.31	8.46	8.69
Middle variant	6.56	5.96	5.84	5.88	6.00	5.80	5.69	5.62	5.62
Low variant	6.56	3.57	2.79	2.16	1.68	0.91	0.44	-0.07	-0.53

Source: BMR

In figure 2 three variants are shown with regard to the growth in total domestic demand over the period 2005 to 2050. The middle variant taken from the macro-economic forecast postulates that the percentage growth in total domestic demand will differ in a narrow band between about 5 % and 7 % during the forecast period and will decline somewhat towards the end of this period driven by some demand saturation. It appears from input-output modelling as well as Monte Carlo forecasting that high variant growth in total domestic demand of 8 % or more could be achieved during the period 2025 and 2050 given sound economic policies, sustained growth in employment and average compensation, higher levels of foreign direct investment in South Africa as well as lower levels of HIV/AIDS impacts on population growth. However, it could come about over the forecast period that job creation remains at lower levels, that higher levels of direct investment in the economy are not being achieved, that compensation grows at lower levels and that future economic policies and practices lead to economic stagnation giving rise to lower levels of growth in total domestic demand resulting in the low variant as shown in figure 2.

Figure 3: Growth in Private Consumption Expenditure, 2005 To 2050

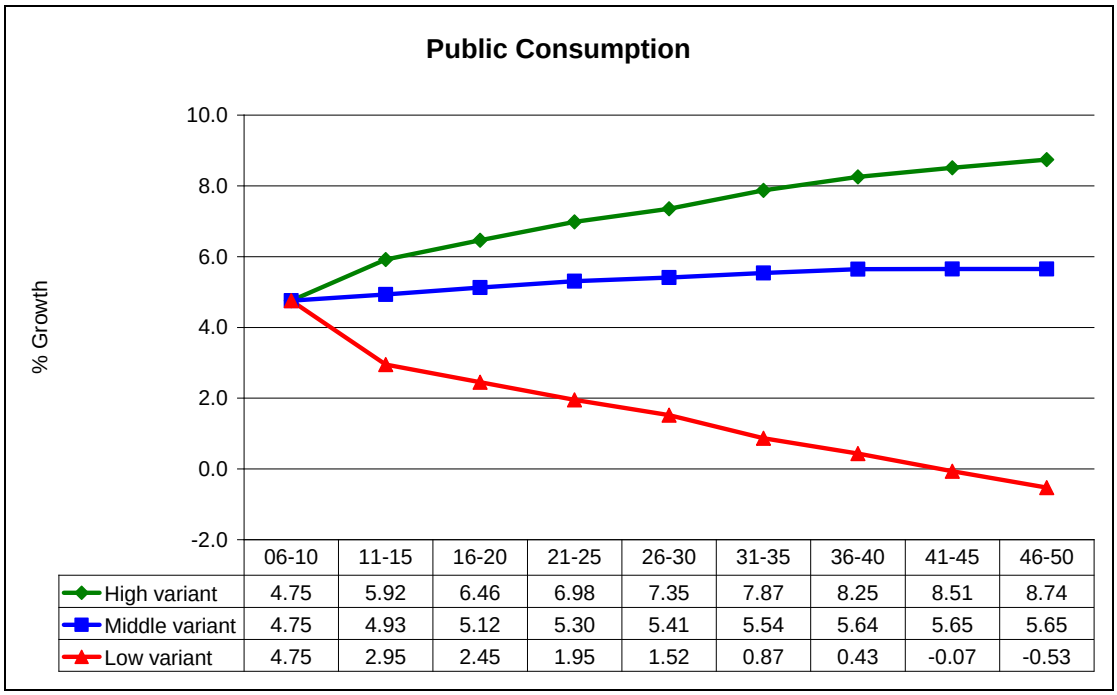


	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	5.56	5.90	6.34	6.80	7.23	7.67	7.99	8.23	8.45
Middle variant	5.56	4.91	5.02	5.17	5.32	5.39	5.47	5.47	5.47
Low variant	5.56	2.93	2.40	1.90	1.50	0.84	0.42	-0.06	-0.51

Source: BMR

It appears from figure 3 that growth in private consumption expenditure during the period 2005 to 2050 will remain at levels of about 5 % per annum throughout the forecast period, as shown in the middle variant. However, rising living standards driven by higher levels of employment, compensation growth as well as entrepreneurship, could contribute to strong growth in private consumption expenditure being experienced during the period 2005 to 2050. It is expected that a high growth path with regard to private consumption expenditure in South Africa could be realised given the rapid growth in demand for goods and services experienced during recent years, the rapid growth in the buying power of the emerging black middle class, the growing levels of employment in South Africa as well as growing levels of formal sector entrepreneurship. However, economic stagnation is also possible in the future due to lower levels of investment in the economy driven by a possible global and regional slow-down in economic activities, continuing low levels of foreign direct investment in South Africa as well as an investor-unfriendly future economy as a result of possible future economic policies and practices discouraging investment in South Africa.

Figure 4: Growth in Public Consumption Expenditure, 2005 To 2050

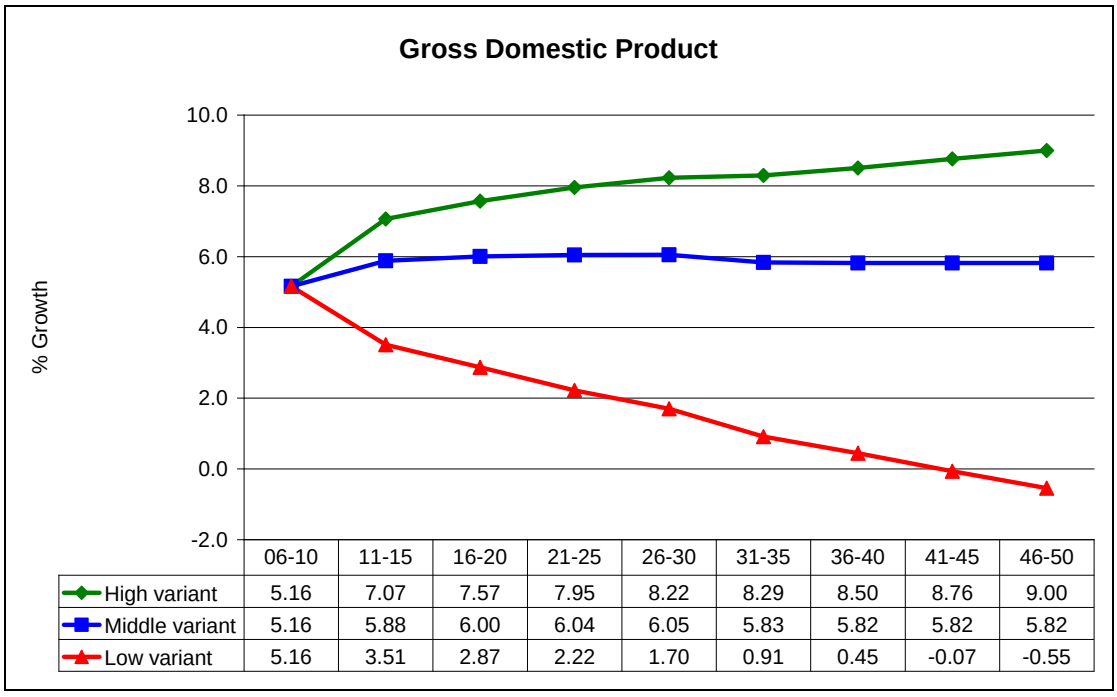


	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	4.75	5.92	6.46	6.98	7.35	7.87	8.25	8.51	8.74
Middle variant	4.75	4.93	5.12	5.30	5.41	5.54	5.64	5.65	5.65
Low variant	4.75	2.95	2.45	1.95	1.52	0.87	0.43	-0.07	-0.53

Source: BMR

It appears from the middle variant shown in figure 4 that public consumption expenditure will probably decline somewhat during the period 2005 to 2050 driven by more prudent fiscal policies, lower levels of public capital expenditure projects as well as a growing number of public-private partnerships where the private sector assumes responsibility for higher levels of social expenditure. However, it is possible that a higher growth path in this regard could be realised should government maintain a strong role in the economy in spending on both capital and social expenditure projects. In this event, about 6 % growth per annum in public consumption expenditure during the period 2005 to 2050 could be realised. In the event of economic stagnation with the fiscus obtaining less money to spend on capital and social expenditure projects, far lower growth paths with respect to public consumption expenditure could be realised over the forecast period as shown in the low variant in figure 3. Generally, it is expected that public consumption expenditure will not decline significantly over the period 2005 to 2050 but will, however, change in structure during this forecast period as new spending priorities arise.

Figure 5: Growth in Gross Domestic Product, 2005 To 2050



	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	5.16	7.07	7.57	7.95	8.22	8.29	8.50	8.76	9.00
Middle variant	5.16	5.88	6.00	6.04	6.05	5.83	5.82	5.82	5.82
Low variant	5.16	3.51	2.87	2.22	1.70	0.91	0.45	-0.07	-0.55

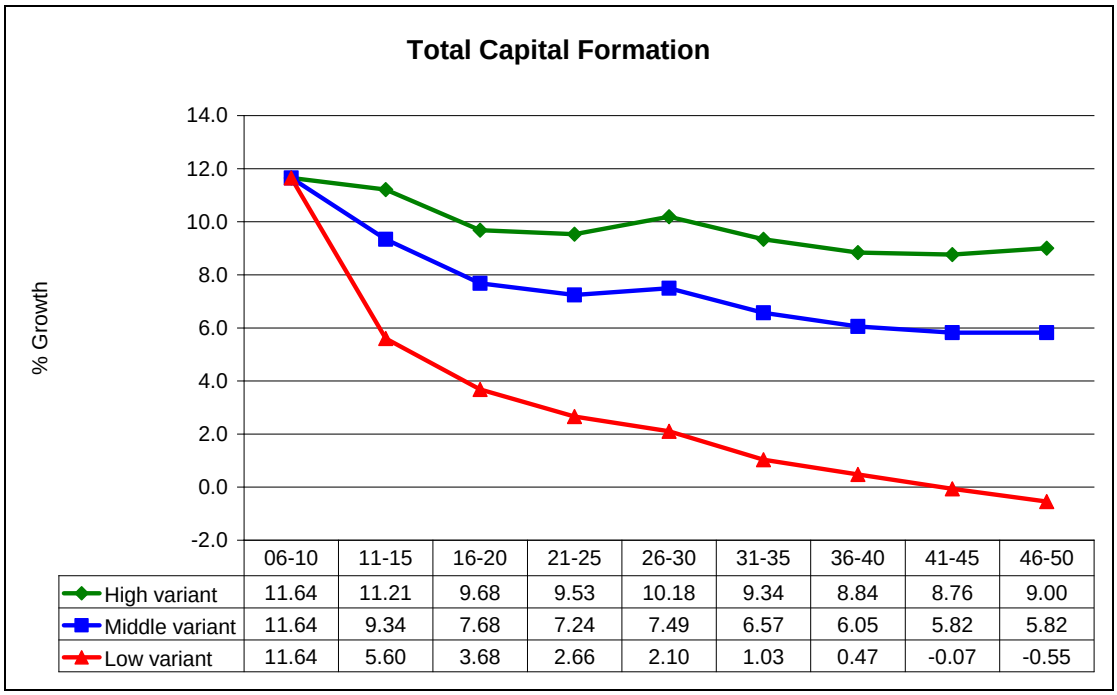
Source: BMR

As is evident from figure 5, on the basis of the macro-economic model, it is expected that a growth path of about 6 % per annum in gross domestic product could be realised during the period 2010 to 2050. This is premised on a 'business as usual' scenario assuming that prudent fiscal policies, investment-friendly economic policies, relatively high consumption expenditure growth per annum, addressing structural constraints in the economy as well as employment and compensation growth will continue over the forecast period. Should the structural constraints be addressed more aggressively, the impact of HIV/AIDS faced head-on, and a more investment-friendly climate be created in South Africa while ensuring a more equal distribution of income, a high economic growth path as shown by the high variant of close to 8 % per annum could be realised. However, it will be important to cap growth at about 8 % to ensure that a high level of consumer price inflation as well as producer price inflation is averted. South Africa could conceivably during the medium- to long-term future, experience a Zimbabwean scenario as is shown by the low variant growth path reflected in figure 6. In this event future economic policies could give rise to an investor-unfriendly environment leading to stagnation in business and consumption growth in South Africa. In terms of the low variant scenario stagnation in consumption expenditure could give rise to a slump in production activities, which in turn would give rise to lower employment and compensation growth that in turn would give rise to lower consumption expenditure leading once again to lower production levels, thus creating a negative spiral in the economy and leading to lower and lower levels of economic growth during the forecast period.

The Zimbabwe scenario is not seen as a likely scenario in South Africa due to the structural composition of the South African economy with manufacturing and the wholesale and retail sectors contributing nearly 60 % of GDP, enabling the economy to become more export oriented during the forecast period compared to Zimbabwe who is very dependent

on agricultural exports that were severely impacted on by agricultural and land reform policies in that country.

Figure 6: Growth in Total Capital Formation, 2005 To 2050



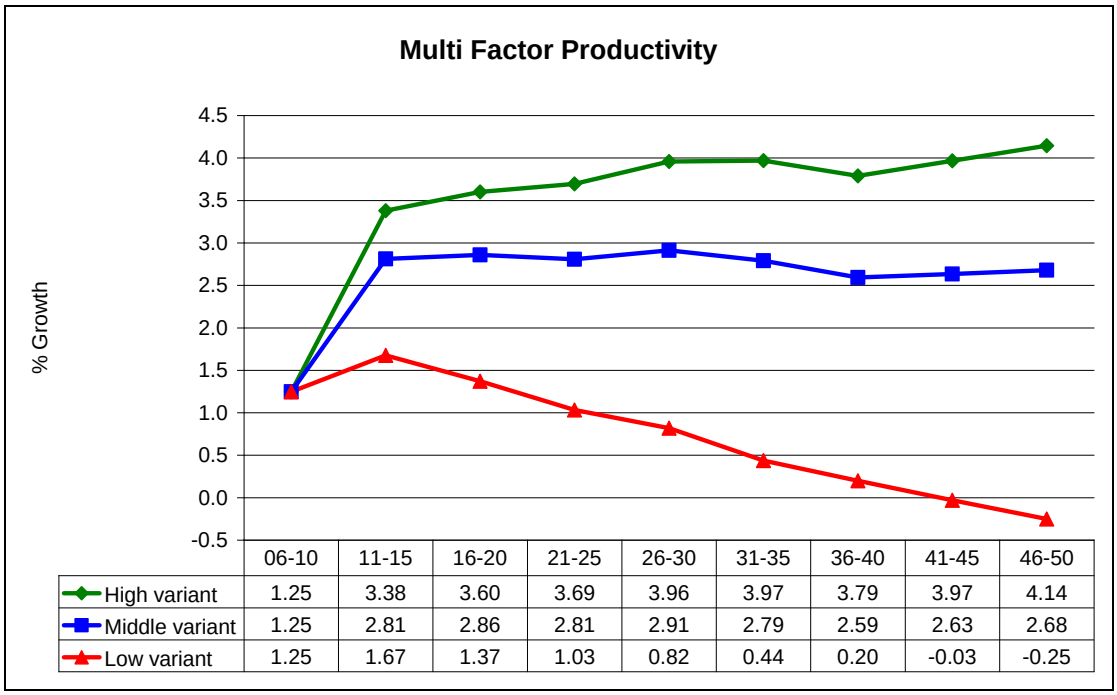
	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	11.64	11.21	9.68	9.53	10.18	9.34	8.84	8.76	9.00
Middle variant	11.64	9.34	7.68	7.24	7.49	6.57	6.05	5.82	5.82
Low variant	11.64	5.60	3.68	2.66	2.10	1.03	0.47	-0.07	-0.55

Source: BMR

South Africa has been experiencing high levels of total capital formation driven by rapid industrial expansion, infrastructure development as well as public consumption expenditure to ensure a better infrastructure for production, industry as well as for the 2010 Soccer World Cup. It is expected that the high levels of total capital formation will taper somewhat during the forecast period, from about 11 % per annum during 2005 – 2009 to about 6 % by 2045 – 2050. Although total capital formation will still be growing at high levels during 2045 – 2050, it will be somewhat lower due to infrastructure development saturation that will be achieved by 2050, which does not preclude further development (albeit at lower levels than current catch-up infrastructural development) and maintenance of existing infrastructure (see figure 6). However, it could be that the current high levels of capital formation could be sustained over a longer period of time as is indicated by the high variant driven by higher levels of foreign direct investment in South Africa, sustained high levels of infrastructure development and upgrading of existing infrastructure as well as by both government and the private sector investing heavily in capital formation during the forecast period.

It is also foreseen that a low variant growth path with regard to total capital formation could be realised during the forecast period should far lower levels of capital expenditure by both the private and public sectors realise over the forecast period, should organisations decide to increase the capacity utilisation of existing infrastructure even further, and/or in the event of future economic stagnation where sufficient funds for capital formation are unavailable, a low growth path could realise.

Figure 7: Growth in Multi-Factor Productivity, 2005 To 2050

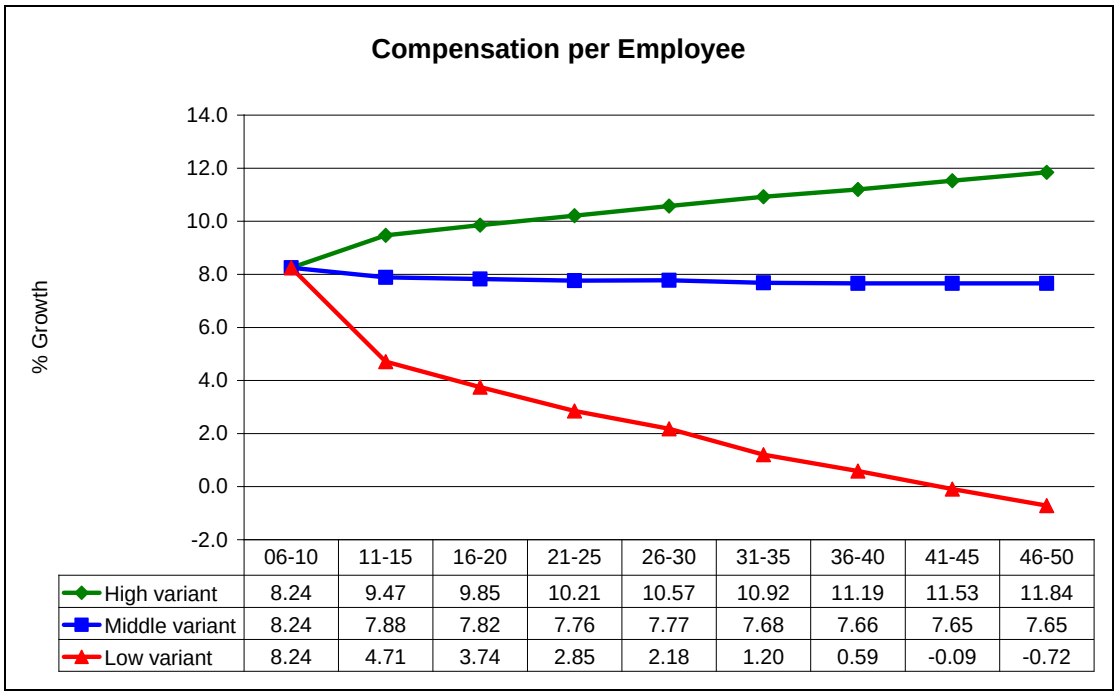


	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	1.25	3.38	3.60	3.69	3.96	3.97	3.79	3.97	4.14
Middle variant	1.25	2.81	2.86	2.81	2.91	2.79	2.59	2.63	2.68
Low variant	1.25	1.67	1.37	1.03	0.82	0.44	0.20	-0.03	-0.25

Source: BMR

The level at which a high variant growth path will be realised with regard to multi-factor productivity in South Africa, will to a large extent be determined by the level at which structural constraints in the economy are addressed, and here especially with regard to skills levels and the skills mix in South Africa. Should current skills shortages remain unaddressed and the competitive ability of the economy not be enhanced, a lower growth path could be realised as reflected in figure 7. Under a 'business as usual' scenario it is expected that a multi-factor productivity growth path of about 3 % could be realised over the forecast period given the growing number of skilled people entering the labour market, a growing number of companies that are able to compete in global markets as well as the growing number of formal sector operators within the secondary and tertiary sectors of the economy that are optimising their competitive abilities in order to survive as companies in an increasingly competitive environment in South Africa and globally.

Figure 8: Growth in Compensation Per Employee, 2005 To 2050

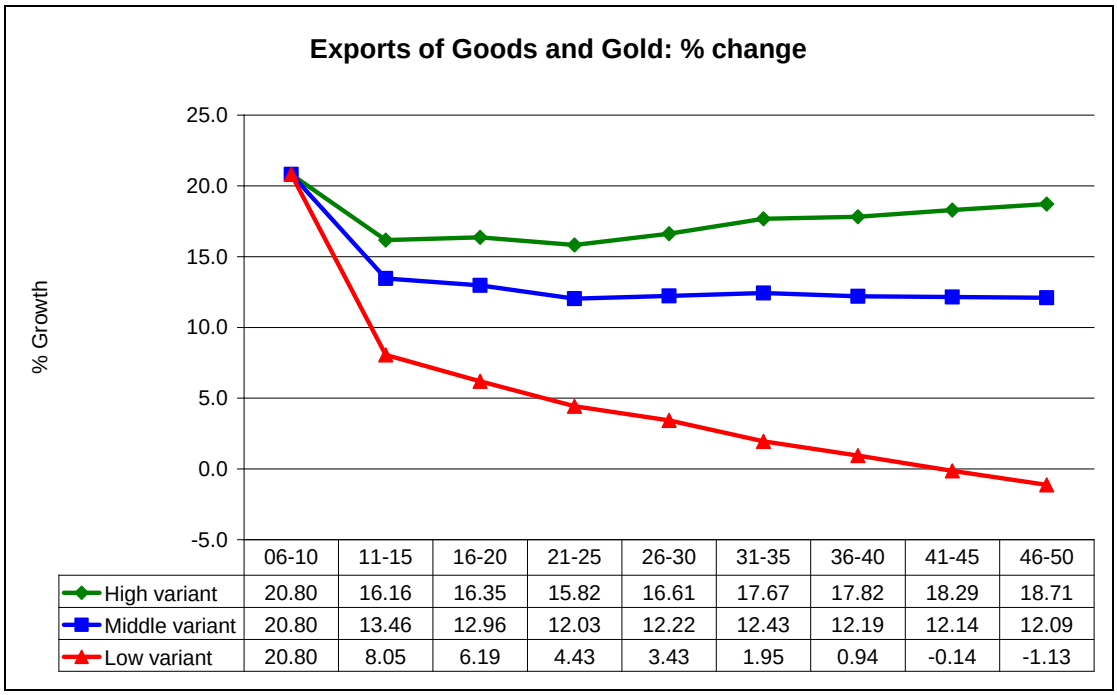


	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	8.24	9.47	9.85	10.21	10.57	10.92	11.19	11.53	11.84
Middle variant	8.24	7.88	7.82	7.76	7.77	7.68	7.66	7.65	7.65
Low variant	8.24	4.71	3.74	2.85	2.18	1.20	0.59	-0.09	-0.72

Source: BMR

Figure 8 shows the percentage growth in compensation per employee. It appears that under a 'business as usual' scenario it is expected that growth levels of about 8 % per annum will be maintained over the forecast period, driven by higher levels of productivity, the necessity to adapt compensation levels as a result of inflation, sustained trade union activity during this period ensuring high levels of employee compensation growth, as well as the expansion of businesses in South Africa giving rise to high levels of employment, and here especially of skilled employment. Especially in a knowledge economy where more skilled workers are employed with higher salaries, a higher employee compensation growth path of 10 % per annum or higher could be achieved during the forecast period as shown in the high variant forecast. However, it could also be that due to economic stagnation lower levels of employment are realised, giving rise to lower levels of trade union demands for high wage increases, thus giving rise to lower levels of compensation growth per employee during the forecast period.

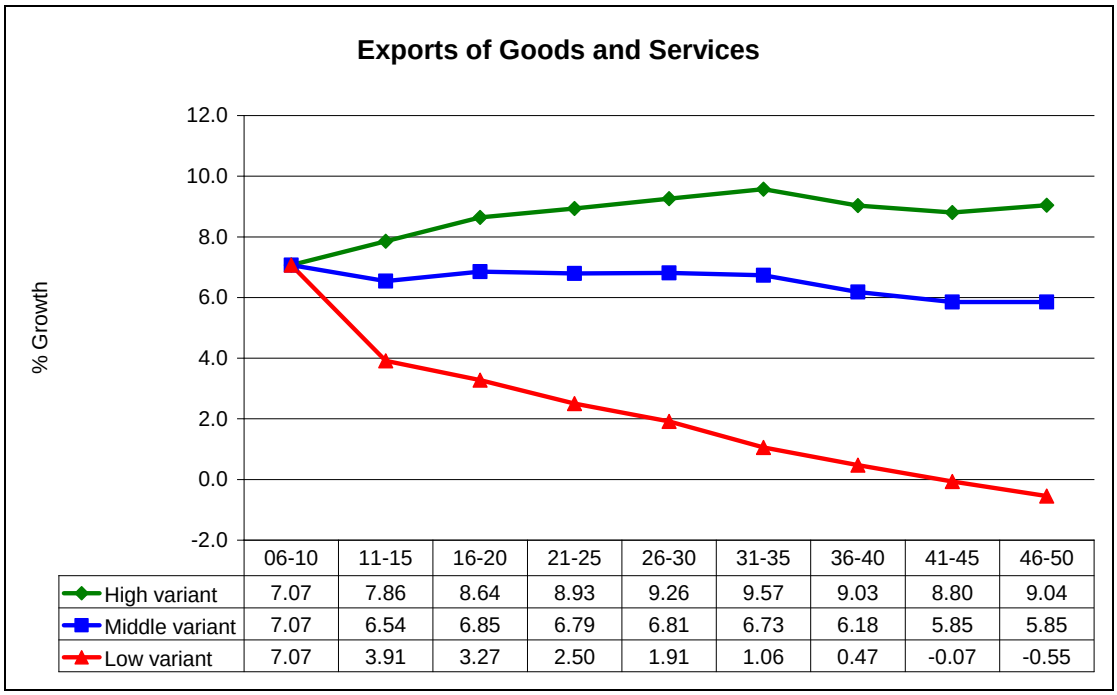
Figure 9: Exports of Goods And Gold, 2005 To 2050



	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	20.80	16.16	16.35	15.82	16.61	17.67	17.82	18.29	18.71
Middle variant	20.80	13.46	12.96	12.03	12.22	12.43	12.19	12.14	12.09
Low variant	20.80	8.05	6.19	4.43	3.43	1.95	0.94	-0.14	-1.13

Source: BMR

Figure 10: Exports of Goods And Services, 2005 To 2050



	06-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
High variant	7.07	7.86	8.64	8.93	9.26	9.57	9.03	8.80	9.04
Middle variant	7.07	6.54	6.85	6.79	6.81	6.73	6.18	5.85	5.85
Low variant	7.07	3.91	3.27	2.50	1.91	1.06	0.47	-0.07	-0.55

Source: BMR

Figures 9 and 10 reflect the possible growth paths with regard to the growth in exports of goods and gold (figure 9) and exports of goods and services (figure 10). It appears from both figures that it is expected that over the forecast period the levels of exports of goods and gold and goods and services will decline somewhat driven by lower demand for gold on international markets as well as a growing number of marginal goldmines in South

Africa, the growing dominance of India and China on world markets making exporting, and here especially to other African countries, more difficult, as well as a gradual move from consumption driven growth in South Africa towards investment driven growth.

Should South Africa's ability to compete in international markets be strengthened by addressing structural constraints to growth, having a sufficiently large skills pool available to produce high quality goods, invest sufficiently in research and development to develop goods and services that can compete successfully in international markets, a higher growth path with respect to the exports of goods and gold and goods and services could be achieved during the forecast period. However, it appears that a Zimbabwe scenario, in which there is stagnation in the growth of exports, could also be achieved given economic stagnation in South Africa as well as structural constraints to growth and higher productivity not being addressed, giving rise to a growing inability to compete successfully in international markets.

Table 11 provides a summary of the three scenarios reflected in figures 2 to 10. In this table the middle variant is referred to as the 'baseline' or the 'business as usual' scenario, while the low variant is referred to as the 'relatively pessimistic' scenario and the high variant is referred to as the 'relatively optimistic' scenario. In terms of the relatively pessimistic scenario there will be a continuous decline in gross domestic product growth during the forecast period, together with a decline in the growth rates in the exports of goods and services, compensation growth per employee, employment growth, growth in private consumption expenditure, growth in public consumption expenditure as well as growth in total capital formation. In terms of the relatively pessimistic scenario it is expected that slower global growth and higher oil prices coupled with high levels of HIV/AIDS as well as a skills deficit will impact on the South African economy in various ways, namely:

- There will be a negative impact of these factors on South Africa's export performance and output.
- The increase in the oil price will put upward pressure on import costs and hence domestic prices.
- The resulting inflationary pressures result in a weakening of the terms of trade and the current account, thereby putting pressure on the rand, further fuelling inflation.
- The monetary authorities react to this situation by increasing interest rates.
- Higher interest rates raise the opportunity costs of purchasing consumer items and real household consumption expenditure declines.
- Fuelling output and lower capacity utilisation also put downward pressure on real wages in the economy, which reduces unit labour costs further, thereby inhibiting consumption expenditure. Higher levels of HIV/AIDS reduce the economic active population, which further inhibits consumption expenditure.
- This has a negative impact on output that causes investment to decline. Investment expenditure is also inhibited by higher user costs of capital as the increase in short-term interest rates spills over into higher long-term interest rates.
- The said skills shortage further inhibits investment spending. During this process, firms adjust their inventory levels downwards. With final household consumption expenditure, investment and inventories declining, gross domestic expenditure, output and the economy-wide capacity utilisation declines, resulting in slower employment growth. These various factors all have negative regional effects that once again negatively impact on the South African economy.

Table 11: Summary of Scenarios

Aspect	Relatively pessimistic	Possible reasons	Baseline	Possible reasons	Relatively optimistic	Possible reasons
GDP growth	Continuous decline	Declining aggregate demand	Stable at 5-6 %	Free market policies remain	Increase to 5-9 % growth path	Structural constraints addressed
Exports of goods and services	Continuous decline	Inability to penetrate international markets	Some decline from 7 to 5.7 %	Competitive ability stagnates	Increase to above 8 % PA	Competitive ability enhances
Change in compensation per employee	Continuous decline due to inflation, etc	Smaller margin between wage increases and CPI	Stable at about 8 % PA	Business as usual	Increase to about 12 % PA (high growth, low CPI)	Bigger margin between wage increased and CPI
Employment growth	Continuous decline	Decreasing job creation, more capital intensive	Grow to about 2.1 % PA	More job creation, more labour intenstive	Grow to about 3.3 % PA	Rapidly increasing production elasticity of employment
Growth in total domestic demand	Continuous decline	Declining growth in disposable income and ensuing negative transmission	Gradual decline from 6.5 to 5 %	Slight decline in household consumption expenditure	Increase to about 8 % PA	High growth in disposable income and ensuing positive transmission effects
Private consumption expenditure	Continuous decline	Declining growth in household disposable income effects	Decline from 6 to 5 % PA and then stable	Business as usual	Increase to nearly 8 % PA	Increased growth in household disposable incomes
Public consumption expenditure	Continuous decline	Stagnation in tax revenue growth	Decline from 5.5 to 4.1 % PA and then stable	Business as usual re tax revenue growth	Increase to 6.5 % PA	Increasing tax revenue growth
Total capital formation	Continuous decline	Low business confidence, low investment capital	Decline from 11 to about 4.6 % PA	Business as usual re business confidence	Decline from 11 to about 8.4 % PA	Increased business confidence

The baseline scenario shown in the above table was derived from the 'business as usual' forecast produced by means of the macro-economic model. In terms of this forecast GDP growth is expected to remain stable at about 5 % – 6 % during the forecast period, while the exports of goods and services will decline from 7 % in 2005 to about 5.7 % by 2050. Furthermore, the changing compensation per employee will remain stable at about 8 % per annum throughout the forecast period, while employment growth will increase somewhat to about 2.1 % per annum by the end of the forecast period. Focusing on consumption aspects, it appears from the figures produced by means of the macro-economic forecast that total domestic demand will decline from about 6.5 % growth per annum in 2005 to about 5 % by 2050, while private consumption expenditure will decline from about 6 % in 2005 to about 5 % per annum by 2050, while public consumption expenditure will decline from about 5.5 % in 2005 to 4.1 % per annum by 2050. All-in-all, the 'business as usual' scenario is indicative of macro-economic stability throughout the forecast period, with the assumption that some of the structural constraints to a higher growth path will be addressed, that capital formation will remain at high levels, that both the public and private sectors will continue with fairly high levels of consumption expenditure, that employers will maintain fairly labour intensive production processes and that growth in total domestic demand will remain fairly high throughout the forecast period.

In terms of the scenario-building conducted for the purposes of this study, it appears that there may be some risks to the economy continuing to perform as projected in terms of the 'business as usual' scenario. The possible negative economic results associated with such a scenario were shown in the discussion of the relatively pessimistic scenario above. However, it appears that the opposite may also become true. A relatively optimistic scenario could be possible given higher levels of investment in South Africa, that structural constraints to growth are effectively addressed, that production processes continue to become more labour intensive and that prudent economic and fiscal policies are maintained throughout the forecast period. An indication of this relatively optimistic scenario realising, can be found in the fact that the actual performance of the economy presently is more robust than was predicted by ABSA in its long-term economic prospects document in 2003 (ABSA, 2003). Whereas ABSA predicted that under an optimistic scenario the economy could be growing by about 4 % during the period 2003 to 2017, substantially higher levels of economic growth than 4 % were already realised during 2006. This is indicative of the fact that the economy could potentially grow according to a higher growth path than anticipated by means of earlier models. This was taken into account for the purpose of this modelling exercise and the question was asked: 'How high can the economy go during the period 2005 to 2050?' Irrespective of the potential economic growth path decided on, it needs to be kept in mind that a very high growth path could be inflationary to such a level that it would not be sustainable and that the Central Bank would have to intervene to cool down the economy by means of monetary instruments to ensure acceptable levels of inflation while having high (and sustainable) levels of economic growth. For the purposes of this modelling exercise it was assumed that more than 8 % economic growth per year would be inflationary to such an extent that the Central Bank would have to intervene by means of monetary instruments to keep inflation in check.

It appears from figure 5 that in terms of a relatively optimistic scenario, an economic growth path of between 5 % and 9 % could potentially be realised, while the exports of goods and services could increase to above 8 % per annum. Furthermore, it is foreseen that with such a high growth path compensation per employee could be growing as much as 12 % per annum while employment growth could increase to about 3.3 % per annum, which is substantially higher than the growth of the economically active population in South Africa, leading to lower levels of unemployment.

Furthermore, in terms of the relatively optimistic scenario, private consumption expenditure could increase to nearly 8 % per annum while public consumption expenditure could increase to about 6.5 % per annum. For the purposes of the relatively optimistic scenario it is assumed that whereas government consumption expenditure is fairly high at the beginning of the scenario period due to more grants and capital expenditure by government, it will taper down somewhat during the later stages of the forecast period where private consumption expenditure will become a stronger driver of gross domestic output growth in South Africa, compared to public consumption expenditure.

On scrutiny of the transmission mechanism in terms of the relatively optimistic scenario, it appears that strong global economic growth, lower levels of HIV/AIDS and the eradication of the major supply-side constraints will provide the impetus for the realisation of a higher economic growth path. Strong global growth, together with lower levels of HIV/AIDS and the eradication of the major supply-side constraints, will lead to higher levels of investment from both domestic and foreign sources. This in turn will lift the potential growth path of the South African economy and will in this way alleviate upward pressure on prices. Such low inflationary pressures will result in the strengthening of the terms of trade helping to boost exports and neutralising increased demand for imports. This will give rise to an improvement in the current account thereby alleviating pressure on the rand and further lowering inflation. The monetary authorities will react by decreasing interest rates. Higher growth in the economically active population due to lower levels of HIV/AIDS, together with higher real wages brought about by lower inflation, will give rise to increases in real consumption expenditure, which in turn will lead to increased output, which in turn will lead to higher levels of employment growth. Such positive economic multipliers will give rise to the realisation of both a higher economic growth path in South Africa and the ability to sustain such a high growth path for a longer period of time.

The question could be asked: 'What would determine which of these scenarios will eventually realise?' To answer this question, many documents were accessed and information was obtained from interviews with eminent macro-economists regarding such future predictors/drivers of which scenario will realise. Eventually the following ten key drivers were identified:

- Future policies and programmes.
- Investment.
- Competitiveness (including productivity and technology).
- Infrastructure.
- Consumption.
- Macro-economic stability.
- Fiscal policy.
- Confidence (including crime and safety issues).
- Service delivery.
- Environmental sensitivity.

These key drivers will be discussed in more detail below.

Firstly, regarding policies and programmes, some of the key determinants of future economic growth will be the level at which ASGISA works in practice, the extent to which labour market and business segmentation is implemented and the rate at which it is implemented, the efficacy of skills development policies and programmes, the levels at which HIV/AIDS policies and programmes are implemented, the level at which migration

policies and programmes are implemented and the level at which economic development policies and programmes are implemented.

The second driver is investment and here especially the levels of foreign direct investment in South Africa. The key aspects of investment include personal and company savings rates, investment expenditure, gross capital formation, foreign direct investment and foreign portfolio investment. It needs to be kept in mind that very high levels of foreign portfolio investment in the absence of high levels of foreign direct investment could be more detrimental to the economy than being facilitative towards higher levels of economic growth, simply as a result of the greater volatility that such investment brings to the economy.

A third key driver is competitiveness. The level at which the South African economy can be competitive in a globalising world, includes the levels of labour and capital productivity being realised, future levels of economic and political stability, the level at which South African companies succeed in competing in international markets and the level at which future World Trade Organisation (WTO) negotiations will be facilitative towards opening up international markets for South African products. Should South African companies succeed in competing internationally it will have a positive effect on exports from South Africa, in addressing current problems regarding the balance of trade and in ensuring higher levels of GDP growth in South Africa.

A fourth key driver will be infrastructural development. Of importance are the levels at which sufficient energy and electricity will be available to consumers and here especially towards consumers of energy for production purposes, the level at which roads are maintained, energy costs as well as the level at which communication infrastructure is expanded and maintained.

A further key driver of future economic importance is consumption and here especially household consumption expenditure, intermediary consumption expenditure, the level at which there is a consumption shift from goods to services as well as a consumption shift from government to the private sector, the sales content of new demand as well as income growth levels.

Monetary aspects have also been shown to be an important key driver of future economic growth. Monetary aspects that need to be taken into account include price stability, future rand/dollar exchange rates as well as the current account balance. The current account balance as it was in 2006 – 2007 was indicative of South Africa being unable to export sufficient goods nor curb the level of imports to South Africa, which over the longer term could be detrimental to maintaining a higher economic growth path.

A further aspect pertaining to future economic growth will be fiscal policy and here especially future levels of personal and company income tax, future levels of budget deficit, the level at which social grants are curbed and here especially the level at which social expenditure can be reduced and productive expenditure can be enhanced.

A final key predictor of future economic performance is confidence that includes business confidence, the level at which Afro-pessimism is addressed, the level at which crime is effectively addressed as well as the level at which the flight of human resources and capital from South Africa can be contained in future. In the event that NEPAD is successful, it can be expected that confidence in African economies will increase, giving rise to higher levels

of foreign confidence in the South African economy that in turn will give rise to higher levels of foreign direct investment in South Africa.

There are various determinants of the level at which the key drivers of growth mentioned above will be directly addressed by government, parastatals and the private sector, namely:

- the high cost of labour, and here especially high unit labour costs associated with relatively low skilled labour;
- the rapid growth in the number of grant dependent people (more than 12 million) creating an urgency to ensure job creation and friendly economic growth; and
- the very unequal distribution of incomes in South Africa creating an urgency to ensure effective growth-driven wealth transfer in South Africa.

6 The Implications of Scenario Results for Transport Planning

Having identified the three economic scenarios shown and discussed in the preceding section, the question can now be asked regarding the implications thereof for transport planning. On perusal of available data and through interviews with transport economists the following implications were identified:

- a higher economic growth path necessitates rapid infrastructural development;
- higher levels of economic growth go hand-in-hand with changes in the transport mix that necessitate more and better roads within urban areas;
- higher levels of export necessitate sufficient road and rail infrastructure to ensure that manufactured goods can reach harbours and be shipped to other countries;
- more affluent people give rise to more economic activities, more vehicles and more transport;
- infrastructural development is a strong predictor of competitive advantage and living standards; and
- rapid urbanisation necessitates a good transport infrastructure.

Each of these implications will be discussed below.

Higher Economic Growth Necessitates Rapid Infrastructural Development

It appears from World Bank (2007) data that there is a strong correlation internationally between economic growth and infrastructural development, namely higher levels of growth necessitate well-developed transport, communication, electrification and banking infrastructure. Without such infrastructures a higher economic growth path is not sustainable.

Higher Economic Growth Goes Hand-In-Hand with Changes in the Transport Mix

It is evident from World Bank (2007) data that sustained higher economic growth rates go hand-in-hand with a stronger reliance on road transport than rail transport. The reason is that rapidly expanding urban areas with numerous businesses and malls require a better road network to ensure that a large volume of goods can be transported to malls for retail purposes, and that employees, entrepreneurs and consultants can reach their places of work and the businesses of clients, etc. It needs to be mentioned in this regard that the provision of more effective (and efficient) public transport to workers should be provided on a continuous basis to ensure the availability of workers for production, service provision and retail purposes.

Higher Levels of Export Necessitate a Better Road and Rail Infrastructure to Ensure That Manufactured Goods Can Reach Harbours

Due to the higher levels of exports that need to be realised to ensure a more favourable balance of trade and a higher economic growth path, it is imperative to ensure that goods manufactured in the landlocked provinces can reach harbours to be exported. This is already a major problem in South Africa with both the road and rail infrastructures being under pressure to ensure that goods reach harbours for export purposes. This is of special importance for producers and exporters of perishable goods (ie fruit, vegetables, meat,

milk, etc) to ensure that such goods reach harbours within an optimally short period of time. To ensure the availability of adequate road and rail infrastructure such infrastructure needs to be maintained, expanded and upgraded on a continuous basis to cater for the transport demand of a growing economy.

More Affluent People Give Rise to More Economic Activities, More Vehicles and More Transport

It is evident from developments in the different metro areas that higher levels of economic activity gave rise to more employment, thus higher incomes, more vehicles and therefore more pressure on existing road infrastructure. In the case of especially Tshwane, Johannesburg, Durban and Cape Town traffic congestion has become a real threat to the realisation of higher levels of economic growth, and here especially as many businesses in such areas decide to migrate to other less congested areas, thus creating new business hubs where road infrastructure is still lacking. This displaces economic activity from one area where road infrastructure is under pressure to another area where it is still lacking.

Infrastructural Development Is a Strong Predictor of Competitive Advantage and Living Standards

According to Porter (2007) infrastructural development is one of the key predictors of competitive advantage. He distinguishes between two types of competitive advantage, namely cost and differentiation advantages. A better road infrastructure gives rise to cost advantage by making it less costly for producers to transport their goods to clients and harbours (for exports). It also gives rise to a differentiation advantage by creating an infrastructural platform for participation in e-commerce where more goods are being exported nationally and internationally.

Rapid Urbanisation Necessitates a Good Transport Infrastructure

According to the United Nations (2007) well-developed transport infrastructures in growing cities are of vital importance to ensure the smooth functioning of cities. Most cities worldwide did not cater for an adequate number of lanes when building roads in central business districts, or for sufficient freeways entering and exiting such cities thus making it difficult to solve traffic congestion problems as cities become more and more populous as a result of urbanisation and higher life expectancies of people in cities. By pro-actively ensuring an adequate transport infrastructure for future urban growth billions of rands can be saved over the long-term and can ensure higher levels of quality of life for urban dwellers as well as the possibility of higher economic growth paths than would have been likely with a more limited urban transport infrastructure.

7 Population Projection

7.1 National Population Projections

7.1.1 Population Projection Methodology

The quality of a population projection is determined by the level at which such a projection accurately, reliably and consistently models the relation between the four demographic variables included in the demographic balancing equation, namely births, deaths,

immigration and emigration. There are three important requirements that ensure a good population projection end result, namely (1) good input data to include in the model as base population and demographic assumptions, (2) population projection outcomes (ie population growth rates) of greatest likelihood, and (3) internal consistency between the different population projection outcomes, e.g. between the number of females in the population in their reproductive years and the number of children being born, the HIV prevalence rates, and the fertility rates of the population.

There are various steps involved in conducting a population projection. Such steps are not fixed, but would usually include establishing a base population for the projection, deciding upon a projection period, formulating future demographic (fertility, mortality and migration) assumptions, generating population projections based on the said demographic assumptions, scrutinising the projection outcomes to determine the plausibility thereof (e.g. by discussing the projection outcomes with specialist demographers), adapting the projection outcomes based on such scrutiny, and generating population variants.

The demographic balancing equation forms the basis of any population projection to be conducted, and appears as follows (see Population Reference Bureau, 2000 and Newell, 1994):

Equation 1: The Demographic Balancing Equation

$$P_{t+1} = P_t + B_t - D_t + I_t - E_t$$

where:

P_{t+1} : Population outcome at time +1

P_t : Population at time

B_t : Number of births during the interval between time and time +1

D_t : Number of deaths during the interval between time and time +1

I_t : Number of immigrants during the interval between time and time +1

E_t : Number of emigrants during the interval between time and time +1

For the first year (base year) of the population projection, 'Pt' will constitute such base year population information. It logically follows from this that should the base year information be unreliable, all subsequent population estimates will be unreliable.

In the preparation of base year information for population projection purposes, the starting point of such information is a reliable age structure. Without this even the best assumptions on mortality, fertility and migration would result in a future population that is not acceptable to the users of population projection results.

It is generally accepted that the quality of the age distributions by sex in every country – and here especially in developing countries - must be evaluated since respondents and

interviewers may not be successful in reporting age correctly. In preparation of the 2001 age structures of the population groups in South Africa a two-pronged approach was followed to ensure accurate base year age-sex distributions, namely:

- to measure under-enumeration of the age group 0-39 years, a reverse projection of the adjusted 1996 and 2001 census populations for a period of 15 years was applied; and
- the adjustment of the age group 40 years and older was affected by the projection of the Van Aardt and Van Tonder (1999) age structure.

The current age structure of a population is the result of its demographic history. Persons of the same age at a particular point in time constitute a cohort of people who were born during the same year (or period) and have been exposed to the same impacts on their survival up to a certain age, e.g. disease or famine. Reverse projections look back in time from a base date and reconstruct the age structure of the population at earlier dates, show past trends in the size of the population, and provide estimates of births and deaths. The quality of reverse projections depends on the existence of reliable data of age and sex at the base date and reasonable assumptions about levels and age patterns of mortality in the past. Fertility is not assumed, but rather the number of births is determined by the reverse projection itself. A distribution of births by age of woman may be assumed, because variations in the assumption have a small effect on the total fertility rate that is implied by the birth stream.

One of the most difficult parts of a population projection is the generation of demographic assumptions of greatest likelihood. The generation of such assumptions is not just a mathematical process based on available data, but inevitably includes a large component of what he terms 'crystal ball gazing'. Although it is possible to make educated guesses on possible future fertility, mortality and migration outcomes, it is virtually impossible to estimate future population dynamics accurately because of the many political, social and economic impacts on such outcomes.

To ensure a good population projection that delivers excellent population projection outcomes, fertility, mortality and migration assumptions of greatest likelihood should be included in the population projection model. Demographic assumptions of greatest likelihood do not simply occur, but are derived from detailed analyses of past fertility, mortality and migration trends. Such detailed analysis of the data requires an intensive interrogation of all possible usable demographic data and trends. The efficacy of generating demographic assumptions of greatest likelihood will be determined by the availability of high quality demographers who interrogate and generate such data continuously, as well as the quality of available trended demographic data to be used as the basis for generating demographic assumptions for population projection purposes.

Obtaining and/or generating assumptions of greatest likelihood for South Africa is no easy task because of (1) the lack of reliable population data, (2) the low level of population data analysis by trained analytical demographers in South Africa, (3) defects in official data collection and registration systems in South Africa, and (4) the numerous conflicting demographic assumptions being published by various researchers from diverse disciplines.

In order to obtain demographic assumptions of greatest likelihood for the purposes of this study, it was necessary to accumulate a vast amount of available demographic assumptions, estimates and survey results. These were then meticulously compared with one another as well as to the most likely historical population growth pattern in South Africa.

The complexity of population projections models varies greatly, eg deterministic mathematical models could be used that require little input data but are often not

sufficiently reliable or detailed to be of any use. To compensate for the inadequacies of such models, demographers often use cohort component methods that require far more detailed input data, but arrive at far more detailed and reliable outcomes.

Reliability is, however, not just a function of the projection method used, but also of the length of the projection period. The length of projection periods differs depending on the size of the area to which a specific projection pertains, the needs to be served by the projection, the available demographic resources and the projection strategy formulated by the demographer. Some projections are made for nearly a century ahead, eg the long-range projections of the United Nations, while some pertain to far shorter periods of time, eg those of the Population Reference Bureau which cover a period of about 25 to 30 years. There are many cases where population projections are conducted that cover a far shorter period than that of the Population Reference Bureau, namely about 10 to 15 years (or even less).

Although the demographer may, at his/her discretion, choose any time span for the projection, the general rule is that the more uncertainties there are regarding population dynamics, the shorter the projection period should be. In South Africa, where there are so many uncertainties regarding population dynamics and population structures, it would thus be wise to opt for a period of no more than 20 years. Projecting the population structure and size for a period of more than 20 years can be a very daunting task, as uncertainties regarding HIV/AIDS, migration and fertility dynamics need to be taken into consideration.

There is presently a wide range of methods and software available for conducting population projections. Some of the best-known software programmes available are Populus, Spectrum, Lipro household model, Population Analysis Spreadsheets (PAS), Rural/Urban Projection (RUP) programme, Population Development and the Environment (PDE) model and FIVFIV. Inasmuch as there is software available to facilitate the population projection process, there is also software available for determining fertility trends (ie PAS), mortality trends (ie MortPak) and HIV/AIDS trends (ie AIM). A wide range of such software was used for the purposes of this study. Spectrum and PAS were used to generate the base populations and to conduct population projections for the period 2001 to 2021, and AIM and PAS were used to determine HIV/AIDS trends. By means of such software the necessary base populations were created, the different demographic assumptions were generated and the required population projections were conducted. The results were then scrutinized as indicated below, base populations and assumptions were modified and the population projections were again conducted. Through long and cumbersome iterative approach final base populations, demographic assumptions and projections were selected.

Scrutiny of the population projection outcomes is crucial for ensuring an acceptable population projection end result. Such scrutiny not only involves examining population projection outcomes and deciding whether they make intuitive sense. It also encompasses a lengthy process of discussing base populations, fertility assumptions and projection outcomes with other leading demographers, verifying such assumptions and outcomes against available research findings, and forward and backward projections of data to earlier base populations (e.g. 1996) to determine the accuracy of the 2001 base populations and the demographic assumptions. The base populations, demographic assumptions and population projection outcomes shown and discussed in this study endured such thorough scrutiny and can thus be described as estimates of greatest likelihood given our current understanding of past, present and future population structures, population sizes and demographic dynamics.

Although no effort has been spared to obtain base year information and demographic estimates of greatest likelihood, no population projection is without its shortcomings. As a result of the blight of reliable base year and/or demographic trend data, the accuracy of the following inputs to the projection model could not be determined:

- base year data in respect of Africans and Whites; and
- migration data in respect of Africans and Whites.

7.1.2 Population Projection Assumptions

The age-sex accuracy index of the United Nations as applied to the 2001 South African population census information, describes the age structure of the population as being 'borderline accurate'. By examining the index it is revealed that the distribution is only 'borderline accurate' as a result of a skewed sex ratio for the younger age groups. If one assumes that South Africa is gaining migrants and that they consist of an equal proportion of males and females, it is not easy to explain the larger number of younger female age groups compared to what would have been expected when applying the sex ratios of Sadie (1993).

During the reverse projection using the 2001 census population as baseline population, TFRs were generated that appear to be too high for the five-year period prior to 2001. The determination of the base populations for the different population groups was quite difficult because the 2001 census outcome for the Africans, Asians and Coloureds as published by Stats SA was far higher than expected, and that of the White population group was lower than expected. The higher than expected population size outcomes for the mentioned population groups cannot be explained solely by the high TFRs mentioned above and had to be investigated in detail before final 2001 base populations for projection purposes could be established. The only conclusion the author of this report could come to with regard to the three higher than expected population size outcomes, was that the counted African, Asian and Coloured populations were adjusted too high. It was not possible to determine the extent of this apparent over-adjustment.

In the light of the discussion above it was decided not to follow the reverse approach using 1996 and 2001 census outcomes to determine the 2001 base populations as was done by Van Aardt and Van Tonder (1999), but rather to use the 2001 projected age structures of Van Aardt and Van Tonder (1999) as base year data for the projection. These age structures were shifted to midyear 2001 and modified through the use of reused demographic assumptions. The outcomes of such data manipulation are shown in tables 12 to 15 below.

Table 12: African 2001 Base Population for Projection Purposes

AGE GROUPS (years)	MALE	FEMALE	TOTAL
0 to 4	2 167 175	2 162 127	4 329 302
5 to 9	2 090 927	2 070 029	4 160 956
10 to 14	2 018 238	1 993 123	4 011 361
15 to 19	1 891 428	1 862 317	3 753 745
20 to 24	1 736 413	1 689 320	3 425 733
25 to 29	1 569 256	1 523 738	3 092 994
30 to 34	1 360 465	1 344 376	2 704 841
35 to 39	1 134 266	1 150 348	2 284 614
40 to 44	936 309	969 042	1 905 351
45 to 49	730 778	771 539	1 502 317
50 to 54	576 284	624 824	1 201 108
55 to 59	438 232	490 386	928 618
60 to 64	332 586	382 606	715 192
65 to 69	242 487	289 213	531 700
70 to 74	159 625	197 385	357 010
75 to 79	89 619	116 801	206 420
80+	58 416	93 966	152 382
TOTAL	17 532 504	17 731 140	35 263 644

Source: BMR

Table 13: Asian 2001 Base Population for Projection Purposes

AGE GROUPS (years)	MALE	FEMALE	TOTAL
0 to 4	47 397	47 140	94 537
5 to 9	45 641	45 143	90 784
10 to 14	47 418	46 011	93 429
15 to 19	53 966	52 633	106 599
20 to 24	49 066	49 231	98 297
25 to 29	50 489	51 232	101 721
30 to 34	44 338	46 020	90 358
35 to 39	38 851	42 116	80 967
40 to 44	37 757	40 623	78 380
45 to 49	34 537	35 364	69 901
50 to 54	30 316	31 395	61 711
55 to 59	23 252	24 381	47 633
60 to 64	17 714	19 268	36 982
65 to 69	12 019	13 773	25 792
70 to 74	7 971	9 873	17 844
75 to 79	4 450	5 749	10 199
80+	3 018	4 166	7 184
TOTAL	548 200	564 118	1 112 318

Source: BMR

Table 14: Coloured 2001 Base Population for Projection Purposes

AGE GROUP (years)	MALE	FEMALE	TOTAL
0 to 4	199 875	198 260	398 135
5 to 9	179 611	179 000	358 611
10 to 14	182 263	181 586	363 849
15 to 19	192 129	191 805	383 934
20 to 24	166 267	167 831	334 098
25 to 29	180 232	183 773	364 005
30 to 34	169 267	175 558	344 825
35 to 39	150 140	159 888	310 028
40 to 44	124 224	134 701	258 925
45 to 49	95 969	105 737	201 706
50 to 54	71 774	83 224	154 998
55 to 59	51 098	59 906	111 004
60 to 64	37 674	47 949	85 623
65 to 69	27 653	37 024	64 677
70 to 74	15 493	23 357	38 850
75 to 79	8 512	14 835	23 347
80+	7 115	14 963	22 078
TOTAL	1 859 296	1 959 397	3 818 693

Source: BMR

Table 15: White 2001 Base Population for Projection Purposes

AGE GROUP (years)	MALE	FEMALE	TOTAL
0 to 4	182 460	180 829	363 289
5 to 9	174 433	168 308	342 741
10 to 14	175 754	169 722	345 476
15 to 19	190 511	184 297	374 808
20 to 24	185 011	180 797	365 808
25 to 29	202 839	201 926	404 765
30 to 34	212 420	210 569	422 989
35 to 39	197 981	196 006	393 987
40 to 44	191 014	190 815	381 829
45 to 49	175 367	176 749	352 116
50 to 54	172 123	172 831	344 954
55 to 59	157 047	157 060	314 107
60 to 64	127 912	130 006	257 918
65 to 69	88 271	98 554	186 825
70 to 74	66 821	82 847	149 668
75 to 79	45 902	62 674	108 576
80+	39 679	68 495	108 174
TOTAL	2 585 545	2 632 485	5 218 030

Source: BMR

There appears to be broad consensus among demographers about expected future TFR trends with regard to the Asian population. Sadie (1993) projected the TFR of the Asian population to be 1,81 % during 2006-2011, while Calitz (1996) indicated that their TFR would be about 1,8 % during 2015-2020. The TFR assumptions used in this study with regard to Asians are based on those of Sadie (1993) and Calitz (1996), as well as the probable fertility trends identified by other demographers who were consulted for the purposes of this study, and are shown in table 6 for the period 2001 to 2021.

The expected total fertility rates for the African population used in this study to conduct the required population projection are supplied in table 16 below. There appears to be a fair amount of support for the base TFR for the period 2001-2021 used in this study, namely from Sadie (1993) and the fertility decline trends found by Caldwell and Caldwell (1993). It appears from the TFR assumptions used in this study for the African population that a fairly dramatic decline in total fertility rates is expected over the projection period, namely a drop from 3.32 in 2001 to 2.4 in 2021. The major factors driving this fertility decline are urbanisation, a greater use of contraceptives, lower fertility preferences among Africans, growing labour force participation rates among women and a fertility reduction among African women due to HIV/AIDS. Other reasons for worldwide declining fertility rates are as follows:

- the higher status of women: as the social status of women improves they are able to marry later in life and have fewer children as a result of having more control over their bodies and their destinies;
- higher educational levels among females: the higher the educational levels of females, the lower their fertility preferences and the lower the fertility rates applicable to them;
- higher labour force participation rates among females: higher levels of labour force participation give rise to lower fertility preferences and lower fertility outcomes since the economically active spend more time on their careers and less on having children; and
- The higher the incomes of females, the lower their fertility preferences: higher incomes provide more females with sufficient financial muscle to make their own fertility decisions.

As with the African population, there appears to be less consensus among demographers with regard to the future fertility dynamics among the Coloured population since it is expected that HIV/AIDS will have a significant impact on their TFRs. It appears from the SADHS (1999) that the African population group experienced the most dramatic decreases in fertility rates especially among the urban Africans, ie during 1998 the TFR for non-urban Africans was 2,4, which constitutes a 40 % difference. It can thus be expected that as urbanisation of the African population continues during the projection period, their fertility rates will decrease continually during this period. For the purposes of this study the author used the proposed TFRs of Calitz (1996), the SADHS (1999) and Van Aardt and Van Tonder (1999) as TFR assumptions for projection purposes. These assumptions regarding Coloureds are shown in table 16 below.

Compared to the African and the Coloured populations where there is still much disagreement regarding future fertility and mortality trends, there appears to be more consensus regarding such future trends with regard to the White population. According to Calitz (1996) the total fertility rates of the White population will remain stable at a level of about 1,7 to 1,5 over the period 2000 to 2020. In this regard Sadie (1993) indicates that the White TFRs will decrease from 1,66 (for the period 1996 to 2001) to 1,5 (for the period 2006 to 2011). The TFR assumptions used in this study are based on those of Sadie (1993), Calitz (1996) and Van Aardt and Van Tonder (1999), as well as the future fertility trends identified by other demographers who were consulted for the purposes of this study. The TFR assumptions for the White population are also shown in table 6.

Table 16: TFR Assumptions For Population Projection Purposes

YEAR	AFRICANS	ASIANS	COLOUREDS	WHITES
2001	3,32	1,99	2,42	1,86
2002	3,27	1,96	2,38	1,85
2003	3,23	1,93	2,35	1,84
2004	3,18	1,90	2,31	1,82
2005	3,14	1,87	2,28	1,81
2006	3,09	1,84	2,24	1,80
2007	3,04	1,81	2,20	1,78
2008	3,00	1,78	2,17	1,77
2009	2,95	1,76	2,13	1,76
2010	2,91	1,73	2,10	1,75
2011	2,86	1,70	2,06	1,73
2012	2,81	1,67	2,02	1,72
2013	2,77	1,64	1,99	1,71
2014	2,72	1,61	1,95	1,69
2015	2,68	1,58	1,92	1,68
2016	2,63	1,55	1,88	1,67
2017	2,58	1,52	1,84	1,65
2018	2,54	1,49	1,81	1,64
2019	2,49	1,46	1,77	1,63
2020	2,45	1,43	1,74	1,61
2021	2,40	1,40	1,70	1,60

Source: BMR

It appears from the TFR assumptions generated for population projection purposes (as shown above) that the Asian and White populations were already below replacement TFRs by the 2001 base year, with the result that these population groups will start decreasing in size once the demographic momentums for each of them have been completed. It is expected that the demographic momentum of the White population will be completed by about 2004 where after this population group will start decreasing in size. With regard to the Asian population, it is expected that this population group will complete its demographic momentum by about 2012 where after negative population growth could become possible.

Concerning the Coloured population, it is expected that replacement fertility levels will be reached by 2010 where after the demographic momentum will ensure that up to about 2026, this population will continue growing in size, depending on the extent of HIV/AIDS ravages on it during the projection period. It is not projected that the African population will achieve replacement TFR during the projection period. However, it could be that HIV/AIDS impacts so severely on members of this population group of reproductive age that replacement fertility is still realised during the projection period.

In the same way that substantial changes are expected in the TFRs for the African population, mortality trends among Africans are also expected to change dramatically due to the effects of HIV/AIDS ensuring lower life expectancies among the 15 to 55 year age cohorts, while more widely available health care services and urbanisation are expected to bring about higher levels of population ageing among the age cohorts above 55 years. The question can be raised of the extent to which HIV/AIDS will impact on the future life expectancies of the African population. A large number of South Africans will be dying during the next two decades as a result of AIDS-related diseases. Because of the expected

large impact of HIV/AIDS it will affect the life expectancies of African males and females dramatically. It is being projected that HIV/AIDS will ensure a dramatic decline in the average life expectancies of South Africans from about 58 years in 2000 to about 46 years by 2015. For the purposes of this study life expectancies not including HIVAIDS impacts were used, since a separate module of the cohort component projection programme will bring about life expectancy reductions due to HIV/AIDS.

The TFR and life expectancy assumptions shown above (together with the resulting survival rates) were used to project the future growth of the African male and female populations for the period 2001 to 2021. The life expectancy assumptions used for the Asian population are based broadly on those of Calitz (1996), and Van Aardt and Van Tonder (1999). Also in this case HIV/AIDS impacts were not taken into account for the purposes of table 7 because the life expectancy reduction is brought about endogenous to the model as indicated above. Based on the fertility and mortality assumptions shown, population projections for Asian males and females were performed for the period 2001 to 2021.

With regard to the future life expectancies of the Coloured population, there appears to be little consensus among demographers. According to the life expectancy assumptions of Calitz (1996), the average life expectancy of Coloured males and females will be about 69,7 years for the period 2005 to 2010. For the purposes of this study, the author opted for the life expectancy assumptions of Calitz (1996) and those of Van Aardt and Van Tonder (1999). These assumptions for the Coloured population are shown in table 7 below. Such assumptions did not include HIV/AIDS impacts for the reasons indicated above.

There appears to be broad consensus among demographers regarding life expectancy and infant mortality trends among the White population. Sadie (1993) estimated that the life expectancies of White females might be about 77,8 years for the period 2006 to 2011. Regarding White males, he indicated that their life expectancy would be about 71,2 years by 2006 to 2011. Calitz (1996) agrees with these assumptions, namely that the average life expectancies of White males and females will be about 74,6 years for the period 2005 to 2010 and about 75,3 years for the period 2015 to 2020. The life expectancy assumptions used in this study for the White population are shown in table 17 below. Based on the fertility and mortality assumptions for the White population shown above, population projections were performed for the period 2001 to 2021.

Table 17: Life Expectancy Assumptions (Years) For Projection Purposes (Hiv/Aids Impacts Not Included)

YEAR	AFRICAN MALE	AFRICAN FEMALE	ASIAN MALE	ASIAN FEMALE	COLOURED MALE	COLOURED FEMALE	WHITE MALE	WHITE FEMALE
2001	57,2	63,4	64,6	70,3	60,2	68,6	70,3	77,3
2002	57,6	63,9	65,2	70,9	60,3	68,7	70,4	77,4
2003	58,1	64,4	65,8	71,4	60,4	68,8	70,5	77,5
2004	58,5	64,8	66,5	72,0	60,5	69,0	70,5	77,5
2005	59,0	65,3	67,1	72,5	60,6	69,1	70,6	77,6
2006	59,4	65,8	67,7	73,1	60,8	69,2	70,7	77,7
2007	59,8	66,3	67,8	73,2	60,9	69,3	70,8	77,8
2008	60,3	66,8	67,9	73,3	61,0	69,4	70,8	77,8
2009	60,7	67,2	68,0	73,5	61,1	69,6	70,9	77,9
2010	61,2	67,7	68,1	73,6	61,2	69,7	70,9	77,9
2011	61,6	68,2	68,2	73,7	61,3	69,8	71,0	78,0
2012	62,0	68,7	68,3	73,8	61,5	69,9	71,1	78,1
2013	62,5	69,2	68,4	74,0	61,6	70,0	71,2	78,2
2014	62,9	69,6	68,5	74,1	61,7	70,2	71,2	78,2
2015	63,4	70,1	68,6	74,2	61,8	70,3	71,3	78,3
2016	63,8	70,6	68,7	74,4	61,9	70,4	71,4	78,4
2017	64,2	71,1	68,8	74,5	62,0	70,5	71,4	78,4
2018	64,7	71,6	68,9	74,6	62,2	70,6	71,5	78,5
2019	65,1	72,0	69,0	74,7	62,3	70,8	71,6	78,6
2020	65,6	72,5	69,1	74,9	62,4	70,9	71,6	78,6
2021	66,0	73,0	69,2	75,0	62,5	71,0	71,7	78,7

Source: BMR

There are currently very conflicting viewpoints regarding the impact of immigration and emigration on the present and future size of the South African population. According to Calitz (1996) South Africa could be gaining about a 100 000 to 200 000 immigrants per year. On the other hand, when looking at the official statistics (Stats SA, 1998) very little evidence could be found on a significant number of Africans immigrating to or Whites emigrating from South Africa. Although there is sufficient evidence to query the accuracy of official migration statistics, there does not appear to be vast numbers of Africans officially immigrating to South Africa at present. It is estimated that South Africa will gain about 30 000 African males and about 15 000 females per year through immigration. In the case of the White population it is assumed, based on available South African Network of Skills Abroad (SANSA) estimates, that there will be a net migration loss of about 10 000 White males and 7 000 White females per year over the projection period.

With regard to immigration and emigration trends among the Asian and Coloured population groups, very little evidence could be found regarding a significant number of them immigrating to or emigrating from South Africa. It is also not foreseen that there will be significant changes in the Asian or Coloured populations resulting from such migration during the projection period.

7.2 Provincial & Municipal Population Projections

Up to this point the focus was on the national population projections. The following section gives an overview of the methodology and assumptions used for the provincial and municipal projections. Some concepts are discussed in more detail.

7.2.1 Methodology - overview

The local municipal demographic projections are derived in three stages, with each stage using a different technique and model. The first stage entailed the projection of the national population as described above. The second stage breaks down the national projections to provincial level. Finally the population figure for each province is divided into the local and metropolitan municipalities that make up the province.

As is the case with the national model, the provincial demographic model (second stage) makes use of the cohort component model. It uses the results from the national population model as the benchmark for the age-gender structures, specifically for the census years where detailed provincial data is available. The provincial model follows a different approach compared to the national model where a base year is used as a starting point. The nine provinces as they are known today were only created in 1994, and since then the boundaries have changed significantly.

In order to overcome this problem, the 1991, 1996 and 2001 population census data was re-worked to fit the Dec-2005 provincial boundaries. The migration data derived from these three population censuses was entered as the migration assumptions into the model, where after an iterative process of calibration followed. The provincial model was projected forward, starting with the 1991 distribution as the "virtual base year", and iteratively refined by adjusting this distribution to fit all three population census distributions as closely as possible. A function was developed to measure the goodness of fit, by tracking the age groups over time, e.g. the 0-4 aged in 1991 compared to the 5-9 in 1996 and 10-14 in 2001.

This provided a fairly stable and good fit for the three population census years: 1991, 1996 and 2001. The next step was to calibrate the **Total Fertility Rates (TFR)** per province, by looking at the number of babies born over this period. Even within the same population group, some provinces have recorded higher fertility rates than other provinces, e.g. the Africans in the Eastern Cape have more children compared to those having migrated to the Western Cape. This variable was benchmarked to fit the number of babies born in the period 1991 to 2001. It is worthy to note that the 0-4 age category is often underreported during population censuses, and therefore this figure was adjusted slightly upwards to correspond with the national TFR rates. The **Birth Ratio** which defines the number of male vs. female born was also calibrated to fit the age and gender structures as measured in the population census.

The final step was to break the provincial models down to local municipality level. The 1996 and Census 2001 Census distributions were used, with interpolated data for the years in between. The changes in the share-of-provincial-total between 1996 and 2001 were annualised, and applied from 2002 onwards, making sure the share never reaches zero or turns negative, by reducing the change in share over time, reaching its peak in 2020 after which the shares are constant.

In order to compensate for known projects in the pipeline that will affect the local municipalities in the years to come, inputs from the various IDP and LED reports per municipality were used, e.g. ore and coal reserves, as well as bigger projects in the pipeline that was published in the public domain.

For example: The population figures for the Lephalale local municipality, which has decreased in provincial share from 1996 to 2001, were adjusted to show an increase reflecting the effect of the the bigger projects in the areas.

7.2.2 Inter Provincial Migration

The key difference between a provincial model and a national model is the difference in migration. In the national context, this refers to international migration, i.e. people moving between different countries. For the provincial models, an extra dimension is added: people moving to and from other provinces. South Africa saw high levels of inter-provincial migration in the past 10-15 years, with particularly high migration towards Gauteng and the Western Cape provinces.

To illustrate the importance of the inter-provincial migration, see the table below. Note that the data in the table does not reflect the results of the Community Survey 2007.

Table 18: The Importance Of The Inter-Provincial Migration

			Average Annual - 2001-2005			
Province	**2001**	**2005**	**Births**	**Deaths**	**Migration**	**Total**
Eastern Cape	6,333,784	6,374,945	162,296	-87,143	-59,231	15,922
Free State	2,829,872	2,857,286	60,485	-41,004	-10,191	9,291
Gauteng	9,056,417	9,699,849	173,806	-120,233	106,702	160,275
KwaZulu-Natal	9,614,052	9,910,700	257,733	-158,208	-18,263	81,261
Limpopo	4,985,736	5,186,876	152,076	-63,898	-37,011	51,167
Mpumalanga	3,487,707	3,616,467	94,688	-54,145	-6,709	33,835
Northern Cape	1,017,806	1,054,636	23,902	-12,627	-1,862	9,413
Nort West	3,372,563	3,453,925	74,335	-47,487	-4,549	22,299
Western Cape	4,552,715	4,911,076	95,224	-50,124	42,012	87,112
South Africa	**45,250,652**	**47,065,760**	**1,094,546**	**-634,869**	**10,899**	**470,577**

Source: Global Insight provincial demographic model

This table highlights migration in the context of births and deaths for the provinces for the period 2001-2005. Gauteng had on average 174,000 births and approximately 120,000 deaths each year. The migration component contributed another 100,000 migrants into Gauteng on top of the natural births and deaths per year. Note that the migration between 2001-2005 is estimated by extrapolating the migration as measured in the Census 2001. The Census 2001 figures only measures the migration stream between 1996 and 2001, converted into nr of migrats per year. We assume that the annual migration after 2001 will be similar to those observerd between 1996 and 2001.

Various future migration outcomes are possible. On the one extreme there might be a low inter-provincial migration stream, while on the other extreme a high inter-provincial migration stream might develop, where a high level of urbanisation occurs and vast numbers of people cross the provincial borders in their search for a better future.

The question remains whether such inter-provincial migration streams will be a short term phenomenon or whether it will change the spatial distribution of people in South Africa dramatically over time.

There is some evidence of conglomeration of populations in South Africa while at the same time a relative de-population of the rural areas and small town areas is visible, i.e. while the Pretoria-Johannesburg area is experiencing a population explosion; other areas (e.g. Meyerton and Aliwal-North) are experiencing an out-migration.

7.2.3 HIV Prevalence rates

The stage of the HIV/AIDS virus differs from province to province, e.g. KwaZulu-Natal is at a much more advanced stage of the disease and on a higher level than the Western Cape. The Adult HIV prevalence rates from the HIV/AIDS model build by the Actuarial Society of Southern Africa (ASSA-2003) were used on a provincial level. The provincial ASSA-2003 data was slightly adjusted to reflect the national HIV Prevalence rate per population group as used in the national demographic models. The ASSA model in its turn uses the prevalence rates from various primary data sets – in particular the HIV/AIDS surveys conducted by the Department of Health.

7.3 Community Survey 2007 (CS-2007)

The last full population Census was conducted in 2001. After Census 2001, the cabinet decided to reduce the frequency of the regular 5 year population censuses to every ten years, by postponing what would have been the 2006 Population Census to 2011. In order to fill the information gap, the Community Survey (CS) was born. This large-scale survey was designed to provide demographic and socio-economic data up to municipal level.

The Community Survey was scheduled to be released by 10 Oct 2007. The release was postponed on the last minute to address quality problems with the survey, and the actual release took place on the 24th of October.

The following table highlights the data released from the CS-2007 and compares this with the Global Insight Population Model results, before incorporation of some of the CS-2007 data into the model.

Table 19: Population by province

Total population by province – Census 2001, CS 2007 and Global Insight model

Provinces	StatsSA Census 2001	Global Insight 2001	StatsSA CS 2007	Global Insight 2007
Eastern Cape	6,278,651	6,333,784	6,527,747	6,351,537
Free State	2,706,775	2,829,872	2,773,059	2,844,115
Gauteng	9,178,873	9,056,417	10,451,713	9,976,197
KwaZulu-Natal	9,584,129	9,614,052	10,259,230	9,967,942
Limpopo	4,995,534	4,985,736	5,238,286	5,261,679
Mpumalanga	3,365,885	3,487,707	3,643,435	3,652,573
Northern Cape	991,919	1,017,806	1,058,060	1,067,471
North West	3,193,676	3,372,563	3,271,948	3,468,477
Western Cape	4,524,335	4,552,715	5,278,585	5,079,296
South Africa	**44,819,777**	**45,250,652**	**48,502,063**	**47,669,286**

The big differences in the table above require a deeper investigation into the CS-2007 dataset.

7.3.1 CS2007 - 48.5 Million ?

The far from expected national figure of 48.5 million surprised demographers, with some describing it as *outrageous*. StatsSA did provide some insight as to how they derived this

number when they describe the methodology used for this survey. This methodology will be analysed in more detail when trying to understand the very high figure of 48.5 million.

StatsSA's methodology document describes the concept of "benchmarking" which is commonly used in surveys, to adjust the weights to add up to the national population. However, the target benchmark figures did not come from their own demographic model as published in the StatsSA's mid-year estimates – they adopted a somewhat unconventional methodology: (quoted from StatsSA)

> The determination of the new population estimates was done using Census 2001 as the base reference population, which was projected by using the cohort-component method from 2001 to 2007 with some interpolation to February 2007. The population projection took into account the inter-provincial migration as measured from the survey. Mortality and fertility over the period were estimated to be consistent with the rates from the Community Survey. There was also an adjustment in respect of men mostly between 20 and 39 years old, by using sex ratios to compensate for men who were undercounted relative to women.

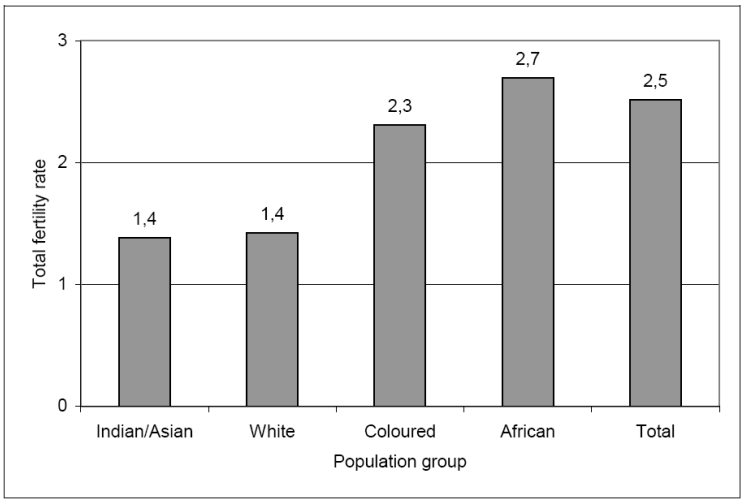
Judged by this, the methodology seems to be sound and consistent with the Global Insight / BMR demographic model (see the entire section on the national demographic model). But the question remains how they arrive at a figure that is totally different to that of the Global Insight model? The following paragraphs will analyse the various demographic variables as measured in the Community Survey 2007.

7.3.2 CS2007 – Fertility

Fertility and Mortality are the two variables in the field on demographics where population censuses do not always provide satisfactory estimates. Global Insight has consulted the fertility and mortality expert of South Africa, Dr E Udjo on his views on these two variables as measure in the Community Survey 2007.

At a rate of 2.5 for 2007, the national fertility rate was exactly the same as that of the Global Insight/BMR demographic model. For some of the smaller population groups – the Asian and White populations – Global Insight's estimates were a bit higher. The white population is notorious for being undercounted. The Asian population is relatively small and even the large sample survey would not provide a reliable estimate for these variables. Dr Udjo comments were exactly this: the figures were as expected, but for the smaller population groups, the weighting and small number of records could very easily skew the numbers.

Figure 11: Observed Total Fertility Rates By Population Group, CS-2007



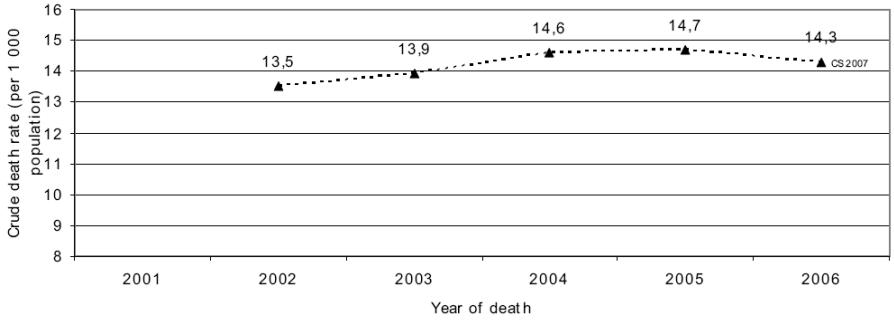
Source: Community Survey 2007, StatsSA

7.3.3 CS2007 – Mortality

The crude death rate as measured in the CS-2007 was lower than expected, meaning that CS-2007 reported fewer deaths than expected by demographers.

The weights of the deaths might be problematic in the CS-2007, as a result of the small sample size. Further datasets suggest higher death rates and StatsSA admits that the CS2007 figures are low when compared to estimates from other years.

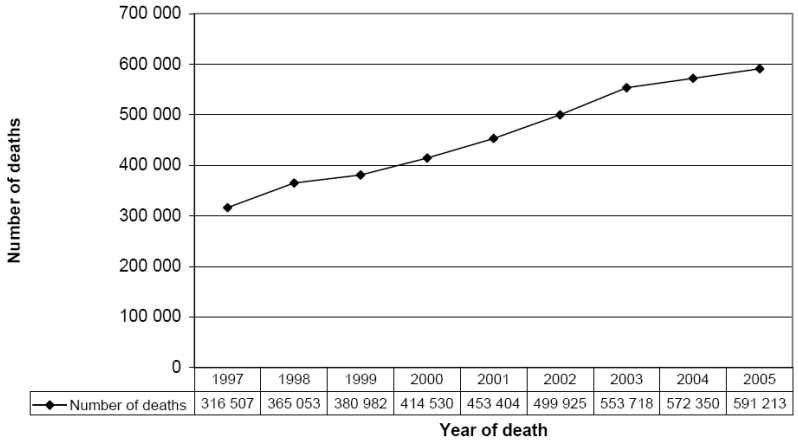
Figure 12: Crude Death rate per 1000, 2001-2006



Source: Community Survey 2007, Key Findings, StatsSA

Do we really expect a decline in the death rate? StatSA publishes their annual publication *Mortality and causes of death in South Africa*, and the 2005 edition (released Jun 2007) suggests exactly the opposite - the results show an enormous increase. The data is not based on samples, but on detailed individual death notifications records which are much more reliable – not taking unregistered deaths into account. The cause of death report contained the following chart:

Figure 13: Number of Deaths, 1997-2005



Source: Mortality and causes of death in South Africa, 2005 edition, StatsSA

7.3.4 CS2007 - International Migration

International migration is a topic dreaded by most demographers, as there is little data available on the topic. One way of measuring international migration on an indirect method, is by asking all residents of the country whether they were born in SA or in another country. The question however does not address citizenship.

Table 20: Country of Birth outside of South Africa

Census 1996	837,536
Census 2001	1,026,192
Community Survey 2007	1,268,000

Source: Global Insight Calculations from Census 1996, Census 2001 and CS-2007, StatsSA

This implies an average in-migration of approx 45,000 per year, between Census 2001 and CS-2007. Between Census 1996 and Census 2001 this was approx 38,000 per year. We see a definite increase in international in-migration. Out-migration is not measured in the CS-2007, or in any of the population censuses.

7.3.5 CS2007 - Provincial Migration

The inter-provincial migration data is very suspect. There are various ways to measure the concept of inter-provincial migration. The CS-2007 published only one table on this topic, which is the total number of people per province of usual residence, by province in which they were born.

This table has a couple of problems:

- The provincial boundary changes muddied the water on enumeration level. Many people staying in exactly the same house, is now technically born in a different province
- The corresponding table from the Census 2001 – which is typically used for comparison purposes and working out trends, is based on the old provincial boundaries.

Comparing these two result sets provides strange results – with less people reporting in 2007 that they were born in the Free State than in 2001. Where have they gone?

- The CS-2007 report reached conclusions which are not valid.

> Gauteng is found to be the main receiver of internal migrants while Northern Cape is the main sending province. Individuals migrating to Gauteng are mainly from Limpopo while majority of those leaving Northern Cape tend to move to the Western Cape.

Finally, the totals of the migration table does not add up to the other provincial figures - a footnote explains the difference: * *total exclude cases where province was unspecified and the population in institutions*. This explains the lower total of 47.7 million vs. 48.5 million.

This should be true for all provinces, but for the North West province, 3.617 million people were reported vs. the official reported figure of 3.271 million. What happened to the 350,000 people ?

Although not stated explicitly in their documents, using reverse-projection techniques shows an enormous increase in migration streams. The table below shows the "Expected" migration streams as measured in the previous censuses, and assumed by most provincial demographic models, vs. the migration levels required to arrive at the CS-2007 provincial distribution.

Table 21: Expected net migration (As measured in Census 2001) vs. required net migration to arrive at CS-2007 provincial population figures

	Expected	CS-2007
Western Cape	39,000	82,000
Eastern Cape	(46,000)	(46,000)
Northern Cape	(1,000)	(4,000)
Free State	(9,000)	(32,000)
KwaZulu-Natal	(14,000)	(8,000)
North-West	(3,000)	(50,000)
Gauteng	98,000	160,000
Mpumalanga	(6,000)	(21,000)
Limpopo	(31,000)	(57,000)

Source: Global Insight Calculations from Census 2001 and CS-2007, StatsSA

The North-West province shows a 47,000 extra people moving out of the province, with Gauteng increasing by more than 60,000 extra migrants moving into Gauteng.

7.3.6 All together – what do we expect?

The current population projections are very close to the demographic variables as measured in the CS-2007 report. On a national level we expect the national total to be consistent with the demographic models and the mid-year estimates of StatsSA. In quantitative terms: a total population between 47.5 to 47.9 million in 2007 is expected.

But the CS-2007 reported a high 48.5 million!

7.3.7 Conclusion

We first list the concerns about the CS-2007, and finally conclude with the value extracted from the survey and how we implemented this on the demographic models. The list of concerns:

- No explanation was given for the big differences between the CS-2007 results and other StatsSA publications (mid-year estimates, GHS, LFS, etc).

- StatsSA admitted there were quality problems with the CS-2007. This was the reason for the delay in the release of the CS-2007.

  "… to put in place additional quality assurance processes of the data captured from this survey…"

- The methodology behind the "benchmarking" is only stated in very broad terms, without any details on the processes and assumptions.

- The launch of the CS-2007 results was described as a "dark day" by a number of demographers in the life of the preferred provider of quality statistics.

- The sub-national (provincial etc.) dataset is full of mistakes and inconsistencies.

The decision was made to lift the population projections slightly to be on par with the StatsSA Mid year estimates (47.9 million for 2007). This was done by increasing the international in-migration, and lifting the fertility slightly.

7.4 Provincial & Municipal Population Scenarios

Similar to the national macro-economic environment, three population scenarios that describe the risks and possible outcomes were developed. HIV/AIDS, which was identified as an economic risk, impacts on the population. Higher international immigration was identified as being another risk.

The biggest difference in the three population scenarios is the concept of centralisation, i.e. urbanisation and metropolisation – people migrating to the cities, and specifically the metropolitan areas. The concept of high, middle and low may be confusing when comparing urban areas to rural areas – the scenarios will therefore be labelled **RED**, **GREEN** and **BLUE**.

The low or "relative pessimistic" economic scenario goes together with the **RED** population scenario, the baseline or middle economic scenario matches the **BLUE** population scenario, and the high or "relative optimistic" scenario goes hand in hand with the **GREEN** population scenario.

7.4.1 Assumptions for Scenarios

The assumptions for the different scenarios are listed below:

Low / RED

- Decentralised population growth by assuming lower inter-provincial migration than the migration measured between 1991 and 2001.
- High HIV Aids, which results in lower life expectancy.
- Lower outflow of people from rural provinces.

Middle / Baseline / BLUE

- Inter-provincial migration rates at the same level as we have measured between 1991 and 2001.
- HIV/AIDS assumptions of greatest likelihood.

High: GREEN

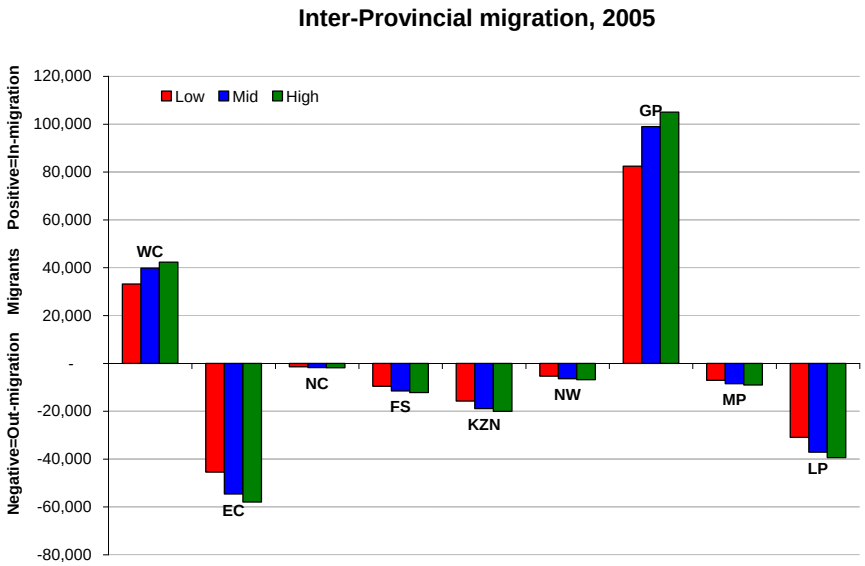
- Centralised population growth by assuming higher inter-provincial migration and resulting urbanisation. For the period 2002-2007, inter-provincial migration streams required to arrive as the Community Survey 2007 provincial distribution were assumed, after which the figures decline to levels slightly higher than the Census 2001 inter-provincial migration streams.
- Low HIV/AIDS; Higher anti-retroviral treatment roll-out to patients.
- Higher international in-migration.
- Higher outflow of people from "rural" provinces, those without a metropolitan area

7.4.2 Inter Provincial Migration Assumptions

The assumption of centralisation is managed via the inter-provincial migration streams. Higher levels of inter-provincial migration is likely to result in more people moving to the Gauteng and Western Cape areas – indicated as positive migration on the chart below. The provinces most affected by out-migration are the Eastern Cape, Limpopo and KwaZulu-Natal.

Note that the structure of these migration is the same for all the scenarios, it is only the levels that do differ. The GREEN scenario has a higher numbers – for Gauteng and the Western Cape more positive, indicating more people moving towards these provinces. This implies that more people are also moving out of the rural provinces, with the GREEN scenario having more negative figures than the BLUE and RED scenarios.

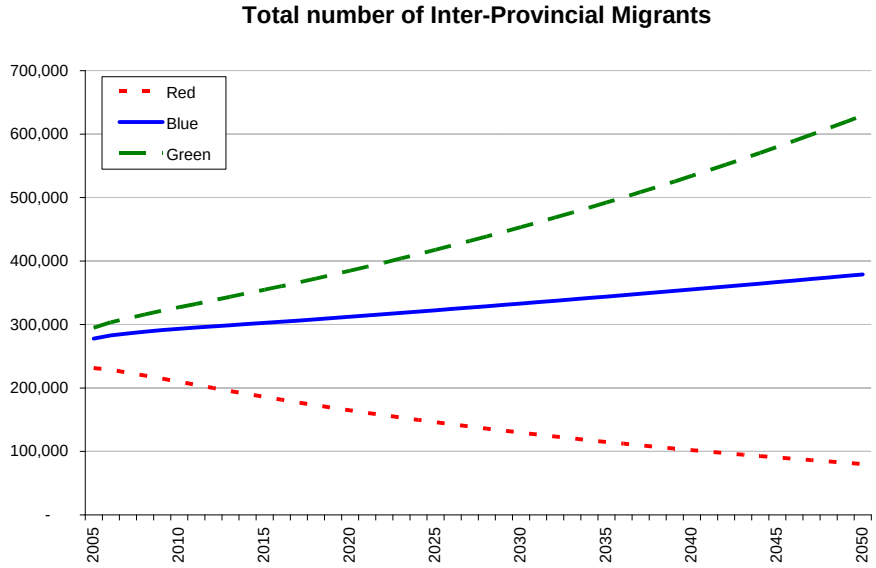
Figure 14: Inter Provincial Migration, 2005



Source: Global Insight Demographic Model

Over time, the gap between the scenarios increases, and the difference between the scenarios is more pronounced. The following chart illustrates this concept:

Figure 15: Total number of Inter Provincial Migrats, 2005-2050



Source: Global Insight

For the **RED** scenario, the inter provincial migration levels decline over time. The **BLUE** scenario inter-provincial migration remains at levels observed for the period 1991-2001. The **GREEN** scenario increases over time as progressively more people move towards Gauteng and the Western Cape.

7.5 Results - National Population Projections

The national population outcomes are as follows:

Figure 16: National Population Projection Outcomes, 2005-2050

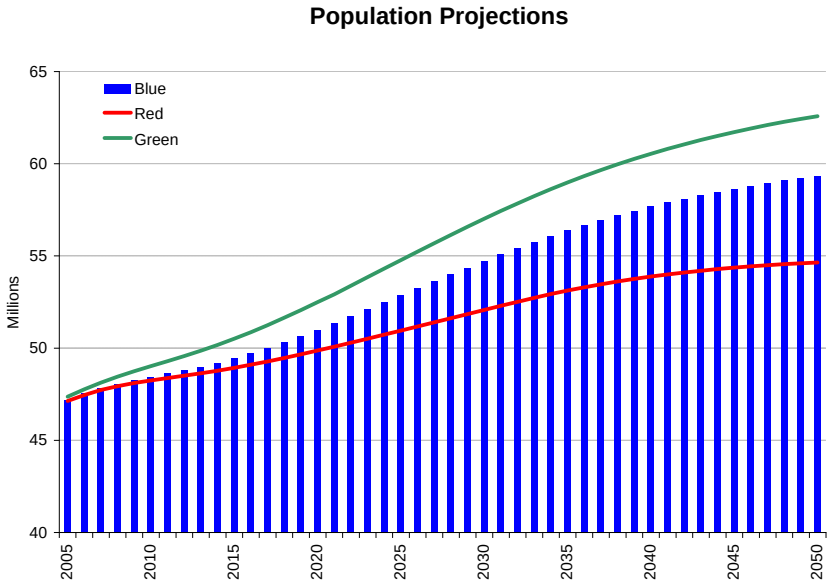
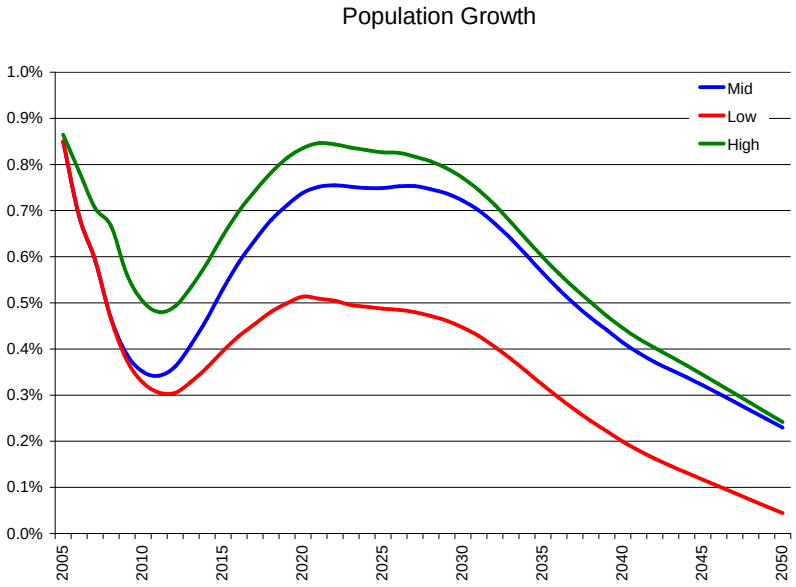


Table 22: National Population Projection Outcomes, 2005-2050

Scenario (million)	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Green	47.4	49.0	50.5	52.5	54.8	57.0	59.0	60.5	61.7	62.6
Blue	47.2	48.5	49.5	51.0	52.9	54.7	56.4	57.7	58.6	59.3
Red	47.1	48.2	48.9	49.9	50.9	52.1	53.1	53.9	54.4	54.6

Figure 17: Population Projections: Population Growth, 2005-2050



The two charts above illustrate the scenario outcomes on a national level. The first chart and table highlights the actual population outcomes, whereas the second chart focuses on growth over time. The dip in the growth chart between 2005 and 2020 is due to the impact of HIV/AIDS, while the declining trend over the long run is primarily due to declining fertility rates.

How does these scenarios compare with other studies that have been done ? The following table highlights various demographic models, and compares them the the middle (blue) scenario.

Table 23: Comparison to various other demographic models

Agency	*2005*	*2010*	*2015*	*2020*
HSRC	45,070,000	46,090,000	46,920,000	47,460,000
US Census Bureau	42,550,000	40,610,000	38,040,000	35,850,000
World Bank	43,980,000	44,780,000	45,820,000	47,020,000
Dorrington et al	47,485,369	47,392,059		
Global Insight / BMR	**47,198,746**	**48,452,625**	**49,450,753**	**50,989,581**
United Nations MV	45,010,000	45,140,000	44,616,000	43,977,000
CIA-UN		49,169,000	52,969,000	57,062,000
Mean	45,215,686	45,947,669	46,302,625	47,059,763
BMR from Mean	1,983,060	2,504,955	3,148,127	3,929,817

7.6 Results - Provincial & Municipal Population Projections

7.6.1 Comparison with historic StatsSA Population Census data

In order to compare the sub-national data from the demographic model with the historic estimates from StatsSA, the 1996 and 2001 census data (based on the new provincial boundaries, as calculated by StatsSA, and reported in the CS-2007 report) is contrasted with the estimates from the Global Insight provincial demographic model (shaded) in the table below.

Table 24: Demographic Model (Blue scenario) vs. Census 1996, 2001 and CS-2007

	StatsSA Census 1996	GI/BMR 1996	StatsSA Census 2001	GI/BMR 2001	StatsSA CS 2007	GI/BMR - Mid 2007
Western Cape	3,956,875	4,023,921	4,524,335	4,498,809	5,278,585	4,997,889
Eastern Cape	6,147,244	6,162,385	6,278,651	6,361,027	6,527,747	6,391,103
Northern Cape	1,011,864	960,638	991,919	1,018,921	1,058,060	1,070,107
Free State	2,633,504	2,700,133	2,706,775	2,833,336	2,773,059	2,857,815
KwaZulu-Natal	8,572,302	8,930,361	9,584,129	9,652,645	10,259,230	10,034,705
North-West	2,936,554	3,174,564	3,193,676	3,378,831	3,271,948	3,488,290
Gauteng	7,624,893	8,140,593	9,178,873	9,053,033	10,451,713	10,010,597
Mpumalanga	3,124,203	3,204,917	3,365,885	3,501,532	3,643,435	3,678,587
Limpopo	4,576,133	4,699,493	4,995,534	5,016,919	5,238,276	5,303,481
	40,583,572	**41,997,004**	**44,819,777**	**45,315,052**	**48,502,053**	**47,832,575**

For both the official Census 1996 and Census 2001 estimates are lower than the model results on a national level, while for 2007 the figures from the model is less than the official CS-2007 figure.

The detailed local municipality and district municipal data for 1996 and 2001 is available in Appendix D.

7.6.2 Provincial population outcomes – up to 2050 – different scenarios

The future population outcomes per province are shown in the table below. It is further graphically represented for the Gauteng and Limpopo provinces.

Table 25: Provincial Population Outcomes, 2005-2050

Provincial Population Outcomes - Thousands

		2005	2010	2015	2025	2035	2050
Western Cape	Red	4,816	5,133	5,372	5,779	6,107	6,270
	Blue	4,838	5,216	5,558	6,313	7,107	8,176
	Green	4,964	5,533	6,010	7,100	8,336	10,348
Eastern Cape	Red	6,435	6,405	6,338	6,313	6,371	6,404
	Blue	6,411	6,315	6,165	5,975	5,748	5,120
	Green	6,453	6,385	6,207	5,866	5,360	4,048
Northern Cape	Red	1,057	1,083	1,098	1,138	1,194	1,247
	Blue	1,057	1,083	1,099	1,150	1,215	1,270
	Green	1,050	1,063	1,076	1,123	1,176	1,204
Free State	Red	2,868	2,821	2,747	2,663	2,599	2,440
	Blue	2,868	2,815	2,736	2,654	2,542	2,189
	Green	2,812	2,696	2,574	2,359	2,033	1,194
KwaZulu-Natal	Red	9,955	10,015	10,023	10,373	10,842	11,255
	Blue	9,970	10,048	10,112	10,742	11,454	12,001
	Green	10,046	10,253	10,445	11,285	12,165	12,853
North West	Red	3,467	3,484	3,468	3,497	3,537	3,488
	Blue	3,470	3,488	3,480	3,556	3,601	3,437
	Green	3,346	3,199	3,116	3,014	2,784	2,017
Gauteng	Red	9,655	10,144	10,465	11,134	11,727	11,948
	Blue	9,720	10,384	11,014	12,728	14,692	17,413
	Green	9,914	10,998	12,065	14,826	18,170	23,707
Mpumalanga	Red	3,634	3,706	3,762	3,957	4,172	4,375
	Blue	3,639	3,712	3,777	4,022	4,237	4,275
	Green	3,613	3,659	3,734	3,967	4,101	3,837
Limpopo	Red	5,241	5,457	5,655	6,091	6,571	7,216
	Blue	5,226	5,391	5,510	5,718	5,796	5,451
	Green	5,163	5,236	5,277	5,232	4,859	3,368
Total	Red	**47,128**	**48,248**	**48,928**	**50,947**	**53,119**	**54,643**
	Blue	**47,199**	**48,453**	**49,451**	**52,859**	**56,391**	**59,331**
	Green	**47,362**	**49,022**	**50,505**	**54,772**	**58,984**	**62,576**

Due to the complexity and the combinations of assumptions, the traditional view of three scenarios with a high, middle and low no longer holds. The charts of Limpopo and Gauteng illustrates that for some provinces, the top line is represented by the **GREEN** scenario (Gauteng), while for other provinces it is represented by the **RED** scenario (Limpopo).

Figure 18: Population Outcome: Limpopo, 2005-2050

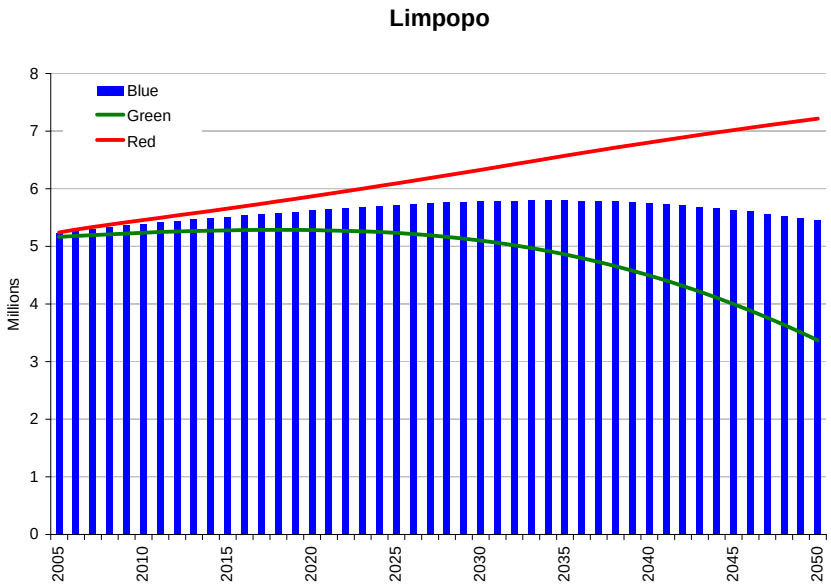
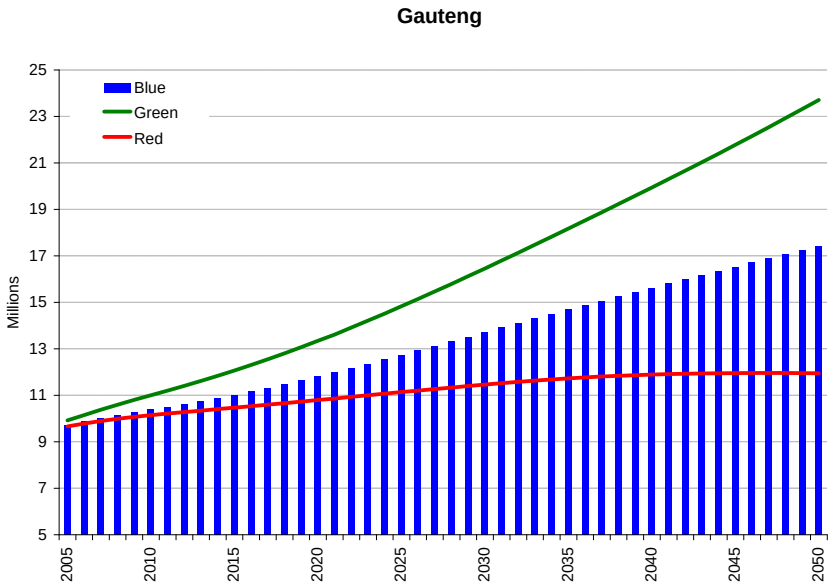


Figure 19: Population Outcome: Gauteng, 2005-2050



The reason for this difference is the inter-provincial migration assumption. In the **RED** scenario, a more rural, decentralised assumption is made, which results in bigger growth for Limpopo – even if we have lower national population growth. The **GREEN** scenario assumes higher national population growth, but in combination with the more centralised assumptions, this growth is absorbed by the Gauteng province, leaving a net population increase for Limpopo which is less than the **RED** scenario.

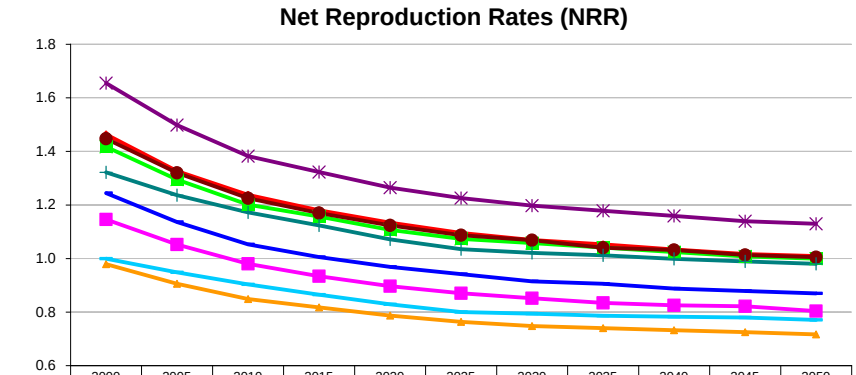
7.6.3 Provincial Net Reproduction Rates (NRRs)

The Net Reproduction Rate is a measure that calculates the average number of daughters that would be born to a woman (or a group of women) during her lifetime if she passed through all her childbearing years conforming to the age-specific fertility rates and age-

specific mortality rates of a given year. This measure includes the effect of mortality that would cause some women to die before completing their childbearing years, but does not take into account the effects of migration.

When we assume there is no migration, a NRR greater than 1 means ultimate population growth. An NRR less than 1 means ultimate population decline.

Figure 20: Net Reproduction Rates (NRR), 2005-2050



	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
EC	1.46	1.33	1.24	1.18	1.13	1.10	1.07	1.05	1.03	1.02	1.01
FS	1.15	1.05	0.98	0.93	0.90	0.87	0.85	0.83	0.83	0.82	0.80
GP	0.98	0.91	0.85	0.82	0.79	0.76	0.75	0.74	0.73	0.72	0.72
KZN	1.42	1.29	1.20	1.16	1.11	1.07	1.06	1.04	1.02	1.01	1.00
LP	1.65	1.50	1.38	1.32	1.26	1.23	1.20	1.18	1.16	1.14	1.13
MP	1.45	1.32	1.23	1.17	1.12	1.09	1.07	1.04	1.03	1.01	1.00
NC	1.32	1.24	1.17	1.12	1.07	1.03	1.02	1.01	1.00	0.99	0.98
NW	1.24	1.14	1.05	1.01	0.97	0.94	0.91	0.91	0.89	0.88	0.87
WC	1.00	0.95	0.90	0.86	0.83	0.80	0.79	0.79	0.78	0.78	0.77

The chart above shows the NRR values per province for the projection period. They follow exactly the same pattern as the Total Fertility Rate (TFR) assumptions for the provinces.

For all provinces we see a decline in the NRR over time – as the fertility declines – with Gauteng and the Western Cape provinces breaching the level of one at or before 2000. Most provinces will be at or below one by 2050, with the exception of the Limpopo province.

7.7 Municipal & Provincial breakdown – Labour & Economic variables

The final step was to produce a number of labour variables and economic growth figures for the local municipalities based on the three scenarios.

7.7.1 Economic Growth by Local Municipality

StatsSA does produce GDP estimates per province, called the GDP-R estimates – see the table below. The GDP-R estimates from StatsSA, together with other datasets, are used to calculate the sector composition of each local municipality. Due to the complexity of the methodology, an overview is given in Appendix A - the section describing the Regional Explorer (ReX) product of Global Insight.

Table 26: GDP-R by Region, 1995-2005

a. Current prices - Rand million

Province	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Western Cape	80 079	88 363	98 669	104 907	116 269	130 983	144 586	164 925	181 969	203 183	225 779
Eastern Cape	45 366	51 067	56 502	60 984	66 853	75 418	82 412	90 900	100 880	111 907	122 021
Northern Cape	12 548	12 996	14 258	15 913	18 925	21 443	23 510	25 617	27 905	30 127	33 380
Free State	31 164	37 101	40 249	41 166	45 537	49 650	54 690	65 562	68 707	76 008	84 068
KwaZulu-Natal	92 089	104 081	114 644	123 882	132 784	150 912	168 410	191 338	207 345	230 623	251 286
North West	33 530	39 730	42 805	46 844	51 425	59 896	67 533	76 686	79 204	87 745	97 627
Gauteng	185 673	207 449	231 223	251 000	273 164	311 992	337 480	392 499	424 547	471 750	519 017
Mpumalanga	36 961	42 830	47 292	51 292	56 971	62 900	73 089	83 017	86 496	93 647	102 378
Limpopo	31 085	34 342	40 090	46 435	51 755	58 954	68 298	78 155	83 639	93 166	103 697
GDP at market prices	**548 515**	**617 959**	**685 731**	**742 424**	**813 684**	**922 148**	**1 020 008**	**1 168 699**	**1 260 693**	**1 398 157**	**1 539 253**

b. Current prices - percentage contributions

Province	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Western Cape	14.6	14.3	14.4	14.1	14.3	14.2	14.2	14.1	14.4	14.5	14.7
Eastern Cape	8.3	8.3	8.2	8.2	8.2	8.2	8.1	7.8	8.0	8.0	7.9
Northern Cape	2.3	2.1	2.1	2.1	2.3	2.3	2.3	2.2	2.2	2.2	2.2
Free State	5.7	6.0	5.9	5.5	5.6	5.4	5.4	5.6	5.4	5.4	5.5
KwaZulu-Natal	16.8	16.8	16.7	16.7	16.3	16.4	16.5	16.4	16.4	16.5	16.3
North West	6.1	6.4	6.2	6.3	6.3	6.5	6.6	6.6	6.3	6.3	6.3
Gauteng	33.9	33.6	33.7	33.8	33.6	33.8	33.1	33.6	33.7	33.7	33.7
Mpumalanga	6.7	6.9	6.9	6.9	7.0	6.8	7.2	7.1	6.9	6.7	6.7
Limpopo	5.7	5.6	5.8	6.3	6.4	6.4	6.7	6.7	6.6	6.7	6.7
GDP at market prices	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

c. Constant 2000 prices - Rand million

Province	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Western Cape	114 001	117 737	121 470	120 994	125 678	130 983	135 864	141 659	146 676	155 636	164 437
Eastern Cape	67 453	69 674	70 900	70 588	72 285	75 418	77 448	78 734	80 745	84 123	88 198
Northern Cape	18 800	19 287	20 127	20 474	21 026	21 444	21 085	21 390	22 185	22 774	23 657
Free State	45 277	47 672	48 584	46 735	48 615	49 649	49 101	50 998	52 167	54 320	56 587
KwaZulu-Natal	132 048	137 979	141 548	142 774	144 183	150 911	157 578	161 642	166 359	174 132	183 382
North West	55 163	58 327	58 150	58 241	59 004	59 896	60 413	61 424	64 181	66 484	69 670
Gauteng	269 124	275 723	285 226	288 045	294 746	311 992	319 211	335 204	345 876	364 735	384 332
Mpumalanga	53 541	56 815	58 732	59 283	60 997	62 901	63 700	65 296	67 052	69 801	72 813
Limpopo	50 924	51 922	55 779	57 834	58 832	58 954	62 974	65 773	67 523	69 764	72 598
GDP at market prices	**803 710**	**838 326**	**860 516**	**864 968**	**885 365**	**922 148**	**947 373**	**982 120**	**1 012 763**	**1 061 769**	**1 115 875**

d. Constant 2000 prices - percentage changes

Province	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Western Cape		3.3	3.2	-0.4	3.9	4.2	3.7	4.3	3.5	6.1	5.7
Eastern Cape		3.3	1.8	-0.4	2.4	4.3	2.7	1.7	2.6	4.2	4.8
Northern Cape		2.6	4.4	1.7	2.7	2.0	-1.7	1.4	3.7	2.7	3.9
Free State		5.3	1.9	-3.8	4.0	2.1	-1.1	3.9	2.3	4.1	4.2
KwaZulu-Natal		4.5	2.6	0.9	1.0	4.7	4.4	2.6	2.9	4.7	5.3
North West		5.7	-0.3	0.2	1.3	1.5	0.9	1.7	4.5	3.6	5.1
Gauteng		2.5	3.4	1.0	2.3	5.9	2.3	5.0	3.2	5.5	5.4
Mpumalanga		6.1	3.4	0.9	2.9	3.1	1.3	2.5	2.7	4.1	4.3
Limpopo		2.0	7.4	3.7	1.7	0.2	6.8	4.4	2.7	3.3	4.1
GDPR at market prices		**4.3**	**2.6**	**0.5**	**2.4**	**4.2**	**2.7**	**3.7**	**3.1**	**4.8**	**5.1**

Source: StatsSA

7.7.2 Sectoral Forecasts

The national forecasts are broken down into 34 detailed sectors from Global Insight's World Industry Service (WIS). The table below shows the average annual growth by detailed economic sector for a 5-year, 10-year and 20-year horizon.

Table 27: Growth forecasts by detailed Economic Sector

Avg Annual Growth, by sector - Blue / Baseline scenari	2006-10	2011-15	2016-20	2021-25	2026-30	2031-35	2036-40	2041-45	2046-50
11 Agriculture and hunting	1.0%	4.6%	4.7%	4.8%	4.9%	4.8%	4.9%	5.0%	5.0%
12 Forestry and logging	1.6%	4.6%	4.7%	4.8%	4.9%	4.8%	4.9%	5.0%	5.0%
13 Fishing, operation of fish farms	1.9%	4.6%	4.7%	4.8%	4.9%	4.8%	4.9%	5.0%	5.0%
21 Mining of coal and lignite	4.4%	3.2%	3.0%	3.7%	3.9%	3.9%	4.1%	4.3%	4.4%
23 Mining of gold and uranium ore	-2.1%	-0.2%	-0.3%	-0.4%	0.3%	0.7%	1.2%	1.7%	2.2%
24 Mining of metal ores	3.8%	5.5%	5.6%	5.6%	5.7%	5.5%	5.5%	5.5%	5.5%
25-29 Other mining and quarrying (incl 22)	1.2%	3.9%	4.5%	4.4%	4.5%	4.5%	4.6%	4.7%	4.8%
30 Food, beverages and tobacco products	3.1%	5.3%	5.6%	5.5%	5.6%	5.4%	5.4%	5.5%	5.5%
31 Textiles, clothing and leather goods	2.5%	4.1%	4.0%	4.2%	4.4%	4.3%	4.5%	4.6%	4.7%
32 Wood and wood products	4.8%	5.4%	5.2%	5.4%	5.4%	5.3%	5.3%	5.3%	5.4%
33 Fuel, petroleum, chemical and rubber products	4.9%	6.3%	6.1%	5.9%	5.9%	5.7%	5.7%	5.7%	5.7%
34 Other non-metallic mineral products	6.1%	6.4%	5.9%	5.5%	5.5%	5.4%	5.4%	5.4%	5.5%
35 Metal products, machinery and household appliances	5.9%	6.3%	6.2%	6.0%	6.0%	5.8%	5.7%	5.7%	5.8%
36 Electrical machinery and apparatus	5.0%	6.1%	6.1%	6.0%	6.0%	5.8%	5.8%	5.8%	5.8%
37 Electronic, sound/vision, medical & other appliances	2.3%	4.4%	5.3%	6.1%	6.0%	5.8%	5.8%	5.8%	5.8%
38 Transport equipment	6.8%	6.8%	6.5%	6.5%	6.5%	6.2%	6.1%	6.1%	6.1%
39 Furniture and other items NEC and recycling	5.1%	6.5%	6.1%	6.3%	6.3%	6.0%	6.0%	6.0%	5.9%
41 Electricity, gas, steam and hot water supply	4.9%	5.9%	5.9%	5.9%	5.9%	5.7%	5.7%	5.7%	5.7%
42 Collection, purification and distribution of water	3.0%	5.9%	5.9%	5.9%	5.9%	5.7%	5.7%	5.7%	5.7%
50 Construction	11.7%	9.3%	7.8%	6.6%	6.5%	6.2%	6.2%	6.1%	6.1%
61 Wholesale and commission trade	4.1%	6.3%	5.9%	6.1%	6.1%	5.9%	5.8%	5.8%	5.8%
62 Retail trade and repairs of goods	5.4%	5.3%	5.7%	6.1%	6.1%	5.8%	5.8%	5.8%	5.8%
63 Sale and repairs of motor vehicles, sale of fuel	3.9%	5.4%	5.2%	5.4%	5.5%	5.3%	5.3%	5.4%	5.4%
64 Hotels and restaurants	2.5%	6.3%	6.2%	6.0%	6.0%	5.7%	5.7%	5.7%	5.7%
71-72 Land and Water transport	5.7%	6.0%	6.0%	6.0%	6.0%	5.8%	5.8%	5.8%	5.8%
73-74 Air transport and transport supporting activities	4.1%	6.0%	6.0%	6.0%	6.0%	5.8%	5.8%	5.8%	5.8%
75 Post and telecommunication	5.4%	6.4%	6.4%	6.4%	6.3%	6.1%	6.0%	6.0%	6.0%
81-83 Finance and Insurance	6.6%	5.9%	6.0%	6.4%	6.4%	6.1%	6.1%	6.0%	6.0%
84 Real estate activities	5.8%	5.5%	5.8%	6.1%	6.1%	5.9%	5.8%	5.8%	5.8%
85-88 Other business activities	7.1%	6.3%	6.9%	6.9%	6.8%	6.5%	6.4%	6.3%	6.3%
91 Public administration and defence activities	3.8%	5.1%	6.0%	5.5%	5.6%	5.4%	5.4%	5.5%	5.5%
92 Education	4.6%	5.9%	6.3%	6.6%	6.5%	6.2%	6.2%	6.1%	6.1%
93 Health and social work	4.8%	5.9%	5.9%	6.2%	6.1%	5.9%	5.9%	5.9%	5.9%
94-99 Other service activities	4.4%	5.3%	6.1%	5.8%	5.8%	5.6%	5.6%	5.6%	5.6%
Total (Gross Domestic Product - GDP)	5.2%	5.9%	6.0%	6.0%	6.0%	5.8%	5.8%	5.8%	5.8%

Source: Global Insight World Industry Monitor

The construction sector has the highest expected growth, while gold and uranium mining is declining into negative growth for the years to come.

7.7.3 GDP-R forecasts per local municipality

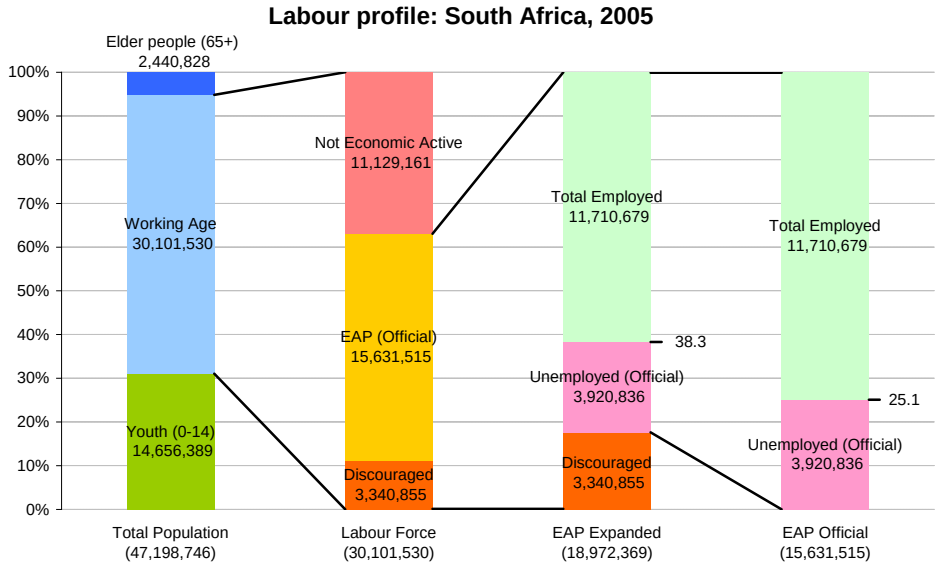
The national sectoral forecasts (from WIS) in combination with the historic sectoral compositions for each local municipality (from ReX) are used to produce a forecast per local municipality – making the basic assumption that the growth for each industry is spread equally across all of South Africa. On top of this assumption a historical weight was introduced, which compares the historical performance of a particular area to the national average. For areas performing above average, we assume this trend will hold for a couple of years Over time the historical weight declines.

We also include a factor for known projects in specific areas which will have a huge impact on the local economy. Note that this is only a very technical factor showing increased overall economic activity, and does not include any detailed economic impact assessment.

7.7.4 Labour variables - overview

The final step was to take the population forecasts, in combination with the economic growth forecasts, to estimate the labour concepts of employment, unemployment etc.

Figure 21: National Labour Profile, 2005



The South African population amounted to 47.2 million in 2005. When the elderly and very young people are subtracted from the total, the working-age population (also known as the labour force) of 30.1 million is derived. The working-age population may be broken down further into the economically active population (EAP) and non-economically active. The non-economically active people include scholars, students, housewives, disabled persons, and people not willing to work.

The two definitions of unemployment in South Africa allows for the isolation of a group called the "discouraged work seekers", which were counted at 3.3 million in 2005. They are the people who are willing to work, but who have not actively taken steps to find work. Using the expanded definition of unemployment, the discouraged group is regarded as unemployed, while in the official definition of unemployment they are regarded as non-economically active. The result is a big difference in the unemployment rate as measured by the two definitions: 38.3% using the expanded definition, but only 25.1% using the official definition

For the purpose of this project, estimates for the EAP, unemployment and total employment are needed. The expanded definition of unemployment, and the accompanying expanded definition of the EAP, which includes the discouraged group, will be adopted.

7.7.5 Labour variables - forecast

The forecast for the labour variables is done in two stages. The first stage is to forecast each variable independently, and the second stage is to make sure that the identity between these variables is preserved.

The following assumptions are used:

- **EAP**: It is assumed that the EAP is growing at the same rate as the P-EAP, or population of working age, as calculated in the demographic models.

- **Unemployment**: The assumption is made that unemployment is declining at the same trend as the national for each local municipality.

- **Employment**: The employed is split into three main categories: Informal employment, Formal employment and Domestic Workers.

- **Informal employment** is assumed to grow at 0.75%, 1.0% and 1.25% per year for the three different economic scenarios, with the higher informal growth in the low economic growth scenario and the lowest informal growth in the high economic scenario.

- **Domestic employment** is assumed to grow at the same rate as the population growth.

- **Formal employment** is broken down by detailed economic sector, and is expected to grow based on the detailed sectoral growth patterns as calculated in the regional GVA estimates. The labour intensity of each industry is taken into account translating into a specified number of jobs per industry.

The employment variables are estimated at Place of Work, while the Unemployed and EAP is measured at place of Residence. In order for the identity to hold, total employment needs to be transformed to Place of Residence by way of a transformation matrix.

The results of the first stage estimate can we written as:

$$EAP^{(1)} = Unemployed^{(1)} + Transform(\ Total\text{-}employment^{(1)}\ ) + Error$$

The second step involved distributing this error term back to the other variables in order to minimize the error. The error term was distributed according to the following:

- 50% of the error term result in a change in EAP
- 30% of the error affect the unemployed people in the region
- 20% of the error as an increase in the regional estimates of employment

The error term can either be positive or negative, i.e. resulting in either an increase or a decrease in EAP, employment or unemployment.

- **EAP** Changing the EAP affects the Labour Force Participation rate, which is possible, as people constantly enters and exits the labour market. Migration too has a significant affect, as people can easily move somewhere else when offered a better job opportunity.

- **Unemployment** The dynamics of the unemployed is very difficult to model. \

- **Employment** The constant capital:labour ratio per industry across all regions previously assumed, is not always the case. By distributing a portion of the error term to the employment variables, some variation in this is introduced.

7.7.6 Households by Income category – forecast

The last variable to forecast was the number of households by income category. This was done assuming the following growth dynamics:

- **Low income**: growing at the same rate as the informal sector, which is typically the low income earners in the economy.
- **Middle income:** growing at the same rate as the EAP growth, plus 1% per annum
- **High income**: growing at the same rate as the final Total Employment figures

7.8 Provincial Results

The Provincial Results for a number of variables is shown below.

Table 28: EAP – Economic Active Population by Province, 2005-2050

EAP Economic Active Population

		2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Western Cape	R	2,090,408	2,267,037	2,397,455	2,509,788	2,618,137	2,739,279	2,883,008	2,992,873	3,039,371	3,031,014
	B	2,090,408	2,314,854	2,527,695	2,749,341	2,976,024	3,201,462	3,422,515	3,608,701	3,745,943	3,830,715
	G	2,090,408	2,387,158	2,654,275	2,941,914	3,236,118	3,514,404	3,764,226	3,962,942	4,121,898	4,217,066
Eastern Cape	R	1,856,055	1,922,020	1,943,993	1,955,327	1,957,240	1,954,535	1,935,534	1,917,413	1,916,889	1,914,846
	B	1,856,055	1,892,121	1,878,074	1,864,427	1,848,060	1,840,939	1,836,069	1,837,040	1,842,245	1,834,382
	G	1,856,055	1,896,419	1,874,063	1,855,050	1,834,860	1,825,126	1,821,636	1,820,200	1,827,084	1,791,554
Northern Cape	R	345,352	364,915	375,233	383,723	393,063	399,481	401,672	402,617	403,393	402,483
	B	345,352	365,662	378,208	391,181	408,286	421,024	427,962	434,670	441,802	446,708
	G	345,352	364,818	382,021	398,409	419,068	434,059	442,332	451,309	462,478	470,225
Free State	R	1,123,526	1,107,681	1,083,968	1,071,587	1,063,550	1,058,843	1,058,454	1,059,817	1,061,758	1,057,255
	B	1,123,526	1,103,553	1,077,959	1,070,354	1,071,142	1,075,219	1,082,450	1,090,841	1,094,196	1,083,724
	G	1,123,526	1,086,669	1,059,505	1,047,358	1,042,397	1,041,555	1,041,504	1,034,448	1,011,825	949,395
KwaZulu Natal	R	3,268,048	3,335,099	3,395,199	3,490,619	3,572,274	3,635,637	3,676,712	3,701,970	3,732,091	3,752,182
	B	3,268,048	3,326,600	3,383,546	3,492,645	3,594,557	3,682,382	3,753,167	3,811,165	3,854,176	3,870,140
	G	3,268,048	3,363,971	3,449,343	3,578,132	3,694,692	3,795,141	3,882,800	3,957,157	4,033,267	4,048,979
North West	R	1,608,872	1,590,829	1,564,843	1,543,613	1,520,578	1,505,170	1,498,912	1,495,759	1,493,178	1,483,176
	B	1,608,872	1,588,330	1,564,272	1,555,701	1,552,913	1,559,791	1,574,889	1,591,904	1,603,832	1,601,894
	G	1,608,872	1,539,993	1,529,820	1,523,750	1,512,440	1,517,260	1,534,915	1,548,106	1,551,746	1,516,992
Gauteng	R	5,616,920	6,027,393	6,322,232	6,589,964	6,845,549	7,137,173	7,468,692	7,718,153	7,839,067	7,849,254
	B	5,616,920	6,149,557	6,654,746	7,209,775	7,782,360	8,359,473	8,909,590	9,371,172	9,721,528	9,957,428
	G	5,616,920	6,358,808	7,050,342	7,790,460	8,544,846	9,272,198	9,920,821	10,447,128	10,878,373	11,160,652
Mpuma-langa	R	1,460,803	1,499,130	1,528,801	1,560,177	1,585,835	1,607,547	1,624,494	1,635,017	1,643,205	1,642,567
	B	1,460,803	1,497,991	1,529,580	1,569,993	1,608,753	1,643,362	1,672,398	1,694,328	1,706,132	1,701,106
	G	1,460,803	1,494,678	1,542,090	1,591,695	1,633,968	1,671,995	1,703,910	1,724,072	1,735,613	1,713,136
Limpopo	R	1,602,385	1,696,889	1,757,238	1,802,612	1,830,530	1,833,077	1,805,976	1,778,566	1,774,379	1,776,836
	B	1,602,385	1,672,002	1,697,133	1,708,406	1,710,898	1,698,996	1,675,441	1,654,428	1,641,379	1,620,669
	G	1,602,385	1,650,710	1,668,116	1,665,303	1,650,617	1,627,348	1,599,460	1,567,817	1,529,994	1,453,481
Total	R	18,972,369	19,810,993	20,368,963	20,907,411	21,386,758	21,870,741	22,353,454	22,702,184	22,903,331	22,909,613
	B	18,972,369	19,910,670	20,691,214	21,611,825	22,552,993	23,482,649	24,354,480	25,094,249	25,651,233	25,946,766
	G	18,972,369	20,143,223	21,209,574	22,392,070	23,569,007	24,699,085	25,711,604	26,513,179	27,152,279	27,321,479

Table 29: Total Employment – number of jobs by province, 2005-2050

Number of Jobs: Total Employment

		2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Western Cape	R	1,638,059	1,751,153	1,862,321	1,984,249	2,142,690	2,361,196	2,636,518	2,756,119	2,711,772	2,627,718
	B	1,638,059	1,848,437	2,084,357	2,337,646	2,616,755	2,921,945	3,236,165	3,429,083	3,512,412	3,554,419
	G	1,638,059	1,919,550	2,231,346	2,554,702	2,894,258	3,240,338	3,533,569	3,683,260	3,794,545	3,835,386
Eastern Cape	R	890,780	921,477	965,991	1,024,793	1,107,514	1,225,278	1,371,181	1,429,455	1,403,042	1,363,427
	B	890,780	967,077	1,065,276	1,176,045	1,300,143	1,437,682	1,577,473	1,652,169	1,673,235	1,679,594
	G	890,780	997,121	1,126,494	1,262,083	1,401,458	1,543,172	1,655,162	1,694,062	1,722,988	1,715,425
Northern Cape	R	221,991	221,728	228,934	240,092	257,178	282,449	313,345	323,998	315,045	302,303
	B	221,991	234,274	255,943	281,890	312,499	344,987	377,219	394,499	399,518	401,017
	G	221,991	241,365	271,663	305,174	340,982	376,269	403,604	414,412	423,349	424,819
Free State	R	648,606	641,522	650,978	673,960	711,791	769,201	843,385	871,090	854,063	830,310
	B	648,606	670,937	712,715	766,437	828,784	898,513	970,218	1,006,610	1,013,358	1,010,421
	G	648,606	685,083	743,347	808,086	875,333	943,376	995,132	1,006,357	1,006,449	981,897
KwaZulu Natal	R	1,808,791	1,882,002	1,978,589	2,100,863	2,266,620	2,491,669	2,767,706	2,892,699	2,867,971	2,817,533
	B	1,808,791	1,966,322	2,166,743	2,392,075	2,641,533	2,915,249	3,189,425	3,355,149	3,422,097	3,458,497
	G	1,808,791	2,024,133	2,288,919	2,566,908	2,854,140	3,143,853	3,381,103	3,492,943	3,585,987	3,611,338
North West	R	822,045	813,251	828,778	860,226	912,451	991,770	1,095,979	1,132,404	1,102,540	1,062,777
	B	822,045	855,585	921,119	1,000,468	1,089,465	1,189,235	1,293,988	1,347,808	1,358,624	1,357,072
	G	822,045	873,234	965,015	1,062,881	1,157,301	1,257,054	1,337,402	1,362,017	1,376,354	1,362,067
Gauteng	R	4,022,182	4,354,746	4,656,076	4,990,045	5,425,606	6,023,559	6,770,726	7,100,136	6,991,962	6,783,339
	B	4,022,182	4,608,417	5,239,265	5,927,598	6,697,592	7,544,475	8,417,390	8,960,667	9,207,592	9,351,166
	G	4,022,182	4,798,506	5,644,573	6,531,474	7,475,371	8,449,401	9,284,362	9,728,103	10,075,516	10,240,703
Mpuma-langa	R	834,901	858,543	896,392	944,920	1,009,935	1,101,641	1,215,441	1,263,478	1,247,811	1,221,042
	B	834,901	895,737	979,994	1,073,305	1,175,117	1,285,831	1,398,866	1,460,876	1,479,064	1,483,417
	G	834,901	917,516	1,029,853	1,144,939	1,260,193	1,376,505	1,469,674	1,504,087	1,523,148	1,514,272
Limpopo	R	823,323	847,922	888,993	940,661	1,013,329	1,111,541	1,229,410	1,279,363	1,265,319	1,242,682
	B	823,323	882,867	965,729	1,056,862	1,157,301	1,264,942	1,372,312	1,427,694	1,441,446	1,443,655
	G	823,323	902,454	1,008,958	1,115,661	1,222,864	1,328,222	1,408,084	1,427,865	1,435,675	1,413,541
Total	R	11,710,679	12,292,345	12,957,052	13,759,811	14,847,112	16,358,305	18,243,691	19,048,743	18,759,528	18,251,131
	B	11,710,679	12,929,653	14,391,140	16,012,327	17,819,189	19,802,859	21,833,055	23,034,555	23,507,345	23,739,258
	G	11,710,679	13,358,962	15,310,167	17,351,907	19,481,900	21,658,190	23,468,090	24,313,105	24,944,010	25,099,449

Table 30: Percentage of Households with low Income – by province, 2005-2050

Percentage of Households with Low Income

		2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Western Cape	R	37.5%	36.7%	36.2%	35.8%	35.4%	34.7%	33.9%	33.9%	34.8%	36.1%
	B	37.5%	35.4%	33.5%	31.8%	30.3%	28.9%	27.7%	27.1%	27.0%	27.0%
	G	37.5%	34.4%	31.7%	29.5%	27.5%	25.9%	24.7%	24.1%	23.6%	23.5%
Eastern Cape	R	63.4%	63.6%	63.8%	63.9%	63.8%	63.3%	62.6%	62.6%	63.2%	64.2%
	B	63.4%	62.8%	62.1%	61.2%	60.3%	59.2%	58.0%	57.3%	57.2%	57.3%
	G	63.4%	62.2%	60.9%	59.4%	58.1%	56.6%	55.4%	54.8%	54.1%	54.1%
Northern Cape	R	58.2%	58.4%	58.5%	58.6%	58.5%	58.2%	57.8%	58.2%	59.1%	60.2%
	B	58.2%	57.4%	56.4%	55.4%	54.2%	53.1%	52.2%	51.8%	51.8%	51.9%
	G	58.2%	56.8%	55.1%	53.4%	51.7%	50.3%	49.3%	48.8%	48.2%	48.0%
Free State	R	61.3%	62.4%	63.2%	63.7%	64.0%	64.1%	64.0%	64.4%	65.2%	66.2%
	B	61.3%	61.6%	61.6%	61.2%	60.7%	60.1%	59.5%	59.3%	59.5%	60.0%
	G	61.3%	61.3%	60.8%	60.0%	59.2%	58.3%	57.7%	57.6%	57.8%	58.7%
KwaZulu Natal	R	58.4%	58.6%	58.7%	58.6%	58.3%	57.7%	57.0%	57.0%	57.7%	58.6%
	B	58.4%	57.7%	56.7%	55.5%	54.4%	53.3%	52.1%	51.5%	51.3%	51.4%
	G	58.4%	56.9%	55.3%	53.4%	52.0%	50.5%	49.3%	48.6%	47.9%	47.7%
North West	R	63.9%	65.0%	65.7%	66.1%	66.3%	66.1%	65.5%	65.6%	66.3%	67.4%
	B	63.9%	64.1%	63.7%	63.0%	62.2%	61.2%	60.1%	59.5%	59.5%	59.7%
	G	63.9%	63.9%	62.8%	61.4%	60.2%	58.9%	57.8%	57.3%	56.9%	57.2%
Gauteng	R	39.5%	38.6%	38.2%	37.8%	37.3%	36.5%	35.6%	35.7%	36.7%	38.0%
	B	39.5%	37.2%	35.3%	33.5%	31.8%	30.3%	29.0%	28.4%	28.3%	28.4%
	G	39.5%	36.1%	33.3%	30.9%	28.8%	27.0%	25.7%	25.1%	24.6%	24.5%
Mpuma-langa	R	63.2%	63.3%	63.4%	63.5%	63.4%	63.1%	62.7%	62.8%	63.6%	64.6%
	B	63.2%	62.4%	61.6%	60.6%	59.8%	58.8%	58.0%	57.6%	57.6%	57.9%
	G	63.2%	61.9%	60.4%	58.8%	57.6%	56.4%	55.4%	55.0%	54.6%	54.8%
Limpopo	R	67.4%	67.3%	67.2%	67.1%	66.9%	66.8%	66.8%	67.2%	68.0%	68.8%
	B	67.4%	66.7%	66.0%	65.3%	64.7%	64.1%	63.6%	63.5%	63.8%	64.2%
	G	67.4%	66.4%	65.2%	64.2%	63.2%	62.4%	61.9%	61.9%	62.0%	62.8%
Total	R	52.7%	52.3%	52.0%	51.7%	51.2%	50.5%	49.5%	49.3%	50.1%	51.2%
	B	52.7%	51.1%	49.4%	47.6%	45.9%	44.2%	42.7%	41.8%	41.5%	41.5%
	G	52.7%	50.1%	47.5%	45.0%	42.7%	40.7%	39.1%	38.2%	37.4%	37.1%

8 Conclusion

Global Insight Southern Africa (PTY) Ltd. and the Bureau for Market Research (BMR) at the University of South Africa (UNISA) were approached by the Department Of Transport (DoT), to develop future demographic and economic scenarios for South Africa. These scenarios are to serve as inputs in the development of a transport model for South Africa, which will feed into the preparation of a National Transport Master Plan for South Africa.

A "baseline" macro economic (business as usual) scenario was developed and two alternative scenarios namely a "relatively optimistic" and a "relatively pessimistic" scenario. Ten key drivers of growth were subsequently discussed to determine the probability of any of the scenarios realising. The conclusion drawn suggests that through addressing critical skill shortages, infrastructural impediments and structural imbalances in the economy a highly efficient, fundamentally well managed market orientated economy could render even higher levels of confidence and very well result in a higher growth path than suggested by the baseline forecast.

These scenarios set the economic scene against which The National Transport Master Plan for South Africa can be developed.

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Appendix A: Background to the Methodology and Approach

For the purposes of this project Global Insight will utilise its macro econometric model for the South African economy and the Regional eXplorer (ReX). The macro econometric model will be utilised to provide the baseline macro-economic forecasts, as well as to construct the two alternative scenarios. These baseline macro-econometric scenarios will be incorporated into the REX following a top-down approach to construct the regional sectoral level scenarios required for this project. A brief overview of the macro-econometric model and the ReX are provided below.

Global Insight's Macro Econometric Model

In line with mainstream econometric models, a key feature of the *Global Insight Model* (GIMO) is that it is consistent with economic theory. Consequently, the economic properties of the model play a key role in determining the model's behaviour and it has been specified to ensure that a set of structural/theoretical relationships hold in the long-run. This long-run relationship is based on neo-classical economic growth theory, where output is determined by technological progress and the available factors of production (labour and capital). As a result, money is neutral with respect to long-run economic output. In the short-run, however, output is primarily demand determined as a result of the slow adjustment of prices and quantities. The short-run dynamics are estimated on the basis of historical data and the dynamics are constrained by the need to fulfil long-run steady state properties via the use of Error Correction Mechanism (ECM) terms and appropriate homogeneity properties. This approach is similar to those used by the European Central Bank, The Bank of England and the Reserve Bank of New Zealand.

GIMO is mid-sized econometric model, with approximately 20 econometrically estimated equations and about 280 variables in total. The long-run technical equilibrium structure of the model can be summarised in terms of seven key relationships. The first four concern the supply side:

- Supply-side output is determined by a constant returns-to-scale Cobb-Douglas function of the effective labour force, capital and exogenous technical progress;
- The demand for private sector labour depends on private sector output and the average real private-sector wages;
- The demand for private sector capital in turn depends on output and the real after tax cost of capital; and,
- Real unit labour costs depend on a set of structural variables and the unemployment rate.

The other three key long-run relationships concern aggregate demand, money demand and a monetary reaction function:

- **Aggregate demand is the well-known identity:** the sum of the demand for consumption, government spending, investment, inventories, and net trade (i.e. exports less imports). The GIMO also provides for a fiscal block on the revenue and expenditure components of the general and national government. Each of these components are modelled separately and depend on a number of factors, including,

among others, real income levels, real interest rates and the real (trade-weighted) exchange rate.

- The nominal variables (or variables at current prices), the demand for money is related to the price level, real income and interest rates. Consumer prices are determined in the context of a wage-price block; whereas producer prices are largely a function of unit labour costs, import costs and a variable mark-up over costs (reflecting business cycle dynamics); and,
- A Taylor-rule based monetary reaction function, which allows the policy interest rate to react to expected changes in inflation and the output gap.

For external prices, relative excess money supply differentials, net reserves and interest rate differentials (the difference between domestic and international interest rates) form the basis of the Rand/U.S. dollar exchange rate equation. In this relationship provision is also made for the role of the U.S. dollar/euro exchange rate (for relative dollar strength) and commodity price movements.

Global Insight's Regional eXplorer (ReX)

Regular users of data in South Africa are aware that the process of collecting existing published data is time consuming, and that once collected, the data is often inconsistent or outdated and in a format not easily imported into standard software packages. The Global Insight Regional eXplorer (ReX) overcomes these problems by putting accurate and up-to-date regional data at the user's fingertips.

The ReX draws together numerous sources of sub-national economic information from Statistics South Africa, government departments, development agencies, Regional Services Councils, private research houses and Global Insight's own data. These data components are reworked to ensure that they are internally consistent and add up to the national accounts totals. All indicators are then updated to the current period using Global Insight's suite of forecasting models including the macroeconomic model, industry model and income distribution forecasting model. The ReX ensures reliable, consistent information helping decision makers and analysts to make better-informed decisions.

Methodological overview of Gross Value Added estimates

Before 2003, the last reliable official estimates of Gross Geographic Product (GGP) were made in 1991 and later updated to 1995 levels. Since there have been substantial shifts in the regional distribution of economic activity it was decided that these figures were not suitable for use in the ReX database.

Between 1995 and 2003 Global Insight filled the information gap by calculating independent GDPR estimates on a sub-national level. These **calculations** involve complex models and the process of estimating GDP-R is set out below. Since 2003, Statistics South Africa (StatsSA) **once again** produces estimates for Gross Domestic Product per region (GDPR) on an annual basis, with the latest available estimates covering the period 1995-2004. However, these estimates are not disaggregated further to a sub-regional level. Prior to the introduction of the 1993 System of National Accounts (SNA) StatsSA compiled estimates at a magisterial district level, with the last official Gross Geographic Product (GGP) estimates being released in November 1995. StatsSA suspended this publication owing to limited resources caused by the implementation of the 93SNA and the benchmarking of South Africa's National Accounts as well as the rebasing of the National Accounts to 1995.

Although there are official statistics available at present for GDP-R, Global Insight Southern Africa does its own estimates of GDP-R. Global Insight's estimates are not necessarily compatible with those published by StatsSA for a number of reasons:

- The information published by StatsSA is only updated once a year, and are only available at a provincial level. Global Insight's estimates are updated continuously as new information becomes available and are broken down to a magisterial district level;

- The methodology used by StatsSA is based on business entity level, whereas Global Insight's information is compiled from and individual perspective. Global Insight is of the view that geographic and sectoral information is more accurately captured on an individual basis, compared with entity level information.

9.1.1 The "-R" extension to the GDP and GVA concepts, simply imply a specific geographic area, called a region. The GDP-R terminology supercedes the old term Gross Geographic Product (GGP), but in essence this is exactly the same.

What are the difference between GVA and GDP at a national level?

GDP(market prices)=	GVA (basic prices) (RB6645J)
	+ Taxes on products (RB6603J)
	– Subsidies on products (RB6604J)
GVA (basic prices) (RB6645J) =	GVA (factor cost) (RB6003J)
	+ Other Taxes on production (RB6600J)
	– Other Subsidies on production (RB6601J)
GVA (factor cost) (RB6003J) =	Compensation of employees (RB6000J)
	+ Gross operating Surplus
Gross operating Surplus =	Net Operating Surplus (RB6001J)
	+ Consumption of fixed capital ((RB6002J)

Consequently, Gross Value Added by Region (GVA-R) refers to GVA for a geographic area. RBXXXXJ - refers to Reserve Bank series (p S-112 National Income & Production Accounts of South Africa June 2006).

In previous versions of the ReX data set we referred to GGP, while according to the strict definition it actually referred to GVA-R. We do not have information on "Other Taxes on products" and "Other subsidies on products" on a regional basis, while we **do** have compensation of employees on a regional level and GVA by sector from Statistics South Africa (StatsSA P4141). We are therefore in a position to derive GVA on a regional and sectoral level.

It is important to note that all the statistics in the ReX from 1996-2006 are ESTIMATES - not the truth, as no one knows what that is - not even the 1996 Census is 100% correct - but is ultimately also an estimate!

How does Global Insight arrive at their estimates for GVA? The first step in the compilation of the GVA estimates is the estimation of the historical ratio between labour

remuneration (LR) and GGP for each broad sector in each magisterial district from the 1994 Stats SA Statistical Release P0401. By applying the ratio between LR and GGP estimated in step one to the LR estimates for 34 economic sectors, Global Insight arrives at preliminary estimates of GVA for 1996. In the third step, these estimates are benchmarked on national level Reserve Bank estimates of value added by sector to arrive at final estimates for 1996.

In step four the GVA growth rates for each year covering the period 1996-2005 are estimated from various sources:

- Mining sector: growth rates were estimated from magisterial district data provided by the Minerals Bureau.
- Construction sector: growth rates for each magisterial district were estimated from Regional Service Council data on company turnover. These estimates were then benchmarked on provincial level estimates of growth in cement sales provided by the Cement and Concrete Institute.
- Electricity sector: Eskom provided data on electricity production from the 17 major power stations. Growth in electricity production from these stations was used as a proxy for growth in electricity value added for those districts in which the stations are situated. Growth rates for electricity value added in districts without power stations were based on growth rates on the two major electricity consuming sectors i.e. mining and manufacturing.
- Retail trade: growth rates for each magisterial district were estimated from Regional Service Council data on company turnover. These estimates were then benchmarked on provincial level estimates of growth in retail trades sales as measured by Stats SA.
- Other sectors: Growth rates were estimated from Regional Service Council data on company turnover.

In the final step of calculating GVA, the growth rates arrived at in the previous step are applied to the 1996 data to arrive at preliminary estimates of GVA for each year from 1997 to 2006. These estimates are then benchmarked and adjusted to national level estimates of sectoral GVA (unpublished detailed series obtained from StatsSA as well as South African Reserve Bank published series) to arrive at final estimates.

Gross Geographic Value Added Projections: 2007-2025

The GVA projections are based on projected growth rates derived from two sources: historical growth rate estimates and national level industry forecasts. The projections are thus based partly on the notion that regions that have performed well in the recent past are likely to continue performing well (and visa versa) and partly on the notion that those regions which are well endowed with sectors that are forecast to grow rapidly in the national economy (e.g. finance and telecommunications) are likely to perform well (and visa versa). As the target year moves further from the latest year (2005) so the emphasis moves from historical growth rates to national-level industry growth rates.

A growth rate for each sector (34 sectors) in each magisterial district is calculated as a weighted average of:

- The estimated growth over the period 1996 to 2006; and

- The projected growth of the sector (34 sectors) at the national level from Global Insight's World Industry Forecast.

The relative weights vary by year and are show in the table below.

Table 31: Relative sectoral growth weightings

Year	Historical weight	Industry weight
2006	0.50	0.50
2007	0.45	0.55
2008	0.40	0.60
2009	0.35	0.65
2010	0.30	0.70

These growth rates are applied to the base year (2004) estimates of GVA by sector to arrive at preliminary projected estimates. The projections are then benchmarked on the national level forecasts of GVA growth from the Global Insight macro-econometric model.

Appendix B: Sensitivity Analysis and Forecast Reliability of the Global Insight Macro Econometric Model

Sensitivity analysis

The Global Insight macro-econometric model has a "natural" tendency to return to its long term equilibrium level following a shock to the overall system. Such a temporary shock may result from external forces, for example a change in the oil price or a change in domestic interest rates, which drives the economy away from its long term growth path. In time, as the "shock" works its way through the system, the economy tends towards its long term growth path, rendering no change to the economic growth rate over the whole forecast period but leaving the economy at a new equilibrium level. To illustrate the effect on the economy, the transmission is described involving an increase in the real interest rate as well as an increase in the oil price.

Interest rate

The impact of a 1% (or one percentage point) increase in the real repo rate from the third quarter of 2007 onwards gives the following results.

Higher (real) interest rates raise the opportunity cost of purchasing consumer items and real household consumption declines. This in turn has a negative impact on output, which causes investment to decline. Investment expenditure is also inhibited by higher user cost of capital as the increase in short-term interest rates spills over into higher long-term interest rates. During this process, firms start to adjust their inventory levels downwards. With final household consumption, investment and inventories declining, both gross domestic expenditure, output and the economy-wide capacity utilization falls.

The lower gross domestic expenditure and capacity utilization result in a lower demand for imported goods. The lower imports lead to a higher surplus (reduced deficit) on the current account, thereby raising the net reserves to GDP ratio (under the assumption of a no change in capital flows). This leads to an appreciation in the value of the domestic currency. Falling output and lower capacity utilization also put downward pressure on real wages in the economy, which reduces unit labour costs. The fall in unit labour costs is slightly inhibited by a decline in productivity as employment is reduced at a slower rate than private sector output. Lower unit labour costs, complemented by an appreciating currency, reduce domestic inflationary pressures and the inflation rate reverts to the long-term steady state.

Before the level of GDP reverts back to "pre-shock" levels it registers a lowest turning point of -0.6% occurring around the first quarter of 2011, while the CPIX inflation rate declines around 1.2%.

Oil price

Should the forecasted baseline dollar oil price is increased with $10 from the third quarter of 2007 onwards it would have a negative impact on G7 growth and hence South African

export performance and output. An added assumption on G7-growth is thus required where the rate of G7 growth declines by 0.5 percentage points over the period, in line with IMF estimates of the effect on the global economy of a increase in the price of oil[4].

With some lag, the fall in global growth from higher oil prices would be a brake on export growth and hence lower output and capacity utilization. Furthermore the effect of higher oil prices is an increase in the transport component of the CPIX index. However, due to the importance of fuel as an input in the production process, it is clear that there will be a further, second-round, effect on prices throughout the economy. The inflationary pressures would result in a weakening of the terms of trade and current account, thereby putting pressure on the rand. It is important to note that a no change in the interest rate is assumed in this scenario although the Taylor-rule interest rate specification in the model[5] indicates that interest rates should be raised by 0.8 percentage points at this stage, which should quicken the process to revert back to equilibrium. At the height of the effect in 2012 output falls by 0.2% and CPIX-inflation increases by 0.4%.

Forecast reliability

Global Insight participates in the "Sake24 – Economist of the Year" competition and contributes to the "Reuters – Econometer" on a monthly basis. The macro-economic model is run on a monthly basis to produce forecasts for the South African economy thereby guaranteeing that the latest availably data can be incorporated on a timely basis.

To further illustrate historic forecast reliability two graphs, one of real GDP growth and one of the CPIX-inflation, are presented to indicate the model outcome compared to the actual outcome of GDP growth and CPIX inflation (figure 12).

A detailed table showing the past year's forecasted and actual outcomes are also presented. Tables 19 and 20 show the month in which the forecast was done in the first column. The following columns show the forecasted value, actual outcome and the difference between the forecasted value and the actual. A negative sign in the "difference" column indicates that the model underestimates and a positive value show an overestimation. In this regard the forecast for the second quarter GDP growth in 2007 were mostly correct, while the rest where slightly underestimated.

[4] A joint report by the IEA, the OECD and the IMF concluded that a sustained $10 a barrel increase in the price might reduce global output by about 0.5 per cent after one year. Deutsche Bank research shows that a surge in oil price to $70 ($20 spike) triggered by supply disruptions might reduce global growth by about 1,5 percentage points.

[5] The repo rate is a function of the inflation rate, the level of capacity utilisation, the world interest rate and a variable capturing the risk premium on South African debt

Figure B1: Model outcome compared to actual

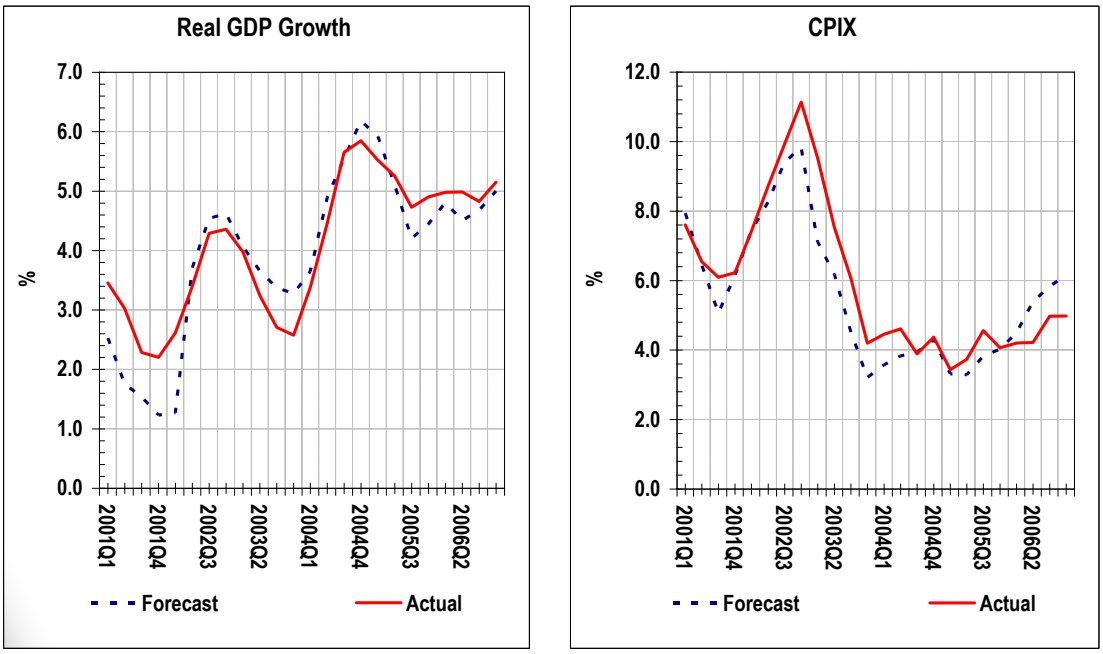

Table B1: Forecasted and actual outcomes of GDP growth

Forecast done in:	GDP Growth											
	2006						2007					
	Forecast Q3	actual	diff	Forecast Q4	actual	diff	Forecast Q1	actual	diff	Forecast Q2	actual	diff
Aug-06	4.2		-0.6	4.6		-0.6	4.5		-0.6	4.2		-0.6
Sep-06	4.2		-0.6	4.6		-0.6	4.5		-0.6	4.8		0
Oct-06	4.2		-0.6	4.6		-0.6	4.5		-0.6	4.8		0
Nov-06	4.5	4.8	-0.3	4.6		-0.6	4.5		-0.6	4.8		0
Dec-06				4.7		-0.5	4.8		-0.3	4.8		0
Feb-07				4.8	5.2	-0.4	4.8		-0.3	4.8		0
Mar-07							5.1		0	4.8		0
Apr-07							5.1		0	4.8		0
May-07							5.1	5.1	0	4.8		0
Jun-07										4.8		0
Jul-07										4.8		0
Aug-07										4.8	4.8	0

Table 32: Forecasted and actual outcomes of CPIX inflation

Forecast done in:	CPIX%											
	2006						2007					
	Forecast Q3	actual	diff	Forecast Q4	actual	diff	Forecast Q1	actual	diff	Forecast Q2	actual	diff
Aug-06	5.3		0.3	5.1		0.1	5.8		0.6	5.5		-0.9
Sep-06	5		0	5.8		0.8	5.6		0.4	6.1		-0.3
Oct-06	5	5	0	5.8		0.8	5.5		0.3	6.2		-0.2
Nov-06				5.8		0.8	5.5		0.3	6.0		-0.4
Dec-06				5.3		0.3	5.4		0.2	6.1		-0.3
Feb-07				5	5	0	5.4		0.2	6.1		-0.3
Mar-07							5.1		-0.1	6.1		-0.3
Apr-07							5.2	5.2	0	6.1		-0.3
May-07										6.1		-0.3
Jun-07										6.2		-0.2
Jul-07										6.3		-0.1
Aug-07										6.4	6.4	0.0

Appendix C: Key Definitions

Balance of trade: The net balance between exports and imports of goods.

Change in net reserves = Current account of the balance of payments + the capital account.

Constant prices (i.e. in real terms) refers to economic variables measured in *volume* terms, and implies that the effect of price changes (inflation) have been eliminated from the variable in question. The concepts of "constant prices" and "in real terms" can be used interchangeably.

Consumer price inflation (CPI): Price increases as measured by the consumer price index (CPI), which reflects the prices of a representative basket of consumer goods and services.

CPIX: CPI excluding interest rates on mortgage bonds. The CPI excluding interest rates on mortgage bonds (is derived by excluding the interest rates on mortgage bonds from the basket of goods and services.

Current account deficit/surplus: The difference between total imports and total exports, also taking into account service payments and receipts, interest, dividends and transfers. The current account can be in deficit or surplus.

Current prices (i.e. in nominal terms) refer to economic variables measured in monetary (*value*) terms. This implies that price effects (inflation) are still included in the variable. The concepts of "current prices" and "in nominal terms" can be used interchangeably.

Deflator: **Deflating** a time series means converting a nominal (current-price) time series to a real (constant-price) time series, i.e. the effects of price increases are removed. By deflating a current-price time series with the aid of a price index or deflator, a constant-price time series is obtained, i.e. the values are expressed in terms of base-year prices. If a price index or deflator is used to deflate a value index, a quantity index is obtained.

Disposable income: Excess income after paying all taxes and necessary expenses.

Domestic Debt: When domestic debt is financed (referred to as a domestic loan), it raises *credit* extended to the private sector. This increase funds available in the economy for consumer spending, investment spending or savings. When the domestic loan is repaid, it decreases funds available in the economy.

Domestic Equity: When dividends are paid domestically it adds to household income.

Foreign Debt: When foreign debt is financed (referred to as a foreign loan), the inflow of funds is recorded in the capital account. Likewise the outflow of funds, when the loan is paid back, will be recorded in the capital account.

Foreign Equity: Foreign equity is seen as foreign direct investment and resorts under the capital account. Foreign dividend payments are seen as a service import and thus resort under the current account of the balance of payments.

Economic Growth: An increase in the total amount of output, income and spending in the economy.

Employment: Formal employment

FDI: **Foreign Direct Investment:** The Reserve Bank of South Africa defines FDI as investment originating from a foreign source. If a foreign company invests R1bn in South Africa and the whole amount is financed from abroad the whole R1bn is seen as foreign direct investment in South Africa. If 50% is financed from SA sources (capital, debt or other) only R0.5bn is foreign direct investment and the rest is seen as claims on non-residents.

Financial account: A statement of all financial transactions between the nation and the rest of the world, including portfolio and fixed investment flows and movements in foreign reserves.

Financial- and real economy: The financial economy is linked to the real economy through interest rates and the exchange rate, where the financial economy can be seen as the "grease" that allows the "gears" of the real economy to turn and produce goods and services.

Fixed investment: Spending on buildings, machinery and equipment contributing to production capacity.

GDP: **Gross Domestic Product** is used to measure total economic activity and is measured as the total value of all final goods and services produced within the borders of a country in a particular period.

Gross fixed capital formation: The addition to a country's fixed capital stock during a specific period, before provision for depreciation.

Imports and exports of goods and services represent the value (i.e. in nominal terms) and/or volume (i.e. in real terms) of transactions between residents of *South Africa* and non-residents.

Inflation: A sustained increase in the general price increase.

Inflation targeting: A monetary policy framework intended to achieve price stability over a certain period of time. The Reserve Bank and Government agree on a target rate to be achieved over a stipulated period.

Investment: The flow of expenditure on new capital goods.

Monetary policy: Government policy that is delegated to central banks to implement policies that address the total money supply, exchange rates and the general level of interest rates in order to control inflation.

Money supply: The total stock of money in an economy.

Personal saving rate: Saving as a percentage of disposable income.

Portfolio investment: Investment in financial assets such as stocks and shares or government bonds.

Private sector credit extension: Credit provided to the private sector by banks. This includes all loans, credit cards and leases.

Producer price inflation (PPI): Price increases measured by the producer price index (PPI), a measure of the prices paid based mainly on published price lists by producers.

Repo rate: The rate of interest that the Reserve Bank pays on repurchase agreements with money market participants.

Reserves (foreign exchange): Holdings of foreign exchange, either of the Reserve Bank only or of the Reserve Bank and domestic banking institutions.

Saving: The difference between income and spending.

TFR: The total fertility rate is an indicator of the average number of children that a woman will give birth to in her lifetime

Total Output differs from GDP in the sense that it includes the inter-industry demand for goods needed in the production process. Total output can therefore be defined as the sum of total final demand and total inter-industry demand.

Appendix D: Population on Local Municipal level – 1996, 2001 and 2005

Population, 1996	African	Asian	Coloured	White	Total
South Africa	**32,251,070**	**1,061,617**	**3,589,927**	**5,094,389**	**41,997,004**
Provinces (New boundaries)					
Western Cape	902,034	39,101	2,167,521	915,265	**4,023,921**
Eastern Cape	5,328,092	18,427	447,472	368,393	**6,162,385**
Northern Cape	431,816	2,410	402,895	123,516	**960,638**
Free State	2,290,295	2,612	76,548	330,678	**2,700,133**
KwaZulu-Natal	7,410,273	795,286	124,511	600,291	**8,930,361**
North-West	2,803,768	10,187	49,553	311,057	**3,174,564**
Gauteng	5,654,696	175,031	292,173	2,018,693	**8,140,593**
Mpumalanga	2,905,972	11,466	20,406	267,073	**3,204,917**
Limpopo	4,524,123	7,097	8,849	159,424	**4,699,493**
Metropolitan municipalities					
WC - City of Cape Town	701,718	36,698	1,252,022	605,956	**2,596,394**
KZN - eThekwini	1,830,753	602,846	78,131	341,293	**2,853,023**
GP - Ekurhuleni	1,536,717	30,439	58,568	541,672	**2,167,397**
GP - City of Johannesburg	1,913,466	105,409	179,524	589,194	**2,787,593**
EC - Nelson Mandela Bay	547,019	10,540	225,319	193,159	**976,038**
GP - City of Tshwane	1,186,835	26,837	30,698	568,364	**1,812,734**
District municipalities					
Western Cape					
DC1 West Coast	13,581	503	171,888	53,682	**239,655**
DC2 Cape Winelands	92,741	1,214	375,971	110,817	**580,742**
DC3 Overberg	23,854	158	97,043	39,622	**160,677**
DC4 Eden	63,081	484	228,887	96,800	**389,253**
DC5 Central Karoo	7,059	44	41,710	8,388	**57,200**
Eastern Cape					
DC10 Cacadu	186,806	1,030	127,769	52,119	**367,725**
DC12 Amathole	1,524,058	4,915	47,411	88,829	**1,665,214**
DC13 Chris Hani	769,766	614	30,370	20,310	**821,061**
DC14 Ukhahlamba	307,566	66	9,861	9,877	**327,370**
DC15 O.R.Tambo	1,606,006	1,102	4,781	2,472	**1,614,360**
DC44 Alfred Nzo	386,871	159	1,959	1,627	**390,617**
Northern Cape					
DC45 Kgalagadi	163,298	99	12,878	13,338	**189,613**
DC6 Namakwa	3,072	72	83,725	16,611	**103,480**
DC7 Pixley ka Seme	43,751	141	100,782	20,132	**164,806**
DC8 Siyanda	39,335	105	123,146	27,281	**189,867**
DC9 Frances Baard	182,359	1,994	82,365	46,154	**312,872**
Free State					
DC16 Xhariep	91,096	47	18,600	14,067	**123,811**
DC17 Motheo	547,091	1,224	33,294	111,569	**693,178**
DC18 Lejweleputswa	619,800	392	12,388	91,859	**724,439**
DC19 Thabo Mofutsanyane	653,381	691	3,393	39,187	**696,653**

Population, 1996	African	Asian	Coloured	White	Total
DC20 Fezile Dabi	378,927	258	8,873	73,995	**462,052**
KwaZulu-Natal					
DC21 Ugu	606,875	26,800	5,518	36,865	**676,058**
DC22 uMgungundlovu	725,613	76,693	18,827	87,142	**908,274**
DC23 Uthukela	537,219	16,867	3,032	17,320	**574,438**
DC24 Umzinyathi	443,278	7,774	2,245	10,773	**464,070**
DC25 Amajuba	386,643	12,753	2,822	30,120	**432,338**
DC26 Zululand	707,843	492	1,192	17,615	**727,142**
DC27 Umkhanyakude	522,059	353	713	4,118	**527,243**
DC28 Uthungulu	745,461	9,898	3,463	38,856	**797,678**
DC29 iLembe	507,006	40,191	2,105	10,472	**559,774**
DC43 Sisonke	397,524	619	6,462	5,717	**410,322**
North West					
DC37 Bojanala Platinum	1,054,240	4,207	5,311	85,807	**1,149,565**
DC38 Ngaka Modiri Molema (Central DM)	692,241	2,378	9,006	32,690	**736,315**
DC39 Bophirima	407,833	847	14,602	23,955	**447,237**
DC40 Dr Kenneth Kaunda (Southern DM)	649,454	2,754	20,634	168,605	**841,448**
Gauteng					
DC42 Sedibeng	580,177	6,190	7,186	174,412	**767,966**
DC46 Metsweding	93,488	232	1,417	27,685	**122,822**
DC48 West Rand	344,012	5,925	14,779	117,365	**482,081**
Mpumalanga					
DC30 Gert Sibande	712,975	5,802	5,957	99,238	**823,973**
DC31 Nkangala	864,703	3,160	8,319	114,411	**990,593**
DC32 Ehlanzeni	1,328,294	2,505	6,130	53,423	**1,390,352**
Limpopo					
DC33 Mopani	954,746	477	925	32,463	**988,611**
DC34 Vhembe	1,097,999	2,424	1,565	19,375	**1,121,362**
DC35 Capricorn	1,060,323	3,052	3,995	32,687	**1,100,057**
DC36 Waterberg	492,649	660	1,683	65,100	**560,092**
DC47 Greater Sekhukhune	918,406	483	681	9,800	**929,370**
Local Municipalities					
WC011: Matzikama	1,156	44	30,526	8,967	**40,694**
WC012: Cederberg	1,269	20	24,709	6,034	**32,031**
WC013: Bergrivier	919	23	28,269	8,907	**38,118**
WC014: Saldanha Bay	5,125	234	38,468	14,187	**58,014**
WC015: Swartland	5,058	172	46,181	14,565	**65,977**
WCDMA01: West Coast DMA	55	9	3,735	1,022	**4,821**
WC022: Witzenberg	10,685	71	53,990	9,172	**73,918**
WC023: Drakenstein	32,192	442	123,724	35,031	**191,389**
WC024: Stellenbosch	18,660	252	59,395	28,944	**107,251**
WC025: Breede Valley	22,417	389	85,949	24,701	**133,456**
WC026: Breede River/Winelands	8,059	55	47,682	12,307	**68,103**
WCDMA02: Breede River DMA	727	5	5,231	662	**6,625**
WC031: Theewaterskloof	11,926	61	51,191	11,205	**74,383**

Population, 1996	African	Asian	Coloured	White	Total
WC032: Overstrand	9,005	50	13,274	16,267	**38,597**
WC033: Cape Agulhas (incl Overberg DMA)	1,457	25	15,784	6,532	**23,798**
WC034: Swellendam	1,467	22	16,793	5,617	**23,899**
WC041: Kannaland	305	12	17,596	3,375	**21,287**
WC042: Hessequa (Langeberg)	2,145	15	26,942	10,949	**40,050**
WC043: Mossel Bay	12,806	91	31,199	17,922	**62,018**
WC044: George	24,779	236	55,241	31,220	**111,477**
WC045: Oudtshoorn (incl South Cape DMA)	5,806	38	69,928	16,636	**92,407**
WC047: Bitou (Plettenberg Bay)	5,070	52	7,660	5,118	**17,901**
WC048: Knysna	12,170	41	20,322	11,580	**44,113**
WC051: Laingsburg	238	13	4,656	1,120	**6,027**
WC052: Prince Albert	109	13	8,165	1,474	**9,761**
WC053: Beaufort West (incl Cent.Karoo DMA)	6,712	18	28,888	5,794	**41,412**
NC061: Richtersveld	989	17	8,916	2,422	**12,343**
NC062: Nama Khoi	989	29	34,616	5,245	**40,879**
NC064: Kamiesberg	181	4	8,472	1,378	**10,035**
NC065: Hantam (incl Namaqualand DMA)	536	21	15,273	3,703	**19,533**
NC066: Karoo Hoogland (Frasuwil)	94	1	8,935	2,434	**11,464**
NC067: Khai-Ma	284	0	7,513	1,429	**9,226**
NC071: Ubuntu	2,820	6	13,119	2,134	**18,079**
NC072: Umsobomvu	14,505	16	7,183	2,022	**23,725**
NC073: Emthanjeni	10,453	53	20,975	5,748	**37,230**
NC074: Kareeberg	811	12	8,923	1,489	**11,235**
NC075: Renosterberg	2,484	1	5,375	1,068	**8,928**
NC076: Thembelihle	1,271	9	9,337	1,803	**12,420**
NC077: Siyathemba (incl Bo Karoo DMA)	2,853	34	16,232	2,934	**22,052**
NC078: Siyancuma	8,555	10	19,638	2,935	**31,138**
NC081: Mier	33	0	5,441	284	**5,758**
NC082: !Kai! Garib	9,016	14	37,972	5,046	**52,048**
NC083: Khara Hais	12,816	49	47,423	12,438	**72,726**
NC084: !Kheis	420	0	11,969	1,363	**13,752**
NC085: Tsantsabane	9,167	6	9,409	3,775	**22,358**
NC086: Kgatelopele (Dan-Lime)	6,507	18	5,342	2,883	**14,751**
NCDMA08: Benede DMA	1,375	17	5,590	1,492	**8,474**
NC091: Sol Plaatjie	101,763	1,824	59,044	32,799	**195,430**
NC092: Dikgatlong (incl Diamondfields DMA)	23,512	63	13,564	3,151	**40,289**
NC093: Magareng	16,046	88	3,253	2,391	**21,778**
NC094: Phokwane	41,039	18	6,504	7,813	**55,374**
EC101: Camdeboo	10,277	147	27,719	6,164	**44,306**
EC102: Blue Crane Route	19,401	19	11,365	3,603	**34,388**
EC103: Ikwezi	3,757	3	5,520	1,079	**10,358**
EC104: Makana	57,117	761	8,971	11,871	**78,720**
EC105: Ndlambe	36,127	16	2,923	6,677	**45,743**
EC106: Sunday's River Valley	30,918	14	8,453	3,962	**43,347**
EC107: Baviaans	1,515	3	11,757	1,218	**14,493**

Population, 1996	African	Asian	Coloured	White	Total
EC108: Kouga	21,433	41	28,396	12,744	**62,615**
EC109: Kou-Kamma	5,386	18	18,049	3,978	**27,432**
ECDMA10: Aberdeen Plain DMA	876	7	4,617	823	**6,322**
EC121: Mbhashe	245,686	44	199	119	**246,048**
EC122: Mnquma	288,212	278	316	664	**289,469**
EC123: Great Kei	37,145	17	420	2,652	**40,234**
EC124: Amahlati	133,650	30	1,299	3,034	**138,013**
EC125: Buffalo City	572,484	4,451	36,079	78,456	**691,470**
EC126: Ngqushwa	92,826	3	122	96	**93,048**
EC127: Nkonkobe	136,214	71	4,247	1,950	**142,482**
EC128: Nxuba	17,841	21	4,729	1,858	**24,450**
EC131: Inxuba Yethemba	30,562	36	19,640	7,548	**57,785**
EC132: Tsolwana (incl Mount Zebra NP)	32,008	7	1,753	1,339	**35,107**
EC133: Inkwanca	17,133	1	735	1,548	**19,417**
EC134: Lukhanji	163,348	399	7,042	7,859	**178,649**
EC135: Intsika Yethu	186,306	26	113	30	**186,475**
EC136: Emalahleni	132,479	27	598	893	**133,997**
EC137: Engcobo	149,495	59	155	112	**149,820**
EC138: Sakhisizwe	58,436	59	334	981	**59,811**
EC141: Elundini	132,783	30	851	1,037	**134,701**
EC142: Senqu	127,987	16	1,442	1,564	**131,008**
EC143: Maletswai	25,348	11	3,046	3,766	**32,171**
EC144: Gariep (Eastern Cape)	21,448	10	4,522	3,509	**29,489**
EC151: Mbizana	234,576	39	328	401	**235,345**
EC152: Ntabankulu	124,682	37	149	12	**124,880**
EC153: Qaukeni (Ingquza Hill)	245,996	160	1,000	36	**247,192**
EC154: Port St Johns	146,247	33	491	123	**146,894**
EC155: Nyandeni	261,646	37	481	33	**262,196**
EC156: Mhlontlo	201,125	23	314	61	**201,524**
EC157: King Sabata Dalindyebo	391,734	773	2,017	1,806	**396,329**
FS161: Letsemeng	22,930	10	8,392	4,243	**35,574**
FS162: Kopanong	35,535	18	8,832	6,582	**50,966**
FS163: Mohokare	32,632	20	1,377	3,243	**37,271**
FS171: Naledi (Free State)	22,589	40	803	1,985	**25,417**
FS172: Mangaung	480,822	1,018	30,340	105,076	**617,258**
FS173: Mantsopa	43,679	166	2,150	4,508	**50,504**
FS181: Masilonyana	60,350	16	964	6,044	**67,374**
FS182: Tokologo	22,285	2	1,937	3,114	**27,338**
FS183: Tswelopele	48,842	6	473	4,226	**53,547**
FS184: Matjhabeng	410,931	361	8,663	71,758	**491,712**
FS185: Nala	77,393	7	351	6,716	**84,467**
FS191: Setsoto	101,895	345	1,024	9,575	**112,840**
FS192: Dihlabeng	92,792	107	1,694	15,307	**109,900**
FS193: Nketoana	59,744	7	207	5,520	**65,479**
FS194: Maluti a Phofung (incl Golden Gate)	355,692	225	392	5,482	**361,791**
FS195: Phumelela	43,257	7	76	3,303	**46,644**
FS201: Moqhaka	146,971	84	4,856	21,845	**173,756**
FS203: Ngwathe	104,270	20	3,293	15,324	**122,906**
FS204: Metsimaholo	78,047	128	461	31,595	**110,232**

Population, 1996	African	Asian	Coloured	White	Total
FS205: Mafube	49,639	26	262	5,231	**55,157**
KZN211: Vulamehlo	105,313	650	131	152	**106,246**
KZN212: Umdoni	35,727	12,624	791	7,150	**56,291**
KZN213: Umzumbe (Khiphinkunzi)	175,316	24	102	70	**175,513**
KZN214: uMuziwabantu	83,723	403	1,793	537	**86,457**
KZN215: Ezingoleni (Izingolweni)	48,592	167	94	414	**49,267**
KZN216: Hibiscus Coast	158,203	12,933	2,607	28,543	**202,286**
KZN221: uMshwathi	110,295	2,159	173	3,516	**116,143**
KZN222: uMngeni	51,516	4,003	817	15,170	**71,506**
KZN223: Mooi Mpofana (incl Highmoor)	21,281	730	125	3,037	**25,172**
KZN224: Impendle	37,465	18	92	373	**37,948**
KZN225: The Msunduzi	400,998	68,378	17,154	60,763	**547,293**
KZN226: Mkhambathini	43,390	299	59	1,974	**45,722**
KZN227: Richmond	60,669	1,105	406	2,308	**64,488**
KZN232: Emnambithi-Ladysmith	161,077	10,727	1,587	11,547	**184,938**
KZN233: Indaka	101,651	8	33	25	**101,717**
KZN234: Umtshezi	38,768	5,848	1,244	3,437	**49,297**
KZN235: Okhahlamba (incl Gaints Castle)	119,142	262	102	2,226	**121,732**
KZN236: Imbabazane	116,581	22	66	84	**116,753**
KZN241: Endumeni	32,800	4,971	1,645	6,951	**46,368**
KZN242: Nquthu	158,939	6	82	19	**159,045**
KZN244: Msinga	163,869	94	156	209	**164,328**
KZN245: Umvoti	87,669	2,703	362	3,594	**94,328**
KZN252: Newcastle	263,331	10,882	2,273	25,502	**301,988**
KZN253: Emadlangeni (Utrecht)	22,729	21	370	2,139	**25,259**
KZN254: Dannhauser	100,584	1,850	178	2,479	**105,091**
KZN261: eDumbe	67,013	7	21	1,839	**68,881**
KZN262: uPhongolo	100,806	16	72	2,745	**103,639**
KZN263: Abaqulusi	162,613	430	836	12,748	**176,627**
KZN265: Nongoma	197,611	16	176	54	**197,856**
KZN266: Ulundi	179,801	23	87	229	**180,139**
KZN271: Umhlabuyalingana	124,185	19	45	183	**124,433**
KZN272: Jozini	159,191	61	215	617	**160,085**
KZN273: The Big Five False Bay (Umzinene)	26,699	37	44	923	**27,703**
KZN274: Hlabisa	176,162	1	55	73	**176,291**
KZN275: Mtubatuba	22,292	232	339	1,715	**24,577**
KZNDMA27: St Lucia Park DMA	13,531	2	14	607	**14,154**
KZN281: Mbonambi	100,313	69	257	1,365	**102,004**
KZN282: uMhlathuze	162,329	8,025	1,530	30,736	**202,619**
KZN283: Ntambanana	76,373	21	81	129	**76,603**
KZN284: uMlalazi	233,424	1,725	1,427	5,399	**241,975**
KZN285: Mthonjaneni	36,406	54	152	1,202	**37,814**
KZN286: Nkandla	136,617	4	17	25	**136,663**
KZN291: Mandeni (Endondakusuka)	110,990	2,282	528	3,013	**116,812**
KZN292: KwaDukuza	91,474	35,715	1,314	7,113	**135,616**
KZN293: Ndwedwe	179,817	2,154	201	327	**182,499**
KZN294: Maphumulo	124,725	41	62	19	**124,847**

Population, 1996	African	Asian	Coloured	White	Total
MP301: Albert Luthuli	182,703	251	234	3,562	**186,750**
MP302: Msukaligwa	91,028	814	427	19,040	**111,308**
MP303: Mkhondo	94,599	945	508	7,502	**103,554**
MP304: Pixley Ka Seme	63,010	373	280	7,990	**71,653**
MP305: Lekwa (Standerton)	76,378	947	2,102	14,871	**94,298**
MP306: Dipaleseng	34,809	326	35	4,833	**40,003**
MP307: Govan Mbeki (Highveld)	170,448	2,147	2,371	41,440	**216,406**
MP311: Delmas	44,391	80	242	9,875	**54,587**
MP312: Emalahleni (Mpumalanga)	182,275	1,171	3,884	58,460	**245,790**
MP313: Steve Tshwete (Middelburg)	93,177	1,680	3,518	41,417	**139,792**
MP314: Emakhazeni (Highlands)	33,083	156	166	4,408	**37,813**
MP315: Thembisile	248,479	34	294	198	**249,005**
MP316: Dr JS Moroka	263,298	39	215	53	**263,605**
MP321: Thaba Chweu	56,428	279	1,336	9,630	**67,672**
MP322: Mbombela	393,864	1,478	3,075	34,563	**432,979**
MP323: Umjindi	43,206	519	741	5,150	**49,617**
MP324: Nkomazi	277,507	147	438	3,291	**281,382**
MP325: Bushbuckridge	555,994	78	538	191	**556,800**
MPDMA32: Lowveld DMA	1,295	4	3	599	**1,902**
LIM331: Greater Giyani	223,806	71	61	932	**224,869**
LIM332: Greater Letaba	208,019	34	66	995	**209,113**
LIM333: Greater Tzaneen	339,058	293	457	12,050	**351,858**
LIM334: Ba-Phalaborwa	99,237	58	247	12,960	**112,501**
LIM335: Maruleng	83,461	22	82	5,107	**88,672**
LIMDMA33: Kruger National Park DMA	1,165	0	14	418	**1,597**
LIM341: Musina	28,464	87	125	5,175	**33,850**
LIM342: Mutale	73,309	29	75	271	**73,684**
LIM343: Thulamela	542,752	1,054	255	673	**544,734**
LIM344: Makhado	453,474	1,254	1,110	13,257	**469,094**
LIM351: Blouberg	153,655	12	71	644	**154,382**
LIM352: Aganang	150,042	14	33	37	**150,127**
LIM353: Molemole	108,087	39	111	1,839	**110,077**
LIM354: Polokwane	407,073	2,944	3,604	29,915	**443,537**
LIM355: Lepelle-Nkumpi	241,465	43	175	251	**241,934**
LIM361: Thabazimbi	47,323	30	287	15,658	**63,299**
LIM362: Lephalale	79,480	52	149	12,035	**91,715**
LIM364: Mookgopong	8,553	17	61	7,080	**15,710**
LIM365: Modimolle	39,284	203	232	14,111	**53,830**
LIM366: Bela-Bela	38,685	253	709	10,550	**50,197**
LIM367: Mogalakwena	279,324	105	245	5,666	**285,341**
NW371: Moretele	184,175	18	157	120	**184,471**
NW372: of Madibeng	309,971	1,133	2,361	32,874	**346,339**
NW373: Rustenburg	291,466	2,315	1,952	43,914	**339,647**
NW374: Kgetlengrivier	28,566	290	422	6,685	**35,962**
NW375: Moses Kotane	240,062	451	418	2,214	**243,145**
NW381: Ratlou (Setla-Kgobi)	102,714	15	358	417	**103,504**
NW382: Tswaing	89,815	35	786	6,454	**97,090**
NW383: Mafikeng	246,506	1,342	4,967	5,030	**257,844**
NW384: Ditsobotla (Lichtenburg)	123,314	426	2,218	14,834	**140,793**

Population, 1996	African	Asian	Coloured	White	Total
NW385: Ramotshere Moiloa (Zeerust)	129,892	562	676	5,955	**137,085**
NW391: Kagisano	87,720	34	1,076	1,374	**90,204**
NW392: Naledi	42,647	516	7,619	9,357	**60,139**
NW393: Mamusa (Schweizer-Reneke)	41,242	130	771	3,829	**45,972**
NW394: Greater Taung	192,778	81	1,903	1,154	**195,916**
NW395: Molopo	12,828	6	424	1,358	**14,616**
NW396: Lekwa-Teemane	30,619	80	2,809	6,882	**40,389**
NW401: Ventersdorp	29,154	90	804	4,074	**34,121**
NW402: Tlokwe (Potchefstroom)	88,752	786	7,851	41,608	**138,997**
NW403: City of Matlosana (Klerksdorp)	284,002	1,539	9,407	74,422	**369,371**
NW404: Maquassi Hills (Wolmaransstad)	57,478	95	1,068	7,312	**65,953**
NW405: Merafong City	190,067	245	1,505	41,189	**233,006**
GT421: Emfuleni	505,483	5,157	6,200	120,637	**637,477**
GT422: Midvaal	24,218	255	489	34,661	**59,623**
GT423: Lesedi	50,476	778	497	19,114	**70,866**
KZN431: Ingwe	98,092	19	169	705	**98,985**
KZN432: Kwa Sani (incl Mkhomazi NP)	14,936	32	115	1,861	**16,944**
KZN433: Greater Kokstad	29,900	131	4,159	1,960	**36,150**
KZN434: Ubuhlebezwe	79,575	390	1,592	1,170	**82,727**
KZN435: Umzimkhulu (Umzimkulu)	175,020	47	427	22	**175,516**
EC441: Matatiele	198,603	109	1,585	1,436	**201,734**
EC442: Umzimvubu	188,268	50	374	191	**188,883**
NC451: Moshaweng	98,753	32	606	77	**99,467**
NC452: Ga-Segonyana	50,202	64	4,933	4,599	**59,797**
NC453: Gamagara	8,401	3	6,602	6,878	**21,885**
NCDMA45: Kalahari DMA	5,942	0	738	1,784	**8,464**
GT461: Nokeng tsa Taemane	30,838	38	978	14,977	**46,832**
GT462: Kungwini	62,650	194	439	12,707	**75,991**
LIM471: Greater Marble Hall	96,915	38	59	2,739	**99,751**
LIM472: Elias Motsoaledi	216,279	173	244	4,704	**221,400**
LIM473: Makhuduthamaga	275,023	118	98	191	**275,430**
LIM474: Fetakgomo	97,929	7	40	149	**98,126**
LIM475: Greater Tubatse	232,259	147	240	2,017	**234,663**
GT481: Mogale City (incl Sterkfontein DMA)	164,972	5,687	1,726	72,394	**244,779**
GT482: Randfontein	72,588	115	12,619	30,049	**115,371**
GT483: Westonaria	106,452	123	434	14,923	**121,931**

Population, 2001	African	Asian	Coloured	White	Total
South Africa	35,409,759	1,121,316	3,843,317	4,940,660	**45,315,052**
Provinces (New boundaries)					
Western Cape	1,145,749	44,110	2,341,645	967,305	**4,498,809**
Eastern Cape	5,515,542	18,545	470,031	356,909	**6,361,027**
Northern Cape	469,249	2,255	426,921	120,494	**1,018,921**
Free State	2,446,655	3,372	81,097	302,212	**2,833,336**

Population, 2001	African	Asian	Coloured	White	Total
KwaZulu-Natal	8,139,790	815,171	126,859	570,825	**9,652,645**
North-West	3,025,430	10,399	51,274	291,727	**3,378,831**
Gauteng	6,582,884	206,988	316,505	1,946,655	**9,053,033**
Mpumalanga	3,224,470	12,921	20,886	243,254	**3,501,532**
Limpopo	4,859,989	7,553	8,098	141,278	**5,016,919**
Metropolitan municipalities					
WC - City of Cape Town	866,419	40,583	1,336,513	630,916	**2,874,431**
KZN - eThekwini	2,117,727	627,570	78,969	328,240	**3,152,507**
GP - Ekurhuleni	1,809,556	37,616	62,424	541,099	**2,450,695**
GP - City of Johannesburg	2,256,081	127,412	192,882	577,508	**3,153,882**
EC - Nelson Mandela Bay	600,982	11,288	231,212	194,236	**1,037,718**
GP - City of Tshwane	1,374,597	28,616	36,281	531,924	**1,971,417**
District municipalities					
Western Cape					
DC1 West Coast	26,714	794	196,834	57,472	**281,814**
DC2 Cape Winelands	119,749	1,470	393,085	109,515	**623,820**
DC3 Overberg	38,752	272	115,911	48,794	**203,729**
DC4 Eden	87,031	921	254,750	112,905	**455,608**
DC5 Central Karoo	7,084	70	44,551	7,703	**59,407**
Eastern Cape					
DC10 Cacadu	204,609	744	137,935	51,031	**394,320**
DC12 Amathole	1,549,623	4,768	51,053	79,223	**1,684,667**
DC13 Chris Hani	763,272	530	30,796	18,504	**813,102**
DC14 Ukhahlamba	323,349	85	11,354	9,808	**344,596**
DC15 O.R.Tambo	1,682,914	912	5,290	2,393	**1,691,510**
DC44 Alfred Nzo	390,792	218	2,392	1,713	**395,114**
Northern Cape					
DC45 Kgalagadi	170,396	96	13,910	11,707	**196,108**
DC6 Namakwa	4,707	108	91,203	14,889	**110,907**
DC7 Pixley ka Seme	44,988	160	102,840	20,373	**168,362**
DC8 Siyanda	48,821	192	130,423	28,288	**207,723**
DC9 Frances Baard	200,337	1,700	88,546	45,238	**335,821**
Free State					
DC16 Xhariep	103,906	52	21,287	15,544	**140,789**
DC17 Motheo	625,089	1,203	34,479	105,948	**766,720**
DC18 Lejweleputswa	606,781	489	12,838	71,820	**691,927**
DC19 Thabo Mofutsanyane	703,990	1,177	3,529	38,157	**746,853**
DC20 Fezile Dabi	406,889	451	8,964	70,743	**487,047**
KwaZulu-Natal					
DC21 Ugu	641,589	24,628	4,720	33,502	**704,439**
DC22 uMgungundlovu	765,843	74,703	18,569	79,134	**938,250**
DC23 Uthukela	617,876	17,601	3,656	17,912	**657,045**
DC24 Umzinyathi	460,004	6,754	2,377	8,705	**477,840**
DC25 Amajuba	431,435	12,210	2,730	25,592	**471,967**
DC26 Zululand	759,380	636	1,345	16,394	**777,755**
DC27 Umkhanyakude	564,517	378	796	3,883	**569,574**
DC28 Uthungulu	834,656	11,452	3,710	38,303	**888,121**
DC29 iLembe	508,228	38,350	2,331	12,398	**561,307**
DC43 Sisonke	438,535	887	7,655	6,763	**453,840**

Population, 2001	African	Asian	Coloured	White	Total
North West					
DC37 Bojanala Platinum	1,160,403	3,890	5,931	89,907	**1,260,130**
DC38 Ngaka Modiri Molema (Central DM)	756,327	3,102	10,440	32,515	**802,385**
DC39 Bophirima	419,007	1,007	13,918	19,372	**453,304**
DC40 Dr Kenneth Kaunda (Southern DM)	689,693	2,401	20,986	149,933	**863,012**
Gauteng					
DC42 Sedibeng	624,195	6,513	8,189	146,377	**785,274**
DC46 Metsweding	121,925	278	1,835	37,469	**161,507**
DC48 West Rand	396,531	6,554	14,895	112,278	**530,259**
Mpumalanga					
DC30 Gert Sibande	841,618	6,611	5,647	88,992	**942,869**
DC31 Nkangala	957,346	3,155	8,143	96,706	**1,065,350**
DC32 Ehlanzeni	1,425,506	3,155	7,096	57,557	**1,493,313**
Limpopo					
DC33 Mopani	1,040,151	505	1,038	26,217	**1,067,911**
DC34 Vhembe	1,181,547	2,474	1,392	14,527	**1,199,940**
DC35 Capricorn	1,115,164	2,897	3,681	35,977	**1,157,718**
DC36 Waterberg	562,739	1,247	1,384	56,677	**622,047**
DC47 Greater Sekhukhune	960,387	431	604	7,880	**969,302**
Local Municipalities					
WC011: Matzikama	2,763	64	36,751	10,637	**50,215**
WC012: Cederberg	3,057	27	29,618	6,280	**38,981**
WC013: Bergrivier	2,238	68	33,785	10,359	**46,449**
WC014: Saldanha Bay	11,405	341	42,956	15,548	**70,251**
WC015: Swartland	7,184	296	50,137	14,118	**71,735**
WCDMA01: West Coast DMA	67	0	3,586	531	**4,184**
WC022: Witzenberg	15,926	115	56,717	8,918	**81,676**
WC023: Drakenstein	39,634	577	119,028	32,944	**192,182**
WC024: Stellenbosch	23,042	239	65,658	29,930	**118,869**
WC025: Breede Valley	28,463	474	91,874	23,635	**144,445**
WC026: Breede River/Winelands	11,420	60	55,367	13,454	**80,301**
WCDMA02: Breede River DMA	1,265	5	4,443	635	**6,347**
WC031: Theewaterskloof	20,603	134	59,075	12,159	**91,971**
WC032: Overstrand	14,185	38	19,770	22,659	**56,652**
WC033: Cape Agulhas (incl Overberg DMA)	1,474	38	17,640	7,894	**27,047**
WC034: Swellendam	2,489	62	19,426	6,082	**28,059**
WC041: Kannaland	610	23	19,437	3,575	**23,644**
WC042: Hessequa (Langeberg)	1,770	42	29,742	13,016	**44,570**
WC043: Mossel Bay	15,580	252	33,338	23,518	**72,689**
WC044: George	35,453	349	65,387	34,653	**135,843**
WC045: Oudtshoorn (incl South Cape DMA)	7,431	89	73,819	16,726	**98,065**
WC047: Bitou (Plettenberg Bay)	10,499	94	11,267	7,266	**29,126**
WC048: Knysna	15,687	72	21,761	14,151	**51,671**

Population, 2001	African	Asian	Coloured	White	Total
WC051: Laingsburg	148	9	5,348	1,133	**6,639**
WC052: Prince Albert	179	12	8,772	1,379	**10,342**
WC053: Beaufort West (incl Cent.Karoo DMA)	6,757	48	30,431	5,190	**42,427**
NC061: Richtersveld	1,149	14	7,833	1,447	**10,443**
NC062: Nama Khoi	1,347	50	39,603	4,785	**45,784**
NC064: Kamiesberg	186	12	9,398	1,412	**11,008**
NC065: Hantam (incl Namaqualand DMA)	276	16	17,136	3,765	**21,193**
NC066: Karoo Hoogland (Frasuwil)	293	10	8,385	2,151	**10,839**
NC067: Khai-Ma	1,456	7	8,848	1,329	**11,640**
NC071: Ubuntu	2,796	22	11,924	1,973	**16,714**
NC072: Umsobomvu	14,036	18	8,109	1,947	**24,110**
NC073: Emthanjeni	10,557	39	20,675	5,172	**36,444**
NC074: Kareeberg	158	15	8,319	1,151	**9,643**
NC075: Renosterberg	2,494	8	5,634	1,108	**9,244**
NC076: Thembelihle	1,822	19	10,261	2,282	**14,385**
NC077: Siyathemba (incl Bo Karoo DMA)	3,273	20	15,410	2,440	**21,144**
NC078: Siyancuma	9,852	20	22,507	4,299	**36,678**
NC081: Mier	89	4	6,504	297	**6,894**
NC082: !Kai! Garib	13,000	25	38,420	5,278	**56,723**
NC083: Khara Hais	14,858	58	50,253	12,860	**78,029**
NC084: !Kheis	773	6	13,893	1,782	**16,454**
NC085: Tsantsabane	11,769	29	9,653	3,295	**24,746**
NC086: Kgatelopele (Dan-Lime)	7,128	66	5,299	2,864	**15,358**
NCDMA08: Benede DMA	1,204	3	6,402	1,911	**9,519**
NC091: Sol Plaatjie	111,315	1,532	64,106	30,813	**207,767**
NC092: Dikgatlong (incl Diamondfields DMA)	24,715	33	13,765	3,608	**42,120**
NC093: Magareng	15,906	103	3,805	2,553	**22,367**
NC094: Phokwane	48,402	32	6,870	8,263	**63,567**
EC101: Camdeboo	9,888	42	29,053	5,474	**44,456**
EC102: Blue Crane Route	21,091	24	11,265	3,045	**35,425**
EC103: Ikwezi	3,835	8	5,501	1,088	**10,432**
EC104: Makana	58,789	465	9,030	8,541	**76,824**
EC105: Ndlambe	43,361	50	3,878	8,797	**56,087**
EC106: Sunday's River Valley	30,551	8	7,324	2,606	**40,489**
EC107: Baviaans	1,913	12	11,985	1,325	**15,235**
EC108: Kouga	24,069	99	32,973	15,260	**72,401**
EC109: Kou-Kamma	8,630	29	21,973	3,971	**34,603**
ECDMA10: Aberdeen Plain DMA	2,483	9	4,951	924	**8,367**
EC121: Mbhashe	255,887	38	261	149	**256,334**
EC122: Mnquma	286,024	241	416	313	**286,994**
EC123: Great Kei	41,361	8	462	3,214	**45,045**
EC124: Amahlati	134,653	22	1,563	3,134	**139,372**
EC125: Buffalo City	606,138	4,367	39,126	69,084	**718,714**
EC126: Ngqushwa	83,953	6	117	124	**84,200**
EC127: Nkonkobe	122,870	63	4,625	1,389	**128,947**
EC128: Nxuba	18,738	23	4,483	1,816	**25,060**
EC131: Inxuba Yethemba	32,794	42	20,585	7,751	**61,172**
EC132: Tsolwana (incl Mount Zebra NP)	29,898	14	1,807	1,106	**32,825**
EC133: Inkwanca	18,160	4	840	1,531	**20,535**

Population, 2001	African	Asian	Coloured	White	Total
EC134: Lukhanji	173,102	344	6,313	6,487	**186,246**
EC135: Intsika Yethu	174,896	4	92	39	**175,032**
EC136: Emalahleni	123,708	30	606	689	**125,033**
EC137: Engcobo	148,886	37	113	30	**149,067**
EC138: Sakhisizwe	61,828	55	438	871	**63,192**
EC141: Elundini	136,072	22	826	1,062	**137,983**
EC142: Senqu	133,148	37	1,505	2,027	**136,716**
EC143: Maletswai	31,088	23	3,291	3,698	**38,100**
EC144: Gariep (Eastern Cape)	23,040	4	5,732	3,021	**31,798**
EC151: Mbizana	247,527	58	293	55	**247,932**
EC152: Ntabankulu	136,650	17	133	24	**136,825**
EC153: Qaukeni (Ingquza Hill)	255,632	179	1,231	122	**257,164**
EC154: Port St Johns	147,355	36	528	316	**148,235**
EC155: Nyandeni	276,211	34	635	88	**276,968**
EC156: Mhlontlo	203,571	37	257	116	**203,981**
EC157: King Sabata Dalindyebo	415,968	550	2,214	1,673	**420,404**
FS161: Letsemeng	28,881	22	10,545	5,266	**44,713**
FS162: Kopanong	41,627	24	9,691	6,737	**58,079**
FS163: Mohokare	33,399	5	1,052	3,541	**37,997**
FS171: Naledi (Free State)	25,293	81	910	2,077	**28,362**
FS172: Mangaung	549,765	910	31,156	99,108	**680,938**
FS173: Mantsopa	50,031	212	2,412	4,764	**57,420**
FS181: Masilonyana	61,323	16	807	5,426	**67,573**
FS182: Tokologo	28,181	11	2,120	3,709	**34,022**
FS183: Tswelopele	52,298	20	695	2,596	**55,608**
FS184: Matjhabeng	369,381	431	8,660	54,248	**432,720**
FS185: Nala	95,598	10	556	5,841	**102,005**
FS191: Setsoto	117,296	589	1,077	8,171	**127,132**
FS192: Dihlabeng	117,392	166	1,800	15,537	**134,895**
FS193: Nketoana	59,378	32	141	4,465	**64,016**
FS194: Maluti a Phofung (incl Golden Gate)	361,304	367	415	5,779	**367,865**
FS195: Phumelela	48,620	23	97	4,205	**52,945**
FS201: Moqhaka	150,060	189	4,584	22,902	**177,735**
FS203: Ngwathe	104,862	71	3,535	15,974	**124,441**
FS204: Metsimaholo	97,428	162	582	27,007	**125,178**
FS205: Mafube	54,540	29	264	4,860	**59,693**
KZN211: Vulamehlo	81,688	567	88	143	**82,487**
KZN212: Umdoni	43,284	12,624	656	6,914	**63,479**
KZN213: Umzumbe (Khiphinkunzi)	191,481	50	169	120	**191,819**
KZN214: uMuziwabantu	89,180	431	1,422	552	**91,585**
KZN215: Ezingoleni (Izingolweni)	53,497	133	43	340	**54,013**
KZN216: Hibiscus Coast	182,459	10,824	2,342	25,432	**221,057**
KZN221: uMshwathi	103,677	2,049	178	2,548	**108,451**
KZN222: uMngeni	55,093	4,056	926	16,366	**76,440**
KZN223: Mooi Mpofana (incl Highmoor)	33,266	811	191	3,152	**37,420**
KZN224: Impendle	32,912	22	62	276	**33,272**
KZN225: The Msunduzi	424,220	66,250	16,674	53,036	**560,179**
KZN226: Mkhambathini	56,735	547	73	1,853	**59,208**
KZN227: Richmond	59,941	968	466	1,903	**63,278**

Population, 2001	African	Asian	Coloured	White	Total
KZN232: Emnambithi-Ladysmith	202,519	11,798	2,019	10,676	**227,012**
KZN233: Indaka	112,576	0	17	47	**112,640**
KZN234: Umtshezi	50,105	5,510	1,388	3,377	**60,380**
KZN235: Okhahlamba (incl Gaints Castle)	133,899	276	140	3,663	**137,978**
KZN236: Imbabazane	118,778	17	91	149	**119,035**
KZN241: Endumeni	40,728	4,102	1,737	5,414	**51,981**
KZN242: Nquthu	167,288	8	65	51	**167,411**
KZN244: Msinga	165,881	98	96	172	**166,248**
KZN245: Umvoti	86,106	2,547	479	3,068	**92,200**
KZN252: Newcastle	302,358	10,370	2,011	21,487	**336,226**
KZN253: Emadlangeni (Utrecht)	29,591	72	545	2,786	**32,995**
KZN254: Dannhauser	99,485	1,768	174	1,319	**102,746**
KZN261: eDumbe	80,343	51	24	1,792	**82,211**
KZN262: uPhongolo	116,645	76	88	3,059	**119,869**
KZN263: Abaqulusi	179,764	431	895	11,161	**192,251**
KZN265: Nongoma	195,917	34	182	122	**196,255**
KZN266: Ulundi	186,711	43	156	259	**187,170**
KZN271: Umhlabuyalingana	139,269	6	54	405	**139,734**
KZN272: Jozini	182,140	64	160	501	**182,865**
KZN273: The Big Five False Bay (Umzinene)	30,491	47	56	679	**31,272**
KZN274: Hlabisa	174,985	7	139	83	**175,215**
KZN275: Mtubatuba	31,214	254	388	2,085	**33,940**
KZNDMA27: St Lucia Park DMA	6,418	0	0	130	**6,548**
KZN281: Mbonambi	105,007	108	55	1,505	**106,675**
KZN282: uMhlathuze	250,332	10,057	2,267	32,131	**294,787**
KZN283: Ntambanana	84,052	10	76	179	**84,317**
KZN284: uMlalazi	214,157	1,231	1,054	3,619	**220,061**
KZN285: Mthonjaneni	49,212	35	223	798	**50,267**
KZN286: Nkandla	131,896	11	36	71	**132,014**
KZN291: Mandeni (Endondakusuka)	122,319	3,212	559	2,809	**128,898**
KZN292: KwaDukuza	117,096	33,463	1,603	9,268	**161,430**
KZN293: Ndwedwe	149,575	1,656	127	307	**151,664**
KZN294: Maphumulo	119,239	19	43	14	**119,315**
MP301: Albert Luthuli	188,339	294	274	3,442	**192,349**
MP302: Msukaligwa	115,094	972	354	15,012	**131,432**
MP303: Mkhondo	140,177	913	547	6,386	**148,023**
MP304: Pixley Ka Seme	76,308	550	374	6,770	**84,002**
MP305: Lekwa (Standerton)	92,233	1,125	1,808	13,940	**109,106**
MP306: Dipaleseng	36,226	326	63	3,912	**40,528**
MP307: Govan Mbeki (Highveld)	193,241	2,432	2,227	39,529	**237,430**
MP311: Delmas	51,528	118	243	7,641	**59,530**
MP312: Emalahleni (Mpumalanga)	237,182	1,281	3,691	54,519	**296,673**
MP313: Steve Tshwete (Middelburg)	118,788	1,536	3,305	29,075	**152,705**
MP314: Emakhazeni (Highlands)	39,649	127	433	5,032	**45,241**
MP315: Thembisile	262,593	29	300	293	**263,215**
MP316: Dr JS Moroka	247,605	65	171	146	**247,986**
MP321: Thaba Chweu	73,157	353	1,495	11,625	**86,630**
MP322: Mbombela	456,560	1,821	3,527	34,026	**495,934**

Population, 2001	African	Asian	Coloured	White	Total
MP323: Umjindi	49,818	615	783	5,823	**57,040**
MP324: Nkomazi	337,818	250	550	5,003	**343,621**
MP325: Bushbuckridge	505,887	108	736	432	**507,162**
MPDMA32: Lowveld DMA	2,266	7	5	648	**2,926**
LIM331: Greater Giyani	239,351	84	76	440	**239,951**
LIM332: Greater Letaba	217,855	68	72	2,469	**220,465**
LIM333: Greater Tzaneen	368,032	269	569	8,561	**377,431**
LIM334: Ba-Phalaborwa	122,102	70	282	11,429	**133,882**
LIM335: Maruleng	91,892	15	39	3,217	**95,163**
LIMDMA33: Kruger National Park DMA	920	0	0	100	**1,020**
LIM341: Musina	37,646	11	88	2,561	**40,306**
LIM342: Mutale	82,182	13	27	459	**82,681**
LIM343: Thulamela	579,312	1,306	234	480	**581,333**
LIM344: Makhado	482,407	1,143	1,043	11,027	**495,620**
LIM351: Blouberg	160,753	41	78	593	**161,465**
LIM352: Aganang	146,965	9	49	45	**147,068**
LIM353: Molemole	107,554	81	27	1,830	**109,493**
LIM354: Polokwane	472,798	2,705	3,446	33,308	**512,258**
LIM355: Lepelle-Nkumpi	227,094	60	81	200	**227,435**
LIM361: Thabazimbi	53,579	30	218	11,995	**65,822**
LIM362: Lephalale	88,096	16	180	9,550	**97,841**
LIM364: Mookgopong	25,988	6	67	5,499	**31,559**
LIM365: Modimolle	63,887	112	183	10,459	**74,641**
LIM366: Bela-Bela	45,761	249	516	6,446	**52,973**
LIM367: Mogalakwena	285,429	833	220	12,728	**299,210**
NW371: Moretele	189,907	6	162	89	**190,164**
NW372: of Madibeng	334,197	1,201	2,381	30,021	**367,801**
NW373: Rustenburg	359,112	1,994	2,367	50,434	**413,907**
NW374: Kgetlengrivier	31,511	224	482	6,583	**38,800**
NW375: Moses Kotane	245,675	465	538	2,779	**249,458**
NW381: Ratlou (Setla-Kgobi)	108,427	25	670	292	**109,414**
NW382: Tswaing	111,713	60	1,157	7,237	**120,167**
NW383: Mafikeng	260,824	1,922	5,051	4,987	**272,783**
NW384: Ditsobotla (Lichtenburg)	138,969	431	2,813	13,604	**155,817**
NW385: Ramotshere Moiloa (Zeerust)	136,394	664	750	6,395	**144,203**
NW391: Kagisano	90,643	24	1,120	1,365	**93,153**
NW392: Naledi	45,643	654	7,179	7,174	**60,650**
NW393: Mamusa (Schweizer-Reneke)	46,619	160	989	3,068	**50,836**
NW394: Greater Taung	188,077	83	1,910	1,044	**191,114**
NW395: Molopo	11,130	3	255	970	**12,357**
NW396: Lekwa-Teemane	36,895	83	2,465	5,751	**45,194**
NW401: Ventersdorp	39,090	78	1,152	5,133	**45,453**
NW402: Tlokwe (Potchefstroom)	95,916	544	7,658	31,789	**135,906**
NW403: City of Matlosana (Klerksdorp)	301,546	1,387	9,271	69,809	**382,013**
NW404: Maquassi Hills (Wolmaransstad)	64,094	114	1,422	7,106	**72,736**
NW405: Merafong City	189,047	278	1,482	36,096	**226,903**
GT421: Emfuleni	530,311	5,640	6,557	103,467	**645,975**
GT422: Midvaal	36,863	278	833	28,419	**66,392**
GT423: Lesedi	57,021	596	799	14,491	**72,906**
KZN431: Ingwe	105,756	21	227	806	**106,811**

Population, 2001	African	Asian	Coloured	White	Total
KZN432: Kwa Sani (incl Mkhomazi NP)	15,078	10	86	1,120	**16,294**
KZN433: Greater Kokstad	47,159	421	5,583	3,647	**56,809**
KZN434: Ubuhlebezwe	98,231	380	1,362	1,130	**101,102**
KZN435: Umzimkhulu (Umzimkulu)	172,311	56	397	60	**172,824**
EC441: Matatiele	192,273	184	2,076	1,672	**196,205**
EC442: Umzimvubu	198,519	34	316	41	**198,909**
NC451: Moshaweng	92,311	6	678	71	**93,066**
NC452: Ga-Segonyana	62,102	68	5,360	4,516	**72,046**
NC453: Gamagara	11,202	15	7,355	5,803	**24,374**
NCDMA45: Kalahari DMA	4,781	6	516	1,317	**6,621**
GT461: Nokeng tsa Taemane	36,005	53	1,130	16,445	**53,633**
GT462: Kungwini	85,920	225	704	21,024	**107,874**
LIM471: Greater Marble Hall	119,222	66	115	2,593	**121,997**
LIM472: Elias Motsoaledi	219,775	101	172	2,281	**222,329**
LIM473: Makhuduthamaga	261,649	53	45	45	**261,792**
LIM474: Fetakgomo	91,162	0	10	734	**91,906**
LIM475: Greater Tubatse	268,578	211	263	2,226	**271,278**
GT481: Mogale City (incl Sterkfontein DMA)	215,597	6,199	2,108	69,807	**293,712**
GT482: Randfontein	85,713	196	12,326	29,892	**128,127**
GT483: Westonaria	95,221	159	461	12,579	**108,420**

Population, 2005	African	Asian	Coloured	White	Total
South Africa	37,167,371	1,162,726	4,005,920	4,862,729	**47,198,746**
Provinces (New boundaries)					
Western Cape	1,312,315	48,546	2,463,534	1,013,953	**4,838,347**
Eastern Cape	5,566,749	17,878	481,047	345,504	**6,411,178**
Northern Cape	497,898	2,151	442,814	114,080	**1,056,942**
Free State	2,500,773	3,875	83,336	279,798	**2,867,783**
KwaZulu-Natal	8,482,224	818,779	124,460	544,386	**9,969,849**
North-West	3,124,361	10,707	52,708	281,773	**3,469,549**
Gauteng	7,228,162	239,818	330,688	1,921,807	**9,720,475**
Mpumalanga	3,375,846	13,246	20,789	229,069	**3,638,951**
Limpopo	5,079,043	7,725	6,545	132,359	**5,225,672**
Metropolitan municipalities					
WC - City of Cape Town	973,148	44,064	1,402,364	653,102	**3,072,678**
KZN - eThekwini	2,249,431	636,148	77,040	313,228	**3,275,847**
GP - Ekurhuleni	1,999,179	44,569	64,623	545,030	**2,653,401**
GP - City of Johannesburg	2,475,627	149,754	200,010	572,537	**3,397,928**
EC - Nelson Mandela Bay	635,985	10,908	233,379	191,796	**1,072,069**
GP - City of Tshwane	1,511,255	30,703	40,014	517,116	**2,099,087**

Population, 2005	African	Asian	Coloured	White	Total
District municipalities					
Western Cape					
DC1 West Coast	37,150	1,061	212,895	61,047	**312,153**
DC2 Cape Winelands	138,645	1,784	403,384	110,084	**653,896**
DC3 Overberg	50,409	368	128,816	56,106	**235,698**
DC4 Eden	106,031	1,193	270,263	126,168	**503,655**
DC5 Central Karoo	6,932	76	45,812	7,446	**60,267**
Eastern Cape					
DC10 Cacadu	214,210	724	143,592	50,279	**408,804**
DC12 Amathole	1,551,217	4,578	52,895	72,453	**1,681,143**
DC13 Chris Hani	747,273	502	30,714	17,097	**795,586**
DC14 Ukhahlamba	329,806	81	12,221	9,632	**351,739**
DC15 O.R.Tambo	1,701,473	878	5,524	2,511	**1,710,386**
DC44 Alfred Nzo	386,786	208	2,723	1,736	**391,452**
Northern Cape					
DC45 Kgalagadi	176,724	91	14,664	10,336	**201,816**
DC6 Namakwa	5,829	105	96,476	13,525	**115,936**
DC7 Pixley ka Seme	46,811	154	104,125	19,686	**170,775**
DC8 Siyanda	56,002	177	135,096	27,610	**218,886**
DC9 Frances Baard	212,532	1,623	92,452	42,923	**349,530**
Free State					
DC16 Xhariep	110,888	56	22,822	15,647	**149,413**
DC17 Motheo	648,564	1,373	35,021	100,350	**785,308**
DC18 Lejweleputswa	598,070	566	13,123	59,887	**671,645**
DC19 Thabo Mofutsanyane	725,582	1,371	3,575	36,306	**766,833**
DC20 Fezile Dabi	417,670	510	8,795	67,608	**494,583**
KwaZulu-Natal					
DC21 Ugu	652,316	22,958	4,282	31,317	**710,873**
DC22 uMgungundlovu	784,876	72,785	17,785	73,490	**948,935**
DC23 Uthukela	663,631	17,720	3,949	18,051	**703,351**
DC24 Umzinyathi	461,170	6,050	2,309	7,306	**476,834**
DC25 Amajuba	454,813	11,904	2,554	23,060	**492,332**
DC26 Zululand	780,238	678	1,312	15,503	**797,732**
DC27 Umkhanyakude	586,902	401	776	3,986	**592,065**
DC28 Uthungulu	880,416	12,403	3,812	37,561	**934,192**
DC29 iLembe	508,949	36,689	2,443	13,443	**561,523**
DC43 Sisonke	459,483	1,043	8,198	7,441	**476,165**
North West					
DC37 Bojanala Platinum	1,208,042	4,012	6,253	91,350	**1,309,656**
DC38 Ngaka Modiri Molema (Central DM)	785,998	3,175	11,385	32,362	**832,920**
DC39 Bophirima	420,193	1,040	13,638	16,951	**451,821**
DC40 Dr Kenneth Kaunda (Southern DM)	710,128	2,480	21,433	141,110	**875,152**
Gauteng					
DC42 Sedibeng	655,048	7,192	9,203	132,183	**803,626**
DC46 Metsweding	143,523	324	2,133	44,097	**190,077**
DC48 West Rand	443,530	7,276	14,705	110,843	**576,354**

Population, 2005	African	Asian	Coloured	White	Total
Mpumalanga					
DC30 Gert Sibande	878,801	6,779	5,622	82,833	**974,035**
DC31 Nkangala	1,001,925	3,237	8,114	86,900	**1,100,175**
DC32 Ehlanzeni	1,495,121	3,230	7,053	59,336	**1,564,740**
Limpopo					
DC33 Mopani	1,099,000	510	829	23,683	**1,124,022**
DC34 Vhembe	1,232,264	2,519	1,146	12,508	**1,248,437**
DC35 Capricorn	1,160,314	2,977	2,956	36,091	**1,202,337**
DC36 Waterberg	604,113	1,287	1,124	52,821	**659,345**
DC47 Greater Sekhukhune	983,352	432	490	7,257	**991,531**
Local Municipalities					
WC011: Matzikama	4,083	69	40,971	11,851	**56,973**
WC012: Cederberg	4,480	29	32,894	6,468	**43,870**
WC013: Bergrivier	3,294	123	37,353	11,482	**52,253**
WC014: Saldanha Bay	16,465	438	45,736	16,740	**79,379**
WC015: Swartland	8,751	402	52,656	13,948	**75,756**
WCDMA01: West Coast DMA	76	0	3,286	559	**3,921**
WC022: Witzenberg	19,932	128	58,673	8,802	**87,535**
WC023: Drakenstein	44,554	704	115,762	31,864	**192,883**
WC024: Stellenbosch	25,816	262	69,967	31,249	**127,295**
WC025: Breede Valley	32,812	618	95,244	23,131	**151,806**
WC026: Breede River/Winelands	14,092	66	59,918	14,377	**88,453**
WCDMA02: Breede River DMA	1,439	6	3,820	661	**5,925**
WC031: Theewaterskloof	27,362	181	64,583	12,966	**105,091**
WC032: Overstrand	18,060	41	24,221	27,643	**69,965**
WC033: Cape Agulhas (incl Overberg DMA)	1,701	40	18,740	9,009	**29,490**
WC034: Swellendam	3,286	105	21,272	6,488	**31,152**
WC041: Kannaland	719	26	20,491	3,739	**24,975**
WC042: Hessequa (Langeberg)	2,056	47	31,435	14,704	**48,242**
WC043: Mossel Bay	17,327	355	34,851	28,017	**80,550**
WC044: George	43,825	422	71,952	37,647	**153,845**
WC045: Oudtshoorn (incl South Cape DMA)	8,957	97	75,522	16,910	**101,486**
WC047: Bitou (Plettenberg Bay)	14,942	121	13,570	8,883	**37,517**
WC048: Knysna	18,205	126	22,442	16,267	**57,040**
WC051: Laingsburg	174	10	5,753	1,167	**7,104**
WC052: Prince Albert	214	14	8,958	1,447	**10,632**
WC053: Beaufort West (incl Cent.Karoo DMA)	6,544	53	31,101	4,832	**42,530**
NC061: Richtersveld	1,260	12	7,097	937	**9,305**
NC062: Nama Khoi	1,647	50	43,245	4,357	**49,299**
NC064: Kamiesberg	200	11	10,119	1,377	**11,708**
NC065: Hantam (incl Namaqualand DMA)	296	16	18,413	3,677	**22,402**
NC066: Karoo Hoogland (Frasuwil)	316	10	7,881	1,974	**10,183**
NC067: Khai-Ma	2,109	7	9,721	1,202	**13,040**
NC071: Ubuntu	2,844	23	11,053	1,771	**15,691**
NC072: Umsobomvu	13,928	16	8,712	1,819	**24,476**
NC073: Emthanjeni	10,664	37	20,453	4,664	**35,818**
NC074: Kareeberg	170	14	7,806	926	**8,915**

Population, 2005	African	Asian	Coloured	White	Total
NC075: Renosterberg	2,541	8	5,839	1,114	**9,502**
NC076: Thembelihle	2,220	19	10,871	2,461	**15,572**
NC077: Siyathemba (incl Bo Karoo DMA)	3,615	17	14,995	2,042	**20,668**
NC078: Siyancuma	10,828	20	24,395	4,889	**40,133**
NC081: Mier	95	3	7,202	308	**7,608**
NC082: !Kai! Garib	16,101	22	38,700	5,136	**59,959**
NC083: Khara Hais	16,381	52	52,134	12,487	**81,054**
NC084: !Kheis	983	6	15,198	1,954	**18,141**
NC085: Tsantsabane	13,594	27	9,807	2,855	**26,283**
NC086: Kgatelopele (Dan-Lime)	7,567	62	5,262	2,743	**15,635**
NCDMA08: Benede DMA	1,281	5	6,793	2,127	**10,205**
NC091: Sol Plaatjie	117,058	1,459	67,250	28,466	**214,233**
NC092: Dikgatlong (incl Diamondfields DMA)	25,708	32	13,803	3,745	**43,288**
NC093: Magareng	15,823	100	4,232	2,555	**22,710**
NC094: Phokwane	53,944	32	7,167	8,156	**69,299**
EC101: Camdeboo	9,529	39	29,803	5,020	**44,391**
EC102: Blue Crane Route	22,125	22	11,201	2,645	**35,993**
EC103: Ikwezi	3,855	8	5,512	1,063	**10,438**
EC104: Makana	59,429	455	8,957	6,551	**75,392**
EC105: Ndlambe	47,969	49	4,458	10,130	**62,605**
EC106: Sunday's River Valley	29,974	8	6,630	1,718	**38,329**
EC107: Baviaans	2,177	13	12,012	1,362	**15,563**
EC108: Kouga	25,752	96	35,539	17,052	**78,438**
EC109: Kou-Kamma	10,868	26	24,350	3,840	**39,084**
ECDMA10: Aberdeen Plain DMA	2,531	9	5,132	898	**8,570**
EC121: Mbhashe	257,606	36	268	140	**258,050**
EC122: Mnquma	280,184	227	426	305	**281,142**
EC123: Great Kei	43,865	8	477	3,561	**47,910**
EC124: Amahlati	134,069	22	1,774	3,169	**139,034**
EC125: Buffalo City	627,131	4,197	40,712	62,381	**734,422**
EC126: Ngqushwa	77,062	6	121	121	**77,310**
EC127: Nkonkobe	112,154	59	4,848	1,024	**118,085**
EC128: Nxuba	19,146	23	4,269	1,751	**25,190**
EC131: Inxuba Yethemba	33,983	38	21,057	7,729	**62,807**
EC132: Tsolwana (incl Mount Zebra NP)	28,074	14	1,841	969	**30,898**
EC133: Inkwanca	18,760	3	863	1,491	**21,119**
EC134: Lukhanji	177,307	325	5,669	5,531	**188,833**
EC135: Intsika Yethu	164,587	4	99	38	**164,727**
EC136: Emalahleni	115,839	29	619	527	**117,013**
EC137: Engcobo	145,515	36	117	29	**145,696**
EC138: Sakhisizwe	63,209	53	448	782	**64,492**
EC141: Elundini	136,302	21	904	1,016	**138,243**
EC142: Senqu	135,055	34	1,524	2,249	**138,862**
EC143: Maletswai	34,604	22	3,352	3,590	**41,567**
EC144: Gariep (Eastern Cape)	23,844	4	6,441	2,777	**33,066**
EC151: Mbizana	250,353	54	302	50	**250,759**
EC152: Ntabankulu	142,184	16	138	22	**142,360**
EC153: Qaukeni (Ingquza Hill)	256,594	170	1,397	166	**258,327**
EC154: Port St Johns	145,089	35	547	417	**146,088**

Population, 2005	African	Asian	Coloured	White	Total
EC155: Nyandeni	280,576	34	651	84	**281,345**
EC156: Mhlontlo	201,817	36	260	143	**202,256**
EC157: King Sabata Dalindyebo	424,861	532	2,229	1,628	**429,250**
FS161: Letsemeng	32,413	24	11,875	5,580	**49,892**
FS162: Kopanong	45,220	27	10,137	6,541	**61,924**
FS163: Mohokare	33,255	5	809	3,526	**37,596**
FS171: Naledi (Free State)	25,922	91	979	2,022	**29,015**
FS172: Mangaung	571,447	1,032	31,481	93,529	**697,489**
FS173: Mantsopa	51,194	250	2,561	4,799	**58,804**
FS181: Masilonyana	60,550	17	626	4,828	**66,021**
FS182: Tokologo	28,712	12	2,163	3,960	**34,848**
FS183: Tswelopele	53,415	24	795	1,730	**55,964**
FS184: Matjhabeng	349,171	498	8,823	44,247	**402,740**
FS185: Nala	106,222	13	715	5,122	**112,072**
FS191: Setsoto	125,675	688	1,094	7,091	**134,549**
FS192: Dihlabeng	131,869	189	1,802	15,182	**149,043**
FS193: Nketoana	58,020	39	148	3,769	**61,975**
FS194: Maluti a Phofung (incl Golden Gate)	358,628	426	430	5,711	**365,195**
FS195: Phumelela	51,390	28	101	4,552	**56,072**
FS201: Moqhaka	148,866	218	4,267	23,111	**176,462**
FS203: Ngwathe	103,140	81	3,610	15,850	**122,681**
FS204: Metsimaholo	108,760	176	646	24,133	**133,714**
FS205: Mafube	56,904	34	272	4,515	**61,725**
KZN211: Vulamehlo	62,686	584	87	135	**63,492**
KZN212: Umdoni	47,794	12,456	607	6,840	**67,697**
KZN213: Umzumbe (Khiphinkunzi)	198,723	51	212	114	**199,099**
KZN214: uMuziwabantu	91,103	432	1,234	520	**93,289**
KZN215: Ezingoleni (Izingolweni)	55,858	135	43	324	**56,360**
KZN216: Hibiscus Coast	196,152	9,301	2,099	23,384	**230,936**
KZN221: uMshwathi	104,625	2,060	175	1,971	**108,831**
KZN222: uMngeni	56,407	4,004	905	16,976	**78,292**
KZN223: Mooi Mpofana (incl Highmoor)	36,153	810	186	3,193	**40,342**
KZN224: Impendle	28,956	24	63	268	**29,310**
KZN225: The Msunduzi	440,544	64,365	15,904	47,672	**568,484**
KZN226: Mkhambathini	60,404	548	72	1,758	**62,782**
KZN227: Richmond	57,788	974	481	1,651	**60,895**
KZN232: Emnambithi-Ladysmith	228,735	12,107	2,216	10,116	**253,174**
KZN233: Indaka	118,258	0	17	45	**118,321**
KZN234: Umtshezi	57,376	5,313	1,488	3,292	**67,470**
KZN235: Okhahlamba (incl Gaints Castle)	141,871	281	137	4,455	**146,744**
KZN236: Imbabazane	117,391	19	90	143	**117,642**
KZN241: Endumeni	45,677	3,497	1,686	4,365	**55,225**
KZN242: Nquthu	169,981	8	63	69	**170,121**
KZN244: Msinga	163,317	100	94	163	**163,673**
KZN245: Umvoti	82,195	2,445	466	2,709	**87,815**
KZN252: Newcastle	324,149	9,997	1,756	18,968	**354,870**
KZN253: Emadlangeni (Utrecht)	34,051	120	630	3,108	**37,910**
KZN254: Dannhauser	96,613	1,786	168	984	**99,551**
KZN261: eDumbe	88,344	51	23	1,734	**90,152**

Population, 2005	African	Asian	Coloured	White	Total
KZN262: uPhongolo	125,665	129	85	3,159	**129,038**
KZN263: Abaqulusi	188,429	423	872	10,206	**199,931**
KZN265: Nongoma	189,860	32	180	156	**190,229**
KZN266: Ulundi	187,940	43	152	247	**188,383**
KZN271: Umhlabuyalingana	146,293	6	52	518	**146,870**
KZN272: Jozini	193,844	65	154	470	**194,534**
KZN273: The Big Five False Bay (Umzinene)	32,506	47	55	551	**33,158**
KZN274: Hlabisa	170,673	8	137	77	**170,894**
KZN275: Mtubatuba	36,898	275	378	2,247	**39,798**
KZNDMA27: St Lucia Park DMA	6,689	0	0	123	**6,812**
KZN281: Mbonambi	105,613	106	54	1,553	**107,327**
KZN282: uMhlathuze	308,286	11,009	2,559	32,126	**353,980**
KZN283: Ntambanana	87,771	11	75	203	**88,060**
KZN284: uMlalazi	195,088	1,229	873	2,854	**200,045**
KZN285: Mthonjaneni	57,607	35	217	758	**58,617**
KZN286: Nkandla	126,050	11	35	67	**126,163**
KZN291: Mandeni (Endondakusuka)	127,383	3,776	552	2,653	**134,363**
KZN292: KwaDukuza	132,764	31,415	1,723	10,490	**176,393**
KZN293: Ndwedwe	136,602	1,478	126	287	**138,493**
KZN294: Maphumulo	112,200	20	41	12	**112,274**
MP301: Albert Luthuli	188,064	306	272	3,387	**192,028**
MP302: Msukaligwa	124,259	998	347	12,767	**138,371**
MP303: Mkhondo	141,577	940	545	5,643	**148,705**
MP304: Pixley Ka Seme	82,399	559	373	6,082	**89,414**
MP305: Lekwa (Standerton)	98,788	1,159	1,809	13,068	**114,823**
MP306: Dipaleseng	36,375	343	61	3,362	**40,141**
MP307: Govan Mbeki (Highveld)	207,339	2,475	2,215	38,524	**250,553**
MP311: Delmas	55,357	123	245	6,332	**62,057**
MP312: Emalahleni (Mpumalanga)	272,020	1,307	3,675	52,173	**329,175**
MP313: Steve Tshwete (Middelburg)	134,554	1,576	3,294	22,628	**162,052**
MP314: Emakhazeni (Highlands)	43,548	134	426	5,283	**49,391**
MP315: Thembisile	266,668	28	304	273	**267,274**
MP316: Dr JS Moroka	229,778	68	170	211	**230,226**
MP321: Thaba Chweu	83,859	362	1,498	12,700	**98,420**
MP322: Mbombela	493,458	1,862	3,495	33,532	**532,347**
MP323: Umjindi	53,283	637	781	6,108	**60,810**
MP324: Nkomazi	347,836	251	545	5,818	**354,449**
MP325: Bushbuckridge	514,277	109	730	571	**515,686**
MPDMA32: Lowveld DMA	2,409	8	4	607	**3,028**
LIM331: Greater Giyani	248,901	83	62	405	**249,452**
LIM332: Greater Letaba	224,434	69	60	3,352	**227,915**
LIM333: Greater Tzaneen	388,230	269	453	6,805	**395,756**
LIM334: Ba-Phalaborwa	138,582	71	224	10,786	**149,663**
LIM335: Maruleng	97,843	18	30	2,242	**100,133**
LIMDMA33: Kruger National Park DMA	1,010	0	0	93	**1,102**
LIM341: Musina	44,107	11	67	1,540	**45,725**
LIM342: Mutale	87,901	12	21	521	**88,454**
LIM343: Thulamela	599,750	1,308	193	444	**601,695**
LIM344: Makhado	500,507	1,188	865	10,003	**512,563**

Population, 2005	African	Asian	Coloured	White	Total
LIM351: Blouberg	164,572	38	63	560	**165,232**
LIM352: Aganang	143,847	9	40	40	**143,935**
LIM353: Molemole	106,232	81	20	1,822	**108,155**
LIM354: Polokwane	531,260	2,786	2,767	33,483	**570,296**
LIM355: Lepelle-Nkumpi	214,403	62	66	187	**214,718**
LIM361: Thabazimbi	59,546	30	173	10,174	**69,923**
LIM362: Lephalale	107,577	17	146	8,290	**116,030**
LIM364: Mookgopong	28,682	7	52	4,738	**33,478**
LIM365: Modimolle	68,903	113	150	8,818	**77,984**
LIM366: Bela-Bela	50,854	254	421	5,095	**56,624**
LIM367: Mogalakwena	288,551	867	181	15,707	**305,307**
NW371: Moretele	188,892	6	165	85	**189,147**
NW372: of Madibeng	344,982	1,242	2,388	28,024	**376,636**
NW373: Rustenburg	395,244	2,057	2,566	53,604	**453,472**
NW374: Kgetlengrivier	32,741	231	520	6,357	**39,849**
NW375: Moses Kotane	246,183	476	614	3,279	**250,552**
NW381: Ratlou (Setla-Kgobi)	110,809	26	901	280	**112,016**
NW382: Tswaing	117,727	61	1,418	7,689	**126,895**
NW383: Mafikeng	271,006	1,963	5,117	4,957	**283,042**
NW384: Ditsobotla (Lichtenburg)	147,552	447	3,168	12,812	**163,980**
NW385: Ramotshere Moiloa (Zeerust)	138,904	679	781	6,624	**146,988**
NW391: Kagisano	91,138	24	1,149	1,391	**93,703**
NW392: Naledi	46,666	671	6,983	5,890	**60,210**
NW393: Mamusa (Schweizer-Reneke)	49,374	166	1,063	2,663	**53,265**
NW394: Greater Taung	182,422	87	1,923	1,015	**185,447**
NW395: Molopo	9,833	3	264	926	**11,026**
NW396: Lekwa-Teemane	40,759	88	2,256	5,065	**48,169**
NW401: Ventersdorp	40,902	84	1,417	5,819	**48,222**
NW402: Tlokwe (Potchefstroom)	103,634	557	7,703	27,346	**139,240**
NW403: City of Matlosana (Klerksdorp)	306,858	1,438	9,261	67,388	**384,944**
NW404: Maquassi Hills (Wolmaransstad)	67,566	119	1,626	7,104	**76,415**
NW405: Merafong City	191,169	283	1,427	33,452	**226,331**
GT421: Emfuleni	546,631	6,182	7,071	94,920	**654,804**
GT422: Midvaal	46,520	322	1,101	25,299	**73,241**
GT423: Lesedi	61,897	688	1,031	11,964	**75,581**
KZN431: Ingwe	108,992	21	225	759	**109,996**
KZN432: Kwa Sani (incl Mkhomazi NP)	14,832	10	87	1,078	**16,007**
KZN433: Greater Kokstad	58,982	580	6,239	4,484	**70,285**
KZN434: Ubuhlebezwe	109,661	375	1,256	1,064	**112,356**
KZN435: Umzimkhulu (Umzimkulu)	167,016	57	392	56	**167,521**
EC441: Matatiele	184,808	176	2,398	1,698	**189,080**
EC442: Umzimvubu	201,978	32	324	38	**202,373**
NC451: Moshaweng	87,501	6	724	67	**88,297**
NC452: Ga-Segonyana	70,778	66	5,631	4,297	**80,772**
NC453: Gamagara	13,366	14	7,775	4,954	**26,110**
NCDMA45: Kalahari DMA	5,078	5	534	1,018	**6,636**
GT461: Nokeng tsa Taemane	39,307	62	1,200	17,520	**58,089**
GT462: Kungwini	104,216	262	933	26,577	**131,988**
LIM471: Greater Marble Hall	134,658	66	94	2,537	**137,356**

Population, 2005	African	Asian	Coloured	White	Total
LIM472: Elias Motsoaledi	220,378	101	142	1,431	**222,052**
LIM473: Makhuduthamaga	249,769	51	35	43	**249,897**
LIM474: Fetakgomo	85,487	0	8	981	**86,476**
LIM475: Greater Tubatse	293,060	214	212	2,265	**295,750**
GT481: Mogale City (incl Sterkfontein DMA)	253,082	6,865	2,471	69,289	**331,706**
GT482: Randfontein	94,637	224	11,779	30,020	**136,661**
GT483: Westonaria	95,811	187	455	11,534	**107,987**

Appendix E: Projections by Province, 2005-2050

Provincial Population Outcomes

		2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Western Cape	R	4,816,019	5,132,965	5,371,531	5,582,947	5,779,209	5,959,079	6,106,899	6,205,094	6,256,751	6,270,494
	B	4,838,347	5,216,068	5,558,357	5,921,923	6,312,859	6,714,306	7,106,729	7,478,238	7,832,274	8,175,696
	G	4,964,265	5,532,551	6,009,548	6,528,992	7,099,898	7,706,750	8,336,274	8,981,811	9,648,879	10,348,223
Eastern Cape	R	6,434,846	6,404,739	6,338,408	6,311,852	6,313,195	6,335,613	6,370,890	6,393,666	6,402,774	6,403,839
	B	6,411,178	6,315,470	6,164,893	6,058,586	5,975,232	5,878,287	5,748,380	5,573,504	5,361,250	5,119,691
	G	6,453,120	6,385,381	6,207,413	6,040,608	5,866,387	5,646,354	5,359,716	4,993,497	4,553,242	4,048,021
Northern Cape	R	1,057,037	1,083,279	1,098,001	1,115,946	1,138,234	1,165,530	1,193,530	1,216,339	1,233,524	1,246,765
	B	1,056,942	1,082,801	1,098,887	1,121,771	1,150,322	1,183,209	1,214,662	1,239,454	1,257,036	1,269,666
	G	1,049,562	1,062,919	1,076,017	1,097,123	1,122,788	1,151,053	1,176,072	1,192,882	1,200,943	1,203,562
Free State	R	2,867,866	2,821,306	2,747,302	2,698,032	2,663,228	2,632,031	2,599,350	2,554,383	2,499,657	2,440,142
	B	2,867,783	2,815,162	2,736,126	2,687,735	2,653,604	2,608,530	2,541,654	2,446,110	2,326,906	2,189,149
	G	2,812,379	2,696,153	2,574,386	2,468,032	2,358,768	2,217,486	2,032,687	1,797,943	1,517,277	1,194,059
KwaZulu-Natal	R	9,954,613	10,014,861	10,023,266	10,167,576	10,372,966	10,605,396	10,842,115	11,026,305	11,158,759	11,254,962
	B	9,969,849	10,048,015	10,111,665	10,376,433	10,742,108	11,119,057	11,454,094	11,704,766	11,882,421	12,000,650
	G	10,045,752	10,252,775	10,445,260	10,819,862	11,285,176	11,751,766	12,164,515	12,480,416	12,706,479	12,853,439
North West	R	3,467,043	3,484,109	3,467,971	3,476,053	3,497,476	3,520,326	3,536,828	3,534,196	3,515,647	3,487,639
	B	3,469,549	3,488,010	3,480,331	3,509,276	3,556,093	3,591,651	3,600,585	3,574,085	3,517,639	3,437,058
	G	3,346,041	3,199,003	3,115,932	3,064,247	3,014,126	2,926,541	2,784,301	2,581,092	2,323,884	2,017,358
Gauteng	R	9,655,346	10,144,379	10,464,735	10,794,382	11,134,283	11,458,617	11,726,794	11,888,698	11,954,582	11,947,546
	B	9,720,475	10,383,750	11,013,570	11,801,860	12,728,253	13,712,651	14,691,722	15,625,967	16,527,791	17,413,440
	G	9,914,438	10,998,106	12,064,642	13,339,333	14,825,501	16,454,794	18,170,096	19,937,110	21,774,332	23,707,047
Mpuma-langa	R	3,634,412	3,705,725	3,762,190	3,853,395	3,957,159	4,065,868	4,171,891	4,257,564	4,323,828	4,375,328
	B	3,638,951	3,711,928	3,776,773	3,890,573	4,021,968	4,143,549	4,236,999	4,288,274	4,300,148	4,275,017
	G	3,612,725	3,658,672	3,734,374	3,848,678	3,967,317	4,058,420	4,100,859	4,078,672	3,991,361	3,837,091
Limpopo	R	5,240,895	5,456,806	5,655,024	5,867,339	6,091,320	6,327,169	6,570,732	6,802,339	7,017,158	7,216,348
	B	5,225,672	5,391,419	5,510,150	5,621,424	5,718,232	5,781,478	5,796,288	5,747,416	5,632,139	5,450,774
	G	5,163,398	5,235,986	5,277,305	5,280,734	5,232,259	5,099,226	4,858,981	4,494,110	3,998,577	3,367,664
Total	R	**47,128,076**	**48,248,170**	**48,928,428**	**49,867,522**	**50,947,071**	**52,069,629**	**53,119,030**	**53,878,584**	**54,362,680**	**54,643,063**
	B	**47,198,746**	**48,452,625**	**49,450,753**	**50,989,581**	**52,858,672**	**54,732,719**	**56,391,112**	**57,677,814**	**58,637,604**	**59,331,139**
	G	**47,361,680**	**49,021,547**	**50,504,876**	**52,487,610**	**54,772,220**	**57,012,388**	**58,983,501**	**60,537,531**	**61,714,974**	**62,576,465**

Appendix F: Detailed data in Excel

Please see the attached Excel files for the details.

- **Population**
  Pop Rev 006.xls
  Total Population by detailed local municipality, for 2001 to 2050
  Single years, for the three scenarios

- **Economic Variables**
  EconVars - Low Red rev 005.xls
  EconVars - Mid Blue rev 005.xls
  EconVars - High Green rev 005.xls
  5-Year intervals, for
    - Economic Active Population (EAP)
    - Employment (Formal by detail sector, Informal, Domestic and Total)
    - Unemployment
    - Split of household income by Low, Middle and High
    - Gross Value Added by detailed economic sector – Constant prices (Economic Growth)