3.1 Introduction

The development of a long-term transport framework that provides opportunities for economic growth create inclusive communities where people can work, live and play, requires a strategic understanding of the country’s demographic characteristics and socio-economic status.

The characteristics of the population measured in terms of population growth, provincial population share, income, employment status, population density and provincial contribution to the economy are key indicators informing strategic planning.

In tracking and monitoring demographic and socio-economic changes, NATMAP 2050 relied on Census 2001 and National Household Travel Survey 2003 data. These data sources were updated in 2011 and 2013 respectively. Comparing these data sets provides a powerful indication about demographic and socio-economic trends and whether planning policy has had an effect over the past decade. By considering the changes that has come about it is possible to determine the appropriate focus of transport planning and where transport investment should be focused on.

This Chapter provides an overview of the status of South Africa’s demography. It presents observations from the population analysis and forecasting undertaken during the NATMAP 2050 analysis process, the population’s socio-economic status, and the interventions required to align population forecast with the NATMAP 2050 vision.
3.2 Status of Demographic and Socio-Economic Characteristics

3.2.1 Demographic characteristics

Spatial distribution and density are critical in designing sound transportation systems that will meet and support the geographical mobility of the population. Highlighted below are key characteristics of South Africa’s population.

POPULATION

National population growth: The change in population provides planners with guidance of the rate at which the transport system needs to be expanded to support it. The total population increased year on year at a compounded rate of 1.8% per annum between 1996 and 2001. However, from 2001 to 2011 the growth rate declined and stabilised at 1.5% per annum. The total population of South Africa in 2011 was 51.8 million. Figure 3-1 illustrates the South African population growth and growth rate.

Provincial population growth: Changes in population growth in a specific province provide an indication of the attractiveness of the province and when compared to changes in contribution to GDP it provide a strategic indication about migratory movement between provinces, but more relatively the actual increase in population. As seen from Table 3-1, the population per province increased year on year with the exception of North West province where the population decreased slightly during 2007 in terms of the “community survey”. However comparing 2001 with 2011 the population remained about the same. The population growth rate in Gauteng remained above 3% from 1996 to 2011, Mpumalanga and Western Cape reported growth rates of above 2% per year.

<table>
<thead>
<tr>
<th></th>
<th>1996</th>
<th>2001</th>
<th>%GROWTH</th>
<th>2007</th>
<th>%GROWTH</th>
<th>2011</th>
<th>%GROWTH</th>
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<tbody>
<tr>
<td>WC</td>
<td>3,9382</td>
<td>4,5248</td>
<td>2.8%</td>
<td>5,2865</td>
<td>3.2%</td>
<td>5,8016</td>
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<td>EC</td>
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<td>6,4512</td>
<td>0.5%</td>
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<td>5.6%</td>
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<td>0,8064</td>
<td>-1.1%</td>
<td>1,067</td>
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<td>1,1396</td>
<td>1.7%</td>
</tr>
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<td>KZN</td>
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<td>10,282</td>
<td>1.8%</td>
<td>10,2564</td>
<td>-0.1%</td>
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<tr>
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<td>10,4275</td>
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</tr>
<tr>
<td>NW</td>
<td>3,3698</td>
<td>3,6736</td>
<td>1.7%</td>
<td>3,2495</td>
<td>-2.4%</td>
<td>3,5224</td>
<td>2.0%</td>
</tr>
<tr>
<td>MP</td>
<td>2,8014</td>
<td>3,136</td>
<td>2.3%</td>
<td>3,6375</td>
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<td>4,0404</td>
<td>2.7%</td>
</tr>
<tr>
<td>LP</td>
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<td>5,2864</td>
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<td>5,238</td>
<td>-0.2%</td>
<td>5,3872</td>
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<tr>
<td>TOTAL</td>
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<td>44,8</td>
<td></td>
<td>48,5</td>
<td></td>
<td>51,8</td>
<td></td>
</tr>
</tbody>
</table>

POPULATION DISTRIBUTION

Population percentage share per province: The percentage share of the population per province remained near identical between 2007 and 2011. KwaZulu-Natal, the seventh largest province (7.6% land area), and Gauteng the smallest (1.4% land area), have the largest share of the overall population. KwaZulu-Natal’s share of population decreased by 1.2% from 2007 to 2011 whereas Gauteng’s share increased by 2%. This is significant and implies a renewed effort is required in Gauteng to support the increase in population in terms of the transport planning. Figure 3-2 summarises the provincial population share.

Percentage population per urban, tribal and farm classification: The percentage of population in urban, tribal or traditional areas and farms provide an indication of the distribution of people throughout each province (see Figure 3-3). Population share is however not the only indicator and needs to be considered in conjunction with provincial contribution to GDP.
In the provinces with the highest contribution to GDP (see Figure 3-10) the largest portion of the population lives in urban areas, especially in Gauteng, KwaZulu-Natal and Western Cape. The majority (78%) of the population within Limpopo Province lives in tribal areas. Tribal areas are typically villages inhabited by self-sustaining citizens. Villages take the form of pockets of houses/huts clustered throughout an area perforated by large grassland / fields /farm land in between. Urban areas include formal and informal urban residential areas, commercial and subsistence farming.

Given that in several provinces more than 50% of the population lives in tribal areas, it has a significant bearing on the approach to providing access in these rural areas. The provision of rural transport considerations in NATMAP 2050 will therefore have to identify means of supporting and enhancing accessibility in these areas.

Distribution of population between metropolitan areas and secondary development nodes: Todes and Harrison (2013) provides insight into the change in total population within metropolitan and other secondary nodes. The authors prepared a research study on the change of population and Gross Value Added (GVA) per area category. For the purpose of the study to compare population growth and economic contribution urban areas were categorised based on spatial extent, economic activity and population. The categories and typical examples of cities are (Refer to Figure 3-5):

- **An Inner Core**: consisting of the large metropolitan agglomerations and secondary cities (e.g. The Gauteng City-Region, Western Cape Urban Agglomeration, KwaZulu-Natal Coastal Urban Agglomeration, Nelson Mandela Bay, Mangaung, Buffalo City, The Msunduzi, Polokwane, Free State Goldfields, Mbombela, Polowane, Sol Plaatje, Cape South Coast Tourism Belt)

- **An Outer Core**: consisting of large towns with major service functions, medium-sized mining centres, peri-urban agglomerations around the inner core, and large agglomerations around previous homeland capitals (e.g. Newcastle, Kroonstad, Grahamstown, Phalaborwa, Mthatha, Thoyihandou)

- **A Semi-Periphery**: consisting of medium-sized towns with an established infrastructure, secondary mining outliers and the more densely settled parts of the previous Bantustans with local economies producing more than R1 billion per year (e.g. Vryheid, Kuruman, Springbok)

- **A Periphery**: consisting of small service centres with established infrastructure, small mining economies and previous Bantustan economies with output of more than R0.4 – R1 billion (e.g. Calvinia, Dannhauser)

- **A Deep Periphery**: comprising very marginal local economies with outputs of less than R0.4 billion per year (e.g. Jansenville, Tarkastad, Boschf, Harding, Poffader, Warrenton).
FIGURE 3-5: DISTRIBUTION OF POPULATION BETWEEN METROPOLITAN AREAS AND SECONDARY DEVELOPMENT NODES (Source: Todes and Harrison, 2013)
Figure 3-4 illustrates the comparison of annualised population growth and GVA change per category of area between 1996 and 2011. During 1996 the GVA contribution made by the Inner Core settlements was 79.4% and since increased to 81.4% in 2011. However, the more peripheral the area, the lower the GVA growth. Figure 3-4 also shows that only in the Inner Core, significant levels of population growth occurred. South Africa’s average annual population growth of 1.6% between 1996 and 2011 is comparatively low, and the growth that has occurred is overwhelmingly concentrated in the Inner Core.

The changes reflected are very general because the diversity within each spatial category vary considerably. However, this provides insight into migratory patterns and demonstrates that the majority of people migrate to areas where economic activity is increasing. This trend emphasis that transport investment needs to be focused carefully to ensure that all category areas have optimal provision of transport services and infrastructure. An integrated investment approach is therefore required to ensure economic growth throughout the country.

**PEOPLE WITH SPECIAL NEEDS**

Due to the differences in the questions asked during the 1996, 2001 and the Community Survey of 2007 it is not possible to compare the results directly. The latest report also does not include statistics on children under the age of five or on persons with psycho-social and certain neurological disabilities due to data limitations, and should therefore not be used for purposes of describing the overall disability prevalence or profile of persons with disabilities in South Africa.

The findings show a national disability prevalence rate of 7.5%, subject to the limitations described above. Provincial variations show that Free State and Northern Cape provinces have the highest proportion of persons with disabilities (11%), followed by North West and Eastern Cape (10% and 9.6% respectively). Western Cape and Gauteng provinces showed the lowest percentage of persons with disabilities (5%).

Figure 3-6: PERCENTAGE PEOPLE WITH SPECIAL NEEDS PER PROVINCE (Source: STATSSA, 2011)

The percentage of people with special needs per province is shown in Figure 3-6. Typically people with special needs rely on public transport or other organisations to assist with movement needs. When comparing the total population that reside in tribal areas in the Eastern Cape and North West it confirms the need for a stronger rural transport strategy.

**3.2.2 Socio-economic factors**

The socio-economic indicators of employment status and activity, occupation, household and population income and employment by major industries have a significant impact on people's everyday lives and their decisions about transportation.

**EMPLOYMENT**

Employment is a key economic indicator and is sensitive to economic growth cycles. For example employment peaked in 2008 to approximately 13.8 million people during a period of stable and strong economic growth. However, during the world recession that saw economic growth rates decline, between 2009 and 2010 employment declined by approximately 806 000 persons. However following this period, employment grew again by 204 000 and 258 000 persons in 2011 and 2012 respectively.

The number of employed people increased from 0.7% to 3.2% during 1996 to 2011, this is a significant increase and supports South Africa’s economic aspirations. The change in number of people employment per province is shown in Figure 3-7.

**Formal and informal employment split**: The majority of employed people are employed in the formal economic sectors. Figure 3-8 shows the percentage distribution of the employed population between formal and informal sectors per province. Gauteng and Western Cape employed only 9% and 11% of the population in the informal market. Comparing the split between formal and informal employment with average monthly household expenditure, it is seen that provinces with a higher percentage formally employed people spend more per month (see Figure 3-9).

Gauteng and Western Cape yield higher monthly expenditure, suggesting that people that live in these provinces on average earn higher salaries. This may be a reason why these provinces are attractive to job seekers and see higher immigration levels than other provinces. An integrated approach to the provision of housing and transport system is therefore required, particularly in Gauteng and Western Cape.
FIGURE 3-7: NUMBER OF EMPLOYED PEOPLE PER PROVINCE 1996 TO 2011 (Source: STATSSA, 2011)

FIGURE 3-8: EMPLOYED POPULATION PER MAIN SECTOR; 2011 (Source: STATSSA, 2011)

FIGURE 3-9: MONTHLY HOUSEHOLD INCOME PER PROVINCE (Source: STATSSA, 2011)
ECONOMIC ACTIVITY

Provincial contribution to GDP: The provincial contribution to GDP provides an indication of economic activity and change in economic activity in each province (see Figure 3-10). The Figure shows the changes are minimal in the majority of provinces, however constant increases in GDP contribution in Gauteng and Limpopo is notable and also a similarly constant decrease in the contribution of KwaZulu-Natal and Eastern Cape.

A comparison of the average real economic growth rate from 2001 to 2011 recorded by the provincial economies and the total economy is shown in Figure 3-11. The South African economy recorded an average growth rate of 4.0%. Gauteng and the Western Cape have above the national average growth rates of 4.6% and 4.1% respectively. KwaZulu-Natal recorded the same average rate as all other provincial economies recorded lower growth rates, e.g. Northern Cape recorded an average economic growth rate of 2.4% over the period 2001 to 2011.

FIGURE 3-10: PERCENTAGE CONTRIBUTION TO GDP BY PROVINCE (Source: STATSSA, 1996, 2006, 2011)

FIGURE 3-11: AVERAGE REAL ECONOMIC GROWTH RATE PER REGION, 2001 - 2011
### 3.3 Future Demographic and Socio-Economic Characteristics

Several models are used to project the population of South Africa. NATMAP 2050 used several population growth scenarios to estimate the transport demand for the 15, 20 and 40 year horizons. During the development of the transport demand models, several assumptions were made in relation to economic growth, land use patterns and population growth rates. For each of the horizon year’s three scenarios were developed; a low, medium and high growth scenario. **Figure 3-12** illustrates the projected population to 2050 comparing the NATMAP 2050 demand models to the Actuarial Society of South Africa (ASSA) population model of 2011. The figure shows that for each of the NATMAP 2050 horizon years, the scenarios developed, align very well with the latest ASSA model. The significance of the ASSA model is that it is regularly updated with the latest available fertility, mortality and HIV data, and is therefore a very good comparative data set.

The inference drawn for this comparison is that the demand models developed for the NATMAP 2050 remains relevant (especially when looking at the low scenario forecast for 2025; medium scenario forecast for 2030 and low scenario forecast for 2050).

NATMAP 2050 population projections were also carried out at National, Provincial, and Local Government level. The results of the socio-economic scenarios provided input into the transportation demand model. The middle scenario was used to evaluate the impact of the proposed development model on the transport system. Proposals were made per scenario to provide an effective and efficient transport system.

The main population and socio-economic projected outcomes from the NATMAP scenarios are:

- **Population increase**: The total population for the years 2030 and 2050 is expected to be between 52 - 57 million and 55 - 63 million respectively - a potential increase of almost 15 million people by 2050.

- **Population density**: The total population density in Gauteng is expected to almost double from 58 persons per hectare to 105 persons per hectare between 2005 and 2050. KZN will increase from 10 to 12 persons per hectare and Western Cape from 3 to 6 persons per hectare. Nationally, the population density will remain the same.

- **Unemployment**: Unemployment is expected to decline from 38% in 2005 to between 8% and 20% by 2050.

- **Employment shift**: The structural shift away from primary sector employment is projected for the agricultural and mining sectors.

- **Rural Provinces**: have a predominantly low income earning population and typically travel longer distances to destinations offering opportunities. Longer travel also implies higher transport cost to the traveller, which are least able to afford it.

**FIGURE 3-12**: NATMAP PROJECTED POPULATION COMPARED TO ASSA 2011 (Source: ASSA, 2011)
The following issues and concerns relating to the South African future population include:

- **Continued uneven population distribution** ranging from very low density in deep rural areas to densely populated metropolitan areas. That scenario is also associated with economic activity that is concentrated in metropolitan areas. It gives rise to the effects of urbanisation, and the tendency of the population to migrate from rural areas to urban areas.

  The 2030 provincial population share in comparison with 2011 Census illustrated in Figure 3-13, shows the highest increase in population of about 8% will occur in Gauteng. All other Provinces will experience a slight increase in population by 2030 as compared to 2011, except for Eastern Cape, North West and Free State.

- **Economically attractive Provinces**: Gauteng and the Western Cape have been, and are projected to continue to be, the more economically attractive Provinces for people from the other Provinces.

- **Emigration and immigration**: At the international level, South Africa has experienced significant emigration - particularly skilled labour. There is also concern about large numbers of immigrants entering the country from neighbouring countries in search of economic opportunities and socio-political security.

- **Informal settlements**: The urban areas of South Africa are faced with the challenge of informal settlements mushrooming over a short period of time. Some people move to urban areas and they settle in informal areas in the hope of eventually securing employment. This creates settlements that become pockets of poverty within urban areas, putting pressure on the provision of housing, basic services, and public transport services.

- **High unemployment rates in South Africa are a persistent challenge**: Some industries, particularly agriculture and mining, are on the decline due to increasing costs of production and a shrinking resource base. It is noteworthy that these are the primary industries that employ a large number of the unskilled population.

- **HIV/AIDS**: has had a significant effect in shaping the demographic profile of South Africa’s population in the past and is predicted to continue, though perhaps at a lower rate, in the future.

- **Education**: The level of education of many South Africans is another concern. Figure 3-14 illustrate persons aged 20 years and older with no formal schooling. Persons with no schooling decreased significantly since 2002. However, Limpopo and Mpumalanga reported more than 10% of persons aged 20 years and older have no formal schooling.

- **Travel and freight costs**: The fragmentation of population settlements and associated economic activity in the various areas of South Africa, pose a challenge to the transport industry. High travel costs are associated with the movement of workers over long distances and inappropriate land use planning (e.g. apartheid planning). Transportation of freight from place of extraction / production to place of processing / sale is significant enough to require attention when planning transport infrastructure. On the other hand, increased urbanisation and infill development will promote more efficient transport systems due to higher population and activity densities.
3.4 The Socio-Economic Role of Transport

Transportation means personal mobility as well as access to goods, services and information. It is an essential human activity that makes a critical input to social development, and national and global economies. The transport sector has a fundamental influence on socio-economic development. Therefore, all players in the transport sector have an important role to play in making sure that the transport services necessary to economy and quality of life are provided in the most sustainable manner.

Work carried out by the Asian Development Bank Institute (ADBI, 2010) reveals that investment in and expansion of transport infrastructure and trade, facilitates national poverty reduction and enhances socio economic development. It also reduces transaction and opportunity costs and enhances market penetration with improved access and mobility. Improved transportation infrastructure gives rise to complex economic interactions, with the exact causal relationship between economic growth and infrastructure and transport investment unclear. However, the linkages create positive effects. Essentially the benefits of improved accessibility and mobility in transport are transmitted between markets and to households, including the implications for poverty alleviation.

The increased exposure to new businesses that comes with greater connectivity increases the opportunities for improved technological adaptation. Indeed, it has been shown that improving connectivity has been shown to raise work force productivity, increase school attendance, improve working conditions and even wage levels.

If we then agree that transport supports social economic development and has a socio economic role, one of the questions in our local context is – what strategy do we employ to enhance transports role in socio economic development? Here we have to consider for example the level of investment or subsidisation required in public transport to enable it to support socio economic needs. Accessibility and mobility in rural areas and those who cannot afford to travel to reach opportunities are crucial to allow all members of society to access the economy and have a quality of life. A balance has to be struck though between demand, needs, priorities and funding constraints.

It is recommended that this question be explored and definitive guidelines be provided about the socio economic role of transport in South Africa and the financial implications it will have.

3.5 Implications for Transport Planning

The findings and projections highlighted above have the following implications for transport:

- **Demand shift for transport**: The decline in population levels in some provinces, and the increase in the more economically viable provinces, will shift the demand for transport towards economic attractive provinces.

- **Pockets of poverty and infrastructure maintenance**: The pockets of poverty dispersed across several provinces present a public transport planning challenge as the \( \text{emigration} \) will make it difficult to project demand patterns and, in turn, the return on investment.

- **Public transport dependence**: The proportion of the population earning a low income will remain dominant over the planning period, hence the implication is continued dependence on affordable public transport.

- **Transport infrastructure**: Most of the provinces’ rates of formal employment have been projected to increase over the period leading to 2050. The demand for transport will grow as will car ownership, resulting in more pressure to improve transport infrastructure and the quality of public transport systems. Improved public transport, with a wider geographical network, will help suppress the dependency on single occupancy vehicle trips over time.

- **Emigration from rural areas to urban areas**: This phenomena will persist if the lack of or limited development and poor service delivery continues in these areas. Improved service delivery needs to be supported by economic growth in industries within rural areas. Beneficiation around the primary sector needs to be strengthened to support and enhance economic growth in rural areas.

- **Investment**: Rapid urbanisation in the major metropolitan and more economically-developed areas necessitates good transport infrastructure which will require a greater focus on investment needs in transport and related services. This investment is necessary to ensure that mobility and accessibility levels are maintained to continue supporting economic growth, efficiency and productivity.
3.6 Recommendations and Interventions Proposed

- **Informal economic activity survey:** The analysis of economic activities and population needs in the informal sector of the economy, commercial and subsistence agricultural activities requires research and detailed data collection. The purpose of collecting the data would be to determine the needs of the population that earn their income in these segments to enable spatial-, infrastructure- and transport planners to provide context sensitive solutions for both living and to enhance and building on the existing economic activities. Furthermore, changes required in policy and legislation can be informed through this data.

- **Land policies:** Given the continued influx of the population to more economically-developed metropolitan and other urban areas, an integrated approach between land use planning, housing provision, municipal services, social amenities and public transport provision should be implemented by all spheres of government. Detail policies relating to land use and transport planning is provided in later chapters of this report.

- **Densification and corridor infill development:** The use of vacant land and property within built-up areas should take place along public transport corridors to improve public transport ridership. The provision of community facilities should become a priority in nodes supported by transport corridors.

- **Development of rural areas:** To provide the necessary infrastructure that promotes sustainable economic activity to minimise the emigration of people from rural areas, and to maintain rural transport infrastructure. Beneficiation (industrialisation) around the primary sector needs to be strengthened to support and enhance economic growth and job creation in rural areas.

- **Demand-driven, developmental and responsive public transport systems planning:** A large proportion of South Africans are categorized in the low income bracket and are dependent on public transport to access opportunities. This statistic is projected to reduce over time given the implementation of sufficient supporting economic job creating measures. Whilst it is financially unsustainable to provide full demand responsive public transport as a social service (heavily subsidised) up to 2050, due consideration must be given to a package of measures lifting many South Africans out of poverty to enable the provision and affordability of world class public transport – so it does not continue being a mode historically seen as catering for the poor, but a transport system that caters for all as a mode of choice.

- **Investment in infrastructure:** promote continued investment in infrastructure in urban and rural areas.

- **Guidelines:** Establish guidelines about the socio economic role of transport in South Africa and the financial implications it will have.

- **Development of Special Economic Zones (SEZ):** SEZs are critical to Government’s objectives to advance industrialisation, rural development, job creation as well as attracting Foreign Direct Investment (FDI). Special arrangements must be made for supporting infrastructure to support these developments. Transport network planning and transport services implementation should align and support SEZs.