

ANNEXURE “A”

STRATEGIC REVIEW OF BUILT ENVIRONMENT

Contents

STRATEGIC REVIEW OF BUILT ENVIRONMENT	1
1. CURRENT PERFORMANCE OF BUILT ENVIRONMENT	1
1.1 SITUATIONAL ANALYSIS OF NELSON MANDELA BAY	1
2. TRENDS AND DEMAND FOR ECONOMIC INFRASTRUCTURE	20
2.1 ECONOMIC BACKGROUND	20
2.2 STRATEGIC INITIATIVES	25
2.2.1 Red Location Cultural Precinct	27
2.2.2 Njoli Square Development	27
2.2.3 Mermaid’s Precinct	28
2.2.4 North End Coastal Development	28
2.2.5 Waterfront Development-Port / Baakens Precinct	29
2.2.6 Redevelopment of Telkom Park as part of the Happy Valley Precinct	30
2.2.7 Bayworld Revival:	30
2.2.8 Apple Express Rail Link	31
2.2.9 Statue of Liberation	32
3. TRENDS AND DEMAND FOR BASIC INFRASTRUCTURE	32
3.1 WATER MASTER PLAN (WMP)	33
3.2 SANITATION MASTER PLAN (SMP)	34
3.3 ASSET CONDITION	36
3.4 ROADS/STORMWATER/TRANSPORT	38
3.5 ELECTRICITY INFRASTRUCTURE	39
4. TRENDS AND DEMAND FOR RESIDENTIAL INFRASTRUCTURE	45
4.1 LAND AND HOUSING ANALYSIS AND PROJECT DEMAND FOR HOUSING BY INCOME GROUP, LOCATION AND COST	45
5. TRENDS AND DEMAND FOR COMMUNITY AND SOCIAL INFRASTRUCTURE	48
5.1 QUANTIFYING BACKLOGS AND FUTURE DEMAND IN RELATION TO COMMITMENTS SECURED BY RELEVANT PROVINCIAL/NATIONAL DEPARTMENTS OR ENTITIES	48
5.2 STATUS QUO OF CEMETERIES IN NELSON MANDELA BAY	49

6. TRENDS AND DEMAND FOR TRANSPORTATION	51
6.1 TRENDS IN DEMAND FOR TRANSPORT SERVICES BY MODE AND INCOME GROUP	52
6.2 IMPLICATIONS OF ITP AND IPTS FOR LAND USE MANAGEMENT	53
7. TRENDS AND DEMAND FOR SUSTAINABLE DEVELOPMENT	55
8. IMPACT OF SECTOR TRENDS AND DEMAND ON SPATIAL FORM	64

1. CURRENT PERFORMANCE OF BUILT ENVIRONMENT

1.1 Situational Analysis of Nelson Mandela Bay

STATS SA describes Nelson Mandela Bay as follows:

“Nelson Mandela Bay Municipality is located on the south- eastern coast of Africa in the Eastern Cape. It is one of eight category A municipalities in South Africa. In 2001, the Nelson Mandela Bay Metropolitan Municipality was formed as an administrative area covering Port Elizabeth, the neighbouring towns of Uitenhage and Despatch, and the surrounding agricultural areas. Nelson Mandela Bay is a major seaport and automotive manufacturing centre.

The Coega Industrial Development Zone (IDZ) is situated within the Nelson Mandela Metropolitan Municipality. The initiative is a multibillion-dollar industrial development complex customized for heavy, medium and light industries. It is adjacent to a deepwater port, the Port of Ngqura, and covers 110 km2 of land. The city’s unique advantage of possessing two ports, namely Port Elizabeth Harbour and Ngqura, creates an opportunity for the city to establish a strong and vibrant maritime sector”.

A situational analysis of Nelson Mandela Bay, covering various socio-economic trends, is presented below.

Demographic Background

(a) Current situation

The following statistics are relevant:

- Population - 1,152,115 (Census 2011)
- Households (formal) - 276 850 (Census 2011)
- Households (total) - 324 292 (Stats SA)
- Area covered - 1 950 km²
- Unemployment rate - 36,6% (Census 2011)

The demographic composition is detailed in the tables and figured below:

TABLE 1: Demographic Information on Nelson Mandela Bay: Age Distribution

0-14 Years Old	15-65 Years Old	> 65 Years Old	Total
294269	795392	62453	1152114
25.54%	69.04%	5.42%	100.00%

Source: Stats SA, 2011

Figure:1 Age and sex distribution in NMBM

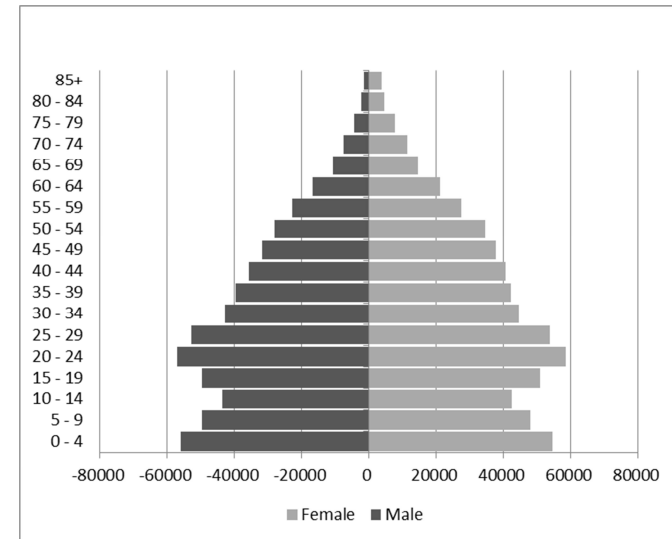


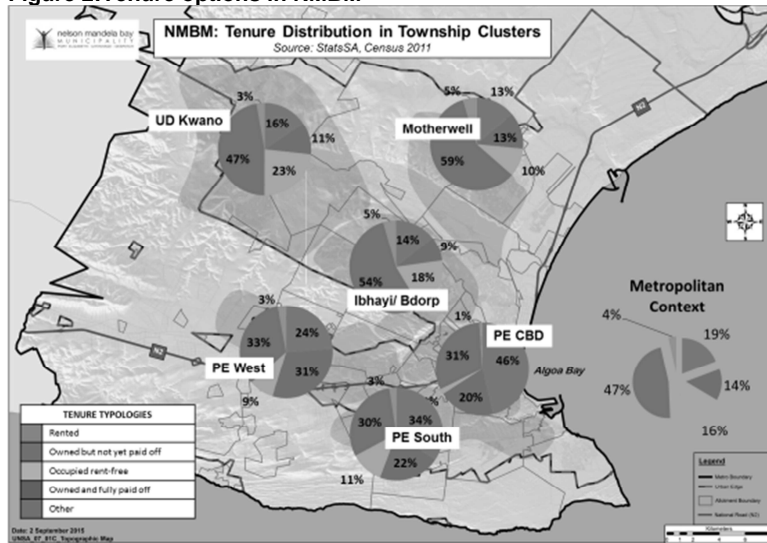
TABLE 2: Demographic Information on Nelson Mandela Bay: Household Distribution

Type of household	No of Households
Total households	324292
Formal households	276850
Informal households	30202
Households/Flats/Rooms in back-yards	6890
Informal households in back-yards	8862
Other	1488

Source: Stats SA, 2011

The above information is reflected graphically in the figure below.

Figure 2: Tenure options in NMBM



The following table shows the low employment in the NMBM.

TABLE 3: Demographic Information on Nelson Mandela Bay: Employment Status

Employment Status (Official)	Working age population	% of working age population
Labour (Total)	795392	100.00%
Employed	290155	36.48%
Unemployed	209088	26.29%
Others (not economically active)	289969	36.46%
Not applicable	6180	0.78%

Source: Stats SA, 2011

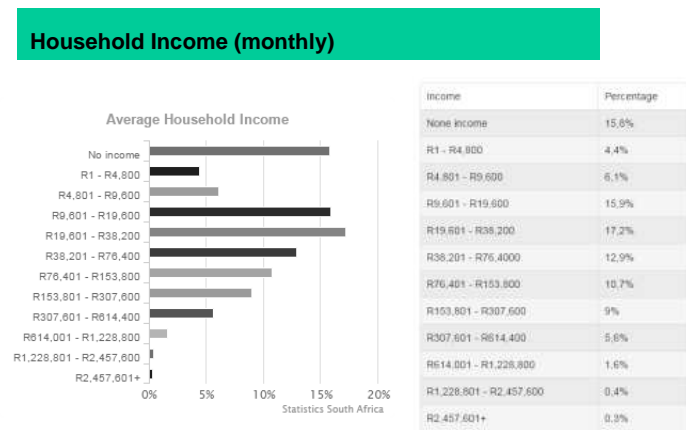
The population trend in Nelson Mandela Bay is reflected in the table below:

TABLE 4: Population Trends for Nelson Mandela Bay (2001 to 2011)

Year	Total	Asians / Indians (%)	Black Africans (%)	Coloureds (%)	Whites (%)
2001	1 005 804	1.12	58.93	23.43	16.51
2007 (CS)	1 050 933	0.92	60.40	22.56	16.12
2011	1 152 112	1.11	60.13	23.56	14.36
2015	1 224 630	1.1	56.0	24.1	18.8
2020	1 243 930	1.0	55.9	24.4	18.7

Sources: StatsSA (Census, 2001), StatsSA (Community Survey, StatsSA Mid-year Estimates and StatsSA (Census, 2011)

The above trends show that there is very low population growth and this trend will continue into the future. An additional 19 300 population in the next five years is estimated i.e. from 2015 to 2020. This translates to a need for only approximately 5 000 housing units assuming four persons per unit, to accommodate new growth. This figure is very low. Coupled to the fact that most of the 5 000 units will be in the subsidized sector, it can be seen that private sector growth is very low.

FIGURE 3: Household Income Distribution (2011)

Source: StatsSA; Census 2011

The above figure shows that 26.3% of NMBM households earn less than R9 600 per month and are therefore potentially dependent on subsidized public sector housing.

Nelson Mandela Bay is the driver of the Eastern Cape economy, with 41,81% of the provincial GGP (Global Insight, 2013).

- 83 660 of the total number of 276 850 formal households are classified as indigent (in terms of the indigent register of the Municipality).
- 44% of households receive at least one social grant.
- The HIV/AIDS prevalence rate is 30,8%.
- Approximately 3% of residents have received no schooling; 13% have passed Grade 7 or less (primary school level); while 75% have passed Grade 12 or less (secondary school level) (these figures exclude the current population of children of pre-school and school-going age, i.e. 0-19 years) (Census, 2011).
- The overall population density is 80 – 100 persons per hectare (20 units per hectare).
- The predicted population for 2020 is 1 243 930.

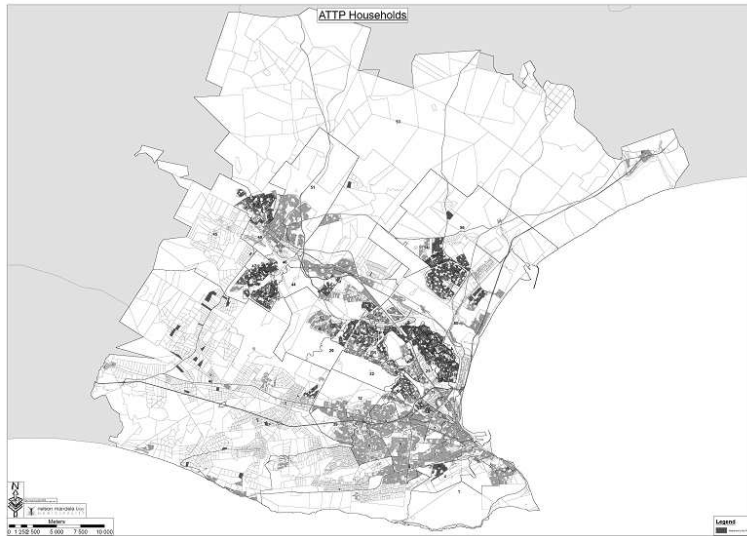
- The growth is therefore predicted to be less than 100 000 people (25 000 units) for all population groups over the next 7 years. This is in accordance with studies showing low in-migration figures, and the findings of the NMBM's demographic study.

The following aspects support the information provided above and serve to illustrate the socio-economic trends in Nelson Mandela Bay.

(b) Assistance to the Poor (ATTP)

The ATTP Programme is a subsidy programme for indigent formal households that cannot afford municipal services. The number of indigent households, as reflected in the ATTP programme of the municipality, provides a valuable yardstick to measure the wealth or financial state of residents in the NMBM.

FIGURE 4:Graphic distribution of ATTP programme beneficiaries.



The figure above is a spatial representation of the location of households that benefit from the indigent subsidies under the ATTP programme. This correlates with the results of demographic studies and confirms the poverty levels that still exist in most of the previously disadvantaged communities of the city.

The figure further indicates the areas of the city where interventions regarding spatial targeting are required. Subsequent sections of this BEPP will reveal the programmes for targeting these areas.

Households that qualify for the indigent subsidy in terms of the municipal ATTP policy, receive financial assistance from the Municipality. This financial assistance comes from the Municipality's Equitable Share Allocation.

In recent years, the number of ATTP beneficiaries has grown. Each new successful ATTP applicant's outstanding debt is written off as part of the

ATTP process. This results in a concomitant outflow from the Equitable Share allocation and thus less of this grant can be used for repairs and maintenance. This results in an increase in municipal repairs and maintenance backlogs.

In the 2013/14 financial year 12 109 indigents were added to the indigent register which resulted in a total of 83,660 indigents by 30 June 2014. In the 2014/15 financial year, 2 100 additional ATTP beneficiaries were approved which resulted in a total of 85,760 indigents at 30 June 2015. It is projected that the indigent numbers will grow with a reduced number of only 748 in 2015/16. This is not as a result of an upturn in the economy but merely because the indigent program has reached nearly all qualifying indigent residents. This will however not be a permanent position. As people are relocated from informal settlements to new housing so they move onto the ATTP register therefore this number will increase.

Currently 31% of formal households in the city cannot afford basic services in terms of the indigent program. This is an unsustainable situation that requires urgent intervention.

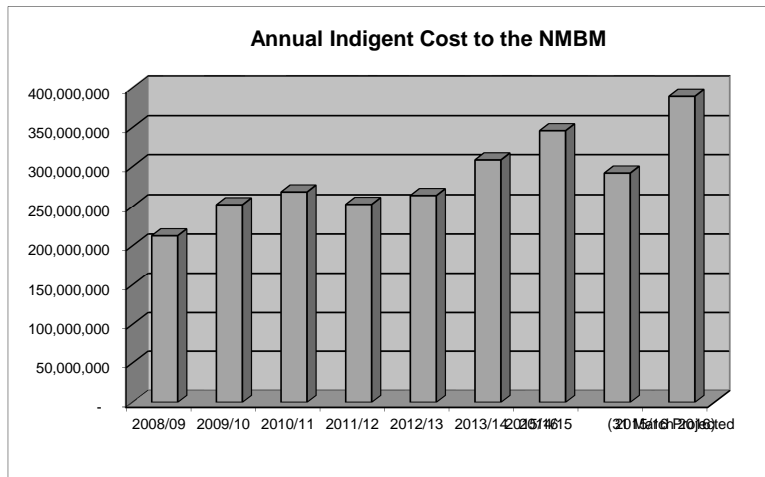
The following table and figure illustrate the number and value of Equitable Share subsidies allocated to ATTP households.

TABLE 5: ATTP - Number and Value of Financial Assistance to ATTP Households

Description	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 (31 March 2016)	2015/16 Projected
Number of approved ATTP households	109,534	108,665	95,489	86,172	71,551	85,022	86,428	87,471	87,591
Indigent cost to the City	212,753,832	252,311,837	268,321,432	252,770,170	263,880,851	308,292,772	345,946,687	291,923,335	389,231,113
Equitable Share Allocation	682,450,000	456,625,000	602,883,000	656,653,000	729,226,000	743,325,000	761,606,000	774,616,000	774,616,000
Percentage E-Share allocated to ATTP	31%	55%	45%	38%	36%	41%	45%	38%	50%

Source: NMBM Budget & Treasury, 2015

FIGURE 5: Financial contributions made to indigent households in Nelson Mandela Bay

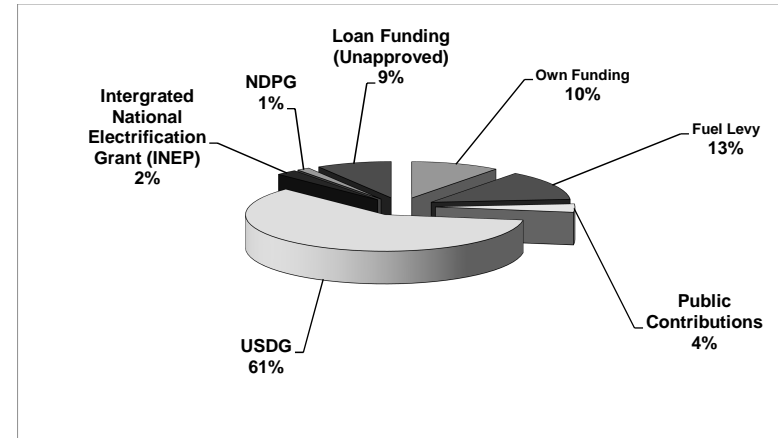


Source: NMBM Budget & Treasury, 2015

(c) Financial Overview of Nelson Mandela Bay Municipality

The total NMBM Draft Capital Budget for the 2016/17 financial year is R1.63 billion.

FIGURE 6: 2016/17 Draft Capital Budget - Sources of Funding



Source: NMBM Budget & Treasury, 2015

TABLE 6: 2016/17 Draft Capital Budget - Sources of Funding (VAT Inc.)

Funding Source	Value	Percentage
Own Funding (Capital Replacement Reserve)	149,500,000	10%
Fuel Levy	193,016,000	13%
Public Contributions	53,000,000	4%
Urban Settlements Development Grant	868,282,000	60%
Intergrated National Electrification Grant (INEP)	35,000,000	2%
Neighbourhood Development Partnership Grant (NDPG)	21,476,000	1%
Loan Funding (Unapproved)	126,042,000	9%
Total Draft Capital Budget Funding	1,446,316,000	100%

Grant Dependency

National Grants	Value	Percentage
Conditional Grants	924,758,000	64%
Unconditional Grants	193,016,000	13%
NMBM Grant Dependency	1,117,114,000	77%

(d) Access to services**(i) Water**

- All households located in formalised human settlements have access to water via a connection per erf.
- 100% of households located in informal settlements within the urban edge have access to water within a 200 m radius.
- Informal areas receive water through standpipes (within a 200 m radius) and water tanks, except for communities occupying private land illegally.

(ii) Sanitation

- Approximately 92.4% of households located in formalised human settlements are connected to waterborne sanitation.

- 20 900 buckets are still in circulation to informal settlements as a means of sanitation.

Bucket eradication is a priority in order to fulfil the Outcome 8 Policy objectives. In October 2014, the NMBM Council adopted a more concerted approach to the eradication of buckets which is detailed later in this document.

(iii) Public health*Solid waste management (refuse removal)*

- 99.98% of formal and informal households are provided with a basic level of refuse collection. This excludes informal areas on privately owned erven and erven not earmarked for human settlements development.

(iv) Electricity

- 96.8% of households in formally demarcated residential areas have access to electricity.
- It is estimated that 6% of households have no access to electricity. These include informal households on privately owned land. In recent years, great strides have been made to provide electricity to all informal settlements.

(v) Integrated Human Settlements Challenges

- Housing challenges:

TABLE 7: Estimated Housing Backlog for Nelson Mandela Bay

NMBM Figures		Census 2011 Figures	
Informal areas	23 411	Informal areas	30 202
Backyard shacks	49 000	Shacks/Rooms in backyards	6890
		Informal in backyards	8862
		Other	1488
Total	72 411	Total backlog	47 442

backlog			
----------------	--	--	--

Source: Stats SA, 2011 and NMBM

The NMBM figures are to be verified by a study to determine the number of backyard shacks and residents in informal settlements. The study commenced in April 2014 but has not progressed due to funding challenges.

- Households living in stressed areas (servitudes, floodplains and overcrowded areas) remain a challenge and these are identified as priority areas to be relocated in terms of the Housing Plan.
 - Land and spatial planning challenges include the following:
 - A shortage of government-owned land in inner-city and serviced areas.
 - A lack of visible spatial restructuring.
 - The lack of fully integrated and sustainable human settlements for new township areas as well as existing poor areas.

The Human Settlements Strategic Framework adopted by Council in December 2012 recommends spatial restructuring through the following interventions:

- Urban Renewal Precincts including Inner City areas, Motherwell, Happy Valley, Lower Baakens Valley, Walmer Gqebera, Korsten, Helenvale and the Greater Ibhayi-Northern Areas Hub.
- Spatial Transformation Precincts such as Parsonsvelei, Coega IDZ/ Motherwell, Bay West and N2 Developments.
- Implementation of an Integrated Zoning Scheme and Land Use Management System.

- Assembly of well-located public and private land for development of Integrated Human Settlements.

(vi) Infrastructure challenges

The following challenges are experienced in relation to infrastructure:

- The backlog of tarring of gravel roads is approximately 341 km. The cost to eliminate this backlog is approximately R2,5 billion. This backlog has occurred largely due to the fact that the housing development programme funded by the government only includes sufficient funding for gravel roads.
- Stormwater drainage inadequacies are experienced in disadvantaged areas, especially in newly developed areas because funding for roads and stormwater construction is limited.
- Ageing infrastructure, especially electricity, water and sanitation infrastructure results in leakages, pipe bursts, blockages and electricity disruptions which in turn cause service delivery disruptions.
- The completion of the Nooitgedacht Low Level Scheme remains the most significant project to ensure long-term water sustainability in the NMBM. This project supports both the provision of basic water, but also water for economic development. Phase 2 of this project has commenced by the implementation of three contracts scheduled for completion in February 2017. The NMBM has set aside funding to support these contracts. Phase 3 requires ±R240M (four contracts) for the completion of the entire expansion. The Department of Water and Sanitation (DWS) has via a directive appointed Amatola Water to implement Phase 3 which they will fund accordingly.
- Fishwater Flats Wastewater Treatment Works (FWF WWTW) upgrade has commenced with the inlet works which are approximately 80% complete. The Wastewater Treatment Works is critical (socially & economically) for further growth and development in the Metro. The total funding needed exceeds R1 billion.

- Economic infrastructure for development such as the Coega Wastewater Treatment Works and the Coega Return Effluent Scheme is needed to support the Coega IDZ. Further development of the IDZ will be hampered without funding for these projects. An investment of approximately R600M is required to complete the project, but the viability of the project is also dependent on the FWF WWTW upgrades.
- Planning has commenced on a new wastewater treatment facility to support the housing developments north of Motherwell and the Coega IDZ. This plant is planned for an ultimate capacity of 120 Ml/d costing in the region of R1 500M. A start up capacity of approximately 40-50Ml/d will be required and is estimated at R750M (including a sea outfall).
- The Municipality is working on a long-term capital investment plan to support economic growth and socio-economic development.

As part of the Capacity Support Implementation Plan funding strategies for Fishwater Flats and the Coega Waste Water Treatment Works will be looked at to optimise the timing and funding.

Infrastructure Challenges - Electricity and Energy .

The following challenges are experienced in relation to electricity infrastructure:

- Large increases in the purchase price of electricity have led to a continuous decline in electricity revenue. This makes it difficult to fund capital loans, repairs and maintenance from the operational value of the business. i.e. it is no longer easy to increase the electricity tariff to recapitalize infrastructure and/or to generate a surplus to fund other initiatives.
- Tampering, theft and vandalism are a challenge as prices soar and pressure is put on the disposable income of the NMBM residents.

- Government's grant funding is decreasing year to year.
- National challenges from Eskom and the uncertainty of load shedding causes residents to move to alternative energy sources placing a concomitant burden on overall municipal revenue.
- Ageing infrastructure is problematic both from an operational as well as a quality of supply point of view. This places further negativity around investment security in the NMBM.

(vii) Building investment trends

Nelson Mandela Bay recorded steady and rapid growth from 2001 to 2004, followed by a decline in the 2004/2005. 2005 to 2007 reflected a recovery but, 2008 saw a dramatic decline in growth, indicating the impact of the global economic crisis.

There was a recovery in the 2009/10, almost to the 2007 pre-economic meltdown figures, both in terms of the number and value of plans passed. This dipped slightly in the 2011/12 financial year which continued to dip in the 2012/13 financial year.

The increase in the number and value of plans for the 2013/14 period was directly attributable to an increase of RDP house plans approved in that period which was 2 910. The figures therefore do not reflect private sector investment and growth.

The number of building plans increased by 2 867 in the 2013/14 financial year. However, the number of RDP house plans increased by 3 122 over the prior year. In the 2012/13 financial year, only 815 RDP house plans were approved.

Therefore for the 2013/14 period commercial and private sector plans decreased by 255 plans.

The percentage of RDP house plans in relation to other building plans changed from 53,15% to 58,85% (3937/7407 to 5601/9517) in the 2014/15 financial period. The value of RDP building plans has however shown an increase which is largely attributable to the increased subsidy quantum value for RDP housing.

A corresponding decrease in the number and value of private and commercial building plans is noted in the last financial year, 2014/15, as an indication of an economy that remains weak.

The table below shows a 5.70% year-on-year change in the number of RDP- and "Other"-building plans approved in the last financial year. It is furthermore noted that the majority of "other" building plans is ; for additions to dwellings, second dwellings and townhouse complexes.

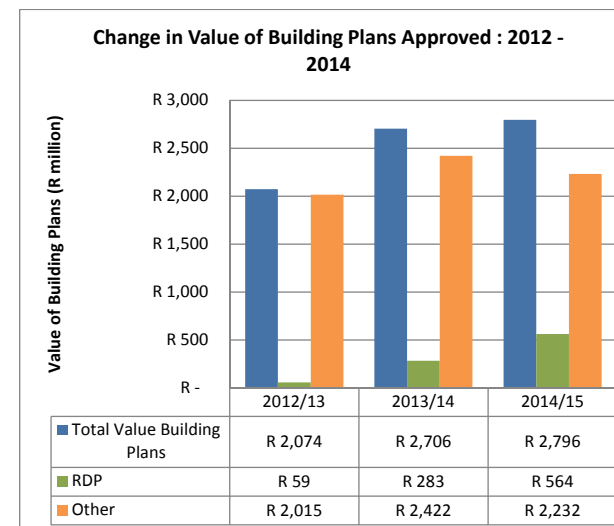
Most of these are in the Fairview, Parsonvlei and Hunters Retreat Areas which emphasises the importance of these nodal areas. Commercial development plans for this period include retail complexes in the Fairview area, amendments to the Baywest Mall and the green building office complex for Sanral, situated in the Baywest Precinct.

TABLE 8: Number of building plans submitted

Type of Building Plans	2012/13	%	2013/14	%	2014/15	%	Year-on-Year change	YoY%
Total	4540	100.00	7407	100.00	9517	100.00	2110	
RDP	815	17,95	3937	53,15	5601	58.85	1664	5.70% ▲
Other	3725	82,05	3470	46,85	6720	41.15	446	-5.70% ▼

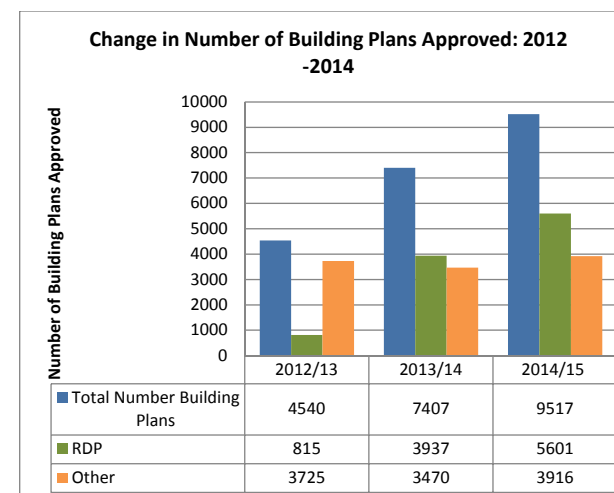
Source: NMBM, 2015 (Building Statistics)

Figure 7: Change in Value of Building Plans



Source: NMBM, 2015 (Building Statistics)

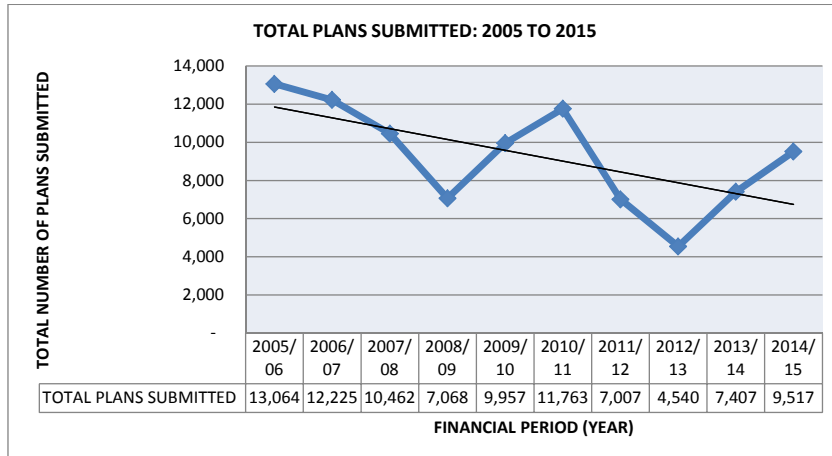
Figure 8: Change in Number of Building Plans Approved



Source: NMBM, 2015 (Building Statistics)

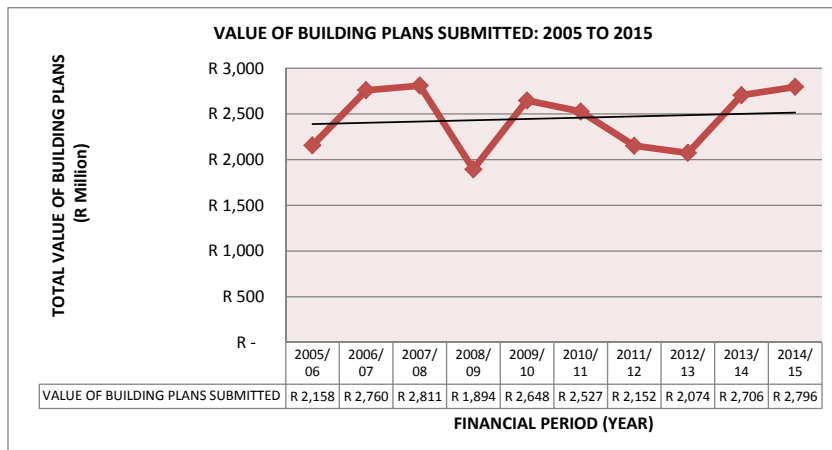
The two graphs below show the number and value of building plans submitted over recent years, as reliable economic indicators.

FIGURE 9: Number of Building Plans Submitted (2005 to 2015)



Source: NMBM, 2015 (Building Statistics)

FIGURE 10: Value of Building Plans Submitted (2005 to 2015)



Source: NMBM, 2015 (Building Statistics)

2. TRENDS AND DEMAND FOR ECONOMIC INFRASTRUCTURE

2.1 Economic Background

STATS SA states that: “according to ECSECC (Eastern Cape Socio Economic Consultative Council), the GDP growth rate for the Nelson Mandela Bay Municipality was 2.1% in 2010 and the GDP per capita R52 147. The largest economic sectors in the Nelson Mandela Metro are manufacturing, finance, community services and transport. Community services, trade and manufacturing sectors are the sectors that create the most employment in the Metro”.

Good quality infrastructure is key to sustainable social, economic and industrial development. Poor infrastructure hampers development, growth and ability to trade in the domestic and global economy.

Economic infrastructure, which includes transport, energy, telecommunications, water and sanitation provides services which are of fundamental importance for development. In NMBM it is deficient and this is exacerbated by inadequate maintenance and thus prematurely deteriorating installations and services. Infrastructural services are often overlooked as a means to alleviate poverty and improve environmental conditions.

In order for Nelson Mandela Bay to grow and develop a sustainable economy, it is important to build new economic drivers to replace or augment the ones that have served the region in the past.

Two single sectors, “Manufacturing and Community”, and “Social and Personal Services”, make up more than half (58.1%) of the Metro’s GVA (Gross Value Added), with “Financial and Related Services”, (Transport and Trade) contributing a further 37%. The automotive sector accounts for more than 50% of the Metro’s manufacturing sector.

Whilst the NMBM is an important node of activity within the economy of the Eastern Cape, it is characterised by several challenges in terms of economic development. These include:

- A high unemployment rate (36,6%), low education levels of the labour force, including large numbers of illiterate adults with limited employment prospects.
- Ageing and inadequate investment in the maintenance and upgrading of infrastructure.
- The dependence on the automotive sector and insufficient diversification within the manufacturing and others sectors.
- A lack of up-to-date local economic statistics and monitoring and evaluation systems.

Growth in the automotive sector of the economy has historically provided employment and boosted exports, while masking long-term weaknesses and continuing social inequality. For NMBM, the automotive industry's infrastructure strengths include the Coega IDZ and NMB Logistical Park which are both growing in potential. There is substantial government and institutional support - the Automotive Production & Development Programme (APDP) supports incentives to replace Motor Industry Development Programme (MIDP). The Nelson Mandela Bay economy is heavily reliant on this industry and this industry, in turn, is heavily reliant on SA incentive support – MIDP/APDP. The fragile and ever fluctuating global economy poses a serious risk to the automotive sector.

Logistically, the distance from product and supply markets is disadvantageous.. This is coupled with high logistics costs and inefficient transport. The automotive industry faces numerous threats to its competitiveness. These include that poor fuel quality restricts entry into the fuel efficient space and markets. Poor management of South Africa's energy supplies contributes negatively to industrial progression. In terms of the crisis of auto-mobility, there is a limit to the alternatives in South Africa. The rise of Asia (China, India, South Korea) as forces in both production and consumption proposes much competition for market share.

NMBM, once the leader in the automotive industry in South Africa, now lags behind eThekweni and Tshwane which now take up the major share of the South African automotive industry.

Countering these weaknesses and inequalities will require the following:

- Serious diversification of the local economy. in order to reduce its dependency on the traditional sectors.
- Down-stream and cross-stream diversification within the manufacturing sector.
- Development of new growth industries.
- Diversification of markets for manufactured products and services.
- Investment in the intellectual capital, creativity and technical capabilities of the labour force through skills development.
- Innovation support through research and development.
- Public and private sector investment to accelerate the production of all economic sectors.
- An aggressive market development programme for regional production within the region itself, as well as within the country, in order to ensure the localised sustainability of productive activities (NMBM EDRS, 2009).
- A clear and shared economic development strategy for the NMBM.

As part of the City Support Programme, Capacity Support Implementation Plan, the NMBM is receiving technical assistance to evaluate the Economic Development Strategy. This will consider the success of current initiatives and determine a way forward for the Municipality in respect economic development and the issues identified above.

There is a portfolio of sectors discussed in the Nelson Mandela Bay Industrial Development Strategy (2012) that focuses on industrial (or secondary) sectors as opposed to primary and tertiary sectors.

Local/Light Manufacturing:

The majority of job seekers are excluded from obtaining work purely due to the high cost and time of commuting to work areas. Places of work ideally need to be within walking distance of where people live. Significant impact can be achieved by revisiting the traditional concepts of urban order that tend to over-emphasize heavy industry and to re-link local production to local consumer markets through light industry that is more responsive to local needs and demand.

Tourism and Hospitality:

This is a consumption industry, rather than a productive industry. Tourism numbers are stagnant or falling, and the tourism-related manufacturing industry is undeveloped. However, there are production opportunities in the manufacture of handcrafts, mementoes, local fabrics, etc. There are also agricultural spin-offs in the supply of ingredients to restaurants and hotels.

Agro-Processing:

Sarah Baartman District Municipality, adjacent to NMBM, has a relatively strong agricultural sector. The biggest employers in the Coega IDZ are agro-processing plants. This sector is a priority for government. Agro-processing has linkages through into the Sarah Baartman District Municipality economy. Strengths of this sector in NMB include existing industries, natural resources and the IDZ to support industry. This sector is constrained by trade policies,

lack of skills, loss of productive land and zoning limitations as well as a lack of coordination between stakeholders.

Pharmaceutical industry:

There is a huge demand for low-cost drugs. Nelson Mandela Bay is home to a number of world-class pharmaceutical companies and the Rhodes and Nelson Mandela Metropolitan Universities have a pharmacy departments.. Threats to this sector of industry are the lack of access to technology, intellectual property and the lack of investment by large companies.

Sport and Leisure:

Sport and Leisure dovetail with Tourism and Hospitality and provides the opportunity to utilize the natural assets of the area. This industry promotes light industry (sport equipment, goods and clothing). Local sports events have demonstrated the capacity to attract large numbers.

Capital goods:

South Africa is on track to become a manufacturer of locomotives for the rest of Africa. This provides the Metro with its best opportunity for growing its presence in the capital goods sector in the short to medium term, and is therefore the focus of the strategy. A large percentage of the wagons should be made in Nelson Mandela Bay. Transnet Rail Engineering has a manufacturing facility in Uitenhage, which has been identified by Transnet as its main export manufacturing facility.

Renewable/Green Industries:

Green industries in this context fall within the broader category of energy, which includes electricity and the various types of fuel used in combustion processes. A Government development incentive is proposed “in order to increase local demand of alternative energy and DEDEAT on the other hand, must strive to influence policy towards developing certain underdeveloped areas in South Africa including the Eastern Cape to be used as manufacturing centres for renewable energy.” (Provincial Industrial Development Strategy, 2010).

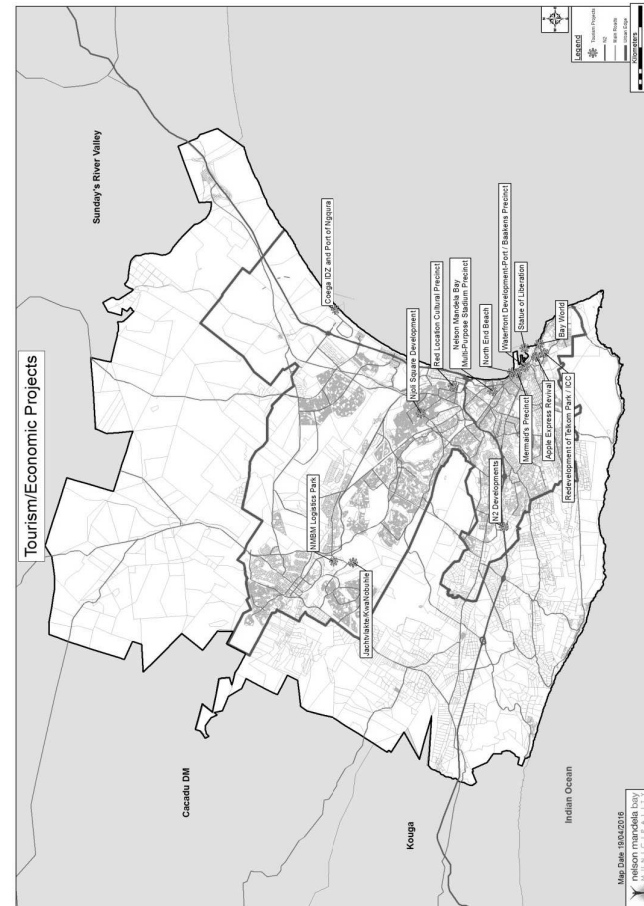
Besides the above-mentioned opportunities, the Municipality has also introduced a number of strategic initiatives and identified a number of key large-scale projects, as reflected in the Spatial Development Framework, the LED Strategy and the IDP of the Municipality, with the objectives being:

- Serving as significant catalysts for economic growth;
- Stimulating economic development;
- Enabling the Metro to become nationally and internationally competitive;
- Creating jobs;
- Alleviating poverty;
- Attracting investors and/or tourists;
- Changing the face of the Metro.

2.2 Strategic Initiatives

The Municipality has identified a number of initiatives to enhance economic development of the city. These are spatially illustrated in the Figure below. The Municipality is currently evaluating and prioritising these initiatives.

FIGURE 11: Tourism/Economic Projects



Source: NMBM CorpGIS, 2015

2.2.1 Red Location Cultural Precinct

Located in the historic Red Location area of Ibhayi, the precinct has been developed and comprises of an Apartheid Museum (2004), Art Gallery, Electronic Library (2011) and Backpackers' Lodge.

The business plan for the performing arts complex has been completed and the National Department of Arts and Culture has made R500 million available for this project. The last phase of the project will consist of a school of music.

The success of the Red Location Initiative is dependent on the urban renewal of the greater Ibhayi Area as this would enable broader urban renewal beyond the localised impact of the Red Location and Njoli Square Precincts upgrades. This is identified as one of the Catalytic Projects of the NMBM.

2.2.2 Njoli Square Development

This project entails the development of a major community taxi/commercial centre where the Njoli Square presently exists. The project is nearing implementation stage.

The success of the Njoli Square Upgrading Initiative is closely linked to the upgrading of the Greater Ibhayi area. Njoli is linked to Ibhayi and Bethelsdorp Hubs in the Urban Network Strategy.

Njoli Square upgrading is funded by the NDPG and is located in the Urban Network Strategy as a Catalytic Project.

2.2.3 Mermaid's Precinct

The project known as the Mermaid's Precinct is located in the heart of the CBD between Russell Road and the Donkin Row houses. It is a proposed mixed use area comprised of social housing, residential development and urban recreational node and complimentary mixed uses.

The area is currently derelict and vandalized with undeveloped municipal and privately owned erven. A master plan has been completed.

It is envisaged that the Municipality in conjunction with the MBDA, the private sector and a social housing institution will develop the area. Presently, funding is a constraint in taking the project forward although there is considerable private sector investment in various developments in the precinct.

The development of the Mermaids Precinct is identified as one of the Catalytic Projects aligned to the Baakens Valley precinct development and has been through a preliminary viability assessment by the DBSA Project Preparation Facility. This has concluded that the project is viable.

2.2.4 North End Coastal Development

The North End Coastal Development project is intended to reinstate the existing degraded coastal environment north of the Port Elizabeth Harbour over a 30-year period, creating an attractive urban gateway entrance to Nelson Mandela Bay. The project is intended to stimulate tourism and the economic development of the region.

The project seeks to restore beach sand to the severely eroded northern coast area through the redirection of dredged sand from the harbor mouth.

The first phase of the project aims to create a 500m long beachfront, with a direct link to the adjacent Nelson Mandela Bay Stadium, New Brighton and neighbouring

communities. The project can be implemented only in partnership with Transnet and the National Ports Authority and is still at concept stage.

2.2.5 Waterfront Development-Port / Baakens Precinct:

There has been recent focus on plans to develop the Waterfront at King's Beach area. After initially agreeing to move the tank farm in 2016, Transnet have now indicated that the oil tanks can only be demolished in 2017/18 due to the facility at Coega needing to be completed. Transnet have committed to move the manganese ore facility to the Coega IDZ in 2019. In the port planning for the port post-relocation, Transnet has agreed that a portion of land will be set aside for a marina/commercial development and this portion will not fall under the strict port security controls.

A Steering Committee comprising of Transnet, the MBDA, NMBM and the ECDC is currently working to ensure there is a Master Plan to determine the extent and depth of retail, residential, office, leisure/entertainment/tourism development as well as a Master Plan that can be implemented over time. The Port / Baakens precinct between the port and the Bridge Street Brewery as part of the broader Waterfront Development plan is envisaged to become a new tourism/ leisure/ entertainment precinct and it will be a further catalyst for the re-development of the area over time for non-industrial purposes.

The development of the Baakens Valley Precinct is identified as one of the Catalytic Projects and has been through a preliminary viability assessment by the DBSA Project Preparation Facility which has concluded that the project is viable.

In addition, as part of the City Support Programme, an Urban Land Institute Panel visit and assessment will take place in November 2015 to further provide key information with regard to the implementation of the project.

2.2.6 Redevelopment of Telkom Park as part of the Happy Valley Precinct

After building 2010 Soccer Stadium in North End, a decision to demolish Telkom Park for other developments was taken by the NMBM Council. This has presented an opportunity for the possible development of an International Convention Centre.

A Master Plan to determine the extent and depth of retail, residential, office and tourism, development as well as a Master Plan that will be rolled out as part of the project development is required. The Master Plan will include research in respect of uses. The market research will then determine the development layout.

The Happy Valley Precinct is identified as one of the Catalytic Projects of the NMBM.

2.2.7 Bayworld Revival:

Bayworld was a key tourism attraction in the region, however, the facility has had funding challenges after the closing of the oceanarium.

Due to the importance of this facility, a special intervention needs to be made in order to ensure the revival of this facility and the plans once again include an aquarium, sea water features, dolphinarium and other tourist facilities.

Bayworld is presently owned by the Department of Sports, Recreation, Arts and Culture (DSRAC) and a proposal that the operations and management of the facility be handed over to the Nelson Mandela Bay Municipality was made to the Department of Sports, Recreation, Arts and Culture (DSRAC).

It is intended that the Nelson Mandela Bay Municipality will enter into an agreement with the Department of Sports, Recreation, Arts and Culture and later hand over the facility to MBDA for project management purposes. The MBDA will therefore be responsible for the final design, sourcing the funding, which will be around R600 million, overseeing construction and the appointment of an operator as per case of

the Nelson Mandela Bay Stadium. A Provincial Cabinet Memorandum has been prepared and submitted to the Department's HOD, the Director-General of DSRAC for approval. There are on-going discussions with the Department to fast track the hand-over process.

2.2.8 Apple Express Rail Link

The closure of the Apple Express narrow gauge railway has negatively impacted the local tourism industry.

In a process of reviving the Apple Express, it became important that a study be done to ascertain the development potential of the Apple Express line between Port Elizabeth and Avontuur in the Western Cape, or a portion of the development of this line for the purposes of real estate, freight, passenger and tourism. The study concluded that this line was not sustainable for pure tourism purposes.

Through the intervention of the MEC for Department of Economic Affairs, Environment and Tourism (DEAET), an amount of R3,8 million was made available for a feasibility study around the Apple Express.

The study's objective is to make a compelling argument to Transnet to make the line available on a lease basis to a development agent.

2.2.9 Statue of Liberation

This project is seen to help grow the tourism products in Nelson Mandela Bay and serve as an iconic attraction that will compel visitors to come to Nelson Mandela Bay. This will also provide an identity for the Nelson Mandela Bay region. Critical to the way forward and the implementation of the project is the identification of a suitable site.

3. TRENDS AND DEMAND FOR BASIC INFRASTRUCTURE

The provision of infrastructure to deal with basic services is not dealt with separately, but forms part of the integrated planning for water and sanitation services that serve the Metro as a whole. As the development of infrastructure for human settlements has been the biggest driver for infrastructure expansion, the financial impact is related to the projects captured in the annual budgets.

The capacity of water and sanitation infrastructure to serve the NMBM is guided by the Metropolitan Spatial Development Framework (MSDF). The planning for the current and future capacity is dealt with in the approved Water and Sanitation Master Plans.

The abovementioned Water Master Plan was approved by Council in 2006 (NMBM Infrastructure & Engineering Directorate, 2006) and is currently being reviewed. However, the recommended expansions to the infrastructure remain relevant, as set out below. The Sanitation Master Plan (NMBM: Infrastructure & Engineering Directorate, 2012) was approved by Council in 2012.

3.1 Water Master Plan (WMP)

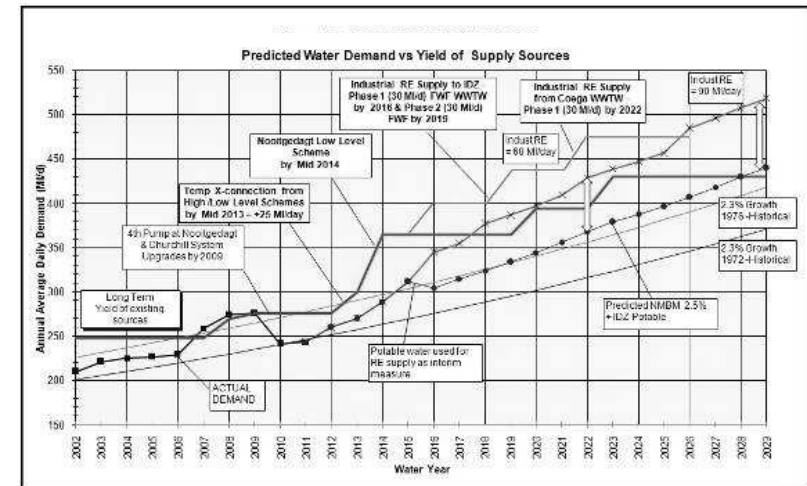
Sufficient internal bulk infrastructure exists to convey water to all developments within the metropolitan boundaries. Link water mains are installed as part of developments, when required. A constraint that does exist, is the completion of the Nooitgedacht Low Level Scheme, which provides water for all new developments, as well as the Coega Industrial Development Zone. Phase 1 of the three phase expansion has been completed. Phase 2 of this project has commenced with implementation of three contracts which is scheduled for completion in February 2017. The NMBM has set aside funding to support these contracts. Phase 3 requires ±R240M (four contracts) for the completion of the entire expansion. The Department of Water and Sanitation (DWS) has via a directive appointed Amatola Water to implement Phase 3 which they will fund accordingly. Failing which, a phased approach after the completion of Phase 2 will have to be followed.

The figure below is an extract of the anticipated water requirements up to 2030 and approved in the Algoa Water Reconciliation Study (Department of Water Affairs, 2012).

The anticipated historic growth for Nelson Mandela Bay has been 2.3%; however, developments such as the Housing Programme and the Coega Industrial Development Zone would increase the medium-term growth pattern. As these developments are linked to the availability of funding and investor interest, it is difficult to predict this growth. The Nooitgedacht Low Level Scheme is there critical for investor confidence in the ability of the Municipality to support large investments.

From a spatial perspective, the land set aside for housing development in terms of the Housing Programme, and for large developments, such as the Coega Industrial Development Zone, shows that the biggest need for water is in the north/northwest of the metropolitan area, which confirms the need for the augmentation of the water supply from Nooitgedacht.

FIGURE 12: Predicted Water Demand of Nelson Mandela Bay



Sources: Department of Water Affairs, 2012; NMBM Infrastructure & Engineering Directorate (Water & Sanitation) 2011

3.2 Sanitation Master Plan (SMP)

Sufficient internal bulk infrastructure exists to connect all developments within the Municipality to sewers. Link sewers are installed, as and when required. Sufficient hydraulic capacity exists to meet the requirements of the current developments. All wastewater treatment works are being upgraded to meet future development and capacity demands, including effluent compliance. In this area the upgrade of the Fishwater Flats WWTW is the most significant one that will be carried out at an estimated cost of R1 billion.

In this area the upgrade of the Fishwater Flats WWTW is the most significant one that will be carried out at an estimated cost in excess of R1 billion. Coupled to this, is the upgrade and expansion of the Kelvin Jones Wastewater Treatment Works to meet the development needs in KwaNobuhle and Uitenhage.

Economic infrastructure for development such as the Coega Wastewater Treatment Works and the Coega Return Effluent Scheme, is needed to support the Coega IDZ. Further development of the IDZ will be hampered without funding for these projects. An investment of approximately R600M is required to complete the project. Planning has commenced on a new wastewater treatment facility to support the housing developments north of Motherwell and the Coega IDZ. This plant is planned for an ultimate capacity of 120 MI/d costing in the region of R1 500M. A start up capacity of ±40-50MI/d will be required.

Coupled to this is the need to eradicate the remaining 20 900 buckets that are still being used in the NMBM. The permanent solution is covered by the Master Plan, however, the interim measures are covered in the implementation strategy as set out below was approved by the Council on 3 October 2014:

- Short Term: Prong 1 [interim solution]: 7-10 years waiting period
- Medium Term: Prong 2 [House foundation & flush toilet]: 3-6 years waiting period
- Long Term: Prong 3 - expedite Integrated Human Settlement provision: 1-2 years waiting period

Note: Timeframes based on Human Settlements Programme.

Short Term Approach:

Providing communal ablution facilities in informal settlements until the communities are relocated to permanent serviced sites.

Medium Term Approach:

The NMBM is servicing ±4000 sites per year, but limited housing subsidies from the HSDG to build houses and thereby efficiently eradicate buckets. This option recommends the building of a house foundation on a serviced site, fitted with a bathroom containing a waterborne flush toilet connected to the conventional sewer system. In order to avoid the excessive cost, the toilet will be located at the final position in the anticipated top structure.

Long Term Approach:

Bucket eradication through the establishment of human settlements with:

- House
- Metered water connections
- Waterborne sewer connections.
- Other public amenities.

The speed of eradication is entirely dependent on the allocations of subsidies to the NMBM.

3.3 Asset condition

This data is an extract from a study (Infrastructure Maintenance Backlog Assessment) that was conducted in 2011.

TABLE 9: Water Backlog Maintenance

<i>Water Backlog</i>	Total Sum of Repair Cost	Total Sum of Estimated Replacement Value	Repairs as % of Replacement Value
Dams	R2,408,320.00	R768,141,482.00*	0.31%
Reservoirs	R21,519,671.43	R1,206,530,799.00*	1.78%
Water Treatment Works	R57,295,705.00	R656,586,425.00*	8.73%
Bulk Water Supply Lines	R12,949,500.00	R5,066,790,845.00*	0.26%
Pump Stations	R23,372,730.00	R127,379,002.00*	18.35%
Internal Reticulation	R530,370,326.24	R1,391,328,057.76	38.12%
Grand Total	R647,916,252.67	R9,216,756,610.76	

Source: NMBM Infrastructure & Engineering Directorate, 2011

TABLE 10: Medium-term Replacement/Refurbishment Plan

<i>Water Backlog</i>	< 2 yrs	< 5 yrs	ASAP	Monitor only	Record only	Routine	Total Sum of Repair Cost
Dams	R853,500.00	R264,800.00	R1,229,520.00	R0.00	R0.00	R60,500.00	R2,408,320.00
Reservoirs	R16,793,467.16	R295,000.00	R4,431,204.27	R0.00	R0.00	R0.00	R21,519,671.43
Water Treatment Works	R22,119,655.00	R7,301,250.00	R18,516,800.00	R359,500.00	R567,500.00	R8,431,000.00	R57,295,705.00
Bulk Water Supply Lines	R1,035,000.00	R1,982,500.00	R9,722,000.00	R210,000.00	R0.00	R0.00	R12,949,500.00
Pump Stations	R2,646,900.00	R477,000.00	R19,784,330.00	R120,000.00	R0.00	R344,500.00	R23,372,730.00
Internal Reticulation	R4,524,276.65	R4,040,984.18	R521,805,065.41	R0.00	R0.00	R530,370,326.24	
Grand Total	R47,972,798.81	R14,361,534.18	R575,488,919.68	R689,500.00	R567,500.00	R8,836,000.00	R647,916,252.67

Source: NMBM Infrastructure & Engineering Directorate, 2011

From the above table, it can be seen that the total maintenance backlog for water infrastructure for the next five years amounts to R647 916 252.

TABLE 11: Sewer Replacement Cost and Maintenance/Rehabilitation Plan

<i>Sewer Backlog</i>	< 2 yrs	< 5 yrs	ASAP	Monitor only	Record only	Routine	Total Sum of Repair Cost	Total Sum of Estimated Replacement Value
Pump Stations	R15,527,520.00	R1,111,000.00	R12,179,100.00	R81,000.00	R0.00	R826,700.00	R29,725,320.00	R120,724,600.00
Sewer Reticulation	R160,180,756.75	R167,349,637.23	R60,938,492.18	R211,084.03	R0.00	R422,168.05	R389,102,138.24	R2,110,840,274.00
Waste Water Treatment Works	R34,021,564.80	R5,046,233.80	R102,497,695.50	R687,320.00	R12,000.00	R487,290.00	R142,752,104.10	R1,979,608,789.00
Grand Total	R209,729,841.55	R173,506,871.03	R175,615,287.68	R979,404.03	R12,000.00	R1,736,158.05	R561,579,562.34	R4,211,173,663.00

Source: NMBM: Infrastructure & Engineering Directorate, 2011

The above information forms the basis of, the Engineering Design and Management Systems software data management system. This same management system is used to provide the GRAP 17 compliance data on asset management.

The figures indicate the serious financial implications of the lack of maintenance of water and sanitation infrastructure. The situation is deteriorating progressively each year, due to the inability of the Municipality to fund basic repairs and maintenance. To relieve the situation, the largest capital requirement is required in less than two years, for which there is insufficient budget.

3.4 Roads/Stormwater/Transport

The Comprehensive Integrated Transport Plan (CITP) as approved by the NMBM Council and Province, sets out the roads network requirements based on the MSDF. The CITP includes the Public Transport Plan, which is dealt with later in this report.

Road infrastructure, (including stormwater), is critical to support economic activities in Nelson Mandela Bay and has the capacity to support the current major public transport network routes. However, the Housing Subsidy (HSDG) does not allow for the tarring of internal and access roads. This results in increasing backlogs. The latter is of particular importance, as this also impacts on public transport.

Projects that have been identified for implementation are summarised in the table below. The table excludes backlog costs that were not budgeted for, due to affordability levels, and therefore does not indicate the actual funding requirements to eliminate infrastructure and maintenance backlogs over the five-year period.

TABLE 12: CITP Projects;

NO.	PROJECT DESCRIPTION	TOTAL PROJECT COST – five years (Rand)
1	Metropolitan Transport Planning	60,000,000
2	Roads required for additional capacity (short-term projects)	495,000,000
3	Roads required for access and connectivity (short-term projects)	545,000,000
4	Roads requiring rehabilitation (short-term projects)	925,000,000
5	Road maintenance projects	2,300,000,000
6	Bridge maintenance projects	485,000,000
7	Public transport projects	4,950,000,000
8	Non-motorised transport projects	320,000,000
9	Freight transport projects	100,000,000
10	Traffic and signage improvements (short-term projects)	105,000,000
11	Stormwater maintenance projects	755,000,000
GRAND TOTAL		6,287,700,000

The following table is an illustration of the roads, transport and stormwater backlogs and the maintenance budget required to address these backlogs:

TABLE 13: Maintenance Backlogs

	Total Operational Maintenance Backlogs	Annual Requirement to Eliminate Backlog	Operating Budget 2014/15	Operating Budget 2015/16	Operating Budget 2016/17	Operating Budget 2017/18	Operating Budget 2018/19
Roads & Stormwater			91,212,870	96,670,100	103,437,007	110,677,597	118,425,029
1 Subsidised Roads	595,000,000	110,000,000	6,458,360	6,830,240	7,308,357	7,819,942	8,367,338
2 Non-subsidised Roads	1,705,000,000	350,000,000	47,222,460	50,055,840	53,559,749	57,308,931	61,320,556
3 Rehabilitation of Stormwater Facilities	755,000,000	165,000,000	37,532,050	39,784,020	42,568,880	45,548,702	48,737,111
4 Road Signs & Markings	105,000,000	24,000,000					
5 Bridges	485,000,000	105,000,000					
6 Resurfacing of Roads	1,800,000,000	195,000,000					

The implementation of the projects depends on the availability of funds and is supported by the asset information from the Road Management System, the Stormwater Asset System and the Bridge Management System.

3.5 Electricity infrastructure

The NMBM has been reliant on electricity revenue to off-set the rates account and fund a portion of the institution's administration. Declining sales, increasing purchases, losses and theft are creating a much reduced gross profit margin.

The following table shows the decline in profit made from the sale of electricity since 2006:

TABLE 14: Declining electricity sales profit

<u>Financial Yr</u>	<u>Sales R</u>	<u>Bulk Purchases R</u>	<u>Gross Profit R</u>	<u>% Gross Profit</u>
2006/2007	-1 119 758 699.36	611 923 001.77	-507 835 697.59	45%
2007/2008	-1 196 274 998.66	663 170 083.73	-533 104 914.93	45%
2008/2009	-1 502 322 088.00	901 060 864.00	-601 261 224.00	40%
2009/2010	-1 807 750 905.00	1 184 203 683.00	-623 547 222.00	34%
2010/2011	-2 185 993 075.00	1 511 442 011.00	-674 551 064.00	31%
2011/2012	-2 711 116 309.00	1 915 652 397.00	-795 463 912.00	29%
2012/2013	-2 819 881 230.00	2 109 854 326.00	-710 026 904.00	25%
2013/2014	-2 963 172 710.00	2 168 503 520.00	-794 669 190.00	27%
2014/2015	-3 182 151 220.00	2 294 034 910.00	-888 116 310.00	28%

A replacement of electricity in cross subsidisation could be the Council's fibre optics and wireless networks. This is still in the stage of development, however, a pilot project for a commercial model for wireless broadband communication is under way in the Walmer Gqebera area. Initial results indicate that in excess of R75 million revenue per annum may be achievable.

The NMBM is a frontrunner in creating an enabling environment and attracting investment in the green economy sector. Currently two wind farms with the capacity to produce approx. 89 megawatts exist in the Metro. The Municipality played a large role in the success of these ventures and continues to support other public and private initiatives. The Municipality is committed to exploring alternative energy solutions to off set the impact of load shedding and the electricity crisis in South Africa.

There has been a decrease in Capital Budget provision for electricity services recently as a result of the financial difficulties the NMBM has been experiencing.

The current condition of the electrical infrastructure requires a major injection of funds and man power in order to bring it to acceptable conditions in line with national standards and the expectation of electricity users.

NERSA has indicated that electricity tariffs cannot be used as the sole source of income to fund capital and maintenance projects. It is thus vitally important that the NMBM finds additional sources of funding for its capital and maintenance projects.

The current electricity outages and challenges being experienced on the electricity distribution network is evidence supporting the above. A previous ring fenced allowance on the local tariff never realized the expected results of an income.

Funding is required to bring the electrical infrastructure back to an acceptable condition, so that it complies with the required national standards. A five year period is detailed below however funding should not stop after five years but should continue into further years to prevent the network from deteriorating again.

In relation to distribution, the existing Nelson Mandela Bay Municipalities Electricity network is a mixture aged and relatively new infrastructure. The larger majority being older with some equipment being 40 years plus old, It is therefore urgent that major upgrade, refurbishment and replacement takes place. The following is a reflection of the first 5 years of this work in order to start making inroads into this problem.

The total cost for the various categories is as follows:

Major Substations	R65 730 000
Major Transformers	R128 000 000
Minor Substations	R122 750 000
Overhead Lines	R52 500 000
Total over 5 years	R368 980 000

With regard to Projects and Planning, the main responsibility is to ensure that the network is capable of catering for present and future loads. It also undertakes project management of new projects from low voltage up to medium voltage. Below is a breakdown of the funding required for the short to medium term projects

TABLE 15::Electricity Projects

Immediate Projects	2015/16	2016/17	2017/18
Walmer Conversion			0.00
Charlo Conversion	3,000,000.00	3,000,000.00	0.00
Uitenhage Reinforcement	2,500,000.00	5,000,000.00	5,000,000.00
Walmer Town Hall Area	1,200,000.00	1,200,000.00	1,200,000.00
Humewood Conversion	3,000,000.00	3,000,000.00	3,000,000.00
Brickmakers Kloof	3,000,000.00	3,000,000.00	0.00
Struandale Conversion	5,000,000.00	5,000,000.00	0.00
Swartkops Village	0.00	2,000,000.00	2,000,000.00
Algoa Park Conversion	1,000,000.00	2,000,000.00	2,000,000.00
Deal Party	5,000,000.00	5,000,000.00	5,000,000.00
Rural Areas	3,000,000.00	3,000,000.00	3,000,000.00
Miscellaneous Mains	4,000,000.00	4,000,000.00	4,000,000.00
Township Development	3,000,000.00	3,000,000.00	3,000,000.00
Redhouse	0.00	1,000,000.00	1,000,000.00
Korsten	2,000,000.00	2,000,000.00	2,000,000.00
Total Cost	35,700,000.00	42,200,000.00	31,200,000.00

The Transmission section is responsible for designing and project managing the high voltage infrastructure in the NMBM. Below is a breakdown of costs for the implementation of all the high voltage projects approved by the Municipality.

TABLE 16: High Voltage Projects

Immediate Projects	2014/15	2015/16	2016/17	2017/18	2018/19
Swartkops 132				15,000,000	
Swartkops/Deal Party Line		450,000	3,000,000	10,000,000	
Deal Party 132kV Substation		2,000,000	4,000,000	10,000,000	5,000,000
Nivens Drift Substation		1,000,000			
San Souci-Nivens Drift Line		30,000,000	15,000,000		
17 th Avenue Substation		4,000,000	4,000,000	1,000,000	40,000,000
Lorraine-17 th Avenue Line		500,000	1,000,000	20,000,000	
Chelsea					
Bloemendal					
Summerstrand					
Chatty Buszone					
Chatty-Chelsea 3 rd 132kV Feeder					
Chelsea 132/22 2nd transformer			14,000,000		
Aloes 3 rd Transformer					14,000,000
Fitchers Corner		5,000,000			
Kragga Kamma Refurbishment			10,000,000	10,000,000	20,000,000
132kV CT Replacement		3,000,000	3,000,000	3,000,000	3,000,000

NMBM network is characterized by old mechanical relays. The existing mechanical relays are obsolete. The aim is to replace old mechanical relays with new Intelligent Electronic Devices.

The average cost for relay replacement is R25 000 000.00 to replace the old mechanical relays in the NMBM network. This financial year only R1 000 000 was allocated to this program. The R1 000 000 will only replace about 25 relays in the

system and will leave a deficit of 940 relays. In the three year program R8 333 000 annually will be needed to facilitate this relay replacement program

4. TRENDS AND DEMAND FOR RESIDENTIAL INFRASTRUCTURE

The NMBM has, over the past decade, successfully provided a steady stream of RDP housing to the order of approximately 77 000 units from 1997 to 2013. The current provision of RDP housing is unsustainable and there is a need to diversify housing development initiatives.

The NMBM Council on 6 December 2012 adopted the Human Settlements Framework 2030 that sets out the strategic vision for the implementation of the new approach towards achieving Integrated Human Settlements aimed at the following objectives:

- Upgrade Informal Settlements and formalise backyard dwellings.
- Ensure all households have access to basic services.
- Plan for transformation, inclusion and resilience (to overcome spatial inequality).
- Increase residential densities and develop rental housing at scale.
- Renew priority urban zones (i.e. townships and inner-city).
- Improve organisational alignment and fitness.
- Support residential property functionality and transformation.

4.1 Land and housing analysis and project demand for housing by income group, location and cost

In order to create a better understanding of residential demand and supply, a joint exercise between the NMBM, the Housing Development Agency (HDA) and the MBDA was undertaken in 2012, conducted by Shisaka Development Management Services in collaboration with Bagale Consulting (Pty) Ltd.

The following table shows the socio-economic distribution of local households from 2007 to 2020:

TABLE 17: Existing and Projected Housing Circumstances (2007 to 2020)

Existing & Projected Housing Circumstance 2007 - 2020 (No of H/Hs)								
Housing Circumstance	R0 - R3,499	R3,500 - R6,999	R7,000 - R9,999	R10,000 - R14,999	R15,000 - R19,999	R20,000 - +	Total	%
Formally Owned	73,397	23,759	12,633	17,452	8,679	29,563	165,483	52%
Formally Rented	35,591	9,918	4,903	5,993	3,272	5,675	65,352	20%
Informal Settlement	31,239	4,710	1,120	407	308	216	38,000	12%
Backyard Dwelling	33,765	7,396	3,460	2,975	967	443	49,006	15%
Other	1,987	220	185	123	162	117	2,794	1%
Total (Existing Housing Circumstances -2007)	175,979	46,003	22,301	26,950	13,388	36,014	320,635	100%
New Households - 2020	14,300	3,900	1,820	2,080	1,040	2,860	26,000	8%
Grand Total Households	190,279	49,903	24,121	29,030	14,428	38,874	346,635	108%
%	56%	14%	7%	8%	4%	11%		

Source: Shisaka Development Management Services, 2012

The data in the table above is based on data modelled by the Department of Economics at the University of Stellenbosch, utilising the Community Survey of 2007. This data was revised in accordance with a study undertaken in 2006 by Charles Simkins for the NMBM and verified through primary research undertaken by the firm Development Partners (Demographic Update for the NMBM – 2007). The estimate of new households was agreed in discussion with officials of the NMBM.

Of note is that 70% of the existing and projected population will depend on some form of subsidised housing in the future.

The following table indicates the proposed housing programmes to address the needs. Nine potential delivery solutions have been identified in accordance with National Government programmes. Of significance is the land need identified. The table shows that in general there is not a great demand for bulk land acquisition, beyond what is currently owned by the NMBM.

TABLE 18: Summary of Land Requirements by Housing Programme

Programme	Current location	Res 1H/G	Res 1S	Res 2/3	Res 3F	Total land unit required (ha)
Programme 1: <i>In Situ</i> Upgrade of Informal Settlements	22,040		15,960			38,000
Programme 2: Backyard Dwelling Consolidation	44,100		4,900			49,006
Programme 3: New Supported Site & Service			14,300			14,300
Programme 4: Housing Supply (rental & subdivisions)	5,300					5,300
Programme 5: Inner City Rental				900	2,500	3,400
Programme 8: Housing Developer Driven Support programme		3,000				3,000
Total requirements (units)	71,440	3,000	35,160	900	2,500	41 560
Projected Land capacity (units) (Type A)	-	26,096	50,597	5,909	11,526	94,128
Excess capacity (units)	-	23,096	15,437	5,009	9,026	52,568

Source: Shisaka Development Management Services, 2012

The map attached as Annexure "B" shows private sector, municipal and public private partnership proposals for the development of different types of housing in Nelson Mandela Bay. This includes the affordable housing sector.

In terms of the Capacity Support Implementation Plan, a land and housing market trend analysis will be done with a view to develop proposals to revise the NMBM housing policy in a manner that is more sustainable and meets spatial restructuring objectives. This work will verify and supplement the work described above.

5. TRENDS AND DEMAND FOR COMMUNITY AND SOCIAL INFRASTRUCTURE

5.1 Quantifying backlogs and future demand in relation to commitments secured by relevant provincial/national departments or entities

The table below relates to the delivery of social amenities. It shows actual delivery costs, it includes the reality of housing costs (at minimum), internal reticulation, bulk servicing, social amenities and retail opportunities. It is concluded that the delivery cost per erf is approximately double the subsidy amount allowed, if community infrastructure is considered.

TABLE 19: Cost of Community Infrastructure

	Cost per Erf	Total Cost (Erf cost X 72411)
BACKLOGS (Informal and backyard shacks): 72411		
Housing Expenditure	R 110,654	R 8,012,566,794
Indicative First Order Summary - Social Facilities		
<i>Schools</i>	R 20,000	R 1,448,220,000
<i>Clinics</i>	R 11,200	R 811,003,200
<i>Police Stations</i>	R 4,800	R 347,572,800
<i>Sports Facilities</i>	R 1,600	R 115,857,600
<i>Community Centres</i>	R 6,400	R 463,430,400
<i>Libraries</i>	R 1,600	R 115,857,600
<i>Parks and Recreation/Greening</i>	R 1,600	R 115,857,600
<i>Private Investment - Retail</i>	R 20,000	R 1,448,220,000
Total - Social Facilities	R 67,200	R 4,866,019,200
NMBM Internal Reticulation (Basic Scraped Roads, Water & Sanitation)	R 23,211	R 1,680,731,721
NMBM Electricity Reticulation	R 9,912	R 717,758,158
Total Housing, Social Facilities & Internal Reticulation	R 210,977	R 15,277,075,873
NMBM Bulk Reticulation (Bulk water, sewer and roads and stormwater upgrade)		R 10,557,000,000
Total Housing, Social Facilities and Bulk Infrastructure	R 356,770	R 25,834,075,873

Note: About R25 000 per erf must be added to tar the roads and provide stormwater control.

Buildings, the natural environment, vegetation and open spaces are important for creating liveable environments. In addition, education and safety and security, well-functioning services and adequate facilities are required by communities for proper living. To deliver the full spectrum of services and amenities with housing opportunities, good intergovernmental relations are required, as all spheres of government are involved in delivering these products.

An impediment to the delivery of fully integrated and sustainable human settlements is the large developmental backlogs, which put pressure on the Capital Budget. The backlog is calculated based on the 72 411 housing unit backlog.

Approximately R13,4 billion is needed over and above the HSDG to eliminate the housing backlog of 72 411 units to fully integrated human settlements standards. The amount to eliminate the total housing backlog and provide all amenities is R25,834,075,873.

The Electricity and Energy Directorate currently provides a capital budget excluding grant funding of R16 mil per annum to provide for new and refurbishment of existing public lighting for social amenities.

5.2 STATUS QUO OF CEMETERIES IN NELSON MANDELA BAY

Currently there are 36 Cemeteries in the Nelson Mandela Bay Municipality of which 24 are closed and 12 are still active. It is anticipated that the Metro, like many cities will run short of burial space.

It should also be taken to account that acquiring of land for burial has its own challenges as the land has to meet certain criteria to qualify as being suitable for the

purpose for example Environmental Impact Assessments, distance from residential area etc. Another challenge could be costs of buying privately owned land if there is no suitable municipal land.

Sufficient funding and planning is required in existing cemeteries to ensure that the remaining land is cleared, levelled and provided with concrete berms so that grave numbers can be allocated to undertakers who constantly apply for graves to conduct services for the deceased families. If this is not done, bodies would have to be stored in mortuaries while the Municipality is still sourcing funding to do the necessary preparations.

Vandalism, theft and stray animals are a challenge due to lack of fencing and monumental work gets stolen and destroyed and residents encroach on Cemetery land because it is not demarcated properly.

6. TRENDS AND DEMAND FOR TRANSPORTATION

The NMBM is aware of the experiences of cities that are implementing IPTS projects.

Those cities are currently operating at deficits (revenue is not covering the direct operating costs). The NMBM is currently undergoing a process of rethinking and remodelling the implementation of the IPTS project as previously conceived.

This is to ensure that the city can afford to provide a new public transport system. To that end, a team from the Cities Support Program of National Treasury has visited the NMBM in the course of 2015 to explore ways in which the city can move forward taking into account the history of the project, especially the fact that the city has delayed in implementing the IPTS project.

A workshop to assist the new executive leadership in developing the best strategy for public transport services was held. Parallel to this process, the National Department of Transport and the NMBM are currently engaging on mapping a recovery plan for the project.

The recovery plan will detail the process that the NMBM will follow which entails undertaking public transport operator surveys on affected priority routes (corridors) from Cleary Park and Njoli to the PE CBD. The data collected will be used to finalise operational plans on these affected routes and the operational plans will in turn be used to finalise financial plans by January 2016. A report on these routes will then be placed before Council for adoption.

If these plans are approved by Council, the NMBM will target a roll-out of Public Transport Services from Cleary Park to PE CBD from June 2016 and from Njoli to PE CBD in 2017.

6.1 Trends in demand for transport services by mode and income group

The Transport Travel Survey undertaken in 2009 indicates an estimated total of 1.33 million person trips per day in the municipal area.

TABLE 20: Person Trips per Day (2009)

MODE	PERSON TRIPS	% (ALL MODES)	% PRIVATE/ PUBLIC	% PUBLIC MODES
Private vehicle	739 746	56	57	-
Taxi (all types)	372 866	28	43	67
Bus	188 465	14		33
Walk	23 974	2	-	-
Total	1 325 051	100	100	100

Source: SSI Engineers & Environmental Consultants, March 2011

It should be noted that this information excludes the number of passenger trips by commuter trains; only two scheduled train services a day are in operation between Uitenhage and the Port Elizabeth CBD. The train service is accessible to a relatively small number of residents within walking distance of the stations, because the railway line was originally constructed as a freight line, located away from the residential areas.

A future public transport route between Uitenhage and Port Elizabeth would alleviate this problem. PRASA is well advanced in the planning of the Motherwell to Port Elizabeth Commuter Rail Corridor.

Walking is the predominant mode of travel in low income areas, while private transport is the predominant mode used in the Port Elizabeth Central/Western suburbs and Uitenhage/Despatch areas. In the Northern Areas (Gelvandale/Bethelsdorp), there is an almost equal modal split between walking and private and public transport.

Contracted bus services and minibus taxis are currently the predominant public transport service providers in the municipal area.

6.2 Implications of ITP and IPTS for land use management

According to the Technical Transport Planning Guidelines for CITPs prepared by the Department of Transport, the MSDF should be influenced by the CITP. Specifically, the alignment of an Integrated Public Transport System (IPTS) should inform land development, thereby providing proposed developments access to existing and operational public transport facilities. Additionally, the CITP can indicate the necessary intensification requirements of commercial, residential and activity land-uses that would make an IPTS viable. Low density, dispersed developments beyond the reach of public transport corridors have numerous negative impacts on the transport system, including long trip-times to public transport nodes, poor non-motorised transport (NMT) opportunities and the promotion of private vehicle use. These developments should consequently not be prioritised for development until they are linked to the public transport system or employment opportunities are provided within or close to the development and urban densities are increased to sustainable levels.

The MSDF, and the individual project proposals specified by the MSDF, should be evaluated according to the transport implications of the project alternatives. Selection of project alternatives should be made with reference to the performance of the proposal and transport system in terms of the following objectives:

- Integration
- Safety
- Environmental Impact
- Economy
- Accessibility

The MSDF should be informed by the CITP in such a way as to meet the five above mentioned objectives. Poor integration of land-uses and inadequate accessibility to work opportunities by public transport negatively impact the economy and environment through long average travel times, high fuel usage and wasted time.

One of the focal points of the MSDF is to develop corridors along major transport routes. These corridors are to be flanked by mixed-use development and will be supported by improved public transport routes, such as the Khulani Corridor that

extends from the NMBM 2010 Stadium to Njoli Square and Motherwell. These corridors thereby promote accessibility to a number of amenities, facilities and jobs, as well as improve mobility within the City.

The strategic development projects included in the MSDF implement the core development focus areas. A number of projects, such as the Njoli Square Development, the Motherwell Urban Renewal Programme, and the Zanemvula Project to name a few, include strategies to promote mixed-use development, increase urban density and infill housing on currently vacant land, especially along transport corridors.

A core component of the Urban network Strategy and identified Integration zones is to promote transport oriented developments.

Improved integration is assured by promoting public transport development, which is made viable by increasing housing densities as more people can make use of fewer public transport stops. The safety of users is enhanced by upgrading the road reserves as well as through densification: by placing more residences and businesses adjacent to the access routes, human presence on the street is increased thereby enhancing pedestrian security. Environmental impact is mitigated by reducing travel distances and time spent travelling by promoting mixed-use developments and public transport. Dense, mixed-use neighbourhoods allow economic opportunities and community facilities to be located closer to a greater number of residents, thereby making the provision of facilities more cost effective. Accessibility to public transport and facilities is also improved by dense, mixed-use development strategies on defined transport corridors.

An area which was lacking in a number of projects is specific reference to the safety and security of pedestrians, cyclists and wheelchair users and community segregation by barriers such as high order roads and rail lines. This needs to be addressed in the MSDF under review for the 2015/16 financial year.

Overall, however, the SDF performs favourably in terms of its implications on the transport system, as evaluated in terms of the five objectives for good integration of a spatial development framework and the transport system that ultimately supports it.

City Support Programme of National Treasury has, since late 2014, been supporting the NMBM with a view to determine whether the Integrated Public Transport System

that is being planned is affordable and sustainable. To this end, the World Bank was appointed by National Treasury to assist the NMBM. As mentioned above the entire IPTS system as conceived up until the 2014/15 BEPP is under review.

7. TRENDS AND DEMAND FOR SUSTAINABLE DEVELOPMENT

7.1 Ecological infrastructure and urban growth and development

In terms of the United Nations Development Programme (UNDP) paper on *Sustainable Development: From Brundland to Rio 2012*, sustainable development is defined as development which meets the need of the present without compromising the ability of future generations to meet their own needs.

The South African Local Government Association (SALGA) explains in the publication entitled *An Introduction to Municipal Planning within South Africa* (2011) that sustainable development is the utilization of resources in such a way as to meet human needs.

It is clear that sustainable development revolves around the utilization of resources and the needs of people. In a local context, sustainable development then relates to all resources, ecological and others, which form part of service delivery. Sustainability in development should therefore be an all-encompassing concept that is directly linked to how municipalities plan and deliver services.

The South African National Framework for Sustainable Development (NFSD) was approved in 2008, and is the precursor to the National Strategy for Sustainable Development and Action Plan 2011-2014 (NSSD 1), approved by Cabinet in 2011. In the NSSD 1, sustainable development is accepted as a long-term vision for the country's prosperity. Through 5 key priorities, it sets out to guide the implementation of all three tenets of sustainability (environmental protection, social equity and economic efficiency).

Priority 3 relates to the green economy and provides interventions to unlock the potential of this "mindshift" in developmental thinking. Infrastructure, and indeed the

built environment, must become sustainable to serve both the needs of present and future communities.

Interventions at a local level include implementing a "Green Building Regulator Enforcement Programme" with Green Building by-laws, as an example. The NMBM's IDP provides a strong focus on Local Economic Development and job-creation projects for waste minimization, beautification and education and awareness-raising for residents on climate change. All the five priorities of the NSSD 1 can guide local government in making decisions on how to create sustainability in both human settlements and the built environment.

How the ecological (natural/green) infrastructure supports and constrains urban growth and development; procedures; standards; and performance

The NMBM is divided into clusters, based on geographic location and for the purpose of development planning. Within these clusters are integration zones, which contain growth hubs, which are centers of economic growth and catalysts for local economic development. These hubs are intended to be linked by easily accessible transport modes in order for the city to become more integrated.

The National Environmental Management Biodiversity Act, Act 10 of 2004 and other environmental legislation require municipalities to develop strategic environmental planning tools (i.e. Strategic Environmental Assessment, Environmental Management Framework and Bioregional Plan, Greening & Beautification Plan) and management programmes aimed at informing and guiding land use planning and decision-making processes, thereby promoting sustainable biodiversity management.

The Municipal Systems Act, Act 32 of 2000 which states that municipalities must deliver their services in a sustainable manner also requires that the environmental impacts of the Municipal Spatial Development Framework (MSDF) be evaluated. In 2007, the NMBM completed a systematic biodiversity planning assessment process that spatially represented a network of its biodiversity resources and processes. This process of developing the municipality's systematic biodiversity assessment led to

the Bioregional Plan (gazetted in March 2015). The Biodiversity layer of the Bioregional Plan informed the MSDF.

The biodiversity network represented within the MSDF was later used to inform the Environmental Management Framework (EMF) at a Metro-wide scale in 2009. It is used to guide development to appropriate areas and limits development in environmentally sensitive areas. Geographical areas were identified and mapped to facilitate a reduction in the legal requirements and streamline the Environmental Authorisation process at a strategic level. This process ensures that biodiversity priorities are taken into the sector planning of the NMBM. It is anticipated that the review and refinement of the Metro's EMF will be completed in the 2015/16 financial year.

FIGURE 13: Critical Biodiversity Areas



Source: NMBM Metropolitan Spatial Development Framework, 2015

The NMBM Bioregional Plan is aimed at conserving biodiversity at a regional level and is primarily concerned with guiding land use planning and decision making

through improving the legal standing and consideration of Biodiversity/Conservation areas by all organs of state. This plan is the first that a municipality has developed and gazetted in South Africa, and is legally binding for development assessments within the NMBM. The National Environmental Management Act 107 of 1998, and the updated Environmental Impact Assessment (EIA) regulations and Listing Notices of 2014 also make specific mention of threatened ecosystems, Critical Biodiversity Areas, Bioregional Plans and systematic biodiversity plans to act as EIA triggers, mining permits, Air Emissions Licenses (AEL), forestry permits, and Water Use License (WUL) triggers. Development is therefore controlled legislatively, through the requirements for these licenses; The Bioregional Plan is currently under review and is expected to be completed by the end of the 2015/2016 financial year.

To ensure the alignment of service delivery objectives, governance structures are critical to achieving a common-ground approach to the mandate of local government.

The incorporation of municipal and provincial spatial planning instruments is encouraged as a means of integrating and aligning of strategic sustainability priorities. The overlaying of municipal spatial development frameworks, the conservation status layers, and collaboration with Environmental Management and other relevant Directorates are all efforts which speak to this integration and alignment.

A Corporate Environmental Impact Assessment Task Team (CETT) and Bilateral meetings between the Nelson Mandela Bay Municipality and the Provincial Department of Economic Development and Environmental Affairs (DEDEAT), the Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Water and Sanitation (DWS) are further instruments employed towards ensuring integration at social, economic and environmental levels.

The National Environmental Management: Integrated Coastal Management Act, Act 24 of 2008, allows for the development of a Municipal Coastal Management Programme. This programme calls for an integrated, coordinated and uniform approach to coastal management within the Metro by all stakeholders in ensuring the sustainable use of coastal resources. The programme in the form of the NMBM Coastal Management Plan has been updated in 2014 and was subjected to a public

review process. The Coastal Development Line (hazard lines) study has been completed in association with the Eastern Cape Provincial Department of Economic Development, Environmental Affairs and Tourism (DEDEAT). The delineated development lines (hazard lines) will, once promulgated, be used to inform appropriate development along the coastline of the Metro by means of specific regulations as well as the updated Coastal Management Programme and other sector plans of the NMBM. These plans are due for completion in the 2015/16 financial period.

The natural resources planning, inventory and operational management of the NMBM's nature reserve network and green infrastructure network is concerned with conserving ecosystem values, functions and the restoration of natural systems that underpin watershed health and hydrological integrity supporting natural resources necessary for agriculture and aquaculture.

Municipal policies, such as the Integrated Environmental Policy and the Integrated Energy Plan, are specifically geared to address the response and resilience of all communities to climate change impacts. The NMBM now has an action-based response to climate change, in the form of the Climate Change and Green Economy Action Plan (2015). This municipal response uses a scientifically-sound climate projection, a collaborative vulnerability assessment and specific sector interventions to respond to the challenges of climate change, but also create sustainable economic opportunities (green economy) from these responses.

Cemeteries although sometimes overlooked in land use planning are one of the main competing land uses. Land use for cemeteries is unsustainable due to its sprawling nature in urban areas. Suitable land is scarce due to the requirements for burial sites. Breaking through traditional burial methods, perceptions and beliefs is a challenge to exploring alternative methods. The NMBM therefore requires an overarching Master Plan for cemeteries which would be underpinned by a rigorous public participation process. This Plan would guide the municipality on cemetery development as well as provide guidance on alternative burial methods.

Open public spaces are a legislative right for citizens. They are however increasingly being lost to development. These "green lungs" do not only add aesthetic value but also help mitigate the urban heat island effect, filter air and reduce runoff. The open public spaces are opportunities to create integrated communities, promote non-motorized transport modes, and create liveable, breathable cities.

The Integrated Environmental Policy of 2012 (currently under review) specifically, provides guidelines for the Land Use and Planning sector of the Municipality, which (amongst others) are to:

- Undertake spatial planning that reduces urban sprawl, promotes densification, mixed use development, and corridor developments, and
- Encourage green buildings and sustainable design and development practices.

On the 28th September 2015, a green building was opened to the public in the Grootkloof area of Van der Kemps Kloof. Called the Grootkloof Education Center, it houses a rainwater harvesting tank, solar powered heating & lighting systems, gas powered cooking systems and has multi-use spaces.

The NMBM has set out to achieve the following sustainable goals:

- Providing an affordable and secure energy supply that increases the development and use of renewable, less toxic and less carbon intensive sources.
- Providing affordable and secure energy for all, while minimising demand and consumption.
- Increasing the percentage of energy derived from renewable sources.
- Policies promoting the use of clean and efficient energy.
- Achieving greenhouse gas emissions and air pollution reduction in both municipal operations and the community at large, with attention given to the reduction and prevention of inequalities.

- Improving the response and resiliency of all communities to climate change impacts on the built, natural and social environments, with the emphasis on public health and historically underserved populations.
- Ensuring that outdoor air quality is healthy for all segments of the human population and the natural environment.

The current areas of focus for climate change in the city include:

- Greenhouse gas emissions tracking and reduction.
- Promoting current initiatives, whilst exploring municipal and public awareness actions.
- Addressing the roles and responsibilities of every directorate in climate change related issues.
- Responding to vulnerability and aligning it with adaptation.
- Education and awareness.
- Ensuring alignment with provincial and national strategies and actions, and managing in-house policies and strategies.

In 2013, a municipal Community Awareness Campaign, called the Go Green Advocacy Programme, was launched. This Programme was aimed at providing residents with the resources they need to think critically about and address environmental problems and solutions, and include the environment as an important consideration in their work and daily living. This awareness programme built on the Go Green Campaign, which was initiated in 2008 to showcase municipal-led projects and initiatives which demonstrated sustainability. Approximately 108 000 households were targeted in face-to-face information sessions.

The Integrated Energy Plan aims to provide a high level perspective of the energy trends and needs of Nelson Mandela Bay over the next 10 years. This plan is being superseded by the State of Energy Report, which is expected to be finalized in the 2015/2016 financial year.

Another tool which was approved by the NMBM Council in 2009, is the Green Procurement Implementation Strategy, which is aimed at moving the NMBM toward the inclusion of environmental criteria in its Supply Chain Management Policy in order to encourage the development and diffusion of goods and services which have the least impact on the environment.

An Environmental Management System (EMS) is in operation at the Nelson Mandela Bay Multi-Purpose Stadium. This Stadium was built on Green Goal principles, sourced from the 2006 FIFA World Cup held in Germany. An EMS is a management tool aimed at reducing and managing the environmental impacts of activities, and is a condition of the Stadium's environmental authorization.

The NMBM adopted the national standard for energy efficiency or SANS 204 in municipal buildings, which greatly raised awareness of the consumption of energy resources and the type of energy resource that is being used.

The Disaster Management Sub-Directorate (Safety & Security Directorate) has identified in its' Risk Assessment (2010) that the highest rated risks to the NMBM are Hydro-metereological (Floods & Storms) and Hydro-metereological (Droughts), and then Environmental Degradation (in order of importance). This has implications for city planning. Preventative and disaster-proof city planning and design must become the norm in future where the effects of climate change are not linear or always predictable.

The Integrated Waste Management Plan (IWMP) of the Municipality also galvanizes the legislative understanding of the waste hierarchy (Reduce, Reuse, Recycle). The IWMP objectives revolve around the inclusion of the waste hierarchy during the collection, cleansing, transportation and disposal of waste products. The second generation of the IWMP (in 2015) has led to the inception of the Waste Diversion and Beneficiation Project for the Municipality, which intends to divert waste-to-landfill and create secondary waste economies.

This Metro-wide project is aimed at the betterment of the waste management infrastructure, processes and existing systems to offer better efficiency and offer operational cost savings to the NMBM.

Key to this project is the implementation of waste management infrastructure which is to be constructed on strategically located sites including the possible construction of a waste-to-energy (WtE) plant. A detailed feasibility study has been carried out recently, which has identified the project to be economically, environmentally, technically and socially feasible. The project may introduce approximately 300 new sustainable jobs.

The Waste Management infrastructure for this project comprises the construction of what is described as “Waste Parks” including waste transfer stations, waste sorting and recovery facilities (also called Materials Recovery Facilities – MRF’s), and waste treatment which may include composting, anaerobic digestion (AD), aggregate crushing and sieving and waste-to-energy (WtE).

Five sites were identified for Waste Management Infrastructure and the establishment of “Waste Parks” within the NMBM. These are:

- Greenbushes - Approximately size 200 x 220m
- Markman (Motherwell) - Approximately size 400 x 1000m
- Koedoeskloof - Approximately size 330 x 150 m
- PPC West - Approximately size 46ha
- Coega - CDC Zone 5

The sites earmarked for the “Waste Parks” are PPC West and Koedoeskloof, whereas Coega is earmarked for a waste-to-energy plant site only and Waste management infrastructure is earmarked to be installed and constructed at Greenbushes; Markman/Motherwell; PPC West; and Koedoeskloof.

As one example of infrastructure’s ‘adaptive capacity’ (ability to respond to changes in conditions), the Water and Sanitation Sub-Directorate has embarked on an

externally-funded project to increase the energy and water efficiencies of 74 pump stations throughout the Metro. These pump stations are under strain due to population increase and cyclical droughts.

8. IMPACT OF SECTOR TRENDS AND DEMAND ON SPATIAL FORM

The spatial challenges identified, are not experienced in Nelson Mandela Bay only, but are common problems throughout South Africa and include:

- Fragmented socio-economic spatial development (an apartheid legacy).
- Urban sprawl.
- Low densities.
- Lack of integrated transport planning, e.g. car-dominated planning.
- Misalignment of transport and land-use planning.
- Poor civic infrastructure, especially in disadvantaged areas.
- Lack of housing typologies for lower income groups.
- Lack of mixed use and tenure options in lower income areas.

In order to address the above fragmented spatial form, a number of initiatives have been introduced and implemented to a varying degree in Nelson Mandela Bay. These include the following:

- Comprehensive Integrated Transport Plan, to ensure accessibility.
- Defining an urban edge and densification policies.
- Focus on the civic infrastructure in the public realm.
- Metropolitan Spatial Development Framework, including Local Spatial Development Frameworks and Sustainable Community Planning.
- NMBM Housing Programme.
- Social housing implementation.
- Land Use Management System revision.

- Retention of erven in new low income areas for private sector, residential and mixed use.
- Integrated Development Matrix.
- Urban simulation modelling, with a view to refine certain shortcomings identified during the first round and to incorporate financial modelling for the long-term financial sustainability strategy.
- Formulation of a long-term desired shared vision and mission.
- Development of the Urban Network Strategy and Integration Zones

Some of these interventions have been successful; however, the following aspects have been identified as barriers to the effectiveness of the interventions:

- The lack of funding to tar gravel roads and provide access to new areas and internal roads is a major inhibiting factor, as banks will not finance commercial developments unless they are located on a tarred road. Although land is made available for mixed-use development, this deters private sector development in newly developed residential areas.
- Private sector developers constantly pressurise the NMBM to relax the urban edge. Arguments such as the need for job creation and economic diversity are used to motivate developments. These developments cause leap-frog developments and unsustainable bulk infrastructure.
- The acquisition of well located private land at market related prices is a prolonged process, for which there is insufficient funding.
- Growth in the local population and economy is very slow. The implementation of development and the steering of development initiatives to priority areas can therefore take place over the long term only.
- For fully integrated and sustainable settlements, quality civic infrastructure in low income areas is needed. This includes the quality of roads, pavements, cycling infrastructure and civic amenities. There is no funding for this provision from the current grant framework, and the NMBM is unable to fund this infrastructure itself. The result is that new lower-income township areas are developed, with noticeably deficient civic infrastructure and amenities.

- The Spatial Planning and Land Use Management Act (SPLUMA) has recently been promulgated. It is not yet yielding visible results although it is expected that changes can be anticipated in the 2015/16 financial year.
- Intergovernmental coordination is a major challenge with regard to integrated and sustainable human settlements. This is because facilities and services that are to be provided by the provincial sphere of government are not being properly coordinated in the development and redevelopment of human settlements areas.
- In certain projects in the Municipality, such as Zanemvula and Motherwell Extensions 29, 30 and 31, extra-ordinary arrangements have been made to secure the necessary intergovernmental coordination. This, however, does not happen as a matter of course in all projects. The Integrated Development Matrix was specifically developed to identify, at an early stage, the roles and funding requirements of all actors in the development of human settlements and to secure commitment.
- The Provincial Department of Transport does not contribute adequately to the maintenance of provincial roads in the Metro.
- The perpetuation of RDP housing with low densities remains a challenge. There is a need to change the mindset of communities and other roleplayers to adopt alternative sustainable solutions.
- Densification along corridors is slow due to the very slow growth being experienced in the Metro coupled to the majority of development being in the subsidized housing sector.