Municipality of Swakopmund Structure Plan

2020-2040
Municipality of Swakopmund Structure Plan 2020-2040

I, .................................................. in my capacity as ............................................ hereby declare that, the Swakopmund Structure Plan was approved and adopted by the Swakopmund Municipal Council vide Resolution ......................... of 19..........

Signed at ................................................... this ........... day of ................................................. 2020.

___________________

(CEO: Swakopmund Municipality)

In ......................... 2020 Electronic copies of the document were provided to the following:

a) Ministry of Urban and Rural Development (MURD)
b) Ministry of Environment and Tourism (MET)
c) Ministry of Land Reform (MLR)
d) Roads Authority (RA)
e) NamPower
f) NamWater
g) TransNamib
### Table of Contents

**Foreword** ......................................................... 5  
**Acknowledgements** ............................................ 6  
**Executive Summary** ............................................ 7  
**Acronyms and Abbreviations** .................................. 8  
**Glossary of Terms** .............................................. 8  
**Section I: Background Information and Analysis** ........... 10  
  
1. **Introduction** .................................................. 11  
1.1. Objective of a Structure Plan ................................ 11  
1.1.1. Employment patterns and income ......................... 11  
1.1.2. Rationales for the formulation of the structure plan ... 11  
1.1.3. Planning Approach ........................................ 13  
1.1.4. Methodology and Project timeline ........................ 14  
1.1.5. Document structure ....................................... 15  
1.2. Functions of Swakopmund ................................. 15  
1.2.1. Historic overview and origin of town ..................... 15  
1.2.2. Role of Swakopmund within the national and regional framework .................................................. 16  
1.2.3. Physical settings of Swakopmund ......................... 17  
1.3. Swakopmund Townlands boundary ....................... 17  
1.4. Socio-economic drivers of Swakopmund ............... 19  
1.5. Geography ....................................................... 19  

**Chapter 2: Demographic** ........................................ 20  
  
2.1. Population statistics ....................................... 20  
2.1.1. Employment patterns and income ......................... 20  
2.2. Spatial characteristics ..................................... 22  
2.2.1. Industry ..................................................... 22  
2.2.2. Economy and Commerce ................................ 23  
2.2.3. Housing ..................................................... 23  
2.2.4. Education ................................................... 24  
2.2.5. Health ......................................................... 24  
2.2.6. Heritage ..................................................... 25  
2.2.7. Tourism, Leisure and recreation ......................... 25  
2.2.8. Community facilities ..................................... 26  
2.2.9. Conservation ................................................. 27  
2.3. Urban settlement analyses (SPC/WHUDA/Lithon) ....... 29  
2.3.1. Spatial land use analysis ................................ 29  
2.3.2. Disparity between communities ......................... 30  
2.4. Infrastructure (Status quo) ................................ 30  
2.4.1. Transportation and road network ......................... 30  
2.4.2. Water infrastructure ...................................... 34  

**Chapter 3: Planning informants** ................................ 45  
3.1. Statutory framework ........................................ 45  
3.1.1. Namibian National Plans ................................ 45  
3.1.2. Swakopmund institutional and regulatory framework ... 46  
3.2. The aim and objective of the Swakopmund Structure Plan ... 49  
3.3. Cost of current housing strategies ......................... 50  
3.4. The Fourth Industrial Revolution (4IR) .................. 50  
3.5. Economy and investments .................................. 50  
3.6. Planned and ongoing developments ......................... 51  
3.7. Basic assumptions .......................................... 51  
3.8. Natural Environmental factors ............................ 51  
3.8.1. Climate ..................................................... 51  
3.8.2. Precipitation .............................................. 52  
3.8.3. Wind ......................................................... 52  
3.8.4. Geomorphology, Topography and drainage .......... 52  
3.8.5. Biodiversity .............................................. 54  
3.8.6. The Dorob National Park ................................ 54  
3.8.7. The Coastline ............................................. 55  
3.8.8. The Swakop River ........................................ 55  
3.8.9. Bird Areas ................................................. 56  
3.8.10. Lichen Fields ............................................. 56  
3.8.11. The small-holdings ..................................... 57  
3.8.12. Existing Public Open Spaces, Sport Fields and Green Areas 57  
3.8.13. Corridors and connectivity ............................. 57  
3.8.15. Waste management and landfill ....................... 58  
3.8.16. Stability and resilience ................................ 58  
3.8.17. other informants ....................................... 59  
3.9. Mining claims ................................................. 60  

**Chapter 4: Problem Statement** .................................. 64  

**Section II: Planning Policies and Proposals** .................. 71  

**Chapter 5: Spatial Vision and development proposals** .... 72  
5.1. The vision: “Creating a sustainable, livable and inclusive city at the human scale” .................................................. 72  
5.1.1. The Sustainable City ...................................... 72  
5.1.2. The Livable City ........................................... 72  
5.1.3. The Inclusive City ........................................ 72  
5.1.3. The Human Scale City .................................... 72  
5.2. General Building Designs and Guidelines ................ 74  
5.3. Descriptions of urban design principles .................. 74  
5.4. Building lines/coverage/bulk (erf-usage) for all land uses as described individually below ................................. 74  
5.5. Overall land development objectives and development zones ... 75  
5.5.1. Development objectives for Swakopmund: .................. 75  
5.5.2. Development zones (Precints): .......................... 75  

**Chapter 6: Spatial Strategies** ..................................... 76  
6.1. Transportation systems ..................................... 76  
6.1.1. Airport ...................................................... 76  
6.1.2. Rail .......................................................... 78  
6.1.3. Road systems .............................................. 79  
6.2. Commercial and business .................................... 81  
6.2.1. Large scale mixed-use developments .................. 82  
6.2.2. Small scale mixed-use provisions – (i.e. Shop house and House shop) .......................................................... 83  
6.3. Residential ....................................................... 87  
6.4. Housing Typologies ........................................... 87  
6.5. Public institutions, social services and facilities .......... 89  
6.5.1. Tertiary Institution Site ................................... 89  
6.5.2. Central Tertiary Development ......................... 89  
6.5.3. Schools and other institutions .......................... 89  
6.6. Industries ......................................................... 89
7.6 Institutions .......................................................... 115
7.7 Motorsport and Recreation, Municipal room and other existing facilities .......................................................... 116
7.7.1 Municipal Utility Precinct ........................................... 116
7.7.2 Motorsport and Active Recreation .................................. 116
7.7.3 New Prison ............................................................. 116
7.7.4 Satellite Tracking Station ............................................. 116
Chapter 8: Implementation of Plan ........................................ 118
8.1 Phasing and programming ........................................... 118
Chapter 9: Annexures .................................................. 120
Annexure A: NamWater projects impacting the Structure Plan ...... 121
Annexure B: Ministry of Education information on capacity of schools and ‘the need’ .................................................. 122
Annexure C: Flexible Land Tenure Area (FLT) ......................... 124
Annexure D: Shop-house property size analysis ....................... 125
Annexure E: Form Based Coding ...................................... 128
Annexure F: Attendance Lists ........................................... 129

Figures
Figure 1: Planning control .............................................. 12
Figure 2: The sustainability “cascade of dependencies” ............. 12
Figure 3: The Swakopmund Jetty in 1934 ............................. 15
Figure 4: Locating Swakopmund ......................................... 16
Figure 5: Swakopmund within the Erongo region .................... 17
Figure 6: Districts and suburbs of Swakopmund ...................... 19
Figure 7: Population Distribution by age ................................ 20
Figure 8: Areas identified for infill development ...................... 21
Figure 9: Households’ main sources of income ...................... 22
Figure 10: Type of Tenure .................................................. 24
Figure 11: Housing Typologies ............................................ 24
Figure 12: Source of Energy .............................................. 24
Figure 13: Source of Water .................................................. 25
Figure 14: Community facilities in Swakopmund .................. 26
Figure 15: Locating the CBD .............................................. 29
Figure 16: Swakopmund streets in 1910 ................................. 29
Figure 17: Swakopmund CBD streets today, after independence ..... 29
Figure 18: Locating the rail and Swakopmund airport ............... 29
Figure 19: B2 main road configuration outside Swakopmund ..... 30
Figure 20: Road Hierarchies ............................................... 31
Figure 21: Classification of the road and street system ............. 32
Figure 22: Links and junctions with overlaid system of “ways” ... 32
Figure 23: The relationship between vehicle-only, mixed-mode and pedestrian-only links .............................................. 32
Figure 24: Existing bulk supply infrastructure of NamWater in the Central Namib Area ........................................... 35
Figure 25: The NamWater infrastructure located east of Swakopmund next to the B2 Main Road ........................................... 35
Figure 26: Locality of the NamWater supply infrastructure ...... 36
Figure 27: Schematic layout of Swakopmund’s water system ...... 37
Figure 28: The municipal reservoirs ..................................... 38
Figure 29: Areas with less than the minimum of 300kPa static water pressure ................................................................. 39
Figure 30: Sewer pump stations and rising mains .................... 40
Figure 31: Municipal WWTP in relation to the built up area and landfill .......................................................... 41
Figure 32: The schematic layout of Erongo Red’s bulk supply infrastructure .................................................................................. 42
Figure 33: Municipal Landfill Site ......................................... 44
Figure 34: Swakopmund Landfill Site ..................................... 44
Figure 35: Swakopmund Municipality 2008 Structure Plan ......... 47
Figure 36: Fossil Fuel reserves estimation ................................ 51
Figure 37: Dorob National Park ............................................ 54
Figure 38: Swakopmund Coastline ........................................ 55
Figure 39: The Swakop River .............................................. 55
Figure 40: Lichen Patches in the Swakopmund Townlands ......... 56
Figure 41: The SW-NE stretching dolerite ridge east of the pipeline .............................................................. 57
Figure 42: Swakopmund’s Famous Palm Promenade ................ 58
Figure 43: Garden-Lined Roads in Guin, China ........................ 58
Figure 44: off-Road driving and illegal dumping on undeveloped portions of the townlands .................................................. 59
Figure 45: The site of gravel mining opposite Nonidas ............... 60
Figure 46: Registered Epls and MIs Relevant to the Swakopmund Townlands .......................................................... 61
Figure 47: Swakopmund Gravel Mining Area ........................ 61
Figure 48: Quarries in the Swakopmund townlands ................. 62
Figure 49: Road Over Rail Bridge ......................................... 64
Figure 50: Swakopmund Airport expansion feasibility exercise .... 64
Figure 51: Daniel Kamho Avenue ......................................... 66
Figure 52: Daniel Kamho open site zoning ............................ 66
Table 22: Typical composition of the waste stream that ends up on the landfill site ................................................................. 44
Table 23: Town Planning Amendment Scheme 12 vs Town Planning Amendment Scheme 61 .......................................................... 48
Table 24: Differences and Similarities of Shop Houses and House Shops 84
Table 25: Proposed zone in Table B of Town Planning Scheme ........ 84

Maps

Map 1: Townlands Boundary .......................................................... 18
Map 2: Swakopmund Conservation Area as per TPS 12 ................. 28
Map 3: Environmental Sensitivity map of the Swakopmund Townlands 53
Map 4: Urban Spaces and Walkability Map ............................... 91
Map 5: Bulk infrastructure developments .................................... 100
Map 6: Swakopmund Structure Plan 2020-2040 ........................ 117

Tables

Table 1: Methodology and Project timeline (±14 months) ............... 14
Table 2: Population of Swakopmund ........................................... 20
Table 3: Population by density area ............................................. 20
Table 4: Population living with disability in Swakopmund ............. 20
Table 5: Population Projections .................................................. 21
Table 6: When can development jump the new bypass? ............... 21
Table 7: Households participating in “own-account” agriculture ....... 22
Table 8: Households ................................................................ 23
Table 9: Educational Facilities ................................................... 24
Table 10: Toilet facilities .............................................................. 25
Table 11: Estimate of length and roads of Swakopmund ............... 33
Table 12: Categories and amount of vehicles ............................... 33
Table 13: 5-Year Capital Development Plan FY2020-2024 - Namib Area 36
Table 14: Water consumption of the town of Swakopmund over the last 5 Financial Years ......................................................... 38
Table 15: Increase in annual demand related to Potential future developments as per Figure 8 of the Structure Plan .................. 38
Table 16: Effect of Potential future developments on Storage Capacity. . 39
Table 17: Inflow of raw sewage vs outflow of purified effluent water .... 41
Table 18: The average daily inflow of sewage compared to treated outflow from WWTP ..................................................... 41
Table 19: Effect of densification on treatment capacity of the WWTP .... 41
Table 20: Annual Purified Effluent consumption vs the surplus of Purified Effluent per annum ............................................... 42
Table 21: The average daily statistics ............................................. 42
Foreword

Requested from municipality
Acknowledgements

Urbanization is an indispensable aspect of social modernization. To be able to facilitate sustainable growth of an urban environment which will meet the social, environmental, physical and political requirements of a modern society, visionary development plans are needed. The Structure Plan is considered to be a transparent and leading policy document guiding and informing decision makers and communities as to how an urban area can grow.

For the initiation and funding of the Swakopmund Structure Plan (2020 – 2040), we gratefully acknowledge the enthusiasm of the members of the Swakopmund Municipality who have actively contributed to debate and decision-making. The guidance provided by the Municipality repeatedly demonstrated the important role decision-makers play in creating visionary plans. We understand the workload of Council Members and employees, and we would like to thank all of them for having made time within their schedules to attend the consultative meetings.

We would also like to thank his Worship, the Mayor and Chairperson of Council, Hon. Nehemiah Salomon, and the Deputy Mayor, Hon. Assertia Marsh, for their dedication to the project and in their active support for the initiative. We would like to acknowledge the inputs of the Chairperson of the Management Committee, Hon. Erkki Shitana, and his colleagues Hon. Kleopas Ngwena Jason (deputy chairperson of Management Committee), Hon. Jonas Andreas (Management Committee Member), Hon. Pauline N.D. Nashilundo (Management Committee Member), Hon. Alderman Elifas //Khoaseb (Additional Management Committee Member). The contributions of Council Members Hon. Wilfred Groenewald, Hon. Uahimisa Kaapehi and Hon. Elise Kharirros Hangula were well received. In particular the guidance and support provided by the Chief Executive Officer Mr. Alpheus Archie Benjamin, and his colleagues, Johannes Heita and Rachel Eiki in facilitating the meetings we held in Swakopmund during the course of the assignment and for putting this document together. Your cooperation is acknowledged and appreciated.

In addition, it should be acknowledged that without the inputs provided by community members, national and local stakeholders the Report would be incomplete. We herewith put our trust in the leadership of the Swakopmund Municipality to take the recommendations made by this Plan further. We believe that the Town of Swakopmund will grow sustainably under their leadership.

__________________

Günther Stubenrauch
For Stubenrauch Planning Consultants
Executive Summary

The Namibian Government resolved to develop the Swakopmund Townlands area into a well-planned and administered urban development node as the capital of the Erongo Region. Visionary urban planning supported by infrastructure development is needed to achieve the vision of the Namibian Government. The Swakopmund Municipality therefore appointed Stubenrauch Planning Consultants (SPC) to undertake the Urban Structure Plan of Swakopmund. The Swakopmund Structure Plan 2020-2040 was developed in close consultation with the local community and affected parties to serve as the first policy document that sets out a number of goals and strategies that will guide urban development for the next 20 years. The vision of the 2020 – 2040 Swakopmund Structure Plan is to “Create a sustainable, liveable and inclusive city”.

The key issues identified as per the background information and analysis in Section I of the structure plan are:

- Inconveniently located airport and railway
- The need new incentives for local economic development
- Restrictions of the conservation area slowly killing the CBD
- Isolation of the town to the ocean
- Affordable housing not affordable
- Urban sprawl and apartheid planning resulting in the urban poor living far from amenities
- Need for land rehabilitation post mining and quarry
- Need for educational and other socio-economic facilities

The structure plan aims to create liveable spaces by supporting town planning, urban design, architecture and engineering driven approaches that promote city development based on the continued philosophy to create human spaces while also creating opportunities for land use diversification. This approach is successfully used in (cities like) Copenhagen which has gained worldwide recognition in terms of being a model city. The Structure Plan further aims to address these issues by recognizing the call of the Namibian Government to transform into a smart town. This is backed by the sustainable planning principle of live, work and play.

The current economic slowdown is considered to be an opportunity for the town to lay the foundation to building an all-inclusive urban environment. This will be achieved through adopting planning and design principles which will focus on rebuilding the city by introducing incentives for urban densification and place making initiatives. This is towards creating liveable spaces that are not dependent on public and private modes of transport, rather than to continue spending resources and energy on providing serviced land for affordable housing which have not only resulted in an accelerated urban sprawl at considerable financial cost for the local authority but are also highly dependent on motorized forms of movement.

The Structure plan in its Section II formulated development objectives of Swakopmund as listed below to inform the strategies and policies discussed in Section II.

1. Creating liveable spaces by encouraging urban densification within development areas and along mobility corridors while preserving the integrity and homogeneity of existing residential areas.
2. Curbing urban sprawl by introducing mixed use development zones and transforming ailing urban areas into vibrant urban zones.
3. Preserving the beach as a public asset by introducing opportunities for the development of nodes which will be connected to the existing public walk.

4. Encouraging the local authority to actively peruse the re-alignment of the railway line and the re-location of the existing airport to free up developable land and paving the way for urban infill initiatives leading to an integrated and interconnected urban environment.
5. Encourage new and modern commercial, residential, recreational and institutional developments areas within the more recently developed urban area to introduce variety and convenient commercial activities closer to the residential areas which are developed relatively far away and disconnected from the existing historic town centre. In so doing, create contemporary development nodes closer to the newer neighbourhoods.
6. Open up new development opportunities for retail outlets, shop houses and small economic trading opportunities within defined mixed-use corridors.
7. Create additional opportunities for larger industrial developments at the Nonidas industrial area which is suitably located in terms of linkages to regional and national mobility corridors as well as climatic conditions and opening up additional development opportunities within the current industrial areas.
8. Avail additional space for the development of exclusive residential developments at the Rossmund and Heritage Hill area.
9. Maintain the general status of the Swakopmund Smallholding area as an area which contributes to food security and employment creation. The development of alternate agricultural industries such as horticulture, hydroponic gardens, fodder banks for animal husbandry, community projects and recreation and tourism related activities are to be encouraged within this area.
10. Setting the Swakopmund urban area within an environmental green belt to recognise the importance of the Namib Desert environment which is a key tourism attraction and backbone of the local tourism industry.
11. Link the historic CBD to the coast line by introducing a vibrant waterfront development between the mole and the amphitheatre.
12. Development of facilities that commemorate the history of Swakopmund and preserve its heritage.
13. Encourage development of tertiary education facilities and student accommodation and in so doing make Swakopmund a premier town in terms of education development for young and old.

It should be remembered that the plan is not to provide detailed engineering solutions but rather to provide development policies and guidelines for the Swakopmund Municipality in promoting sustainable urban development. Individual development projects may still require activity specific environmental or engineering studies and approvals before Council can permit such developments even if the intended land use is in general agreement of this plan.

Finally, it needs to be noted that, while currently still being a policy document, the Swakopmund Structure Plan is to become a statutory document once the Urban Planning Act 5 of 2018 is enacted.

 Günter Stubenrauch
For Stubenrauch Planning Consultants
Acronyms and Abbreviations

4IR – Fourth Industrial Revolution
AADD – Annual Average Daily Demand
CBD – Central Business District
CBR – Crude Birth Rate
CDR – Crude Death Rate
EIA – Environmental Impact Assessments
EMP – Environmental Management Plan
FGDs – Focus Group Discussions
GRN – Government of the Republic of Namibia
GLA – Gross Letting Area
Ha – hectare
Km² – Square kilometer
MURD – Ministry of Urban and Rural Development
NAMPAB – Namibian Planning Advisory Board
NCAA – Namibia Civil Aviation Authority
NDP – National Development Plan
NMT – Non-Motorized Transport
NPC – National Planning Commission
NPCS – National Planning Commission Secretariat
PCI – Per capita income
SM – Swakopmund Municipality
TPS – Town Planning Scheme
UN – United Nations
WB – Walvis Bay

Glossary of Terms

Beach Area
Any land, which has been reserved for use by the public for beach activities and which is held in trust by the Local Authority and on which, except with the consent of Council as elsewhere specified, only buildings or works required for or incidental to the purpose for which the land is reserved shall be allowed; which purposes are limited to public walkways, seating areas, gardens, playgrounds, and essential services such as infrastructure.

Consent Use
The use of land or a building for certain purposes or any other action, which may only take place upon the granting of permission by Council.

Conservation Area
An area or site or amenity within which there are special aesthetic, historic, architectural, scientific, social, environmental or spiritual significance, which may be conserved for present and future generations, as more fully depicted on the map by a Purple Line defining the outer extent as per the Map Legend.

Council

Crude Birth Rate
The Crude Birth Rate (CBR) is the number of live births per 1,000 of the total female and male population per year.

Crude Death Rate
Crude Death Rate (CDR) is defined as the number of deaths that occurred in a given Calendar year per 1,000 people in the population.

Densification
The process of increasing the number of dwellings or commercial units by utilizing space both horizontally and vertically. Densification should not take place in all areas of a town, but rather in key locations which are close to transportation routes and business areas. The option of offering a variety of choices to investors is crucial to a sustainable town.

Density
Density refers to the number of dwellings per hectare (ha) or km². There is no one threshold to determine high density from low density (e.g. more than 200 dwellings per hectare is high density). The determination belongs to whoever is using it, where in the world they are and what areas they are comparing. A high density area will then be the one with more dwelling units per ha or km² and low density will have a less number of dwellings per ha or km².

Hangar
A structure having a roof, supported by walls and intended for the shelter, housing or enclosure of aircraft.

House shop
Refers to a residential dwelling which is primarily designed and used as a residence. A portion of the building is designed and used by the occupant of the dwelling for repair or small scale manufacturing and crafting of products and goods for daily consumption.

Labour Force
The labour force participation rate is the proportion of economically active people in a given population group, and is calculated as the number of economically active population divided by the total population in the same population group.
Mortgage

A mortgage is a loan/debt instrument, in which property or real estate is used as collateral, that the debtor/borrower/mortgagor is obliged to pay this loan/debt back with a predetermined set of payments. Mortgages are used by individuals and businesses to make large real estate purchases without paying the entire purchase price up front. The loan is paid back over the agreed number of years, plus interest, until the debtor clears their debt and fully owns the property. If the debtor stops paying the mortgage, the lender/creditor/mortgagee can foreclose.

Own-account Agriculture

Agriculture is defined in the Population Census as any activity directly related to the production or processing of crops, dairy products, poultry or livestock for commercial sale or as a principal means of personal subsistence. This is known as 'own-account' agriculture.

Per capita income (PCI) or average income

Per capita income (PCI) or average income measures the average income earned per person in a given area (city, region, country, etc.) in a specified year. It is calculated by dividing the area's total income by its total population.

Private Open Space

Any land zoned in terms of this Scheme for use as private ground for the pursuit of sport, games, rest and recreation or as an ornamental garden or recreational facility together with such buildings as are generally associated with these activities.

Public Open Space

Any land used or reserved in this Scheme for use by the public as an open space, park, garden, playground, recreation ground or square together with such buildings as are generally associated with these activities.

Shop-house

Refers to a building where the front or lower level is designed and used for a shop and the back area or first floor used for residential purposes. A shop-house ensures that there is a link with the pedestrian world outside and brings vibrancy to a traditional business/office area after close of business.

Spatial Development Framework

The Spatial Development Framework is a strategic tool to be used by the local authority to guide and encourage local investment and development initiatives for the years to come. The Spatial Development Framework is a policy document with the purpose to guide and organize the various forms of land-use and utilization of the available natural and man-made resources in a way that optimizes and improves living conditions of the people within its jurisdiction.

Tenure

Tenure refers to the conditions which govern the rights of individuals to occupy dwelling units. The most frequent forms are tenancy (in which rent is paid to a landlord) and owner occupancy which can be subdivided into owner-occupied or mortgaged. In the case of tenancy, the landlord can be a private individual, non-profit organization such as a housing association, or a government body which provides public housing.

Town Planning Scheme

A Town Planning Scheme is a statutory document that for its general purpose coordinated and developed for a local authority area. The Town Planning Scheme contains provisions for regulating, restricting or prohibiting the development of the area to which the scheme applies and generally for carrying out any of the objects for which the scheme. The scheme allocates real rights to properties and provides a set of rules under which the right of use can be carried out.

“Town Planning Scheme” or “Scheme” means a planning scheme, including a regional planning scheme, operative, approved, prepared or in the course of preparation in accordance with the provisions of this Ordinance, and includes a scheme supplementing, varying or revoking an approved scheme, and the map illustrating the scheme. Adopted from Town Planning Ordinance 18 of 1954 (definition has been amended by Ord. 13 of 1970).
The second section of the Structure Plan presents the Spatial Plan. In this section, strategies are formulated based on the background information and in depth analysis undertaken in the first section. This section thus aims to answer the questions ‘what’, ‘where’, ‘how much’ and ‘when’ in the following manner:

- **“What”** question is addressed by Chapter 5 where the vision (as briefly mentioned in Section I) is unpacked and development objectives discussed. The same question is further elaborated on in Chapter 6 where the spatial strategies are discussed.
- **“Where”** question is addressed by Chapter 7 where the plan is extensively described, which strategies apply where and why.
- **“How”** question is addressed by a separate policy document. Policies are put forward where specific directives are set out to give guidelines on where strategies and land use allocation discussed in chapter 6 and 7 is to be conducted.
- **“When”** question is addressed by Chapter 9. An implementation plan is put forward and phased into two sections, short term (5 years) and long term plans (10 years +).
5.1 The vision: “Creating a sustainable, livable and inclusive city at the human scale”

Most cities in the world are working to be more resilient and sustainable especially with increased effects of climate change and drastic loss of biodiversity being experienced all over the world. As a result countries have come together to set goals and pledge to work towards them in attempt to tackle these challenges. Some of these just to mention a few: the 2012 Rio De Janeiro Earth Summit (Environment and Society portal n.d.) explains that, the summit aimed to address global environmental problems using themes such as a green economy towards sustainable development and improved institutional frameworks for sustainable development); also adopted, is the UN Framework Convention on Climate Change (UNFCCC), within it was the 2015 Paris Climate Accord agreement whose aim was to mitigate greenhouse-gas-emissions amongst other contributions to climate change starting in the year 2020 (United Nations Framework Convention on Climate Change, 2018).

5.1.1 The Sustainable City

The sustainable city as explained in Chapter 1: 1.1.2. (c), is one whose survival depends on the state of environment while the economics depend on society and the environment (King, 2009). These three (economics, society and environment) all depend on “governance” to understand issues, develop sustainability policies and implement them (ibid.). It is a city that can accommodate people to a certain capacity, different communities and their institutions, businesses and systems that it needs to function, survive and adapt regardless of the climatic shocks it experiences it is said to be climatically resilient (Duinker et al., 2016). This type of city is able to withstand social, economic and environmental stresses exposed to it; even its inhabitants are resilient (ibid.).

5.1.2 The Livable City

A livable city is defined by Duinker et al. (2016) as a convenient (means it is easily accessible by all modes of transportation and is legible), safe (for the citizens and their movable or immovable properties) and secure places that people can live, work, play. A livable city is one in which the communities, visitors and citizens have easy access to all types of amenities such as shared public open spaces, recreation areas, shops, education facilities, sports facilities and work opportunities; affordable and sustainable housing options; Cooperative governance and informed decision making.

5.1.3 The Inclusive City

An inclusive city is one were all inhabitants of a settlement area, irrespective of race, gender, age, income or creed; enjoy equal access to opportunities and amenities.

5.1.3 The Human Scale City

This part of the vision, amongst others, is heavily inspired by the urban design of Copenhagen. Copenhagen is internationally recognized as a city having successfully implemented policy guidelines leading to the development of a city based on sustainable design principles. Hence the plan will make reference to Copenhagen.

Copenhagen is repeatedly named as one of the most sustainable, livable, and happiest cities on the planet. This is mainly because of its people-oriented urban design that is evident in its elegant harbor-side architecture and its priority for bicycles and other non-motorized transport over motorized.

The human scale principle from Copenhagen is a great precedent to inspire the development of Swakopmund's urban form.

In the 1960s, dense traffic, parking lots, and dominating tower blocks began to replace Copenhagen’s traditional residential blocks and narrow streets. Its architects and urban designers found themselves at a crossroads: Would they continue to develop neighborhoods by covering everything with concrete in the name of urban progression, or would they maintain the city’s traditional citizen-focused design?

The city’s urban designers halted their 1960s push toward dense, concrete towers in favor of maintaining a more human scale. The city retains natural light, historic architecture, a strong bicycle culture, and a widespread pedestrian network. Copenhagen represents a “life-sized city” which doesn’t “overwhelm citizens with arrogant engineering or architecture.”

The city's U-turn from a more aggressive approach to urbanism was a conscious and collective effort to ensure the city was built at a citizen level.

(Payne, 2018)
‘Human Scale’ is the key to making cities more human-centered, user-friendly, and livable. Designing to “human scale” means design that is optimized for human use. This can apply to any perspective from physical to psychological (VannPashak, 2018).

“There is no logic that can be superimposed on the city; people make it, and it is to them, not buildings, that we must fit our plans.” — Jane Jacobs

The automobile gave more average people access to private spaces, mainly in the form of suburban homes and land. Some see this as a benefit, but in a lot of ways, this reduced the focus of making spaces outside of private homes more hospitable to humans.

Figure 56: Human Scale Street in a residential area

In an aesthetic context, the design of any street should be built to look good to someone standing at street level, not sitting on a plane miles above it.

Figure 57: Human Scale Street in a commercial district

Different transportation modes are only effective for trips within a certain distance range. For every mode of transportation there are trips that are too short and others that are too long to be reasonable. This applies whether the trip is on foot, by bicycle, by rail, by automobile, or by air. Different modes are optimized for different kinds of travel.

To make our cities more livable we need to prioritize the transportation mode that scales best to the physical constraints of a city. It’s clear that when the buildings start to get taller and space becomes scarce, trips start to get shorter. Shorter trips and less space are perfect incentives to re-prioritize the movement of humans that comes naturally to us.

However, the typical Namibian City is primarily made up mainly of single residential dwelling, ‘1 erf 1 house’ and converting from that to the high rise high, density mixed use developments would be unsettling or uneasy for some. A level ground needs to be reached between the Namibian City and being sustainable. In the next Chapter (Chapter 6), this structure plan looks at recommending various housing typologies and highlighting appropriate areas of high and low density residential that will allow for and support planning on human scale, sustainable urban forms while still encompassing the culture of Swakopmund. The structure plan will also create an enabling environment for placemaking and creating vibrant urban spaces within this housing typologies.

A walkable, bike-able city is a human-scale city, one with low energy consumption, pollution, and congestion. These are elements that Swakopmund can accommodate and adapt to spatially. It is also cheaper to maintain and conform to all abilities and ages. Building walkable cities is central to the Human Centered Design of urban spaces. If placemaking is embedded in the planning process instead of treated as an auxiliary feature, the result will be a human scale city.

There is no one human scale, but by engaging in a placemaking process, we can find the scale that works for every community (Burke, 2016). This structure plan thus integrates the Copenhagen precedent with the ‘Namibian City’.

Figure 58: Human Scale Street in a city square

“The structure plan in its vision for Swakopmund employs Roger Trancik’s 1986 stimulating book ‘Finding Lost Space’ where he unpacked three approaches to the design of urban developments: The Figure-Ground Theory, The Linkage Theory and The Place Theory. These theories are useful in providing the structure for ordering spaces and allocating land uses in the Swakopmund Townlands based on the Environmental and Socio-economic elements of Swakopmund.

Figure ground theory

The essential element of the figure-ground theory is a concern with the relation between the coverage of buildings as solid mass (‘figure’) and open voids (‘ground’) (Rohayah, 2018). The urban pattern (in plan) is seen as a fabric, which can be modified. This is useful in identifying lost spaces and formulating place making strategies (Trancik, 1986).

Linkage Theory 1986

Trancik defines it as a design of a spatial datum which encompasses “flow of movement, and organisational axis, or a building edge” (Trancik, 1986, p. 106). This approach encourages connecting one element of the city to another. These could be in the form of streets, pedestrian ways, linear open spaces etc.

Applying the theory to the spatial planning of Swakopmund promotes its legibility and permeability by creating connections and linking important nodes. Emphasis is placed on circulation, which if efficiently designed can resolve issues regarding affordability and accessibility. This theory will be employed in this structure plan by adopting Trancik’s 5 Linkage categories as listed below:

1. Gateways
2. Hierarchy of nodes
3. Hierarchy of roads
4. Public parks and gardens
5. Linear open spaces

The essence of this theory lies in understanding the cultural and human characteristics of the town.
This theory adds a ‘human touch’ to the previous theories by paying attention to the historical, cultural and social setting of a particular urban design. The internal context is given preference above the abstract designs imposed from the outside (Rohayah, 2018).

Trancik’s conclusion is clear: ‘Each of these approaches has its own value, but the optimum is one that draws on all three, giving structure and value, but the optimum is one that draws on all three, giving structure to the solids and voids, organizing the links between parts, and responding to the human needs and unique elements of the particular environment’ (Trancik, 1986; p. 98).

**Place Theory**

This section presents the land use scenarios that form the basis of the strategies presented in Chapter 6 and the Policies formulated in Chapter 7.

- High density mixed use – multi-story buildings accommodating retail at ground floor and residential and office mix at upper floors. Usually developer driven;
- Medium to low density mixed use – maximum 4 story mixed-use (shop-house/ house-shop concept) buildings. Generally individually owned on smaller erven;
- Low density residential development for various income groups. Row-housing and/or multi-story residential developments, low-cost mass housing;
- Upgrading existing Industrial areas with added workers accommodation components;
- New industrial areas with included workers housing;
- Agricultural development, small holdings, allotment gardens, green rooftops for high density residential buildings and backyard gardening within residential areas is encouraged;
- Beach area to be sprinkled with activity points similar to the Tiger Reef establishment, as well as possible permanent sports event venues such as beach volleyball and the like;
- Introduction of a tidal pool as well as an international yacht harbour in the mole area;
- Dedicated public open spaces to be integrated into the urban fabric as usable and easily accessible spaces with surrounding buildings to face/look onto the spaces;
- Current airport area to be converted to a small scale light industrial area including workers housing.

### 5.3 Descriptions of urban design principles

#### Building heights

- Specific areas are to be allocated where a mix of building heights of up to 40m can be accommodated;
- Generally building heights (of up to 40m) along new activity spines/corridors only;
- Heights restricted to max 4 stories in heritage area;
- Maximum 3 story height along coastline and Swakop river precinct.

#### Parking

- Parking requirements are to be reduced overall and the concept of shared parking introduced (e.g. parking area on institutional erven to be open for public parking during evenings);
- Extensive paring areas to be located at the side or back of larger facilities (e.g. shopping centre parking areas to be at the back of the shopping center);
- Dedicated erven allocated along activity spines or nodes for multi-story mass parking to be introduced to relieve any shortfall on required parking spaces.

#### Mixed-use

- Introduction of a new zoning category for the definition of the shop-house mixed-use concept;
- Developer mixed-use initiatives: single block development with various functions such as retail, office and residential flats on a sectional title ownership basis;
- Individual/private ownership mixed-use development, i.e. one owner per development. = shop-house/ house-shop developments.

### 5.4 Building lines/coverage/bulk (erf-usage) for all land uses as described individually below

#### Along all activity corridors and nodes:

- Building lines should be restricted to 3m (only if the back property borders onto another property, i.e. no servitude, alleyway or road in-between). For buildings higher than 6m a 5m setback should apply;
- Any planning and construction should commence at the street boundary edge and from erf boundary to erf boundary, except where specific setbacks have been specified in an urban design concept plan;
- Coverage: maximum 80%;
- Bulk: maximum 4.

#### All other areas except where specified in an urban design:

- Building lines to be 0 meters on street and side boundaries and 3meters at back boundary unless otherwise specified in an urban design;
- Coverage: max 60%;
- Bulk: maximum 2.

#### Low density single residential areas:

- Building lines: 5m street setback (unless otherwise specified), 3m side and back erf boundaries.
- Coverage: maximum 45%.
- Bulk: maximum 0.5.

**5.2 General Building Designs and Guidelines**

This section presents the land use scenarios that form the basis of the strategies presented in Chapter 6 and the Policies formulated in Chapter 7:

- Dedicated public open spaces to be integrated into the urban fabric as usable and easily accessible spaces with surrounding buildings to face/look onto the spaces;
- Current airport area to be converted to a small scale light industrial area including workers housing.

**5.3 Descriptions of urban design principles**

**Building heights**

- Specific areas are to be allocated where a mix of building heights of up to 40m can be accommodated;
- Generally building heights (of up to 40m) along new activity spines/corridors only;
- Heights restricted to max 4 stories in heritage area;
- Maximum 3 story height along coastline and Swakop river precinct.

**Parking**

- Parking requirements are to be reduced overall and the concept of shared parking introduced (e.g. parking area on institutional erven to be open for public parking during evenings);
- Extensive paring areas to be located at the side or back of larger facilities (e.g. shopping centre parking areas to be at the back of the shopping center);
- Dedicated erven allocated along activity spines or nodes for multi-story mass parking to be introduced to relieve any shortfall on required parking spaces.

**Mixed-use**

- Introduction of a new zoning category for the definition of the shop-house mixed-use concept;
- Developer mixed-use initiatives: single block development with various functions such as retail, office and residential flats on a sectional title ownership basis;
- Individual/private ownership mixed-use development, i.e. one owner per development. = shop-house/ house-shop developments.
5.5 Overall land development objectives and development zones

At the end of Chapter 4 in section 1, the problem statement was extensively discussed and in conclusion, development objectives were thus formulated in response to the problem statement. These development objectives as discussed below, will majorly guide Section II of the Structure Plan in formulating strategies as per Chapter 6 and 7 and also for the Policies discussed in the separate policy document.

5.5.1 Development objectives for Swakopmund:

- Create liveable spaces by encouraging urban densification within developed areas and along mobility corridors while preserving the integrity and homogeneity of existing residential areas.
- Curb urban decay by introducing mixed use development zones and transforming ailing urban areas into vibrant urban zones.
- Preserve the beach as a public asset by introducing opportunities for the development of nodes which will be connected to the existing public walk.
- Peruse and secure the re-alignment of the railway line to free up developable land and for the safety of the residents of Swakopmund.
- Initiate re-location of the existing airport for maximum utilization of the airport and boost the local economy and tourism industry. This will also pave the way for urban infill initiatives leading to an integrated and interconnected urban environment.
- Encourage new and modern commercial, residential, recreational and institutional developments areas within the more recently developed urban area to introduce variety and convenient commercial activities closer to the residential areas which are developed relatively far away and disconnected from the existing historic town centre. In so doing, create contemporary development nodes closer to the newer neighbourhoods.
- Open up new development opportunities for retail outlets, shop houses and small economic trading opportunities within defined mixed-use corridors.
- Create additional opportunities for larger industrial developments at the Nonidas industrial area which is suitably located in terms of linkages to regional and national mobility corridors as well as climatic conditions and opening up additional development opportunities within the current industrial areas.
- Avail additional space for the development of exclusive residential developments at the Rossmund and Heritage Hill area.
- Maintain the general status of the Swakopmund Smallholding area as an area which contributes to food security and employment creation. The development of alternate agricultural industries such as horticulture, hydroponic gardens, fodder banks for animal husbandry, community projects and recreation and tourism related activities are to be encouraged within this area.
- Setting the Swakopmund urban area within an environmental green belt to recognise the importance of the Namib Desert environment which is a key tourism attraction and backbone of the local tourism industry.
- Link the historic CBD to the coast line by introducing a vibrant waterfront development between the mole and the amphitheatre.
- Development of facilities that commemorate the history of Swakopmund and preserve its heritage.
- Encourage development of tertiary education facilities and student accommodation and in so doing make Swakopmund a premier town in terms of education development for young and old.
- Define gateways into the Swakopmund Townlands for improved legibility.

5.5.2 Development zones (Precints):

1) Daniel Kamho activity corridor
2) Coastal strip between CBD and Platz am Meer shopping centre
3) TransNamib freed-up area
4) Freed-up airport area
5) CBD/ heritage area + Heritage / ‘urban spaces and walkability’
6) Waterfront precinct
7) Swakopmund built up area
8) Small holdings
9) Whole townlands area (i.e. Structure Plan Map)
The main spatial drivers of the Swakopmund 2020-2040 Structure Plan are the natural environment, the socio-political component and the economic component as discussed in Chapter 1. Swakopmund is a naturally rich town, in the sense that it has a desert on the North, East and South, a river on its South and an Ocean on the West. Each one of these elements hosts an ecosystem in the in-between which is Swakopmund that the urban form should consider and maintain in its creativity.

After thousands of years of global evolution, the world has arrived at a never before experienced peak of technology, and pollution. The Anthropocene (defined as the current geological age, viewed as the period during which human activity has been the dominant influence on climate and the environment), is a chance for humankind to resolve and take responsibility in rehabilitating nature and natural systems rather than assuming they are not having an effect on the wellbeing of nature (Ellis, 2014). Evidence of this phenomenon is already visible in the extinction of certain species while others endangered, the frequent occurrence of natural disasters (floods, drought etc.), melting of the glaciers and erosion of the landscape.

Planners and policy makers need to rethink the direction of civilization and the human relationship to earth, which changes our relationship to earth, putting nature back in control to rehabilitate the natural earth systems. Ecological planning is an evolving field; hence, it involves exploring different and new ways of planning and rethinking to understand the interaction between natural and built environment for sustainable development and to create regenerative communities (Ndubisi, 2003).

In order to create these “sustainable communities and cities”, one needs to know how to insert such discussions in decision making that involves especially environmental planning and design (as they deal directly with relationships and interrelationships between nature and the built environment) on a local level (ibid.).

With this said, it should be noted that the development initiatives discussed in this chapter are fully backed by the environmental component discussed in Chapter 4.

### 6.1 Transportation systems

The road, rail and air network have been identified as some of the main structuring elements for the town of Swakopmund. This in addition to the environmental component discussed in Chapter 3 and the population demographics and sanitation facilities and services discussed in Chapter two.

#### 6.1.1 Airport

The existing Swakopmund airport is located just east of the urban edge. While the aerodrome was initially build some distance from town. The town of Swakopmund is rapidly expanding towards the airport area.

The position and the quality of the current airport landing strip is increasingly becoming a point of concern as:

- a) aircraft movement over the urban area will increasingly be a safety concern;
- b) the noise of aircraft movement over the new urban areas under development may become a public concern and will erode the living and working qualitative environment of Swakopmund within affected areas;
- c) the current runway is not in its best state and needs an upgrade;
- d) the future expansion of the runway has become impossible due to the construction of the new bypass and the Road Over Rail bridge build currently being constructed as part of the new bypass in the east while being limited to expand in a westerly direction due to urban expansion and;
- e) the Road Over Rail bridge potentially causes a concern to aircraft movement.

The existing Swakopmund airport holds the potential to be used for urban development as the area:

- a) has the opportunity to free up land which can, economically, be better utilized for urban development;
- b) permits the urban area to expand up to the new bypass and in so doing consolidate town expansion before continuing with urban expansion to the east of the new bypass and;
- c) can be cost effectively linked to existing bulk municipal service infrastructure.

After analyzing the airport site in the problem statement in Chapter 4 priority issue 1, a conclusion between the two scenarios needed to be reached where scenario 1: the current issues of the airport can be accommodated; or Scenario 2: if the airport should be relocated.

The airport will be relocated to the site close to the one used by the skydivers. This is a good site for the airport because it is on relative flat land to the east of the Chinese satellite tracking station (see Draft Structure Plan map at the end of the letter). This location will be favored by the prevalent wind from southwest (in the afternoons when most airport activities take place). It also means that the noise is “blown away” from the urban environment by the wind. Furthermore, the topsoil conditions of the area is of relatively hard nature which will increase municipal service delivery costs should this area be earmarked for urban development purposes.

Another important consideration is that the Lichen fields located within the Swakopmund Townlands are not protected because the townlands is excluded from the park. The development of the airport however opens an opportunity to largely protect the lichens close to the northern boundary of the townlands when it is fenced-in by an airport.
The airport will thus function as a ‘development fringe’ to prevent the town sprawling into the Dorob Park while opening up the area for long term urban expansion (a desire of the local authority). Having the airport there can restrict occurrence of other land uses which disturb other elements of that natural environment such as the lichens, the insects and bird life.

The Swakopmund airport will be shifted to the relatively flat area to the east of the satellite tracking station which is located near the northern townlands boundary of Swakopmund. The proposed airport will then:

- fall within the environmental belt to be maintained along the townlands boundary (and thus largely protects the lichen fields as discussed in Chapter 3.8) from uncontrolled vehicular movements;
- not be in conflict with the proposed urban expansion of the town;
- potentially fall outside the main fog belt;
- make use of land which has a lower economic value in terms of urban development, especially providing connectivity of the area to bulk municipal services;
- provide the opportunity to create residential airport estates where aircraft hangers can be erected on private land from where aircraft movement can gain direct access to the runway;
- can be effectively connected to the existing and planned road network of Swakopmund and;
- the south to north winds blow the noise away from the townlands.

The existing airport can still be operated for some time by maintaining the existing status-quo. The Council will enter into negotiations with developers interested, to invest funds in developing the new aerodrome on the site considered in Figure 59 to be more suitable for the Swakopmund airport.

The hangers in the current Swakopmund airport can be utilized as industrial buildings once the airport is moved and be integrated into the new urban area to be planned on the redundant airport site. They can also be rented out as a means of income generation.

Figure 59: Relocation of Airport
6.1.2 Rail

The alignment of the railway line leading from Arandis through the urban area of Swakopmund to Walvis Bay is considered to be undesirable to carry the type of freight it does as the geometric design of the rail curve at the eastern urban edge is too sharp to effectively and safely handle rail movement at normal speed. In addition, due to the sharp curve which must be negotiated at low speed, the passing trains generate noise which has a negative impact on the surrounding urban areas. Another concern is that, the transportation of hazard, explosive or toxic freight through urban areas poses high risk of catastrophic consequence in case of an accident and is thus undesirable.

The Nonidas Industrial development offers the opportunity to shift heavy industrial industries out of town and open up the industrial area for a more mixed use development area. This in turn, opens up the opportunity to reserve an area for a rail station at the Nonidas Industrial area that could operate as a goods and container dry port and another station north of what will be the ‘old airport site’ (see Figure 61). This can be developed as a rail interchange for passenger and light cargo to be transported into the center of town and for the rest of the goods to continue to Walvis Bay. The existing rail link from the planned new siding north of the ‘old airport site’ into town via the rail curve that will be in the center of town to the rail bridge over the Swakop River can then be downgraded into a light service line i.e. for light passenger rail, for the use of transporting said light goods and passengers into town (marked with ‘x’ in Figure 61).

Parallel to this light rail, the Structure Plan proposes that a service road be erected. This road would then tie into the town’s road network as a significant public transport route. This will be discussed further in the next section, ‘road systems’. University students or workers residing within the new urban areas to the places of employment either in town or then the new Nonidas Industrial area would mostly benefit from these new linkages as they form the back none of a future public rail and an effective and efficient public transport system for Swakopmund.

This rail link thus needs to be surveyed and registered and respected in future urban planning exercises.

Figure 60: Illustration of Road running next to light goods and passenger rail envisioned for Swakopmund

The possibility to construct a new railway line from the Nonidas Industrial station to the salt mine north of Henties Bay can be accommodated within the green belt along the eastern side of the new bypass leading from Swakopmund to Henties Bay, all along the eastern side of the NamWater pipeline reserve.

Figure 61: Re-alignment of the railway line
6.1.3 Road systems

Responsible and future oriented town planning and urban design needs to move away from the dominance of the motor car and create a walkable and non-motorized city where one can complete daily tasks on foot or by non-motorized transport. In cases where the non-motorized transport routes have to be broken, sustainable public transportation should be an alternative (Cooke et al., 2019).

Creating commercial areas that promote exclusionary form of development such as car depended shopping centers office parks industrial parks gated communities etc. is the main leading cause of motor dependent towns (ibid.). Motor dependent towns encourage sprawling.

The town of Swakopmund needs to move more towards sustainable public transportation. One that is accessible, affordable and doesn't emit as much greenhouse gases that contribute to global warming and degrade the natural systems. Figure 63 depicts and motivates why compact and densified public transportation answers this call. Compact and densified public transport amongst many other benefits for both the environment and sustaining livelihoods also helps saves on municipal revenue by not needing as much transport infrastructure.

According to Figure 63, a motorized transport system where everyone has their own car would require more space, which means more traffic, which will require more roads and result in more emission of greenhouse gases which is unsustainable for the earth’s systems. If you look at the top left image, these cars usually have one or two people, which means it is not a lot of people being transported, this is causing an inconvenience for spatial planning and for the health of the natural environment. The same amount of people in these cars that need 4-5 lines of road can fit into 3 buses that will only need 1 road lane and drastically reduce traffic, or on 1 light passenger train. If you were to give every one of these people a bicycle, they still wouldn’t take up as much road space. These 3 alternative options (i.e. bus, train or bicycle) are being proved to be more sustainable and more considerate of developable space.

This way of thinking is one that the Municipality of Swakopmund can majorly benefit from, especially considering the issue of urban sprawl into the desert.

Interconnecting the Swakopmund built up area to the rest of the townlands

The analysis of the Swakopmund townlands highlighted that the built up area of Swakopmund is only accessible via the B2 or from the roads leading to Walvis Bay and Henties Bay. These national roads are currently forming “dividers” to movement onto the rest of the townlands area which are pretty much vacant, besides the few mines and quarry areas that are accessible by gravel roads. Even the Rossmund and the small holdings areas have been inhibited, and they are too only accessible via the B2. Access also needs to be provided for the proposed airport site.
With the formulation of this structure plan, there are various land uses that are proposed for the whole townlands which over the longer term will need to be linked with the existing built up area. This section thus highlights the important links that need to be created to make the Swakopmund built up area accessible via Rossmund-Kramersdorf and also the rest of the townlands.

**Figure 64: Important road linkages**

*Linking the ‘old airport site’*

In the case where the airport is relocated to the area reserved north of the townlands, new road linkages would need to be established for the *accessibility of what would be the ‘old airport site’*. This site will be developed as a light industrial area and logistics hub hence linkages will need to be introduced to make the site more accessible. These links will stem from the Andimba Toivo ya Toivo Street, Otjimburu Avenue and the Bergaloe Street via light structure bridges.

*Linking the proposed airport site*

The old bypass, Daniel Kamho Avenue, has potential to link into the northern parts of the townlands where it intersects at a cross (+) section, the new bypass to the earmarked airport site. This link will be extended to the national road (B2) to create a ring road. This linkage will create access to the proposed airport site to be located north of the townlands, from the bypass.

*Beach Links*

A linkage will be created along the beach from the Swakopmund Platz Am Meer joining into the ‘First Avenue’ road and connecting to ‘Strand Road’.

*Nonidas link(s)*

There is a Road Over Rail Bridge currently being constructed North-East of the ‘old airport site’ (as illustrated in Figure 65).

**Figure 65: Road Over Rail Bridge currently being constructed as part of the New Bypass**

This would’ve been a great linkage through to the east of the townlands from either one of the openings of the bridge being constructed if it was incorporated into the initial project planning. However, about a 100m up north of the bypass, there is an opportunity for a link to be created from Shipala Tobias Street that runs parallel to the NamPower servitude and curves south to connect towards the ‘old airport site’. This link will thus connect into the eastern part of the new bypass as illustrated in Figure 64 via a light structure bridge that is more smaller scale than the one in Figure 65. It should be noted that over the long term, this link will also carry high volumes of Non-motorized transport and such adequate provision for the separate pedestrian and bicycle lanes will be made.

*Matutura CBD to east of bypass*

A link will be created from the new ‘Matutura CBD’ from Ernst Könnecke street into the eastern side of the bypass via a level crossing that connects into the servitude of the New Prison which will also create a cross section (+). This link will create future secondary access to the proposed airport and other economic nodes to be located east of the bypass.
Rossmund and Small holdings link(s)

In the case where the rail is re-aligned and opportunity has been created to degrade the old rail coming into the town of Swakopmund to a light goods and passenger rail, a road is able to run parallel to it that ties in to the towns public transport system. This thus presents an opportunity for a road link to be created from this road (that links from the new train station and goods siding area to the University sites) and linking Kramersdorf to Rossmund all the way to the small holding area and the Swakop river (as illustrated in Figure 66). This road will then connect from Kramersdorf to Rossmund via two light structure bridges; the one over the re-aligned rail and the other, over the existing ridge that has been cut in half for access of the new bypass. A technical study will be conducted to determine where exactly around this area (if across ridge or next to it) is suitable to erect the light structure bridge.

The land reserved for future extension of the NamWater reservoir within which the link to Rossmund cuts, has not been allocated yet. Land swaps will need to be done for this portion of land and also for the one in which the re-alignment of the railway cuts.

Another link will be created from the small holdings area over the B2 for access to the area of the townlands north of the B2. This link is the one that will connect to the proposed airport site and continues into Daniel Kamho from the cross section discussed in ‘B’.

Gateways

To be located on all roads coming into Swakopmund i.e. B2 to Usakos, C34 to Henties, C28 to Walvis and B2 to Walvis.

6.2 Commercial and business

The purpose of this structure plan is not to create employment, but to create a framework in which individual citizens are able to advance themselves and an enabling environment that supports them. This is strategy has been informed by Priority Issue 8 and 9 in Chapter 4 that stresses the high cost of market entry. This is because, the people of Swakopmund cannot cope with the current housing provision system ("affordable housing" is not so affordable) and the urban poor live slightly further away from socio-economic amenities.

Figure 67: Commercial centers and activity corridors
Figure 67 is a conceptual illustration of what will be the ratio of the main economic centers and activity corridors to residential areas of the current Swakopmund Built up area. This is a follow up as per the problem statement in Chapter 4, Figure 53. The commercial interventions are further clarified and categorized in Figure 68 as mixed use areas, areas to be prioritized for shop houses and house shops, light industrial areas and the existing and new CBD earmarked north of the Swakopmund build up area.

Figure 68: Light industry, shop house, house shop and mixed use areas

6.2.1 Large scale mixed-use developments

Figure 59 as discussed earlier creates an opportunity for the current airport site to be utilized as a light industrial and mixed-use area. This can then tie into the existing industrial area between the rail curve and the ‘old airport site’. This area is prime land for the town of Swakopmund thus it is imperative that it is well utilized. General industrial areas are not the ideal, however light industrial areas fused with abit of mixed use development is the most appropriate approach to phase industrial areas out to Nonidas and introduce a variety of mixed use developments to the town.

Diversification of Light Industrial Areas

The advent of the fourth industrial revolution will have the effect that machines become smaller and more intelligent, thus requiring less workers in future. The need for extended large dormitory type accommodation facilities will not happen in the light industrial category. There will, however, be a need for more skilled workers who could be accommodated in clean and amicable accommodation facilities on the premises.

Currently the zoning for light industrial areas allows for only one caretakers flat per industrial site. A growing trend has been to subdivide industrial premises into smaller individual workshops and sold on a sectional title basis. Both of these instances has had the following effects:

- daily commuting of workers from their places of residence to and from work. Often industrial companies need to provide an additional transport allowance which, in the end, is placed on the overall production cost of an item, which is then eventually paid by the customer;
- additional strain on the transport network due to long distance commuting;
- additional increased carbon footprint for the economy which is environmentally damaging;
- industrial premises dead areas during after-hours and on weekends which often results in increase in the crime rate of the area.

Industrial practices and technologies have changed in that we do not depend on large scale and noxious industries anymore. Small scale and clean industrial manufacturing within residential areas is fast becoming an alternative to homogeneous industrial areas and resultant daily commuting of workforce between place of residence and employment. Hence the zoning of light industrial areas should now allow for workers accommodation and other uses such as sales of goods produced on the premises.

Parking requirements should remain as stipulated for this zone, without the need for additional parking per living unit. Workers accommodation could be in the form of small dormitories, dining/entertainment areas and ablations, or individual bachelors-, single- or two bedroom flats. There should also be certain properties or erven within industrial areas zoned or dedicated exclusively for residential purposes. In doing so, it would not only be industrial businesses that provide for housing, but also other developers, catering for excess needs in different income categories close to the industries.

Special provisions should be made for the presence of minors on the premises to guarantee their safety. Possible separate entrances and industrial areas cordoned off from residential areas. Incorporation of dedicated green work-break areas that become after-hours relaxation areas.
Advantages of mixed uses and housing within industrial areas are:

- Industrial areas become livable areas after hours and on weekends
- Reduction in commuting expenses and congestion of roads which will reduce the carbon footprint;
- Reduction of crime in the area;
- Industrial products could become more competitive if additional transport subsidies could be saved or fall away completely;
- Reduced absentee and work stoppage as workers are on site already;
- More leisure time for the workers as need for early and late commuting falls away;
- More spending money for the workers as travel expenses fall away resulting in boost for the local economy and greater savings possible per workers salaries;
- Better, safer and more humane accommodation facilities with running water, working ablutions and lighting, unlike what is currently available in the informal settlements where most of the workers live;
- Reduced strain on municipal/state coffers to provide services and affordable residential erven for housing and;
- Strengthening of social structures and sense of belonging together.

6.2.2 Small scale mixed use provisions – (i.e. Shop house and House shop)

The overarching and clear motivation for the shop house and house shop concept is to create an enabling framework in which the individual or family can provide for the family, make a sustainable living and create wealth on the premises on which they live and own. Current zoning regulations allow mainly only a single use per zone. Slight exceptions and allowances are provided for, however, they are still not far reaching enough to make a real difference.

Each family and individual is subjected to major expenses such as schooling and commuting fees, consumption costs, mortgages and related job securities etc. All these expenses can destroy family units, exert enormous financial pressures and lead to instabilities and insecurities.

There is little opportunity for wealth creation and job security in the current status quo for young families and entrepreneurs. It is only the shop-house or house-shop that has been proven throughout history since the middle ages to be the main source of a sustainable middle class and assured poverty alleviation. Best current proof of this system working are the so called east Asian Tiger states that have grown out of a third world into a first world status. Apart from that, this is already happening in the informal settlements in any case. So, this is by no means a new invention. It’s only a process of formalizing what is already there, with the difference being that of legal land ownership.

If the general overheads of a family could be substantially reduced and at the same time a wealth portfolio be build up, it would be much more far-reaching than having to pay off a low cost, low quality house far removed from any workplaces. The benefits to the family would not only be exponential, but also to the entire community and eventually the total economy at large. This idea surpasses any populist and dogmatic capitalist or socialist/communist ideologies, as it focuses primarily on the survival, sustainability, creativity, individuality, human value, ability and freedom of the individual and the family as a whole to make a living in an ever changing world.

Ideally shop-houses should be located along activity routes and nodes to gain maximum benefit from passing pedestrians and exposure. Similarly house-shops should also be located along these routes, however, they can also be located within residential areas. When located along the activity routes it would be advisable to utilize the full width of a property, i.e. from boundary to boundary, in order, again, to make maximum use of shopfront area.

Ideally, access to the upper residential floors should be from the back or side, however this is not always possible. The delivery or vehicular entrance from the front should then also serve as access point for the upper floors.

House shops can be prioritized for areas that are mostly residential with no economic activities and trying to preserve that appearance while shop houses can be accommodated in especially streets that have other economic activity happening.
It should be noted that it is not the intend to introduce the shop house concept throughout the town but rather to control and introduce such land use rights:

- Along mixed use corridors;
- Within planned new residential areas;
- At pre-identified activity nodes within existing residential areas such as important road intersections or within areas where such land uses will support the surrounding residential dominated neighbourhoods.

Table 24: Differences and Similarities of Shop Houses and House Shops

<table>
<thead>
<tr>
<th>Shop House</th>
<th>House Shop</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Main purpose is the business, secondary the living</td>
<td>- Main purpose is living, secondary the business</td>
</tr>
<tr>
<td>- Can be more than one business</td>
<td>- Only one business</td>
</tr>
<tr>
<td>- Has shop windows and public entrance at ground level</td>
<td>- Often professional service delivery – doctors, engineers, architect</td>
</tr>
<tr>
<td>- Or wares displayed on the pavement</td>
<td>- Can be craft production related</td>
</tr>
<tr>
<td>- Can be small scale manufacturing, fashion design etc</td>
<td>- House entrance is shared with the business</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Similarities
- Owner lives on the same premises as his/her business
- Can be multi-story semidetached, freestanding, row-housing
- Can be multi-generational

A. Allocation of rights in Town Planning Scheme

The National Housing Policy and Town Planning Scheme should be reformed from detached, single family homes on larger free hold plots ±300m² to smaller erven (± 100 m² – 150m²) of a self-helping nature which stimulates individual initiatives and creativity in creating local economic development opportunities that uplift the local economy.

Proposed amendment to the Town Planning Scheme to allow for Shop house, house shop

A zoning category that describes this type of single multi-use ownership does not exist in any of the current Town Planning Schemes yet.

Table 25: Proposed zone in Table B of Town Planning Scheme

<table>
<thead>
<tr>
<th>Zone(s)</th>
<th>Primary Use</th>
<th>Consent Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop House</td>
<td>small scale food, crafts or clothing retail shop with dwellinghouse, office with dwellinghouse, small scale clothing manufacturing with dwellinghouse, printing shops</td>
<td>shebeen, small scale manufacturing, hair and beauty salon, restaurant, place of instruction, place of assembly, launderette with dwellinghouse, home carwashes</td>
</tr>
<tr>
<td>House Shop</td>
<td>dwelling house with: small scale food, crafts or clothing retail shop, office, small scale clothing manufacturing</td>
<td>dwelling house with: shebeen, small scale manufacturing, hair and beauty salon, restaurant, place of instruction, place of assembly, launderette with dwellinghouse, printing shops, home carwashes</td>
</tr>
</tbody>
</table>

B. Additional Land Use Rights: Daniel Kamho Avenue

As part of this intervention, the feasibility study discussed below was conducted for the Daniel Kamho Avenue:

Daniel Kamho Avenue used to be a national road which connected the town of Swakopmund with the coastal towns of Wlotzakasbaken and Henties Bay as well as Namibia’s North-Western regions. With the construction of the new bypass at Swakopmund the road section leading from the bypass into town, now Daniel Kamho Avenue, was downgraded from a national road to that of a municipal road.

Resultantly the wide road reserve restrictions (30m from road centre line in both directions) were relaxed and the local authority can develop the wide road reserve by urban infill. This offers the opportunity to introduce new commercial, institutional, recreational and residential land uses within a mixed use corridor without reducing the traffic capacity of the dual road.

Access roads:

The development of shop houses along the western road section is encouraged. Access to these new buildings can be obtained by introducing a service lane adjacent to the existing properties where municipal services are installed. This will limit traffic from Daniel Kamho Avenue accessing these new buildings, effectively separating slower moving traffic from the faster moving traffic with destinations either within the CBD area or then the northern and north-eastern urban areas.

Building heights:

The buildings along the avenue could be up to 30 meters on the eastern side and 15 meters on the west in height (see Figure 88) and as such capitalize from views in a westerly direction over the rooftops of the residential buildings onto ocean. This, while providing wind sheltered areas on the north-eastern side of buildings where street cafes, seating and public meeting places can contribute to creating a special sense of place. The residential density along Daniel Kamho will further introduce life into the street to the benefit of restaurants and other trading activities in support of night life and entertainment.

Urban design:

The overall width of Daniel Kamho Avenue currently ranges from 76m at its narrowest to 80m at its widest from erf-boundary to erf-boundary. This is sufficient space to accommodate the following (starting from the eastern erf boundary):

- ±4m Pedestrian pavement, (max. required = 3m);
- 1m planter, (incl. integrated bicycle parking areas);
- between 1.5 and 2m bicycle lane (sufficient space for 2 cyclists driving side by side – minimum 1.5m);
- ±3m vehicular slipway for slow moving vehicles (max 20km/h), (could also be 2.8m);
- ±2.5m parking lane (parking lane is placed on this side of the slipway to prevent doors of parked vehicles opening into the cycle lane thus preventing possible accidents), (minimum 2.3m width);
- ±1.5m planter for trees (Parking lane and planter = ±6m = sufficient space for a bus stop and waiting area);
- 2x 3.6m wide fast moving vehicular lanes (max 60km/h), (minimum 3.5m/lane);
- Ditto (±21.2m) all to western side;
- Property depth of between 26m and 29m (sufficient for a ±10m deep building on Daniel Kamho avenue and ±8m building (garage or house) to the back of the property leaving ±8m deep internal
court yard space = sufficient for entertainment/ kids play area/ vegetable gardening);

- Back alley comprising of: ±2.5m pavement, ±2.5m parking, ±3m driving lane, ±1m pavement = ± 9m total

Erven with a minimum width of ±10.5m and a depth of ±28.5 meters would comprise ±300m$^2$ in size. As the width increases the erf sizes would automatically increase, however, it would be advisable to remain in a 5.25m grid width as that would accommodate any structural framework and firewalls within a property in order to ensure clear 5m spans (possibility of 2x5m wide shops/ erf front).

Figure 70: Proposed reform (aerial overlay and abstract design) for the western site of Daniel Kamho Avenue

When implemented, the current road could remain and merely be widened to accommodate the extra slip and bicycle lanes. Current palm trees could also remain, thus reduced upgrading costs. Current service lines such as the sewer or electrical lines would need to be moved slightly towards the west into the new alleyway at a minimal cost. These costs can be easily recuperated through the sale of the new erven, resulting higher rates and taxes. Added advantages of this development (please note, most considerations below focus on the western side only. By adding the eastern side, population assumptions and economic advantages could be doubled or tripled through private initiative):

- All existing and new service lines (sewer, water, electrical, data, telecom, glass fibre) remain accessible and maintainable without disrupting normal traffic flow or pedestrian inconveniences on the main road;
- Opening the possibility of building over the pavement area on first or second floor level, thus offering even more development potential to the property owner by allowing him to increase the property size at an upper level will result in increase in property value and an active increase in rates and taxes;
- When building over the pavement at first floor level, the pedestrian, i.e. the citizen is protected from the elements such as the sun which gives them a positive urban experience which is a preferred space to be in. This can increase the economic sustainability of the property or shop owner which in turn increase in employment opportunities;
- Implementation of ±350 – 370 new erven of minimum 300m$^2$ each including public open spaces with minimal servicing costs compared to new (green-fields) housing areas. This can guaranteed return of investment within a shorter period of time compared to low cost housing developments resulting in ease of recovering municipal investments that contribute to a fraction of new developments;
- Maximum building height of 12m would provide each erf with a sea view from second floor level. Private entertainment areas on rooftop levels would each have an exclusive sea-view which also increases property values;
- As each erf is located along a busy, much traveled road, linking residential areas on either side, (people traveling to and from work every day) economic benefit through businesses on ground floor would be guaranteed and thus creating a sustainable integration of areas which relieves pressure on the CBD;
- Assuming an employment opportunity of ±5 persons per property, a minimum of at least 1750 sustainable and secured employment opportunities could be created within a short period of time;
- Resale of properties increases their value exponentially, unlike low cost housing developments where the values will stagnate or may even diminish over time. Whilst in the low cost mass housing developments only the developer benefits through the sale of the houses, the owners of the new erven along this road benefit exclusively either through the increase in value of the erven, by successive improvements to the property or through the sale of the property at a higher value than what it was purchased/ developed at;
• Environmental benefits through densification, sustainable public transport systems and non-motorized transport;
• Benefits towards urbanity, inclusivity and economic upliftment opportunities.

Prerequisites for equitable and sustainable economic development:
• Only one ownership per property – i.e. one person or company, CC or PTY may not own more than one property along this route on the western side;
• Properties may not be consolidated, however, should be possible to subdivide;
• Preferential treatment to young entrepreneurs and lower income groups.

Daniel Kamho Avenue needs to be treated as an urban design area where pedestrian movement, public transport and bus or taxi stops, street furniture and off-street parking is to be developed while maintaining the integrity of Daniel Kamho Avenue in terms of efficient traffic flow. This linear urban development corridor is considered to become, over time, the backbone of the northern suburbs which will connect the historic commercial town center with the planned Mondesa business center.

The retail outlets and small scale manufacturing units to be developed all along Daniel Kamho Avenue will be within easy walking distance from the residential dominated areas such as Kramersdorf, Mondesa and Swakopmund (Hage Heights)F. As such these areas will largely support the new economic spine in addition to the economic opportunities generated from the movement taking place along Daniel Kamho Avenue. Figure 71 provides an impression as to how Daniel Kamho Avenue could look once developed.

Assuming the city of Swakopmund would agree to the development of Daniel Kamho Avenue, a minimum of 350 new erven of 300m² each could be developed along the western side alone, including smaller and larger public open spaces in-between. These erven would need to be predominantly individually owned ‘shop-house’ developments. Alternatively there could also be pure high density residential erven, i.e. flat developments, however, provided with the option to convert these to businesses and allow the open market to decide. These high density erven can also be fitted into open land pocket on the eastern side of the avenue.

Time and private initiative will show in the end the commercial benefit of this corridor space.
6.3 Residential

Often the past and present practice of ‘one house on one plot’, usually a large plot, in urban development has been the main cause of very high and unsustainable urban sprawl. This again has necessitated the long and often wide traffic routes many cities grapple with today. This situation can be rectified through ‘densifying’ the urban residential areas or promoting compact housing. ‘Densification’ can occur on a number of levels, without disturbing the existing urban environments excessively.

The following advantages can be achieved through densification:

- The construction industry could be kick-started again by providing jobs to small scale building contractors;
- Property values will increase and provide additional income to the owners;
- The housing backlog could be reduced through private initiative, relieving the state and municipalities of this heavy burden;
- Traveling distances could be reduced for commuters;
- Existing vegetation on properties could be positively integrated into the overall property utilization;
- Maintenance of utility services such as water, sewer and electricity becomes more affordable to the local authority - higher rates and taxes;
- Public transport options become much more viable and sustainable.

Implementation and incentives densify for the property owner within selected areas could be:

- Allow the construction of a third, maybe fourth, separate dwelling unit or flat on a property over and above the ‘Granny’ flat. Dwelling units should be independently accessible, attached or detached from the main house;
- One should be able to subdivide the main house into smaller independent units, particularly when the children are out of the house;
- Allow the construction of another floor on top of the main or secondary dwelling or garage for another unit;
- When subdividing a large property, the same options of additional units should be allowed on each subdivided portion as for the one big portion which in turn will result in increased densification.

Locations for densification (Refer to Figure 73):

- Generally along frequently user roads – ideal for public transport considerations;
- First and second row of residential erven behind activity routes for highest possible densification, e.g. maximum 4 – 5 units per erf;
- Properties on cul-de-sac or looped roads should be allowed only minimal densification (3 units max per erf) due to a possible over congestion of the available road space.

Other options for densification:

- Multi story flat developments on larger erven along activity routes. Maximum 4 stories, beyond which a stretcher lift installation becomes compulsory;
- Industrial sites to include workers housing;
- Business properties to allow for residential units on upper levels. Please note, ‘densification’ is not necessarily the same as a townhouse development. In a townhouse development specific rules and regulations apply, owners are part of a community. Townhouse developments are already maximized developments on a single property. Little room for additional units at existing units without body corporate approval. ‘Densification’ is more applicable to existing large residential erven with a single ownership.

It should be noted that, densification within existing residential neighborhoods should only be permitted within certain areas after due consideration of the impact thereof on issues such as traffic, municipal service delivery or then the acceptance thereof by the inhabitants of respective neighborhoods.

6.4 Housing Typologies

The dominant housing typology in most African Cities continues to be detached, single family homes on larger free hold plots ±300m². The increasing pressure on urban land, demands for optimizing existing service infrastructure and the negative socio-economic implications of developing on the urban periphery have necessitated a review of the location and desired densities of housing settlements (Ethekwini Municipality, no date). It has become necessary that the supply of housing be more receptive to the redevelopment of sites located within already serviced and developed areas as well as the upgrading of existing settlements (ibid.).

The structure plan has the purpose to encourage a more diverse mix of housing typologies within the urban area of Swakopmund which in turn will offer a wider choice of housing to households of various income levels, social standing or personal choice of living.

The following housing typologies are will be considered:

1. High-rise block of flats (30-40 meters) with the ground- and first few floors reserved for commercial/business use – to be located in dedicated areas only.
2. **Multi-storey flat buildings** of up to 4 floors, beyond which the installation of a stretcher lift is required. In this typology the inclusion of some business units such as convenient shops is highly recommended. They should also ideally include safe children play areas and green spaces on the premises. Advisable would also be the provision of small storage areas for bicycles and the like for the occupants as well as a small ablution facility on ground level. All of these items have usually been neglected or avoided completely due to costs and savings on the developers’ side. Accordingly, this has been the primary cause for similar developments having become social ghettos and crime areas.

3. **Single story dwellings** should primarily be located in the interior of blocks and sensitive areas such as along the beachfront and riverbed.

4. **Standard townhouse or sectional title developments**
   Townhouse or sectional title developments should only be as per town plan and along activity routes. Located on ‘General residential’ zoned erven. Caution needs to be exercised when permitting town house or sectional title developments within coastal or river embankment areas as these complexes are normally enclosed by a long high security wall or fence, thereby deadening the pavement area and blocking views onto the beach areas or the river embankment.

5. **Low Cost Housing Units**
   Low cost housing units are the most common and socially accepted housing typology where free standing houses are normally erected central to a residential erf with underutilized space surrounding the main house. An alternative would be the use of semidetached housing where use is made of sharing one erf boundary wall in order to save costs and to open up more space on an already small plot for future development of the property. This would not only result in the creation of more usable space on a property but will also permit and encourage future expansion of the main house if properly designed from the start.

6. **Community based housing developments** such as ‘build-together’ of Flexible Land Tenure / housing development with shared spaces and amenities as well as possible income generating facilities.
6.5 Public institutions, social services and facilities

6.5.1 Tertiary Institution Site

In Section I, it was highlighted that Council had indicated a site for a university. This site is located at the end of the new Kramersdorf extension, close to the current Namwater waterworks (see Figure 80).

The advantage of this site is that a large land area for the university is available and that the site offers a magnificent view over the dune landscapes. It is anticipated that the development of a university campus at Swakopmund will be in the long term only, as such developments are dependent on government funding and demand prioritization.

The site for such prestigious development should be reserved at an area where the impact of such institutional development on the surrounding urban areas and vice versa is beneficial in a sense that it provides it with a competitive advantage over other sites.

6.5.2 Central Tertiary Development

In the Section I analysis, it was found that if the railway is re-aligned, the TransNamib site at which the rail curves could be a favorable site in terms of compatible land uses and competitive advantage of having a specialized university or tertiary institution there that can bring students into the CBD. This site be given priority because:

- the proximity to the CBD does not only benefit the student but also the immediate local economy which is already in close proximity;
- services infrastructure such as water, sewer, electricity road networks are already there;
- shorter traveling distance for commuting students;
- closest to existing industrial area for research and employment opportunities for the students;
- easier access to the ocean for marine biology study courses;
- a trickledown effect of this is that a university could be a great intervention to breathe life back into the CBD.

This university site also stands to benefit from the new light passenger rail proposed in 6.1.2 and the new road link proposed in 6.1.3 as a public transportation route for students from the planned university site to be located at the south eastern urban edge on the banks of the Swakop River into town.

6.5.3 Schools and other institutions

During the detail planning of new urban areas, planners need to respond to the need to provide schools, public buildings, places for religious services (churches) and other institutional funding in support of the communities and inhabitants of the town. The Ministry of Education has highlighted the need for schools in Swakopmund as per Annexure B.

6.6 Industries

The development of new mines in the Erongo Region has an enormous impact on all facets of life in Swakopmund which necessitates expansion of the infrastructure of the town and contributes towards the growth of the industrial sector in the town.

Since the 1970s, when Rossing Uranium Limited came into operations, mining had a decisive influence on the development of Swakopmund. Today the majority of at least four mines employees reside in the town and several support services and business to the mining sector are located in the town. During the last decade these supporting services and businesses was an important reason for the expansion of the town’s industrial areas. Many of these supporting services and businesses use the Swakopmund basis to serve the entire mining sector of Namibia as well.

Industries operating in Swakopmund are mainly service industry or construction related industries such as warehousing, car repair, mining equipment, sales and repair, window makers, truss makers, some steel engineering, furniture sales and car retailers. The only major industries present are that of the salt company, (which, however, is planning to relocate elsewhere) and the brick factory. The light industrial area is wedged within a railway loop with only a few access points. It appears to form an island within the urban context. Its main characteristic is one of single use industrial erven each surrounded by high walls. The need to relax the ‘industry only’ land use control is demonstrated by the successful developments accommodating retail and serviced oriented business such as the Kornbluhm Small Business Park.

The shifting of the airport will open up the area for light industrial area to move out of the center of the town into that site. It also has potential to be developed as a logistics hub as it is a great connection of the national rail line and the main roads (new bypass and the B2) running through Swakopmund.

The Nonidas area has the potential to be developed as a heavy industrial area with noxious industries and resource mining. It is further enough
from the built up area of Swakopmund and is sandwiched between the B2 and the national rail line. This area should also include a goods and container dry port so all the hazardous matter is handled on this site further away from where the people inhabit.

The gateway into Swakopmund from Arandis on the B2 can also be stationed around this area as it provides a competitive advantage for switching and handling of freight between road and rail.

6.7 Conservation, heritage and cultural sites

The heritage significance of the oldest part of Swakopmund is recognized by means of a zoned conservation area, proclaimed under the National Heritage Act, No. 27 of 2004 in September 2006. The conservation status of this part of town implies that specific restrictions and recommendations in terms of development, gentrification and use applies. In addition to several buildings that are proclaimed as national monuments, the historical character of this part of the town is complemented by attributes of heritage such as the Lighthouse, the Palm Promenade, the Jetty and the Mole.

In general it can be said that nationally and internationally there is already sufficient evidence in the conscious need for conservation, heritage and the dealing with cultural sites. Since the 1950’s the international modernist approach to architecture and urban planning of historical and cultural sites was one of ignorance and destruction and this attitude has persisted to this day. In recent times, however, people have realized the importance and advantages of such sites, not only their economic value, but also their historic importance in place making and value to future generations. It has been realized that one needs to understand and respect ones past, irrespective of any pains it may have caused or any financial profits it may bring to an individual now, in order for it to be an example to future generations.

Currently there are already sufficient rules and regulations in place that safeguard individual buildings and heritage sites by law. The problem is the overall picture. Places that do not fall into the established set of rules or marked specifically as heritage buildings/ cultural sites can be altered at will. The overall environment is often overlooked in favour of maximizing profit, which then renders the conservation effort as useless or at least devalued.

This can eventually lead to the conclusion that proclaimed heritage sites might as well also be sacrificed in light of ‘greater efficiency and urban renewal’, or alternatively in the sense of trying to rectify egoistically perceived past wrongs. On the other hand, an over regulation or militant resistance to change may also lead to a stagnation of an area as a result of a lack of new investments into that area. This usually results in that area developing into a run down and crime invested space. Thus, a way needs to be found in which heritage sites and its immediate surroundings can be developed to such an extent that history is still being respected sufficiently and yet the area enhanced innovatively to fit into the overall picture. In this, however, lies a further danger that this specific area becomes ‘historicized’, or ‘museumized’ and ‘kitchified’. For any urban environment to remain interesting and livable, enjoyable to the locals and visitors alike, there needs to be a constant reinvestment and change.

6.7.1 Historic CBD

The character of the CBD in terms of architecture and building heights should be conserved and maintained. However the Council should consider liaising for the reform of the National Heritage Act to allow for modernization of buildings in the CBD while maintaining the façade.

Urban design principles to ensure this could include:

- Ground floor areas need to be reserved for retail and business (thus preventing parking garages or dead areas on street edge);
- Glazing areas on ground floor, street edge façades may not be done in mirror glass (thus preventing glare);
- Upper floor facades facing the street need to be atleast 50% plastered and painted (thus preventing the construction of glass towers, for instance);
- Upper floor facades facing any street need to have a minimum of 30% openings – windows or French doors (this would prevent dead facades facing the streets).

However, there should be another set of rules that guide any future development initiatives without being prescriptive such as for instance:

- The provision of marquees, pergolas or movable overhead structures over pavement areas are encouraged (welcome to pedestrians and possible outside seating or café activity);
- The provision of bicycle stands and planter boxes would be encouraged;
- The provision of French or standard balconies would be encouraged;
- Preferable colours are to be used as approved by the council after consultation with the aesthetics committee.

6.7.2 Conservation of the Beachfront

Except for the beachfront, including the Mole area and the adjacent Palm Promenade, no public open spaces form part of the conservation area. The Mole and Palm Promenade is also connected to the Lighthouse area and the adjacent state buildings and war memorials. It is also connected to the rest of Swakopmund’s coastline, elevating its prominence.

Against this spatial context, this part of the beachfront - conservation area will be fully optimized as an unrestricted public open space, connecting it with the rest of the town’s public open spaces, including the entire coastline. Lines of connectivity between the public open spaces can be created by means of statues, outdoor art, public gardens and recreational areas. Permeability and legibility in the CBD should be promoted by encouraging thee private sector to make provision for pedestrian alleys + line shops.

6.7.4 New urban design elements and cultural sites

The spatial quality legibility and sense of space of a town is a reflection of the ability to create a sequence of spaces and events along movement corridors and public spaces. Prominent buildings, monuments, public gardens, streetscapes and design features all form part of developing interesting and changing urban landscapes. Where needed, Council will introduce infill public spaces and street furniture which will effectively create the playing field for the private sector to enhance these areas by improving and upgrading existing buildings.

The spatial vision envisaged for the larger urban area is set out in detail under Chapter 5 (5.2) of this report. This is illustrated and explained in the Urban Spaces and Walkability Map below.
Map 4: Urban Spaces and Walkability Map

New proposed CBD crossing point with activity corridor
Northern gateway to city and potential point of interest.

Activity node crossing point with activity corridor
Potential point of interest

Proposed coastal activity node

Activity node crossing point with activity corridor
Potential point of interest

Proposed coastal activity node

Municipal / public meeting point/hall

Public open space - city central park

Main sports centre and venues

Public open space - municipal park

Proposed coastal activity node

Mole precinct, tourist attraction, focal point

Heritage buildings and commercial centre, Historical CBD

New University site

Activity node crossing point with activity corridor
Potential point of interest

Activity node crossing point with activity corridor
Potential point of interest

Activity node crossing point with activity corridor
Potential point of interest, possible new station building

Municipal / public meeting point/hall

New proposed crossing point with activity corridor
Eastern gateway to city and potential point of interest.


### 6.8 Open spaces and public services

Usually public open spaces are located in ‘leftover’ areas of new township developments, thus not really fulfilling the purpose for which they are intended. Other areas such as riverbeds and the like are being dedicated as ‘public open spaces’. As adjoining properties turn their backs on these spaces, i.e. build high walls facing them, these areas become neglected and “public open crime areas”. Also, due to the property sizes being so big, there remains little need for some extensive so called public open spaces within residential areas. Many of these areas are intended to be children play areas, including ablution facilities. However, due to limited funds, these amenities have never been installed, leaving these areas as barren open areas and rubbish dumps.

For a public open space to function properly it needs to have constant passive public surveillance ("eyes on the street"), be user friendly, cared for and most importantly conveniently located, i.e. within easy reach. If surrounding properties were densified to such an extent that there is little room left for large play areas within them, then people will use these public open spaces more frequently.

It is generally accepted that the following is applicable for residential areas:

- **Low residential densities – recreation areas for children on site** which means, reduced need for play areas;
- **High density residential developments with multi-story which means increased need for play areas.**

A precondition for the approval of multi-story and high-rise developments should be that at least one public open space is located within easy walking distance. Unless such a space can be accommodated within these developments, the developer should be required to contribute towards the establishment and upkeep of a nearby municipal public open space as part of his development fees/costs. An incentive for such an arrangement could be that the developer is allowed to put up advertising in his name on the edge of the space.

There also need to be user friendly public open spaces located within business areas and even along activity routes, to allow for the mingling of people, resting and waiting and recreation for office staff and workers.

---

### 6.8.1 Strategies for public open spaces

In addition to the minimum spatial requirements for public open spaces within new urban areas, it is advised that:

- **There should be at least one public open space within walking distance, i.e. maximum ±500m spacing along activity routes.** These POS’s should adjoin the activity routes and ideally be linked to bus stops or taxi drop-off zones;
- **Sports fields and existing green areas should be linked up strategically to form a continuous safe space for pedestrians and cyclists;**
- **Landscaped street reserve and public squares can form part of interlinked spaces;**
- **Cycling and pedestrian routes should be lined with greens and trees to provide natural shade and protection from motorized vehicles;**
- **The current external areas of the municipal offices, the new regional offices and sewerage works should form one large POS, like a large public park.** This space should be upgraded and furnished with benches, shade structures and pavilions, public fitness equipment and children play areas – even pensioners chess, bowling, crochet and dominoes play areas, walkways, cycle routes, interesting botanical infrastructure, good walkway lighting, lakes and possible a kiosk here and there. It must remain accessible and open 24/7. As this area would be difficult to provide 24h passive surveillance, i.e. ‘eyes-on-the-park’, security cameras or a constant presence of security guards patrolling, particularly during the night is absolutely vital and essential if this park is to function successfully;
- **A multi-purpose public space is developed at the local authority-government precinct which can be used for larger public events such as markets, sport or cultural events. Ideally this place should accommodate a large and prominent monument or focal point which celebrates Swakopmund’s own identity and move away from the historic past into a new future in terms of the goals and objectives as set out by this plan.**

Public open spaces are important in making the urban landscape attractive, creating character, and enhancing social cohesion and respect for natural and cultural assets. The use of public open spaces can vary but finds common ground in addressing the social demands on the one hand and protecting natural and cultural assets of the urban landscape on the other hand.

---

### 6.8.2 Swakop river embankment

Another natural asset of Swakopmund is the Swakop River, which is zoned as core conservation area of the Dorob National Park. Like the coastline, which forms Swakopmund’s natural western boundary, the Swakop River form the town’s natural southern boundary.

Being a core conservation area, a public open space and forming the natural southern boundary of the town at the same time, the unbuilt zone on the northern bank of the Swakop River is to be developed into a continuous greenbelt for multipurpose land use with developed walkways, recreational areas, beautified and garden areas. This will enhance the connectivity between the river and the coastline and between the built landscape of the town and the unspoilt landscape of the Namib Desert.
6.8.3 Swakop Salt Pans

The area utilized by the Swakopmund Salt Works, inclusive of the aquaculture developments do not only plan an important function in the eco-system but hold the potential to be integrated into northern urban edge of Swakopmund. The undulating east to west ridge located just to the north of the recently planned and formalised new residential area can accommodate an upmarket and unique residential edge where the backsides of the houses would face into the prominent south-westerly winds while the north facing sides would be north facing and will capitalize from magnificent view over the salt pans and its associated birdlife.

The currently underutilized aquafarming facility could be transformed into a tourism and public node with view onto the Salt Pan Wetland and the coastline effectively terminating the urban sprawl in a northerly direction.

6.8.4 Beach

A beach area in general belongs to everyone and is and should remain a public open space without any restrictions. It should not be reserved and accessible only for exclusive use by some elite persons or organizations.

In order to vitalize and encourage greater use of the remaining beach areas, the introduction of seasonal or semi-permanent facilities should be allowed. Facilities such as international standard beach volley ball areas or permanent public fitness installations could be provided. Possible semi-permanent structures similar to the Tiger Reef restaurant could also be placed at intervals along the beach and where sufficient parking areas area available. The existing walking path and additional bicycle ways could be installed and extended towards the north.

A) Shoreline

Coastal towns, especially coastal holiday resorts, have the responsibility to develop the town in such manner that public access to the beach is maximized while activity nodes are put in place which provide public facilities such as restaurants, bars and smaller line shops as well as public amenities at regular intervals along the beach while the areas in between are to be reserved as public beaches. These public nodes, which can be built close to the high water mark, are to be linked to the existing beach walk, parking areas to be provided at regular intervals. While some public nodes are to permit the development of permanent structures which can include restaurants, fast food outlets and public squares as well as public amenities others are to be of a more temporary nature where kiosks in support of leisure parks and activity areas are to be permitted.

The development of new erven aimed for the development private residencies closer to the shoreline within open areas where opportunities could be identified for residential infill should not be supported by the local authority. As such the existing urban edge from the Swakop confluence up to the salt pan area should be fixed and not compromised on.

The town of Swakopmund needs to be prepared to invest public funds to create new investment opportunities for the private sector and selected government institutions as improvements made, and opportunities created for urban renewal will be the key catalyst in developing the coastline of Swakopmund.

The strategies relating to the shoreline are better unpacked by the ‘shoreline Precinct’ in Figure 81 below.
Figure 8.1: Shoreline Precinct

- Potential to connect the current pedestrian beach walkway to the beach north of the waterfront development, by introducing a new link road to form a promenade with public parking and walkways to connect to the Waterfront.
- Informal sports area potential for a lawn that can be used as a kickabout area, volleyball, putt-putt etc.
- Braai facilities to be maintained and upgraded
- Promenade link road
- Pedestrian walkway to be upgraded to accommodate a cycle lane
- Activity Node - Sport
  - Potential location for sport activities e.g. beach soccer, beach volleyball etc.
  - Think of wind mitigating features such as planting of tree rows
  - Public parking to be provided
- Activity Node - need for public toilets
  - Kiosks/trading stands
  - Coffee shops
  - Change houses/change rooms
- Upgrade public toilets
- Activity Node - seasonal recreation
  - Supporting facilities
  - Open air gym
- MOLE Activity Node
- Improve access to public toilets
- Activity Node - seasonal recreation
  - Supporting facilities
  - Open air gym
- Bird Area
  - Public access to this area needs to be improved. Currently only access is the parking at Tiger Reef
The Lighthouse is an important part of Swakopmund's skyline and it features in the municipal coat of arms of the town. The Lighthouse is still in operation, guiding ships with its light from as far as 33+ Km out at sea.

When considering the urban form of the existing CBD, the lighthouse becomes not only the focal center and orientation point, but also its so-called 'guiding light'. It forms the pivotal junction point between the central business area and the coastal area. Its 'guiding light' sweeps over the houses and warns ships at sea of the coastline. Vistas to the lighthouse form the main placemaking feature of the CBD. Accordingly, all urban development within its immediate proximity and further afield should be guided by its dominance. Any future development must respect this building as its ultimate point of departure, particularly in terms of new building height regulations. Current town planning regulation has applied this important rule and it should remain as such. Any attempt to change, adjust or alter this legislation through political, economical or any other means must be resisted at all cost.

The lighthouse is 28 meters in height and no building height should be similar or higher than the lighthouse.

The radius west of the blue line should be maintained and there should be no development in the circle unless it is landscaping. More detail on this precinct is annotated as per the precinct plan in Figure 84 below.
Figure 84: The Swakopmund Mole and Lighthouse Activity Node
6.9 Building forms

The concept of development should change from a suburban sprawl one to a more compact form. Densification in this context will refer to compactness, mixed uses or high rises.

A more compact building and urban form will concentrate on selective occupation of large areas of vacant land within the townlands of Swakopmund, preferably on the eastern side of the new bypass i.e infill development.

The building and urban form will be transformed to include forming high density corridors concentrated with urban activity that connect economic nodes.

6.9.1 Building heights in existing urban area

There are a variety of reasons for height restrictions. Some restrictions limit the height of new buildings so as not to block views of an older work decreed to be an important landmark by a government.

In the Russian capital of Saint Petersburg, buildings could not be taller than the Winter Palace. While in Siem Reap (Cambodia), no building may be higher than the main tower of Angkor Wat Temple.

In Bali, Indonesia, a building for instance cannot be higher than a coconut tree, which is about 15 meters. The only building that is higher than a coconut tree is the Bali Beach Hotel because the hotel was built before the height restriction was announced. The restriction was enforced by a regional regulation, however, how much this is enforced is in question.

In Europe, there is no official general law restricting the height of structures. There are however height restriction laws in many cities, often aimed to protect historic skylines.

In Athens, buildings are not allowed to surpass twelve floors so as not to block the view towards the Parthenon. There are several exceptions though, such as the Athens Tower, the Atrina center and the OTE central building which all exceed that level. This is due to them either being built far away from the centre, or to the fact that they were constructed during periods of political instability. The city’s tallest structure is the Athens Tower, reaching 103m and comprising 25 floors.

In the central area of Rome, delimited by the Aurelian Walls, no building can exceed the height of the dome of St. Peter’s Basilica, 136 meters. A skyscraper called Torre Eurosky (Eurosky Tower) built in 2012 in EUR neighbourhood exceed this limit being 155 metres high.

In Swakopmund the opportunity exists that no building within the historic CBD and Mole Precinct should exceed the height of the Swakopmund lighthouse.

Other restrictions are because of practical concern, such as for instance around airports to prevent any danger to flight safety.

Height restriction regulations sometimes become a point of contention in cities and towns due to their use in regulating the growth of the housing supply. Developers often push an increase of building heights in an attempt to maximize profits made on sales based on increased floor space or on rental income. This so often neglects the common good and spatial design qualities of an area.

Fast growth of housing supply benefits renters by producing low prices, while slow or no growth in housing supply benefits property owners by allowing them to charge higher prices. In this way, height restriction laws often become part of a class conflict even when their original purpose was innocuous.

The current Town Planning Amendment Scheme for Swakopmund contains conditions pertaining to height restrictions for the respective land uses and zonings. It also allows developments up to a maximum height of forty (40) meters.

This Structure Plan contains recommendations in respect of specific identified areas in the town where high rise buildings could be accommodated (see Figure 85). These include: the TransNamib site, Daniel Kamho Avenue (east side only) and at the entrance points to the city.

For the current CBD the height restriction is set to a maximum of 15m in order to not compete with the lighthouse which is the main anchor point and primary landmark of Swakopmund.

Other restrictions are because of practical concern, such as for instance around airports to prevent any danger to flight safety.

Height restriction regulations sometimes become a point of contention in cities and towns due to their use in regulating the growth of the housing supply. Developers often push an increase of building heights in an attempt to maximize profits made on sales based on increased floor space or on rental income. This so often neglects the common good and spatial design qualities of an area.

Fast growth of housing supply benefits renters by producing low prices, while slow or no growth in housing supply benefits property owners by allowing them to charge higher prices. In this way, height restriction laws often become part of a class conflict even when their original purpose was innocuous.

The current Town Planning Amendment Scheme for Swakopmund contains conditions pertaining to height restrictions for the respective land uses and zonings. It also allows developments up to a maximum height of forty (40) meters.

This Structure Plan contains recommendations in respect of specific identified areas in the town where high rise buildings could be accommodated (see Figure 85). These include: the TransNamib site, Daniel Kamho Avenue (east side only) and at the entrance points to the city.

For the current CBD the height restriction is set to a maximum of 15m in order to not compete with the lighthouse which is the main anchor point and primary landmark of Swakopmund.
• Applications for high-rise buildings as allowed by the current Town Planning Amendment Scheme should conform to the areas identified for high-rise developments in the Swakopmund Structure Plan 2020 – 2040 in terms of locality and height.

• Predominantly residential areas have been allocated a building height of 9-15m, however, exceptions will be given to e.g. business hubs and other buildings at the discretion of council and the Town Planning Scheme.

• Sufficient water pressure/supply as per the minimum requirements as prescribed by the Guidelines for Human Settlement Planning and Design should be important factors that guides the development of high-rise buildings and be viewed as limiting factors in terms of allowable height.

• Where the above is not sufficient and should developments be approved, additional appropriate technology to enhance same should be specified, approved by the Municipal Council of Swakopmund and be provided by the Developer. Ownership, operation and maintenance of such technology should remain the responsibility of the developer.

Overall, when designing any buildings in any areas the most important point a designer or developer needs to consider is what impact that development will have on the surrounding community/environment. Unlike previously done, planning cannot continue in an egocentric way, by ignoring basic human rights, tacit or recognized, within an urban environment, no matter the economic or political power there may be. Planning needs to be on a human scale thus, the earlier public consent and appreciation is achieved, the quicker a development can go ahead and an investment show a return.

The biggest concern of any building height is the impact it has on neighboring sites and the city as a whole. These may be summarized as follows:

• The higher a building gets, the longer is the shadow it casts on the adjoining properties;
• In added wind conditions, larger buildings can either shelter off wind or create wind tunnels with adverse effect on spatial qualities of the surrounding area;
• Access to sun light and views are often blocked by these tall buildings.

All of the above conditions can have adverse effects on the value of adjoining and further away properties. Even if these concerns have been considered in a design there are other issues such as parking requirements and building setbacks that may have a negative effect on the overall character of the area.

If not all parking can be accommodated on a sub-surface level (which may be a problem in Swakopmund due to the hard rock underground) or above second floor level the only remaining areas are in front of or to the back of the building. This usually results in unsightly open single use parking lots.

Swakopmund has two additional environmental factors that would make the free placement of high-rise buildings problematic. The first is that the landscape is relatively flat, thus inevitably influencing any kind of views of adjoining and more distant properties, if not planned properly. The second is that Swakopmund is usually very misty until late into the day and thus predominantly cold and wet. This necessitates that all houses are extremely reliant on as much natural sunlight and ventilation as possible. Highrise buildings in close proximity may prevent this permanently.

The predominant urban character of Swakopmund is one of low-rise – i.e. between 1 and 4 story heights. Any high-rise building will look like a saw thumb in the landscape and provide a bad impression of the city. An undesirable ‘Dubai look’ should not be permitted within the existing city as the spatial design of this area is not intended to accommodate for high rise buildings.

The structure plan however acknowledges the need and aspiration of cities to develop areas where modern and contemporary high rise buildings may be erected. As such, the plan recommends that the Mondesa and Nonidas commercial zones should be encouraging the erection of multi-storey buildings where urban design principles and spatial design guidelines are to lead the development of livable multifunctional spaces.

For every height restriction zone as per Figure 85 should require any building to be erected above stipulated height to be accompanied by a:

• Urban Design Compatibility Report;
• Traffic Study;
• Engineering Services Report and;
• Environmental Clearance Certificate.

This should be requested prior to the municipality approving such plans

6.9.2 Mixed use areas

A mixed-use development/zone/area can be broadly defined as any piece of property, local or city area – be it a single building, a substantially large urban or suburban community, or anything in between – which combines residential, commercial, cultural and/or industrial usage within a relatively small and dense area. People who live and work in these constructs enjoy easy access to a wide variety of amenities. For example, shops, restaurants, offices, civic facilities, multifamily housing, public open spaces, walking and bicycle routes may all be integrated into a mixed-use area.

Mixed-Use areas should have the following physical characteristics:

• be of human scale i.e. scaled to the pedestrian, although commonly neither the pedestrian nor the motor car has absolute dominance;
• compact, having relatively high building densities;
• their structural elements should be integrated and the composite parts reinforce each other;
• have a strong spatial feel, with well-defined public spaces and;
• their spatial structures should be complex, offering choices in terms of intensity of interaction, privacy of living conditions, lifestyles, housing options and movement systems.

Figure 86: Mixed-Use Development example
The benefits of mixed-use areas include generally the following:

- Increased livability and inclusivity of an area;
- Stimulation of a greater variety in the design of and options for single and multifamily housing designs; May even increase affordable housing options;
- Stimulation of economic growth, particularly for the middle class, which is the engine of any economy. This inherently contributes towards poverty alleviation;
- Improves and revitalizes existing urban environments;
- Reduction of traffic volumes and pollution by less reliance on the private motor vehicle;
- Creation of bicycle and pedestrian-friendly environments = shorter distances between living, work, commercial and recreational destinations;
- Lower infrastructure costs, particularly maintenance costs often more money for local authorities;
- Increased rates and tax revenues on a smaller denser area encourages economic investment, public and private;
- More sustainable public transport infrastructure and use = efficient use of land and infrastructure;
- Environmental advantages – lower carbon footprint, less pollution which means, a healthier environment;
- People and resource orientated, convenient, walkable, versatile and vital, safe and multiuse urban space, instead of single use and car orientated;
- Promotion of a sense of place and community;
- Passive guidance of development towards established areas, thus protecting outlying environmentally sensitive areas;
- Encouragement and feasibility of “Smart Growth” and;  
- Residential and commercial developers, leasing agents and tenants, existing and new landowners all benefit from such areas. Companies welcome the nearby living spaces available to their employees. Employees, in turn, enjoy the short walking or biking commute to work, banks, restaurants, health clubs and/or childcare facilities, as well as public transportation and outdoor recreation.

There are three starting points for achieving positively performing areas.

The first is the importance of pedestrian movement. A fundamental dimension of scale is related to movement on foot. The pedestrian condition describes the reality for the majority of residents in towns and cities in the country.

Large numbers of people do not, and will not in the foreseeable future, own private motor vehicles. Obviously, residential areas cannot be only pedestrian-based.

Township development and growth brings with it higher order opportunities, services and movement systems. Consistent with the principle of equity, particularly in communities with low levels of car ownership, public transport becomes a necessity once the pedestrian scale is exceeded.

The second starting point is the importance of thinking spatially. In pedestrian-scaled environments the public spatial environment should be viewed as the highest level of social infrastructure. In these environments a great deal of activity occurs in the public spaces, with the result that the quality of the public-spatial environment profoundly affects the quality of life.

Thinking spatially, in this context, requires that all public spaces, particularly streets, be viewed as public space.

The third starting point is the importance of a minimalist approach to township development. This requires that the basic structure and most important actions required to create the preconditions for a positively performing area be defined at the outset of the development process. Over-design of the process reduces spontaneous township development activities.

The challenge is to promote environments which provide a diversity of choices, so that people do not have “either-or” choices, but rather choices which relate to relative degrees of privacy or exposure. The key to this lies in hierarchies of movement, public spaces and social institutions, and the design of living areas.

It is neither possible nor desirable for all parts of towns to be the same. The reason for this is that clustering tendencies emerge in the structure of towns as they grow. Activities requiring public support tend to cluster at the most accessible places. Nevertheless, it is important that all people have reasonably equal access to the opportunities and facilities which support living in townships.

Spatially, two issues are central to the above. The first is the recognition that balance is not so much a geographical as a structural concept. The issue is not one of attempting to achieve an even distribution of facilities over the surface of townships. Rather, it is one of integrating public facilities and events with movement systems, so that access is equalised.

The second issue is that of creating the access preconditions for more intensive activities to spread in a logical way, consistent with the growth of the township.

6.10 Physical infrastructure and utilities

The provision of infrastructure and amenities is important for the health and growth of a town.

The poor placement of these activities however can have a negative impact on the growth of development or then the health of communities. Activities such as landfill sites or Wastewater Treatment Plants must be properly fenced off and the locality of these activities must be carefully considered to avoid any form of pollution.

Well planned, designed and maintained infrastructure makes it attractive for investors to establish industries and businesses in such an area. In many cases, utility organizations such as the Roads Authority of Namibia, NamWater, ErongoRed and NamPower construct roads, powerlines and waterlines without consultation with the authorities and without taking into account the impact these infrastructure lines will have on development.

Although this infrastructure is a positive attribute for a town, in many cases limits development as each of these corridors have restrictions that must be adhered to. The localities of these infrastructure lines are therefore important, and the development of town must be taken into account.

It is thus important that infrastructure corridors be identified at an early stage. The benefit of such a corridor is that all the major infrastructure services such as NamWater bulk supply lines, NamPower high tension lines will be placed within a corridor, thereby ensuring that the impact on development is restricted.

The Structure Plan therefore proposes in Map 5 the proactive identification of such development corridors where major bulk service lines must be accommodated.

Such development corridors can then become part of the “green agriculture corridors/open space system within town where institutional amenities such as schools and sport fields can be linked by means of this open space belt.
Map 5: Bulk infrastructure developments
The sustainable development and provision of services to the town of Swakopmund include:

6.10.1 Water Supply

The following strategies need to be effected for efficient and effective water supply management:

- Additional storage capacity within Areas A and B as per the drawing to the right (Figure 8 in Chapter 2 of Section I);
- Separate take-off from NamWater Pipeline from Wlotzkasbaken with additional Water Treatment Plant operated by NamWater;
- New storage capacity east from the Bypass with separate take-off from NamWater Pipeline from Wlotzkasbaken with additional Water Treatment Plant operated by NamWater;
- The above take-off and Water Treatment Plant can be combined infrastructure;
- Identified Industrial Area and surrounding future developments – Nonidas: Separate storage capacity and separate take-off from NamWater Pipeline to Rossing Mine. Water is already treated, thus no Water Treatment Plant is required;
- Upgrade and maintain existing infrastructure in town as per 2005 Water Master Plan for Swakopmund.

Low Pressure Areas for high-rise developments

- Upgrading of existing infrastructure and installation of pressure enhancing installations to accommodate high-rise developments in areas as identified for same.
- Creation of separate storage capacity.
- New developments – responsibility of the Developers to ensure sufficient water supply and pressure.
- Development east of the Bypass – Separate storage capacity appropriately located to ensure sufficient pressure.

6.10.2 Sewerage

The following strategies need to be effected for effective sewerage management:

- Sewerage outfall generated by new developments and extensions of the town in Areas A to D, (figure 8 Section I.) should be collected and diverted directly to the new WWTP by means of lifting stations and direct gravity connections and not to any of the existing systems;
- Sewerage outfall generated by new developments east of the Bypass Road should be diverted directly to the new WWTP by means of lifting stations and direct gravity connections;
- Problems currently being experienced in terms of operational and process efficiency need to be address as a matter of urgency as it limits capacity;
- Provision to be made for increasing the capacity of the existing Wastewater Treatment Plant to accommodate sewerage outfall generated by future development of Swakopmund;
- Sewerage outfall generated by the identified Industrial Area and surrounding developments at Nonidas should be directed to a dedicated Wastewater Treatment Plant appropriately located to ensure that the whole area can be fully serviced;
- Provide a Purified Effluent distribution network and storage capacity on a phased approach to proactively provide the necessary infrastructure to make provision for the development of “Urban Agriculture Areas” and to provide Purified Effluent water to the small holdings for agricultural purposes.

6.10.3 Electrical Supply

Ensure that the following network upgrades as envisaged by ErongoRed realize in the near future:

- Distribution of outer networks to be upgraded from 22kV to 44kV operated at 33kV.
- Construction of a new intake station with a capacity of 60MVA.
- Construction of a NamPower ring network connecting Tamarisk and Mandume substations.
- Increased Erongo RED distribution ring networks.

These upgrades will be sufficient in order to cater for the expected long-term development and increase in demand of Swakopmund for the duration of the Structure Plan period.

6.10.4 Waste Management

The following strategies need to be effected for efficient and effective waste management:

- Reserve sufficient space for the expansion of the solid waste site until year 2040 and beyond.
- The recommendations contained in the EMP compiled by Pwayela Trading Enterprises should be implemented.
- Ensure that the Site Management Company complies with contractual requirements.
- Planned/phased maintenance and increase of resources required to sustain operations to 2040 and beyond.

6.10.5 Roads

The following need to be considered for the efficient and effective planning of road systems in Swakopmund:

Higher order movement route connections

Higher order movement routes, in the form of vehicle only links or mixed-mode links carrying greater volumes and densities of vehicular traffic, which lead to, across, and out of the site, facilitate longer distance intra-settlement connections (Guidelines for Human Settlement Planning and Design - Volume I, 2003).

These links very often do not allow direct access to residential areas or other developed areas as their function is to allow mobility and ease of movement, travelling to and from one area to another.

In many cases the need for, and the alignment of, these higher order movement routes across a site will already have been identified in development or Structure Plans. In these cases, the proposed higher order routes need to be accommodated within the area, and the planning and design of the local movement networks needs to be done in relation to these dedicated alignments.

Of particular importance, is the fact that when these higher order routes take the form of vehicle-only links, the relationship between vehicle-only and higher order mixed-mode links, needs to be considered.
A major arterial network is intended to accommodate major traffic movements and to link the major districts of towns and cities. They serve as “mobility” routes, which have a limited number of interchanges or intersections and a large degree of access control to fronting properties. Minor arterials in turn feed traffic from the major arterials into and from the main urban districts and provide the linkage between them. These are generally the ideal roads for bus and taxi movement. While there are usually some restrictions on frontage access and restraints on street parking on this type of road, particularly during peak hours, the standard of intersection spacing tends to be lower and there is considerable cross-traffic and pedestrian movement, and there are many pedestrian footways at the roadside.

There is a large amount of interaction and cross-traffic that produces a reduced speed of movement.

Activity streets that do not form part of the urban road hierarchy and have not been planned but usually evolve over time. They are streets that experience mixed traffic and intense fronting land use activity. Many activity streets start life as high-mobility arterials but, because of their high accessibility, become congested and attract commercial land use. Activity streets are the ideal locus of road-based public transport services.

Town and Urban Planners should provide layouts and land-use plans which facilitate the emergence of “activity streets” as the basis of public transport corridors. Typically, there should be interaction between one side of the street and the other, with much pedestrian crossing, so the scale of the street should be modest.

Public transport should be precluded from using Local (access) streets. This type of street should be designed to facilitate mixed traffic within neighborhoods in safety and at low speed.

It is thus important that specific attention is given to the following:

**Movement Networks**

- Basic relationships need to be created between vehicle-only, mixed-mode, and pedestrian-only links.
- Public right-of-way networks need to be configured in particular generic ways.

- Higher order mixed-mode links should run parallel to high-capacity vehicle-only links.
- Higher order mixed-mode links and vehicle only links should be close enough to make it relatively easy for vehicles to move between the two routes, yet ensure that the fragmentary impact of the higher order facility, particularly if it is a freeway, does not prevent commercial and public facility activities from locating on either side of the mixed-mode link.
- Access interchanges between vehicle-only links and higher order mixed-mode links, as well as system interchanges between vehicle-only links themselves, should be designed to facilitate safe and uniform operating conditions.
- To improve internal traffic flow mobility (activity) routes should be investigated especially for new developments.

**Public Transport**

- Provide for an urban structure of walkable neighbourhoods clustered together to form a town of compatibly mixed uses, in order to reduce car dependence for access to activities.
- Ensure that walkable neighbourhoods and access to services and facilities are designed for all users, including those with disabilities;
- Facilitates development that supports the efficiency of public transport systems, with safe and direct access;
- Provides a variety of plot sizes and housing types to cater for the diverse housing needs of urban dwellers at densities that can support the provision of viable public transport.

**Capacity of roads**

Urban areas are largely dependent on a legible and hierarchal road system which facilitates future urban expansion, growth and this an increase in traffic volumes. In order for the organized and well-coordinated development of Swakopmund the following aspects should be focused on:

- Determine the impact that the expansion of the town will have through further township development and the increase in traffic flow and patterns within Swakopmund by means of a Traffic Assessment.
- Carry out Site Traffic Assessments for each new township area to be developed in order to determine the traffic demand estimations and the impact of future traffic generation on the traffic flow and patterns in Swakopmund.

- Undertake Traffic assessments against a background of the greater development of the town and transportation planning of the Municipality.

- Execute regular traffic counts within the older part of town to record planning data on traffic volumes and the increase therein.

- Determine traffic flow patterns in order to plan future traffic flow.

The proposed road hierarchies and their urban functions allocated to them are indicated on Figure 64 and Figure 73 respectively.
Chapter 7: The Swakopmund Structure Plan 2020-2040

Future planning and land use allocations are to be guided by Chapter 7. The plan is largely based on the environmental inputs provided in Chapter 3. Sustainability and resource utilization is a key consideration. The planning process in this chapter is heavily centered on the vision of a sustainable, liveable and inclusive human scale city.

Meeting the needs of Swakopmund should be properly managed to ensure that new developments and other interventions protect and enhance the heritage, neighbourhood character and the economic capacity of planned and existing activity centres of the town.

"Existing precinct" refers to the current build up area of Swakopmund and all areas that are to be developed within the lifespan of this structure plan. The development of the existing precinct also focuses on adding choice and not taking existing rights of freestanding neighbourhoods away.

"Future precinct" refers to the area east of the new bypass and north of the B2, excluding the proposed airport site, the heavy and noxious industrial area north of the B2, the municipal quarry area, the new prison, the satellite station, the Limestone mining area, the shooting range and the municipal room (Waste Management and Ecological Energy Generation). This area is envisioned to include developments such as economic corridor areas, the new Nonidas CBD and future high density and mixed use developments etc. The development in this area is recommended for future planning beyond the lifespan of the 2020-2040 Swakopmund Structure Plan as it will enhance and support the interventions prescribed in the 20 year horizon of this plan.

The urban form and development strategies for the ‘existing precinct’ were largely discussed in Chapter 6. The longer term development strategies which largely include the undeveloped townlands area to be developed after 2040 is discussed in more detail within this chapter. The two precincts are illustrated in Figure 87 below. Existing precinct in dark grey, while the future precinct is light grey.

Figure 87: concept map highlighting future precinct and existing precinct
7.1 Environmental Considerations and Agriculture

This zone is of all the green areas appearing on the Structure Plan map which are made of all the Environmental Considerations discussed in Chapter 3 that inform the strategies discussed in Chapter 6. This zone also discusses the area reserved for Agriculture as it is mainly located in close proximity to the Environmental drivers.

Location and extent of Zones on the Structure Plan map:

Figure 88: Environmental considerations and Agriculture sites
7.1.1 Environmental considerations

Zones on Structure Plan map: P,T,W

Metropolitan open space systems and environmental sensitive areas which are created to preserve and respect the environmental heritage of an urban setting are increasingly being recognized to be public spaces. The creation of conservancy zones or areas is thus considered to be long term investments into future generations.

The Eco Zone (marked “P”) on the overall structure plan map is to be preserved as it is either sensitive or of natural significance. This zone is made up of areas such the:

- Beach;
- River;
- Bird areas;
- Lichen fields and
- areas that should be maintained such as the 200m green corridor along the B2 into town.

These environmental drivers thus inform the location of other land uses.

For these areas, non-invasive recreational activities such as picnics, walking trails, bicycle routes, informal day camping facilities, camel and horse riding especially along the river are permitted. This area will be accessible to the general public for public use on conditions determined by Council.

Restrictions:

This area should make up the greenbelt of Swakopmund and should not be subdivided. Motorised vehicles should not be permitted in these area. Invasive activities such as quadbikes and motorbikes or off road driving should not take place in this area other than within localised areas as identified by Council for the specific use of an recreational activity.

7.1.2 Agriculture

Zones on Structure Plan map: B,D,L

Agricultural land needs to be reserved for urban farming to diversify the economy and create jobs for food and economic security. Agriculture does not necessarily refer to ploughing and growing crops, but can be in the form of feedlots, horticulture, mariculture/aquaculture, urban farming within existing town (to encourage backyard or even rooftop gardening), allotment gardens and/or ornamental gardens making use of recycled water etc.

These forms have been categorized into 3 zones for agriculture in the structure plan, namely:

- The Agriculture estates in the smallholdings;
- The allotment gardens and/or ornamental gardens; and
- The urban agriculture zone along the banks of the Swakop River.

a) Urban Agriculture

This area (Zone B) can be utilised for market gardens, poultry or pig farms, feedlots, hydroponic and ornamental gardens, horticulture, mariculture/aquaculture or then similar uses.

Within residential areas, small scale urban agriculture can also be practised to encourage backyard or even rooftop gardening.

b) Agricultural Estate

The agricultural estates (Zone D) is to form a agricultural dominated land use area which forms part of the peripheral greenbelt to be preserved along the peripheral areas of the Swakopmund Townlands. Due to the rocky and infertile topsoil conditions as well as the undulating topography found within this area, as well as the remoteness of the zone from the urban area the area is to be reserved for agricultural uses such as animal husbandry, feedlots, hydroponic and ornamental gardens or then any agricultural activity requiring larger land parcels. As such the smallholdings within this area should not be smaller than 10 Hectares.

Restrictions:

Strict restrictions should be put in place to restrict owners of these plots to further subdivide any smallholding if the minimum site requirement cannot be met. However, exemptions can be made for plots that accommodate two or more existing residential structures (main dwelling units) which were constructed with approved building plans prior to the adoption of this Structure Plan who wish to subdivide. The minimum sizes and land use allocation is further set out under the Small Holdings Policy Plan in the separate policy document.

No industrial activity should be permitted in this area. However economic incentives such as a neighborhood market or a farm stall can be permitted on conditions determined by Council.

c) Allotment Gardens (Urban Agriculture)

This zone (Zone L) will comprise of:

- Land parcels allocated to individuals or community groups for non-commercial gardening or growing food plants. These areas can be subdivided and rented to local people so that they can grow their own fruit, vegetables, and flowers as part of food security or then as recreational activity.
- Small scale community or non-profit organisation (NGO) driven urban agriculture projects; and
- Sport field.

Where possible the use of excessive semi-purified water originating from the municipal sewer works can be used in support of these activities.

The private railway line connecting the Swakopmund station with the salt pans going up north could be accommodated to the east of the C34 and within the greenbelt ‘L’ if it then materializes.
7.2 Transport systems

This zone is made of:
- road networks of different hierarchies and gateways for the main entrances into the townlands;
- ring roads;
- the rail line(s) and train stations;
- new Swakopmund airport and airport estates.

7.2.1 Road networks

Major road corridors need to be reserved in future planning to ensure connectivity and functioning of those in the existing precinct. As discussed in chapter 6, the roads are ranked into 3 categories namely:

Major arterials - intended to accommodate major traffic and link major districts of the town. For Swakopmund's existing precinct, this is the Daniel Kamho Avenue. While the ring road connecting from Daniel Kamho and running up north separating the developable land from the nature conservation area connecting to the B2 gateway could either be for the future precinct, or the existing. It all depends on when the airport is successfully relocated because apart from creating a buffer, it is mainly a form of a bypass road for the ease of access to the airport without having to come all the way into Swakopmund.

These roads will be developed as fast moving lanes with multiple lanes to ensure continuous traffic movement and will have limited access by secondary roads.

Minor arterials - feed traffic from the major arterials into and from and provide linkage between the ideal roads for bus and taxi movement. For both the existing and proposed precinct, this is all the other roads that are visible on the structure plan map excluding the new bypass and the B2. These roads will accommodate NMT routes on the roadside.

Public transport and higher order buildings along these roads is highly encouraged.

Ring roads

A small scale inner ring road is to be developed for fast moving traffic as highlighted below in blue as the first phase for the development of ring roads for the period of the Structure Plan. This is in addition to the largest scale ring road highlighted below in orange which will be developed as the second phase of ring roads as a bypass to the airport from the B2 and also for the future precinct from the C34 from Henties Bay. This road serves on a more townlands scale. For the future precinct, the medium scale ring road highlighted below in yellow is to be developed to serve the land uses envisioned to be located within the future precinct.

The ring roads are of different functions and orders as described below:

- Small scale inner ring road – for fast moving traffic between the Matutura CBD and the Swakopmund Historic CBD. This road will have multiple access that is complemented by multiple lanes to enable fast moving traffic.
- Medium scale ring road – inner ring road for the townlands scale that connects all 3 future CBD’s (Nonidas, Mondesa and Swakopmund Historic). This road will have multiple access and multiple lanes that are separated. This will provide a competitive advantage for efficient public transport which will also be prioritized here.
- Largest scale ring road – outer ring road for the townlands scale. This road will have reduced access for continuous traffic movement. It can however still accommodate public transport thus it will have bus and taxi stops.

Figure 89: Transport systems
Breaking barriers (new linkages)

As per the regulations of the road authority there are restrictions of access onto National roads i.e. the B2 and the new bypass former C34. The structure plan thus recommends use of bridges as they don’t directly interfere with the movement of these roads.

As discussed in Chapter 6, there is a need for bridges to link especially over the new bypass and the railway line. The structure plan thus proposes a bridge to create a link between:

- Kramersdorf and Rossmund connect the old CBD and the rest of the town’s build-up area to the small holdings.
- Existing precinct on the east of the bypass to the west for continuous activity corridor from the old CBD, the light industrial and mixed use area and the university site to the Nonidas CBD.
- For the future precinct, two (2) road over rail bridges are needed to connect the rest of the future precinct north of the railway line to the industrial (light industrial, general industrial, noxious industrial and resource mining) area, residential area (J1), the B2, the small holdings, the river and other land uses and activities taking place south of the railway line.

Gateways

The structure plan hereby recommends 3 gateways for Swakopmund located at the first main intersections of the town with “Welcome to Swakopmund” signage in the existing precinct. These are:

- B2 – located at the first main intersection as you enter the town from Arandis. This is an important intersection as it connects the future precinct area north of the B2 to the Small holdings and the river south of the B2. As such it boosts the potential of the industrial area by connecting the national railway line to the national road. This gateway thus includes a 20 hectare truckport.
- The new bypass to Henties Bay – lies at the intersection that connect the Daniel Kamho Avenue in the existing precinct to the proposed airport site and the Major arterial ‘ring road’ into the future precinct.
- The new bypass to Walvis Bay – lies just before the Road Over River Bridge

7.2.2 Airport and Airport Estates

A portion of land north of the townlands within the conservation is reserved for airport re-location. This is a key objective to the Structure Plan as it will unlock so many socio-economic possibilities and opportunities given that the existing airport site can be used for urban development. The ‘old airport site’ is just over 200 Hectares in size while the new one will be ± 375 Hectares.

The proposed airport site will also include Airport Estates whereby homeowners can live with their aircrafts and have personal access to the Airport.

a) Airport (N1)

The airport is being relocated based on the issues discussed in the problem statement, Chapter 4. This location was decided on because an airport there would create a good buffer zone and is a compatible land use that compliments the protection of the lichen fields.

This airport is not to be a duplication of Walvis Bay International Airport but rather a strong tourism, business and goods hub in support of the local economy.

b) Airport estates (N2)

This land use is to be included within the airport site. This is an exclusive gated community with paved taxiways/streets, underground utilities i.e. sewer, water, electricity etc. Having this provision for the airport will make the airport more attractive and viable. It also provides convenience of a ‘live at work’ environment for others that can’t own hangars.

These estates can be allocated at a long term lease contract. Beneficiaries will have to sign an agreement of Lease and are obliged to pay after an initial grace period has expired, an annual rental fee for the lease. This is because there can only be a limited number of hangars available and it is a great way for the municipality to manage this area. Buildings to be erected on these portions of land are to be done with council approval based on criteria as per the Town Planning Scheme.

7.2.3 Rail

Similarly to the airport, the railway is to be realigned as per the issues highlighted in chapter 4 and the strategy discussed in Chapter 6 (6.1.2). This intervention creates opportunity to introduce trams or light passenger rails to Swakopmund as well as dedicated trains (i.e. Desert Express or Rovos Rail) on existing line into town. This light passenger rail can be accommodated from the train station north of the ‘old airport site’, all through the rail curve at the university site (see Figure 95: Institutional sites) up until the alternative university site. This train station is mainly for passenger transition and handling of non-hazardous cargo that needs to be transported into Swakopmund.

Another train station is to be erected north of the Nonidas industrial area. A train station and dry port for the Nonidas industrial area that services the resource mining area, the Nonidas industrial, the noxious industry and the light industrial area. The proximity to the dry port at the gateway on B2 creates a logistics competitive advantage for the cargo to transition from road to rail and vise-versa.
7.3 Economic nodes and corridors

The Structure Plan promotes walkability, vibrancy and economic development by introducing shop house and mixed use developments along economic corridors. This zone is made up of:

- Economic nodes
  - Swakopmund Historical CBD
  - Matutura CBD
  - Low order economic node on along the B2 at the first entrance towards east into Rossmund and the residential estate in the small holdings area. This node connects the B2 to the Nonidas CBD up north.
  - Nonidas CBD and other low order nodes within the future precinct

- Economic corridors
  - Mixed use corridors made of large order economic activities fused with high density residential areas. These corridors have an average width of 100m.
  - On a smaller scale, not visible on the Structure Plan map, there are economic corridors of house shops and shop houses envisioned for the existing residential areas (see: Figure 73: Residential Densities).

Location and extent of Zones on the Structure Plan map:

Figure 91: Economic nodes and corridors
For these interventions to become a reality, the threshold demand of some commercial centers was assessed and analyzed with precedents as follows:

- **Low Order Retail Complex in Mixed-Use Developments**
  Precedent: Hidas shopping center in Klein Windhoek
  ±2000 persons living in and around the immediate demand area would provide an appropriate threshold to support a development of 2000-5000m² of developable Gross Letting Area (GLA) (DeAth, 2020). This may include a small food anchor, hardware store (for convenience more than hardcore building works) and a couple of take away stores (ibid.).

- **Mid-Size Retail Development**
  Precedent: Baines Shopping center, Pioneerspark, Windhoek
  ±5000-15,000 people in a particular area would provide for a developable centre of roughly 10,000m² which would service the immediate neighborhood and its surrounds (ibid.).

- **A Sub-Regional Centre**
  Precedent: Grove Mall of Namibia
  These centers are a bit tricky for the Namibian context. If there are already high order existing retail offerings with a double anchor like the Platz am Meer, it makes it difficult to get these anchors to easily commit to new stores until the demand is absolutely clear and they can justify (a) the capital expense of opening an additional store and (b) that they wouldn’t cannibalize on their own existing store(s) close by (ibid.).
  A centre like this would typically require anywhere from 15,000 persons in the immediate area to 25,000 noting that it would have to differentiate itself quite well to again ‘pull’ customers closer to other retail offerings with a nicer product offering, unique tenant mix and a desirable shopping experience (ibid.).

- **A new retail heart for the larger area such as a new or then secondary business centre**
  Probably a similar answer to the above where about 25,000 people would justify a new decentralized development node for offices, a new gym, retail etc.

### 7.3.1 Economic nodes

Council realizes the need of the town’s commerce area to be revitalized and enhanced. The Swakopmund Historical CBD area has no room for expansion or transformation due to the restrictions by the National Heritage Act, No. 27 of 2004. Council then identified the 'Matutura CBD' area to serve a more neighborhood type function as a support to the Swakopmund Historical CBD.

However this CBD will not be able to service the population accommodated in the future precinct. Thus a new and larger order CBD is envisioned for the future precinct, the Nonidas CBD.

#### a) Swakopmund Historical CBD

The Swakop CBD is about ± 167 Hectares in extent and consists of predominantly business zoned erven with some other uses such as General Residential.

This area is to be revitalised without destroying the façade of the buildings to incorporate more flexible use of retail, office and residential. Other specifications are contained in the Business Zone Development and Height Policy (in the separate policy document).

The development of pedestrian walk paths in between city blocks are encouraged, for improved permeability.

#### b) Matutura CBD

It is proposed that the Nonidas CBD takes on the function of a sub-regional centre. As the historical CBD has limited space of future expansion. The Matutura CBD is to be developed within the horizon of this structure plan to take some of the pressure off the existing CBD. It is estimated that this area is about ± 80 Hectares in extent with a slightly higher bulk and higher density.

#### c) Low order economic nodes

These nodes, marked as ‘activity node’ on the map are meant to serve a smaller localised area with business opportunities. The role of such business nodes are, to compliment and support communities living further away from the CBD and to maintain vibrancy throughout the city by allowing for a mix of uses in these areas by having a mix of business, office and residential uses. These nodes should have a lower bulk allocation than the central business area.

#### d) Nonidas CBD

When developed, the Nonidas CBD will be the largest CBD in the Swakopmund Townlands. The CBD is expected to only become economically viable after 2040 because this this kind of development will require an excess of 25 000 people living within its vicinity to become economically independent and viable. The areas to be reserved for the Nonidas CBD should be between 120 Hectares and 150 Hectares. The CBD is further complimented by low order economic nodes discussed in (c) and seen on the map and will be developed as a sub-regional centre.

This CBD is to be linked to the Swakopmund Historical CBD via a proposed prominent mixed use corridor (see 7.3.2) that makes up the medium scale ring road discussed in 7.2.1. The area to be reserved for the Nonidas CBD should be between 120Ha and 150 Hectares.

To distinguish the Nonidas CBD from both the historic and the Matutura CBD, this modern commercial hub should accommodate and encourage high rise buildings of up to 40m.

### 7.3.2 Mixed-Use Economic corridors

These corridors will have an average width of 100m, 50m on each side of the road.

The main aim of these corridors is to:
- promote connectivity between economic nodes by means of a high intensity activity street which supports a range of different activities and modes of transport and;
- structurally increase the density and intensity of land uses.

On a smaller scale, not visible on the Structure Plan map, there are economic corridors mainly comprising of house shops and shop houses. These are mainly envisioned for the existing residential areas.

#### a) Mixed-Use Corridors

The major mixed use corridors are indicated on the Structure Plan Map (Map 3). High Density areas or buildings in these corridors are to be utilized for retail and storage, banks, offices and/or high density residential. These kind of developments provide a competitive advantage for other urban components in a sense that areas with Mixed-Use Developments are occupied 24 hours a day. The Daniel Kamho description below, will be used as a precedent for the other two corridors in addition to the specific features discussed.

The calculations of these corridors are based on a household size of 3.1 and a density of 1:50. This is based on 60% non-residential use.
Urban design of Mixed-Use corridors in the Existing Precinct:

**Daniel Kamho Avenue Corridor:**
This corridor can accommodate 350 households which is approximately 1 085 people. This road reserve is at its widest 80m and ±78m at its narrowest. It provides the unique opportunity to not only reintegrate historically separated areas, but also provide a new opportunity to extend the existing commercial center and link it with the lower income, less developed areas to the north. In so doing a new and exciting participatory economic and social integration project for the entire city can be initiated.

This is an absolutely unique opportunity exclusive to Swakopmund, in which, with minimal local investment, a completely new local economic development program can be initiated.

- The road width is to be subdivided to include sufficient pavement space, slipways, bicycle ways, planting areas, parking areas, bus stops and a four lane road as per suggested sketch plans in Chapter 6.
- Introduction of small (minimum 300m²) mixed-use residential and commercial properties with a minimum 8m street boundary width and minimum 27m erf depth on the western side of the road. A remaining 10m exclusive alleyway is to remain at the back of these properties. Access to this alleyway is to be via small access roads between every minimum 10 erven. (see suggested road subdivision plan). A minimum of 370 new erven is possible.
- All new and existing services such as electricity, telecom, water and sewer lines are to be located in this alleyway.
- Any new erven may not be consolidated, but should be allowed to subdivide.
- All new erven are to be allowed to be developed from side to side and back to front. No building lines. Minimum fire and ventilation regulations are, however, still to be adhered to. Suggested permission for the construction of covered walkways on the pavement area.
- Maximum building height of new erven is to be 12m including top of roof. Ideally the roof landscape is to be flat and usable.
- Small public open spaces should be spaced every 500m along this route.
- A professional urban design firm or urban design competition is to be initiated to design the detail development of this precinct, particularly the western part of the road.

Swakopmund Historical CBD to the New Bypass:

- Existing private properties on the eastern side of the road should be allowed to densify, no building lines. Maximum building height to be maximum allowable, i.e. 40m.
- Municipal sewer works and nursery is to become a public open space with bird sanctuary.
- Existing open property to the south of Atlantic High school is to be reserved for a large vocational training center.
- Area at the north-western corner of the Dr. Schwietering Street and Daniel Kamho intersection is to be dedicated as public transport hub and commercial activity zone.

Urban design of Mixed-Use corridors in the Future Precinct:

**Nonidas Mixed-Use Corridor:**

The length of this corridor is approximately 10 000 m as measured from the New Bypass to the activity node north east of the townlands on the proposed ring road. This corridor connects the existing precinct via a road over rail light passenger bridge.

Bulk and high densities are encouraged to be highest in this corridor and based on calculations, this corridor will be able to accommodate approximately 8 000 households which is ± 24 800 people within the high density mixed use buildings.

All the corridors in totality can accommodate approximately 16 670 households which is ± 51 677 people.

**SME corridor**

The length of this corridor is approximately 5 000 m as measured from the New Bypass towards the activity node north of the Nonidas CBD. This corridor can be an SME type of corridor where one could find goods produced from the recycle plant north of this corridor.

This type of local economic incentive can best flourish especially on the part between the municipal utility land portions and then fuse into a mixed use corridor as it runs within the agriculture zone towards the activity node north of the Nonidas CBD (refer to the Structure Plan Map - map no. 3).

This link is important for the continuation of the Matutura CBD corridor and completes the medium scale ring road discussed in 7.2.1.
7.4 Residential

Zones on Structure Plan map: A, C, H1, H2, H3, J1, J2, J3

The main idea is for Swakopmund to contain urban sprawl and the adverse spatial and socio-economic effects associated with it.

This zone is made up 6 different residential typologies:

- Low Density Residential
- Residential Estate (3.5 Ha Minimum)
- Proposed High Density Residential
- Existing residential areas to be made more vibrant through placemaking initiatives
- Future High Density Residential Development

Location and extent of Zones on the Structure Plan map:

The need:

Based on the residential densities calculated in Figure 8 (Chapter 2, Section I), the calculated population of Swakopmund was expected to be approximately 66,000 in 2020. The population of Swakopmund is expected to increase to approximately 113,467 by 2040. This is based on the 5.3% growth rate and a 3.1 household size. Swakopmund will have to provide accommodation for an additional 22,200 households by the year 2040.

7.4.1 Residential areas for the existing precinct

In order to curb urban sprawl, Swakopmund should strive for a more compact urban form. This can be achieved through the promotion of densification, intensification, urban infill.

It is expected that, based on current housing densities:

(a) Areas A to F, as calculated in Table 6 of Chapter 2, will be able to accommodate about 25,675 residential dwellings.
(b) Daniel Kamho Avenue, as per the calculations in Chapter 6.2.2 (B) in Section II, will be able to accommodate 350 high density residential dwellings.

It is thus estimated that the undeveloped area to the west of the new Walvis Bay to Henties Bay bypass as currently under construction, in addition to the Daniel Kamho avenue will be able to accommodate approximately 26,025 residential units.
A. Low Density Residential

Low Density Residential areas are to be located along the beach, the river and north of the Rossmund golf course. These areas consist of one to two storey homes. These areas have the lowest building heights in the townlands, to preserve and limit building heights from causing a visual barrier for all the developments falling behind it.

A new precinct to be included in this area is the Mile 4 residential precinct that is about 60 Hectares in extent. This precinct is to be developed in a way that the residential units have unrestricted visual access to view that is the Salt pans.

In addition to the 26 025 housing provisions to be provided by area A-F and the Daniel Kamho activity corridor, the proposed Mile 4 residential precinct will be able to accommodate about 635 households which is approximately 1 968 people.

B. Residential Estate

The residential estate (Zone C) is to widen the choice of living within a rural setting by permitting smallholdings of not less than 3.5 Hectare. The area should not be developed into a low density residential area similar to the Rossmund Golf Estate and emphasis is to be placed on maintaining the rural setting by preventing non-complying land uses such as industrial, warehousing, scrap yards or other non-residential land used to penetrate this area.

The keeping of domestic animals, inclusive of horses, poultry, sheep or pigs and the cultivating of orchid gardens and plantations inclusive of nurseries within this area is encouraged. With special permission of pigs and the cultivating of orchid gardens and plantations inclusive of the keeping of domestic animals, inclusive of horses, poultry, sheep or pigs, the cultivating of orchid gardens and plantations inclusive of nurseries within this area is encouraged.

Restrictions:

Strict restrictions should be put in place to restrict owners of these plots to further subdivide any smallholding if the minimum site requirement cannot be met. However, exemptions can be made for plots that accommodate two or more existing residential structures (main dwelling units) which were constructed with approved building plans prior to the adoption of this Structure Plan who wish to subdivide.

C. Proposed High Density Residential

High density residential areas will consist of buildings and dwelling units containing of more than one storey, compact residential units i.e. row housing etc., erven containing three or more dwelling units. In this area, where flats are permissible, fewer than three dwelling units shall also be permissible, with Council approval.

D. Existing residential areas to be made more vibrant through placemaking initiatives

Existing residential areas will be prioritized for medium density residential. These areas will also be prioritized for creation of vibrant spaces of social integration i.e. infill placemaking elements, shop houses etc.

This areas are marked H3 on the Structure Plan map and are mostly made of Mondesa, DRC, Tamariskia, Vineta etc.

E. Flexible Land Tenure Area

The tenure system aims to: create alternative forms of land titles that are simpler and cheaper to administer than existing forms of titles; provide security of title for people who live in informal settlements; provide security of title for people who have low-income housing and empowering the persons concerned economically by means of these rights (Christensen, 2017). Although it originates with informality, overtime it can be upgraded to full ownership.

The difference between this form of tenure and others such as Freehold etc., is the capacity to mortgage the land by providing access to a system that allows for an affordable, more secure, but simple right in land acquisition (Christensen, 2005). Many poor people lack any long-term security of tenure, having no rights to the land upon which they have settled in rapidly expanding urban areas (ibid.). This is more like a ‘package of plans approach’ to land acquisition and settlement. For more information on this form of Tenure, see Annexure C.

The structure plan has reserved the vacant portion of land opposite the salt pans, east of the Daniel Kamho Avenue. As calculated to be Area A in Table 6 of Chapter 2 is 459 Hectares in extent and can accommodate up to 7 213 erven at 1:350 density, this density can be increased or reduced at the discretion of the Swakopmund Municipality. The implementation and allocation of rights in the flexible land tenure area will be in correlation with the Town Planning Scheme.

7.4.2 Residential areas for the future precinct

For completion of the plan, and to provide development guidance and land use control within the areas no to be developed within the expected lifespan of this structure plan, the plan sets forth recommendations for compatible land uses that could be developed for the eastern side of the bypass which inter-alia includes land to be reserve for long term residential development.

Once the existing precinct townlands has reached its carrying capacity, which based on the calculations in Chapter 2 will be almost 30 years from now, the development of the town will need to expand into the future precinct to accommodate urban growth. There are a number of ways new developments could be carried out.

This precinct is to be developed in phases as per the subscript numbers i.e. J1, J2 and J3. The first jump/crossover of the bypass should be at the intersection into J1 because of connectivity (water and other infrastructure).

- Area J1 is approximately ± 853 Hectares in size and could accommodate approximately 15 638 residential units which is approximately 48 479 people.
- Area J2 is approximately 985 Hectares in size and could accommodate approximately 18 058 residential units which is approximately 55 980 people.
- Area J3 is approximately 479 Hectares in size and could accommodate approximately 8 782 residential units which is approximately 27 223 people.

The calculations above are calculated at a 1:300 density with a 45% non-residential use. The areas above will be able to accommodate ± 47 478 Residential dwellings.

It should be noted that the plan is not promoting consecutive development of the various areas but rather has the aim to widen the choice and affordability of housing by facilitating developments in parallel with the conventional, mixed use and economic corridor developments is a balanced and sustainable manner. The following map depicts the residential areas to be developed within the lifespan of this plan, the following sections describing the intended land use and compatibility.
7.5 Industrial

For this zone, the Structure Plan removes the heavy industrial land uses out of the city center so that the light industrial and mixed use sectors are given opportunity to flourish.

Location and extent of Zones on the Structure Plan map:

Figure 93: Industrial sites
7.5.1 Light Industrial – Mixed Use Zone

This locality of these areas provides a competitive advantage compared to others in the sense that, it is bordered to its north by the national rail, the train station and the activity corridor going to the Nonidas CBD; to the east, is the new bypass and to the south is the national road (B2); it is close to the old CBD; it is relatively close to both university sites and to high density residential areas.

The mixed use developments both commercial and residential can thus benefit from the influx of students in the area, the proximity to residential areas and the passengers in transit. These structuring elements bordering this zone also provide good barriers that prevent light industrial uses from encroaching into other zones.

The light industrial areas, based on a 1:100 density, 2.5% household size and 20% residential use can accommodate:

- 6,180 households which is approximately 15,450 inhabitants ‘old airport site’;
- Light industrial area east of bypass is about 836 Hectares and will be able to accommodate approximately 16,711 residential units which is around 51,805 people based on 80% non-residential and 1:100 density.

The **Limestone Mining area** applied for by Gecko mining initially stretched over the site that the proposed airport is to be located on. Within the area applied for is two priority areas that sandwich the airport site as illustrated in the overall Structure Plan Map at the end of this chapter.

For security and safety purposes, a buffer area of about 400m to permanent infrastructure is required as there a rocks that are likely to fly as far as that distance when blasting happens. The airport is about 500m away from the limestone area on its western side while the buffer area from the airport estates to the limestone area on the eastern side is about 1300m.

Blasts are scheduled and take approximately 1-2 seconds, thus in a case where these blasting areas are located close to the airport, communication can be made with the airport on blasting appointments. When conducted efficiently and effectively, the project will only need to do an average of 4 blasts a year.

Figure 94: Relationship between Limestone Mining area and the proposed airport site

The illustration above can be used to determine if council will approve the dotted area for mining or just the priority areas. A critical investigation will need to be conducted to carefully analyze the effects of the mining activities to surrounding land uses pending this decision.

7.5.2 Resource Mining

There is an area reserved for **resource mining**. This is so that, **Gravel and Sand Mining** is shifted to prevent disturbance of soil within areas reserved for urban development, even beyond life of this plan.

The availability, suitability and quality of the in-situ material for road construction purposes should be confirmed through a Geo-technical investigation as well as a Borrow Pit investigation by a competent and experienced Geo-technical laboratory. This is important to determine the extent of the resource and most importantly the sustainability of the resource.

If the investigations reveal that the area as indicated is not suitable, it a full borrow pit investigation will be carried out within the Swakopmund townlands in order to identify a suitable resource. In the event that either the indicated site is found to be suitable or another suitable site is identified, the requirements of applicable legislation should be strictly complied with.

These areas are easily connectable with the Nonidas Industrial area, the airport, the national rail network, the national road (B2) and the Walvis Bay National Harbor. The proximity of the limestone areas to the Namibian Harbor creates opportunity to access international markets with regards to limestone exportation.

7.5.3 General and Heavy Industrial

The Structure Plan encourages the development of the **Nonidas Industrial into strong industrial hub**. This is because, there is a need for larger industries which should then not be located within the urban built up and areas but in proximity with complimentary land uses such as the light industrial area, national rail and road (B2) providing access to national infrastructure and it is relatively far from residential areas.

In addition to heavy industrial i.e. the Nonidas and the resource mining area, this area also has the Municipal quarries and an area reserved for resource mining area. Like the light industrial, this area also has a good buffer zone around it: towards the north is the national rail and a train station and dry port, still in the north and stretching all the way to the east is the light industrial area that is primarily positioned there to create a smooth transition and buffer from the hazardous activity happening in the described industrial area into the residential areas north and west of this area; to the south is the national road (B2) and the gateway into Swakopmund that also includes a 20Ha dry port.
7.6 Institutions

As discussed in Chapter 6 (refer to 6.5 Public institutions, social services and facilities) and as illustrated on the zone map on the right, there are 2 tertiary institutions sites reserved within the townlands. These are:

- Planned university site at the railway curve close to the old CBD that is about 26 Ha in extent
- The alternative or can also be a second university site that is towards the south east of the town’s current build up area, that is about 23 Ha in extent

Smaller institutions such as places of instruction and learning such as adult and evening classes can also be accommodated within mixed use buildings and other multifunctional spaces that cannot be illustrated on this scale.

Based on Chapter 2 analysis, the Ministry of education also highlighted the need to build new schools, which the Municipality of Swakopmund will consider for new township establishments. These educational facilities area to be strategically located within residential areas or corridors to serve the communities accommodated within those spaces.

Location and extent of Zones on the Structure Plan map:
7.7 Motorsport and Recreation, Municipal room and other existing facilities

Location and extent of Zones on the Structure Plan map:

7.7.1 Municipal Utility Precinct

As discussed in Chapter 3 (3.8.17, d), this is the new sewage works and neighboring them is a landfill and quarry that is bordered by the shooting range. Extra land has been reserved around these facilities for future expansion of the municipal room. This area is approximately 548 Hectares in extent.

7.7.2 Motorsport and Active Recreation

This zone was adopted from the 2008 Long term Plan of Swakopmund discussed in Chapter 3 (3.1.2, B) and was shifted to an area with land uses more compatible such as the airport. Activities within this area might generate noise pollution which is best locate close to similar features such as the airport. More space is also needed for this land use compared to the area allocated in the 2008 Long-term Plan.

The motor sport area is ± 285 hectares in extent and will accommodate a range of outdoor activities usually of a more formal nature such as organized sports, performed with others that require equipment and extensive facilities that have a significant environmental impact on public open spaces thus needing special prescribed sites or fields. This includes but not limited to: swimming areas; playgrounds; the use of motorized vehicles either for racing such as motocross or non-racing competitions and off-road racing; tot lots; play fields; tennis and other court game facilities; a large Regional Sport Complex and other activities such as go-carts, paintball etc.

7.7.3 New Prison

This area is earmarked as a new prison site by the Namibian Correctional Service.

During the Focus Group Discussions, the representatives of the Namibian Correctional Service have highlighted that it might later be converted into a regional facility and shifted outside the townlands boundary into the Dorob National Park for security purposes.

In the event that it stays within the townlands, the representatives of the Namibian Correctional Service, have assured that movement of prisoners from the facility to the court will not be a challenge.

7.7.4 Satellite Tracking Station

Swakopmund tracking station is a Chinese space tracking station which is used for the Chinese manned space programme and tracks the re-entry of Chinese manned space vehicles. The site is located north of Swakopmund. There are two antennae on site for communicating with spacecraft, one 5m in diameter and the other 9m. The latter is 16m high (Global Security, 2011). An important aspect that needs to be addressed as part of the detailed investigations for the relocation of the airport by the Municipality and NCAA is the probability of radio frequency or radar interference between the two facilities. If potential conflict exists, ways to prevent/eliminate same should be investigated and implemented. The investigation should also be confirmed whether any of the existing buildings and the existing masts/antennae and beacons located on and around the satellite tracking station pose any hindrance or holds any safety risk for the proposed airport site.

Figure 96: Motorsport and Recreation, Municipal room, Satellite Tracking Station and New Prison
Chapter 8: Implementation of Plan

This chapter is to be concise, short and only to give direction to development finance requirements in terms of public vs private funding where the local authority (and GRN) is responsible for seed money development (water towers, sewage, main roads, planning and public spaces) and thus creating the enabling environment while the public sector latches onto these opportunities. (No amounts are to be specified for both).

The private sector can even encouraged to invest in public facilities in partnerships such as the public parking garage.

8.1 Phasing and programming
## IMPLEMENTATION PLAN

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Project Input</th>
<th>Estimated Project Cost Occurrence</th>
<th>Project Completion date</th>
<th>Approval</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2020/21</td>
<td>2021/22</td>
<td>2022/23</td>
<td>2023/24</td>
</tr>
<tr>
<td>Town Planning and Urban Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chapter 9: Annexures
## Annexure A: NamWater projects impacting the Structure Plan

### 5-Year Capital Development Plan FY2020-2024 - Namib Area

#### Projects Possibly Impacting on Swakopmund Townlands & Structure Plan

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CENTRAL COAST DESALINATION PLANT</td>
<td>This project deals with establishing another desalination plant at the coast for supply to coastal local authorities, Usakos, Karibib, Okahandja, Windhoek &amp; en route consumers. It will include a potable water conveyance system from the coast to the Central Area of Namibia. The project is currently in the feasibility study phase, which will be completed early in 2020. At this point (May 2019), go ahead of the full project is uncertain since other options also exist for supply to the Central Area. If implementation goes ahead, some bulk water supply &amp; associated infrastructure may run through Swakopmund Townlands. The outcome of the feasibility study will determine the way ahead. Total cost of this new scheme is guestimated to be N$10s of billions. Implementation period: 8-10 years</td>
</tr>
<tr>
<td>KUISEB COLLECTOR 2 - SCHWARZEKUPPE - SWAKOPMUND PIPELINE REPLACEMENT</td>
<td>This project involves the replacement of the existing Kuiseb-Schwarzekuppe-Swakopmund base pipeline along a very similar route to the existing pipeline at a total estimated cost of about N$ 575 million (excl. VAT). Project has already commenced and expected to be completed by 2023/24.</td>
</tr>
<tr>
<td>NAMIB NEW AREA OFFICE</td>
<td>New office buildings are to be constructed for NamWater's area office in Swakopmund at an estimated cost of about N$ 25 million (excl. VAT). The offices are planned to be constructed on an erf adjacent to the existing NamWater erf to the east of Swakopmund. The buildings are planned to be completed in 2023 pending availability of funding.</td>
</tr>
<tr>
<td>SWAKOPMUND - ROSSING UPGRADE</td>
<td>This project is ongoing and involves upgrading of the bulkwater transfer system between Swakopmund base reservoir and the Rössing terminal reservoirs near Arandis. Currently only the renovation of the pump station buildings is outstanding which is to be completed in 2020 at an estimated cost of N$ 4 million (excl. VAT).</td>
</tr>
<tr>
<td>SWAKOPMUND BASE CHLORINATION</td>
<td>The chlorination facilities at the Swakopmund base reservoir are to be replaced with a new installation at an estimated cost of N$ 3 million (excl. VAT). The project is planned to be completed in 2020.</td>
</tr>
<tr>
<td>SWAKOPMUND BASE RESERVOIR REHABILITATION</td>
<td>The existing 20,000 m³ rectangular concrete reservoir at Swakopmund base is currently being rehabilitated at a cost of N$ 7 million (excl. VAT). The work is scheduled to be completed in 2019.</td>
</tr>
</tbody>
</table>
Annexure B: Ministry of Education information on capacity of schools and ‘the need’
## Existing Schools and Their Capacities in 2015

<table>
<thead>
<tr>
<th>School Name</th>
<th>Enrolment</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-primary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gr. 1</td>
<td>Gr. 2</td>
</tr>
<tr>
<td>Namib High School</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Swakopmund Secondary School</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Swakopmund Private School</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Swakopmund Primary School</td>
<td>52</td>
<td>104</td>
</tr>
<tr>
<td>Westside High School</td>
<td>0</td>
<td>73</td>
</tr>
<tr>
<td>Namib Primary School</td>
<td>25</td>
<td>131</td>
</tr>
<tr>
<td>Pro-Ed Academy Private School Philadelphia</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>Coastal High School</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Festus Gonteb Junior Primary School</td>
<td>100</td>
<td>158</td>
</tr>
<tr>
<td>Vrede Rede Junior Primary School</td>
<td>54</td>
<td>146</td>
</tr>
<tr>
<td>Hangane Primary School</td>
<td>50</td>
<td>210</td>
</tr>
<tr>
<td>Tamariskia Primary School</td>
<td>80</td>
<td>144</td>
</tr>
<tr>
<td>Atlantic Junior Secondary School</td>
<td>52</td>
<td>80</td>
</tr>
<tr>
<td>Swakopmund Christian Academy</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Swakopmund School of Excellence</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>518</td>
<td>1165</td>
</tr>
</tbody>
</table>

DRAFT Swakopmund Structure Plan 2020-2040
Annexure C: Flexible Land Tenure Area (FLT)

The rapidly increasing and growth of informal settlements is a major problem in Namibia. Many rural to urban migrants settle in informal settlements without any form of security of tenure (Christensen, 2004). Currently, the Municipalities’ main engagement in informal settlements is through “slum upgrading”, but land tenure remains leasehold, as ownership remains under the municipality (Christensen, 2017).

In some cases, such “rent” becomes open-ended, without necessarily leading to tenure. In some instances, Municipalities don’t allow for improvements made to the land, because the ownership stays with them and therefore the possibility of moving/displacing a tenant becomes less if further improvements (e.g. erection of a building) are made to the land by the occupant (ibid.).

The Flexible Land Tenure system was developed by the Ministry of Land Reform, previously known as the Ministry of Lands and Resettlement, as an alternative for land tenure to cater for low income groups in 2012 (ibid.).

The focus of the FLT system is on empowerment. The system allows for formalization of land titling in a way that bypasses most of the bureaucracy.

The difference between FLT and full ownership schemes is that the cost. The FLT would allow for lowering costs of housing developments. This concept thus has the potential to improve the livelihood of the less privileged in our communities (The Namibian, 2020).

The scheme will create two land titles, the starter title and the landhold title. The two land titles can be transformed into a freehold title.

### Starter title

Starter title is a new basic form of tenure. Starter title is an individual type of tenure in that one person, as a custodian for a family or a household, is allocated a right to an unspecified site. It is, however, group based in that each household within a block erf must abide to the rules of the community laid down by a community association (ibid.).

In practice, informal sites may have been laid out within the block erf without proper survey by the local authority. This informal lay-out does not however affect the nature of the starter title right and the fact that it does not include a right to a specific site (ibid.). Only a defined number of starter titles should be permitted in a block erf so as to provide security against overcrowding through the continuous addition of relatives and newcomers (ibid.).

Starter title holders are advised on the starter title certificate that they should not erect permanent structures before their rights have been upgraded to landhold title rights or a layout for the area has been approved by the local authority (ibid.). If they should erect permanent structures and then be required to move in order to allow for roads or service provision, they will not be entitled to any compensation (ibid.).

### Landhold title

A statutory form of tenure with a limited range of transactions associated with it. The most important aspects of ownership, including mortgages, are allowed without the full range of transactions (with resulting complexities) that might arise in freehold ownership (ibid.). The owner is entitled to register servitudes over the property in order to facilitate the installation of services (ibid.).

Landhold titles will provide the beneficiaries and their families with security of title to the land they occupy, and enable them to use the title as collateral to raise funds from financial institutions for investment purposes (New Era, 2020). These titles can be upgraded to freehold and build decent houses of their choice which will be connected to essential services.

Landhold title should be capable of being sold, donated and inherited. It should be subject to all applicable changes in matrimonial regime. In contrast to starter title, it should be capable of being mortgaged and therefore sold in execution (The Namibian, 2020).

The difference between landhold and freehold is that the landhold is bound by a mortgage or other financial or Fintiy besides the owner hence the owner can enjoy free and full ownership of the property for purposes in accordance with the Swakopmund Municipality.
Annexure D: Shop-house property size analysis

Corner points of the analysis

For the analysis two erf depths of 29m and 26 meters was chosen, based on the available property depth at the Daniel Kamho activity corridor. This could then be applied to the other activity corridors. Various property widths ranging from 4m, 5m, 8m, 10.5m and 12 m were chosen. The resulting erf sizes ranged from 104m² until 348m². The assumption is that all properties border on the activity corridor at the front or shop side and an alleyway to the back which becomes the service access. Each property exhibits no building lines and the building height is restricted to 4 stories + roof in front and 2 stories + roof at the back. The front building has a depth of 9m which is adequate for two rooms on both sides, a 3m high ground floor reserved for business, a 2.8m (incl. floor slab) high first floor reserved for office or institutional and two upper floors, 2.8m (incl. floor slab) heights, reserved for residential purposes. The roof, max 3m high, is mentioned separately as it could also accommodate a store room or bedrooms with roof windows, or rooftop garden with shade structure or the like. The back building has a depth of 7m which is adequate for a motor vehicle on the ground floor and a residential unit on the first floor. In between is a courtyard space of 10m and 13m widths. Essentially the front building would be for business and residence whilst the back building would be for deliveries, storage and parking.

The aim of the analysis was to determine which would be the most comfortable/livable property size, whilst at the same time providing the most possible options to full development potential. Obviously the cheapest to develop property would be the smallest, becoming more expensive as the size increases, however, even the largest property development would still be the most viable investment than any single use mass produced low cost house out in the desert, particularly to young people and entrepreneurs. Each property could be developed incrementally and to the taste of the individual.

Findings

- Properties ranging from 104m² up to 145m² prove to be on the lower end of development potential, yet still possible. Properties from 208m² up to 348m² showed the most development potential.
- All properties could be developed in phases, i.e. locating the first accommodation at the back and a shop building at the front. The back unit could change into a garage at a later stage with a ‘granny’ flat or residential unit for rent on first floor. In this scenario the person renting would have own entrance and separate from the main house. The front building could be stocked up over time or be completed in post and slab construction and filled in as finances allow.
- The garage area is not added to the overall bulk, but it could be used as workshop area if no vehicles are being stored here. It could also be a storage space for shop wares or the like.
- Residential units possible range from 1 to 1.5 on the smaller plots, up to 5 on the larger ones.
- The courtyards of all properties could be utilized for agricultural purposes or recreation. In the larger properties an additional residential or workshop unit of 4m depth could be possible without losing too much of the courtyard space.
- The largest properties ranging from 273m² until 348m² would have the potential of subdivision where both resulting erven still remain having access to the front and the back. In these properties it would also be possible to allow for a vehicle access way from the front, should a back alley not be possible. In such a case, there would be a 3m building line become necessary at the back and property subdivision is not feasible.
- The bulk factor ranges between 1.3 and 1.65
- The coverage ranges between 55% and 62% or 76% if the courtyard is also utilized for a unit.
- The user split stays at 58% for residential purposes and 42% for a mix of general business, office, institutional and industrial purposes, or say 21% general business and 21% for the rest. Note: the garage space has not been included in this user mix. This space is usually not being used exclusively for parking in any case in all residential property developments and thus becomes an added advantage to the property owner.

Conclusion

- Even though a smaller erf size would be possible and still livable, the best erf sizes range between 250m² and 350m², particularly because they could also be subdivided and then become equal to the smaller properties. The recommended size is 300m² and upward. Any erf size lower than 104m² or a property width of 4m is not recommended, even though it has been proven to work in cities such as Tokyo, Hong Kong and Saigon.
- The best property widths are from 10.5m to 12m as they allow for adequate shop front widths and can be subdivided into smaller shops. Again an added advantage to the property owner should he want to keep the one shop and rent out the other = added passive income.
- As a block width should be between 80m and 120m, property widths of between 10m and 12m would allow for between 8 and 10 properties per block, which is more than adequate.
- Depths of between 25m and 30m are sufficient. Internationally recommended property depths should in any case not exceed 35m.
- A bulk factor of between 1.3 and 1.65 is adequate and could be topped at 1.5. This bulk factor does not include the garage as per standard town planning scheme regulation.
- A coverage of 65% is sufficient in all scenarios
- A building height of maximum 12m + roof of 3.0m is quite sufficient to accommodate a ground floor and 3 upper floors, making this a 4 story walkup, above which a lift would become necessary. The roof could be utilized as storage space, additional bedrooms or in the case of a flat roof, for agricultural purposes and shade structures.
- Apart from the main dwelling a number of additional residential units could be included for additional rental income or complete family accommodation.
- Each property includes a wind protected yet sunny courtyard that can be utilized as an entertainment area or for urban agriculture and trees and be a safe place for children to play in. Also both buildings still get sufficient ventilation and light from two sides when the other two are on the erf boundary.
- Whilst the buildings may show an organized and clean, maybe even sophisticated, façade to the street sides the interior of the erven remain hidden from public view. Money spent on maintenance and the looks of the building, possible for social prestige, is restricted to basically only one street façade, possible two if the alleyway is included, and not all 4 as in a normal freestanding house = reduced construction cost. Here some individual creativity could be displayed at little extra cost and already the property becomes exceptional.
Annexure Diagram 1: Erf size analysis for the Shop-House for Daniel Kamho Street and subsequent Activity Corridors

**MAX 26m DEPTH / 4m WIDTH**

- **ERF SIZE:** 104m²
- **BULK:** 1.6
- **COVERAGE:** 80%
- **Total possible area (excl. garage):** 172m²
- **Residential component:** 58%
- **Shopfront/other:** 42%
- **Max. nr residential units:** 1 - 1.5 (1.75)

**MAX 29m DEPTH / 4m WIDTH**

- **ERF SIZE:** 116m²
- **BULK:** 1.6
- **COVERAGE:** 55%
- **Total possible area (excl. garage):** 172m²
- **Residential component:** 58%
- **Shopfront/other:** 42%
- **Max. nr residential units:** 1 - 1.5 (1.75)

**COMMENTS:**
- Smallest possible erf size
- Ideal for incremental development: first dwelling at back and shop in front
- Space for 1 vehicle or completely as workshop
- Cannot be subdivided
- Very narrow shop front space
- Small courtyard space
- Maximum 1 - 1.5 dwelling units
- Very small room configurations

**MAX 26m DEPTH / 5m WIDTH**

- **ERF SIZE:** 130m²
- **BULK:** 1.3
- **COVERAGE:** 80%
- **Total possible area (excl. garage):** 215m²
- **Residential component:** 58%
- **Shopfront/other:** 42%
- **Max. nr residential units:** 1.5 - 2 (1.75)

**MAX 29m DEPTH / 5m WIDTH**

- **ERF SIZE:** 145m²
- **BULK:** 1.3
- **COVERAGE:** 55%
- **Total possible area (excl. garage):** 215m²
- **Residential component:** 58%
- **Shopfront/other:** 42%
- **Max. nr residential units:** 1.5 - 2 (1.75)

**COMMENTS:**
- Adequate erf size
- Ideal for incremental development: first dwelling at back and shop in front
- Space for 2 vehicle or completely as workspace
- Cannot be subdivided
- Narrow shop front space
- Small courtyard space
- Maximum 1.5 - 2 dwelling units
- Tight room configurations

**MAX 26m DEPTH / 8m WIDTH**

- **ERF SIZE:** 208m²
- **BULK:** 1.65
- **COVERAGE:** 80% (77%)
- **Total possible area (excl. garage):** 344m²
- **Residential component:** 58%
- **Shopfront/other:** 42%
- **Max. nr residential units:** 3 (1.75)

**MAX 29m DEPTH / 8m WIDTH**

- **ERF SIZE:** 230m²
- **BULK:** 1.65
- **COVERAGE:** 55% (64%)
- **Total possible area (excl. garage):** 344m²
- **Residential component:** 58%
- **Shopfront/other:** 42%
- **Max. nr residential units:** 3 (1.75)

**COMMENTS:**
- Good erf size
- Ideal for incremental development: first dwelling at back and shop in front
- Space for 2 vehicles + work space or completely as workspace
- Cannot be subdivided
- Good size shop front and space, could be subdivided as 2 shops
- Adequate courtyard space
- Maximum 3 dwelling units
- Possibility of a room in courtyard
- Room configurations ok
COMMENTS:
- Ideal erf size
  - Ideal for incremental development: first dwelling at back and shop in front
  - Space for 4 vehicles or 3 vehicles and workspace
  - Can be subdivided into 2 x 152.25m², 5.25m wide and each access to back and front
  - Good size shop front and space, could be subdivided as 2 - 3 shops
  - Adequate courtyard space
  - Minimum 3 - 4 dwelling units
  - Possibility of dwelling unit or workshop in courtyard
  - Possibility for vehicular access from the front

- Best erf size
  - Ideal for incremental development: first dwelling at back and shop in front
  - Space for 4 vehicles + workspace
  - Can be subdivided into 2 x 174m², 6m wide and each access to back and front
  - Good size shop front and space, could be subdivided into 3 shops
  - Adequate courtyard space
  - Maximum 4 - 5 dwelling units
  - Possibility of dwelling unit or workshop in courtyard
  - Possibility of vehicular access from the front
Annexure E: Form Based Coding

Origins

Form-based coding has been developed in response to the past half century of urban development, when regulations have been, and still are, more concerned with controlling land uses rather than shaping the physical form of our communities. The current system of zoning was and still is designed to prevent undesirable juxtapositions, like factories next to homes, or separation of work/live/play, as well as incompatible scales of development. Whilst separating incompatible land uses is sensible, many diverse land uses are compatible and their unnatural separation can be harmful to communities. However, the rational of separation became an unquestioned planning convention, one that is totally outdated today, following technological advances and changes in lifestyles and behaviours. Standard zoning has led to communities being divided and separated into sections, i.e. residential, business, industrial, institutional etc. This necessitates larger private mobility which has led to the current urban sprawl as experienced in all urban areas. Another consequence has been the division of the population by income and thus perpetuating in-equality, as well as the disappearance of social gathering places, usable public open spaces, increase in crime. Transportation planning with a single-minded concern with vehicular movement has further eroded community life.

As a response communities do not like the results of modern town planning, zoning and transportation planning. They feel powerless in how their environments are being changed in top-down decision making processes. They want a better future, one where different planning professionals are not working at cross purposes, i.e. each one in his own ivory tower. They want planning to integrate all the concerns of the community into a workable whole. Yet they struggle to find a better way. Thus the ‘Form-based codes’ concept was developed in all leading countries, in order to offer a new way of thinking about development regulation and helping communities holistically shape their futures. The intention is to achieve desired urban forms, such as vital centers supportive of businesses both big and small neighbourhoods and streets that are safe and attractive for walking and bicycling, preservation of community history and protection of the environment.

Definition, procedure and contents

Definition: *Form-based codes (FBC’s) seek to restore time-tested forms of urbanism. They give unity, efficient organization, social vitality, and walkability to our cities, towns, and neighbourhoods.* (Formbasedcodes.org).

Informed by community needs and goals, FBC’s are a set of design regulations that give form to the built landscape to achieve those aspirations. One way to proceed is by asking a community to envision its future through organized local participation meetings. Overall concepts may be devised in an overall structure plan or precinct plans, but a vision needs to show building types, the relationship of buildings to public spaces, types of streets and where they go, placement of parking, the size of blocks, preservation of existing urban areas, etc. This is what a formal structure plan can only provide in general and overarching terms, but not in detail. Once this vision of a form-based code is drafted it needs to be implemented. The code constraints standards that are of a regulatory nature, but not advisory as it is currently the case through the townplanning scheme or subjective aesthetic criteria. The codes are not mere design guidelines, they do not just propose, but they are a legal framework to be adhered to when implementing changes.

FBC’s are composed of Building Form Standards and Public Space Standards which are combined into a Regulating Plan. Building Form Standards regulate simple things like: how far buildings are from sidewalks, how much window area at minimum a building must have, how tall it is in relation to the width of the street (accepted building heights in areas), how accessible and welcoming front entrances are, and vehicular access and storage areas. These standards can profoundly affect how public spaces like streets, squares and parks are experienced and used. Building orientation plays a major role, particularly in Swakopmund. They should contribute positively to the life on the streets to make it a livable urban environment. Designation of parking areas – standards may, for instance, require the placement of parking to the rear of buildings to ensure that it does not interfere between buildings and pedestrians or cyclists. In the absence of such standards, building designs tend to become idiosyncratic, even eccentric or outright hostile rejection as in the case of the Erf 4747 development at the Mole. These buildings cannot be assembled to create streets/places that are unified and pleasing public spaces.

Some architects and developers may fear that the building form standards will restrict their creativity or profitability. In reality, the standards that require walkable urbanism do not limit architectural creativity and investment. They simply require that buildings support and shape the public spaces of a town or city. Building form standards control the use of land in a more indirect way than standard zoning. They do not give the long and ever expanding lists of acceptable or consented uses that zoning codes typically contain. Rather, they describe general uses and they try to guide land uses through building type. For example, if a community wants a pedestrian-friendly main street, its standards would prescribe shopfronts and/or mixed-use buildings.

Public Space Standards regulate the form of streets and squares. Effective standards create comfortable and useful spaces for many activities, including walking, bicycling, driving, public transit and a community’s social life. They ensure that public space works for everyone (inclusivity), not just for the movement and storage of cars. These standards regulate not just individual streets, but also how streets interconnect and function as systems. FBC’s can be applied to precincts, to keep these streets interconnected. An interconnected street system allows more routes between locations. This encourages walking and exploring. Automobile traffic also gets lightly distributed over many streets rather than funneled onto a small number of super-sized streets. Urban designers can design streets to intersect at right angles or have interesting deflections and curves. FBC’s make sure that the block dimensions stay walkable. Street types are formulated not just as conduits for cars, but also as public spaces that invite walking/cycling, with a rich mix of buildings and uses.

A shopping street is a different kind of street than a boulevard, which is different from a residential street, which is different from a rear alley.

A Regulating Plan plays a key role in a form-based code. By looking at the Regulating Plan, a property owner can quickly see the design regulations governing his or her property. He knows what can be done on the site without having to study the entire code. An added advantage to the local authority is a simplified approval process if any intended changes fall within the code, which again speeds up the investment process and thus the economic return.

Form-based codes, with their generous illustrations and simple diagrams, clearly convey a community’s intentions for an area. FBC’s are designed for quick and convenient understanding. By putting all the important decisions about urban form in simple regulations, FBC’s cut through red tape and endlessly protracted review processes. They form objective legal documents that are defendable in a court of law in contrast to subjective decision making processes like an ‘Aesthetic committee’ ruling. They provide greater certainty of outcome. Their form-based regulations ensure that a community’s vision will be more than wishful thinking as it is enforceable. Finally, it is adoptable at various scales, from a small block/ neighbourhood to an entire coastline for that matter.

This form of town planning has been adopted over the whole of Europe and is now being implemented in many US major cities.
Annexure F: Attendance Lists
10. References


Ethekwini Municipality. (no date). HOUSING TYPOLOGIES STUDY PRECEDENTS AND BIBLIOGRAPHY. (pp. 4,9,10). Ethekwini: Ethekwini Municipality.


Namibia Civil Aviation Authority. (2019, June 11). Swakopmund Airport. (Stubenrauch Planning Consultants, Interviewer)


