

LIFTING

SOUTH AFRICA TO NEW HEIGHTS

50-YEAR
DURBAN
AEROTROPOLIS
MASTER PLAN

IMAGINE 2066

A CITY WHERE...

RESIDENTS

enjoy an unprecedented quality of life within “live, work and play” environments designed to serve the whole family and allow for the development of a healthy lifestyle.

INVESTORS

are encouraged and receive support in identifying and pursuing investments that are beneficial to both the investor, the economy and local communities.

STUDENTS

have access to state of the art technologically advanced educational facilities and have access to multiple opportunities and support systems.

TOURISTS

enjoy uniquely South African landscapes, facilities and activities that are unprecedented and are able to experience a memorable cultural exchange.





DURBAN AEROTROPOLIS MASTER PLAN (DURAMP)

The decision to develop the King Shaka International Airport (KSIA) and Aerotropolis in the northern region of eThekweni Municipality, is one that presents the Province and Country at large, with a unique opportunity to generate sustainable urban growth and economic development for the region and beyond. Together with the Port as an economic anchor in the south of eThekweni, Dube TradePort (DTP) and KSIA serve as catalysts in the north, creating a logistics and infrastructure platform for the City and Province.

Whilst there have been many plans at a strategic level produced in an attempt to guide development within the north such as the Northern Urban Development Corridor (NUDC), there is a need for development to be aligned with the current needs and growth trajectory of the north, whilst at the same time addressing the imbalances inherited from apartheid Spatial Policy.

In light of this, the Economic Sector and Infrastructure Development (ESID) cluster was tasked with the responsibility of developing a provincial Integrated Aerotropolis Strategy (KZNIAS).

The objectives of the KZNIAS are:

- To grow KSIA connectivity to major international hubs in Africa, Europe, North America and Asia.
- Maximise commercial development of airport city and connectivity to other major economic nodes in KZN.
- Ensure a globally competitive city region in Africa for businesses that seek a location with unique features of the Durban Aerotropolis.

Emanating out of the Aerotropolis Strategy, a key project identified was the preparation of an Aerotropolis Master Plan which is intended to provide the Spatial Realisation of the Strategy. Given the greenfield opportunity as well as the existing need located on the periphery of the Airport, it is essential that the planning for the Aerotropolis fulfills a broader development agenda. This requires a coordinated approach to spatial planning which represents one of the primary purposes of the Durban Aerotropolis Master Planning process.

This report is a culmination of studies and specialist input and represents the journey taken by the team in the development of the Durban Aerotropolis Master Plan.

Anchored by the King Shaka International Airport, the **Durban Aerotropolis** is a purpose-built city that will enhance urban and national competitiveness through improved multi-modal transport access and planned, coordinated, aviation-linked commercial development, making the airport, surrounding areas, and the entire province more economically efficient, attractive and sustainable.

Growth Opportunity

PROVINCE OF KWAZULU NATAL

2nd largest
regional contributor to South African GDP

Source: STATS SA

Key Sectors

- Manufacturing
- Transport & Communication
- Wholesale, Retail & Trade
- Catering & Accommodation

KING SHAKA INTERNATIONAL AIRPORT

Capacity:

7.2M **45M**
current pax. 2066 pax.

Source: Dube TradePort

Capacity:

0.1M **1M**
current 2066
cargo tons cargo tons

Source: Dube TradePort

CLEARED
AND
READY
FOR

TAKE-OFF

32 000

hectares of
total land

10 000

hectares of
green space

1.5 million

residents

1-8

FAR range

42M m²

of total development

R 1 trillion

potential investment

750 000

permanent jobs

50 year

year planning
horizon

Overview

An **Aerotropolis** is a purpose-built city around an airport, offering local businesses speedy connectivity to their suppliers, customers, and enterprise partners, nationally and worldwide.

Durban Aerotropolis

The **Durban Aerotropolis Master Plan** constructs a development framework for the next 50 years of growth in the region's premier airport precinct. By anticipating and responding to the region's potential trends and challenges, the master plan creates a favourable physical environment for investment through integrated and coordinated spatial planning, integrated multi-modal transport networks, place marketing, infrastructure and engineering services, and environmental sustainability.

The Durban Aerotropolis has the potential to:

- catalyse social, spatial, and economic transformation, and
- localise the benefits of global trends through a robust and flexible master plan framework.



NOTE:
The crossing of the conservation area at Mount Moreland is subject to a detailed study where the exact delineation of the crossing of Umfoloti River at Mount Moreland should be investigated and refined where possible to ensure that the best route is defined from an ecological and urban connectivity points of view. There are current offset agreements that dictate a longer route crossing through possibly a larger sensitive area. The intent is to allow for a more direct route through the broader wetland system and thereby reducing the spatial footprint of the crossing. The current alignment depicted on the DURAMP is based on the original alignment, and it is recommended that this is further investigated as a project emanating from the DURAMP process.

At present the DURAMP encourages mixed use development, however for the proposed 'High Intensity' land use within the noise contour would not include 'noise sensitive land uses' until a detailed assessment can be undertaken to re-evaluate the noise contour position and to explore potential mitigation strategies to accommodate mixed uses within the

2035 55 db noise contour. The position taken in the development of the 50 year DURAMP framework is to promote a more mixed use development across the DURAMP study area including areas within the 2035 55 db noise contour that aligns to the shared stakeholder vision of a "work, live and play" environment developed at the inception of the DURAMP process. It is anticipated that the DURAMP framework will be evaluated every 5 years. Therefore, based on current trends on rapid innovation in Aircraft design and noise level reductions, this position should be reviewed accordingly. With this approach it does not compromise the DURAMP vision but allows for a more strategic and sustainable approach in developing in the noise contour areas.

Open space zones indicated on the plan are subject to further detailed studies where the exact delineation of sensitive/ecological areas will be refined through detailed environmental studies at a project specific level, and therefore, the Aerotropolis Masterplan merely serves to indicate development intent.

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INTRODUCTION

UNDERSTANDING THE CONTEXT AND OBJECTIVES



Each day, cities around the globe are faced with unprecedented growth, placing considerable strain on the physical, economic, social, and institutional infrastructure of urban environments. In response, city leaders and developers must develop creative and innovative solutions to facilitate growth solutions that mobilise a broad array of technical disciplines toward solving complex, multi-dimensional challenges. Using this type of urban intelligence, cities can bridge the gap between current resource availability and future demand to achieve truly transformational visions.

INTRODUCTION

THE STUDY AREA

The Durban Aerotropolis Master Plan considers a series of different study areas:

Study Area 1: 1-hour Time Travel Radius

“Time” is the currency of the Aerotropolis. Consequently, study area 1 is defined not by a fixed physical boundary but by a “fluid” 1-hour travel time radius measured from King Shaka International Airport.

Study Area 2: Satellite Aerotropolis Development Zones

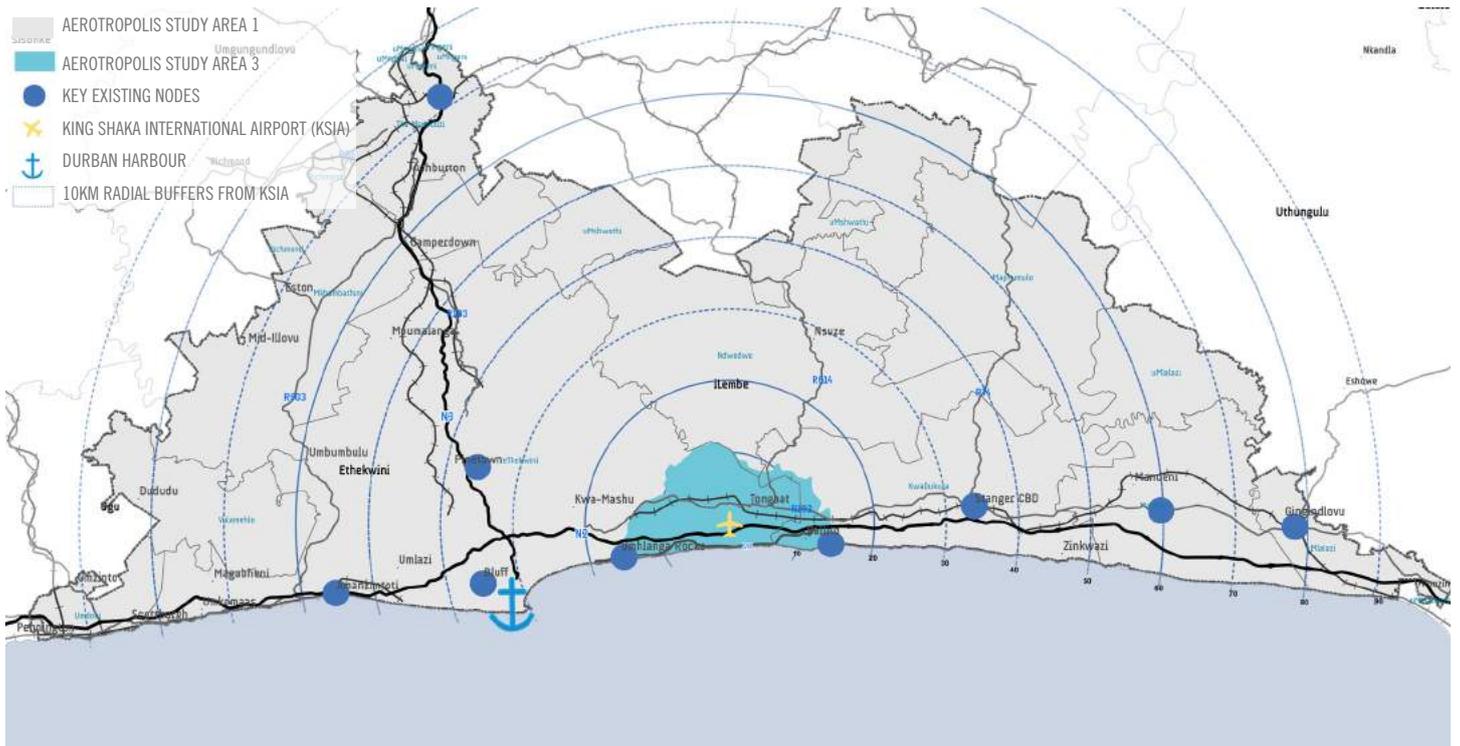
Study area 2 comprises a series of development zones located within study area 1 but beyond the boundaries of Study Area 3.

Study Area 3: Aerotropolis City

The Aerotropolis City starts from the M41 adjacent to Cornubia in the south, and spans through to Compensation in the North near Ballito. The

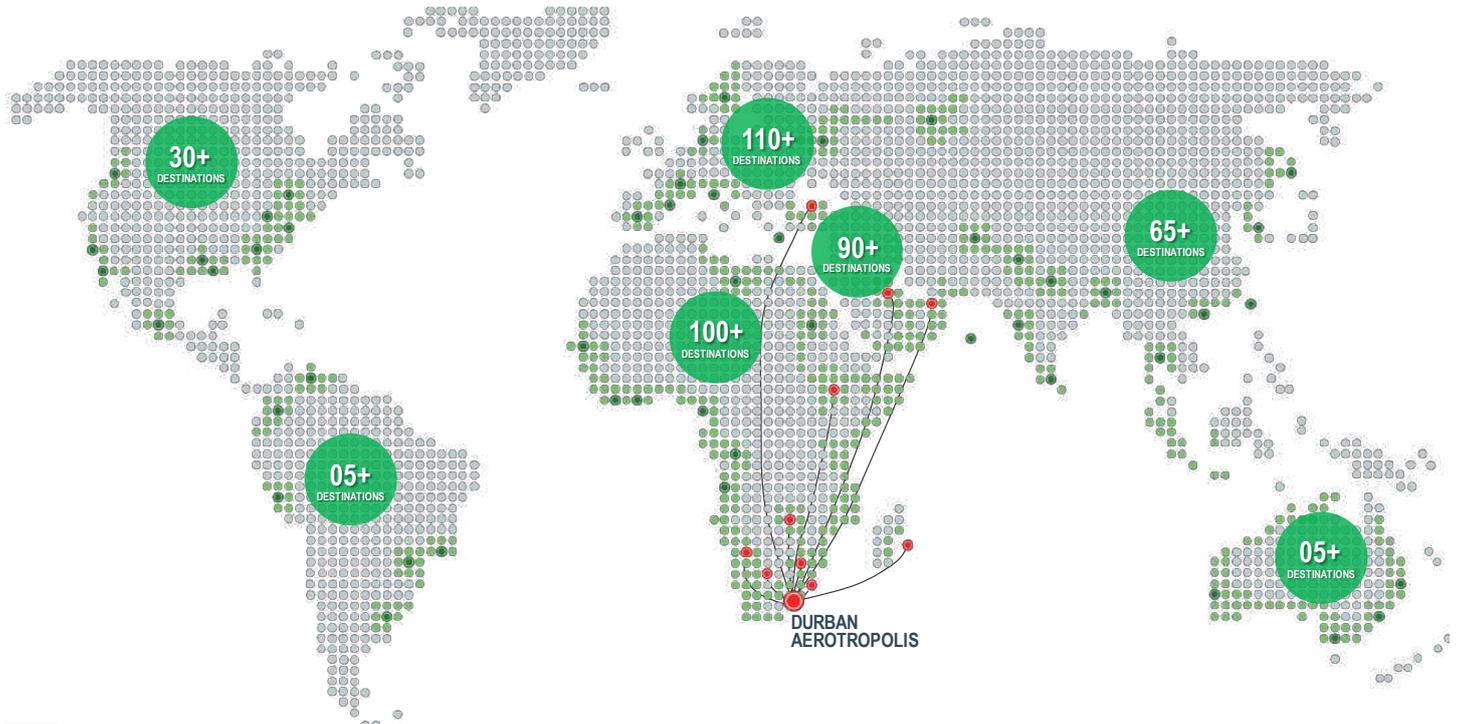
eastern boundary comprises the coastline, whilst the western boundary is defined by the P521 and P715, which includes a small but critical portion of the Ndwedwe region. There are currently 3 major arterials namely the R102, N2 and M4 currently running through the study area. They connect the study area to key centres such as the Durban and Richards Bay Harbours within the province and other key centres in the country.

The map below reflects both study area 1 in grey as well as study area 3 which is considered the Aerotropolis City area in a blue hatch. For the purposes of this document, it is necessary to focus on the Aerotropolis City as the area being subjected to more detailed planning and design. It is important to emphasise that these boundaries are artificial and that broader connections to the western hinterland areas are considered significant in the development of an inclusive Aerotropolis Master Plan.



Aerotropolis Study Area 1 & 3

REGIONAL & GLOBAL SIGNIFICANCE



KSIA Global Footprint/ Connections

Dube TradePort Special Economic Zone (DTP SEZ) is a world-class development offering globally integrated logistics and manufacturing infrastructure, and support for a range of airport-related activities including cargo operations, warehousing, agriculture, commercial real-estate for office, retail and hospitality. Strategically located on the east coast of South Africa, linked to two of Africa's major seaports, major national roads and home to KSIA, DTP is strategically positioned at the intersection of local and global intermodal transport routes.

Dube TradePort (DTP) is a 50-year, master planned airfreight and passenger hub, comprising five business zones:

- Dube TradeZone, an industrial precinct for electronics, pharmaceutical and aerospace manufacturing;
- Dube Cargo Terminal, a state-of-the-art cargo handling facility;

- Dube AgriZone, an advanced agricultural precinct;
- Dube City, a business and hospitality precinct; and
- Dube iConnect, a cutting-edge telecommunications platform and a premier cloud service provider (DTP, 2017).

King Shaka International Airport (KSIA) is located at the core of the study area. As such, the plan reflects the existing connectivity links of the study area, its significance within the KwaZulu-Natal (KZN) Province both at a regional and global level. KSIA currently accommodates commercial and trade related flights to and from multiple destinations in 6 continents. It facilitates air connectivity to 320 destinations within a 24-hour travel time.

INTRODUCTION

SPATIAL INEQUALITIES

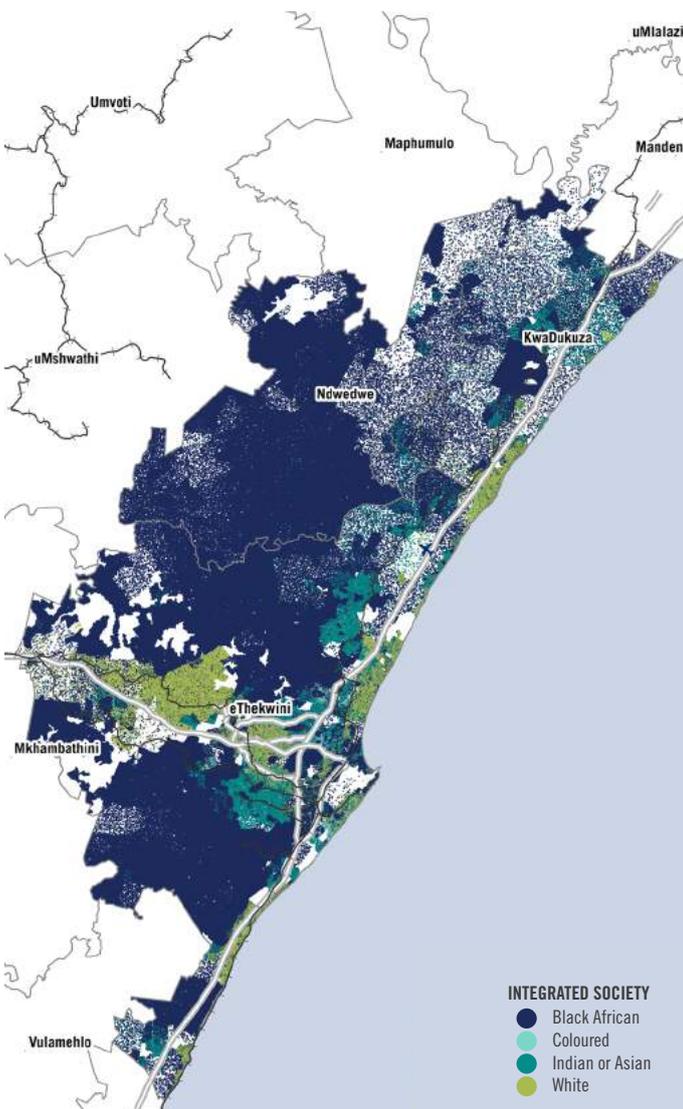
In any planning and design initiative, it is important to understand the history of the study area and its context. This ensures that the planning and development of the area is approached in a manner that is aimed at ensuring any proposals, benefit those who reside within and around the study area.

The National Development Plan (NDP) and the Spatial Planning and Land Use Management Act (SPLUMA) are key tools that direct the country's development vision. This vision is key in ensuring that planning and development redresses the impact of apartheid policies on the spatial and economic landscape of South Africa.

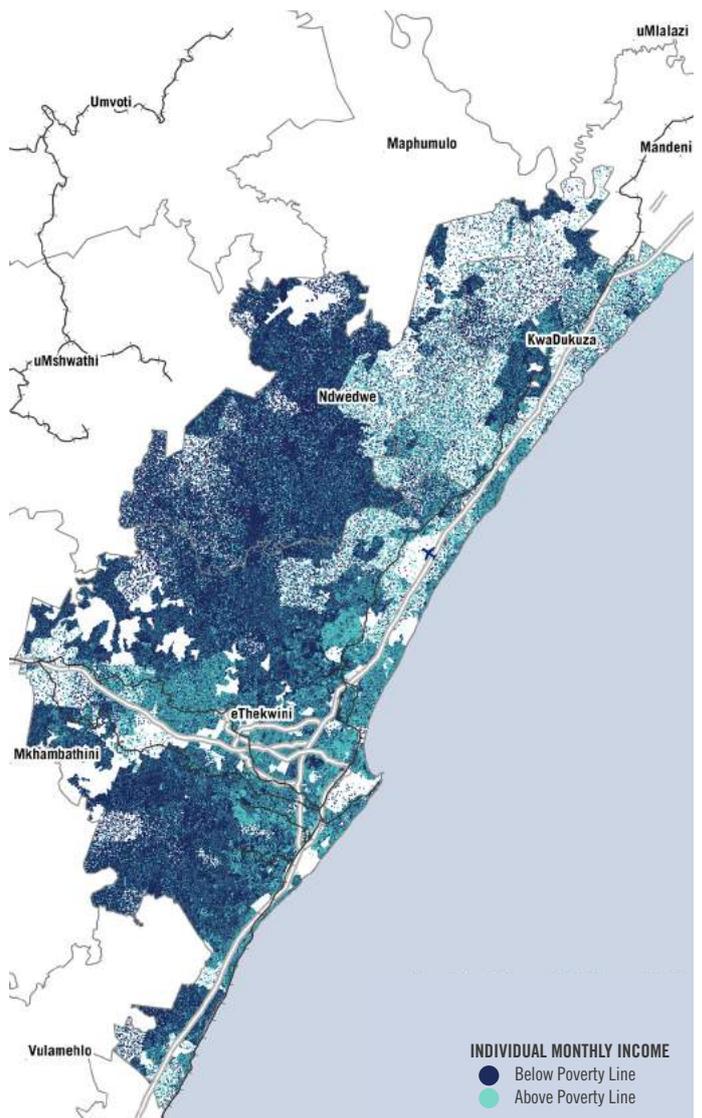
The impact of segregationist policies of apartheid is evident as reflected in the maps below as one is able to note that, the past policies of racial segregation is evident in the current settlement patterns.

The city as a whole and the northern corridor remain spatially divided with the highest concentrations of underdevelopment and poverty found within the inland corridor which are far removed from the areas of the highest opportunity found within the coastal corridor.

The highest concentrations of African people are further inland in a westerly direction towards Ndwedwe Municipality. These areas have the highest concentration of people with an income that is below the poverty line.



Study Area Distribution of Race



Study Area Distribution of Income

POOR YOUTH EDUCATION

The adjacent map shows that as one moves further north and north-west from the coast, the number of youth without a Matric qualification increases. The current reality within and around the study area is that although it is now in excess of 20 years after apartheid, the impact is still evident in the fragmented spatial landscape. The challenges that have emanated from this include high income inequalities, poor access to basic services and limited opportunities for the poor and more specifically women. These challenges are further exacerbated by the increasing cases of rural to urban migration as people continue to chase the dream of a better life in the city.

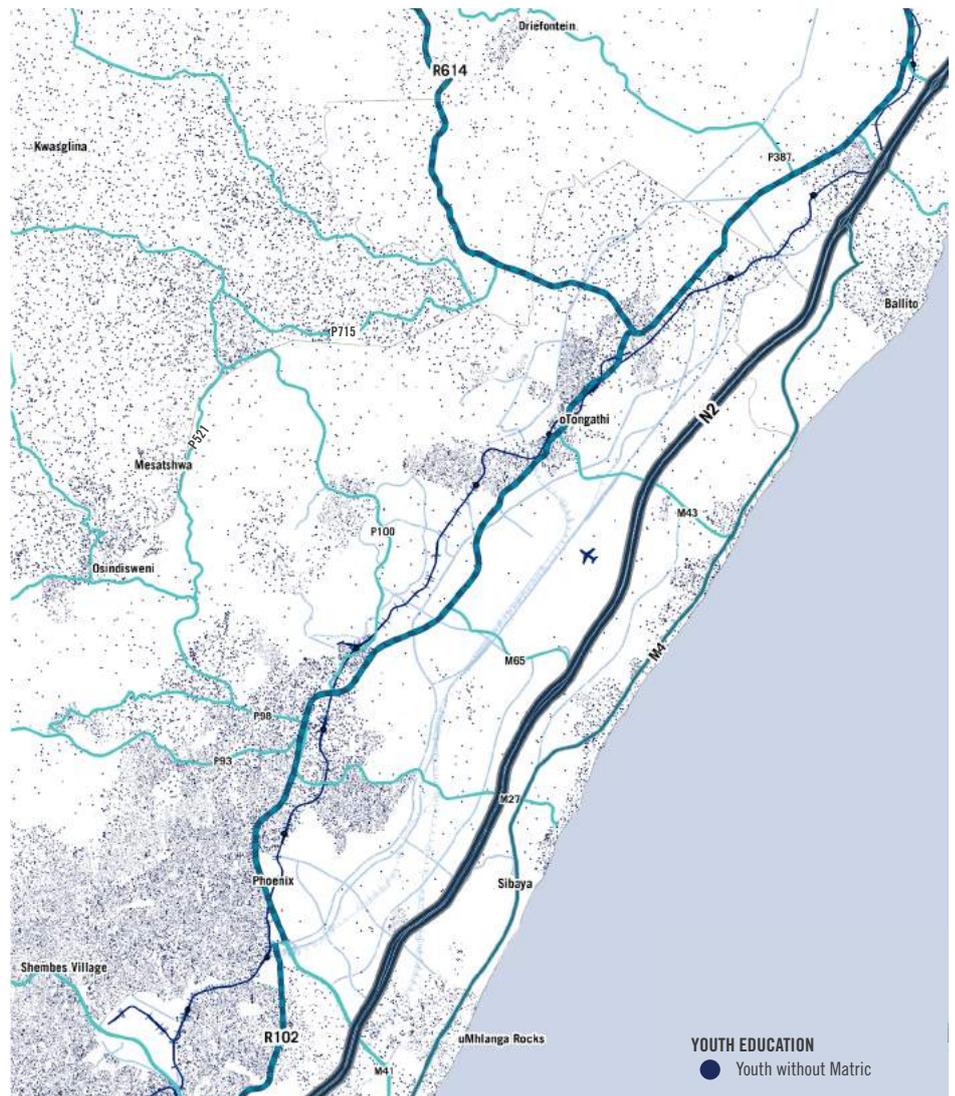


Despite the above, a lack of access to basic opportunities such as quality education in both urban and rural areas, becomes crippling for the poorer communities as they are trapped in a viscous cycle of poverty with limited prospects for improvement due to the lack of access to opportunity. Limited investment in educational facilities within poorer areas as well as poor living conditions accelerates unemployment and further cripples any prospects of gaining progress in the empowerment of women and other social issues.

One of the keys elements to ensuring the long-term future success of the region, is investment in the youth. Currently as reflected in the adjacent info-graphics, only 13.2% of the youth population is skilled and 32% of matriculant's in the region are unemployed. It is evident that a large number of the youth are not adequately educated or skilled. Consequentially they have limited employments prospects. A continued inability to implement measures to adequately capacitate today's youth will have a significant impact on the future performance of the greater northern region and that of the future Aerotropolis.

The Durban Aerotropolis Master Plan recognises this contextual challenge, whereby many communities in the hinterland immediately surrounding KSIA are in desperate need of economic and social uplifting.

As such, the master planning process seeks to systematically undo these historical patterns of separation. It aims to bridge the divide between the more affluent coastal communities and those in the hinterland using the Airport as a catalyst to drive development in this region.



Map Reflecting the concentration of youth with a Matric Qualification



CRAFTING THE PLAN

THE ADOPTED APPROACH AND KEY CONSIDERATIONS



Prior to embarking on any planning and development process, a firm understanding of the study area in question is essential. The study area is the foundation upon which any proposals are made. The introduction chapter provided the location of the study area, highlighting its significance within Durban, the Province, the Country, as well as its growing global footprint. It was established that the study area and its immediate surroundings were significantly affected by the policies of the Apartheid government and that the impact of this is still evident within the current spatial landscape. The landscape shows clear evidence of existing racial and income divides. These divides impact on a range of economic and social aspects of the lives of people residing within the study area.

As such when approaching the crafting of the plan, it was important to understand the need for the plan to become a transformation tool for the spatial landscape of Durban's northern region. In order to ensure this, it was important to consider broader planning legislation and frameworks, consult key stakeholders and key city experts as well as acknowledge the changing nature of cities around the world and the various associated trends. This would prove to be key in developing principles that then informed the detailed analysis and design of the Durban Aerotropolis Master Plan.

The following section looks at this process in greater detail. An essential aspect of the crafting of the plan has been the direct involvement of key stakeholders, both public and private, in physically shaping the principles, strategy and spatial plan for the Durban Aerotropolis Master Plan. This was undertaken through a series of Design Charrettes and workshops at the onset of the planning process and serves as an example of how a varied number of actors on space play a vital role in co-creating a vision for its development.

CRAFTING THE PLAN

ABOUT THE PROCESS

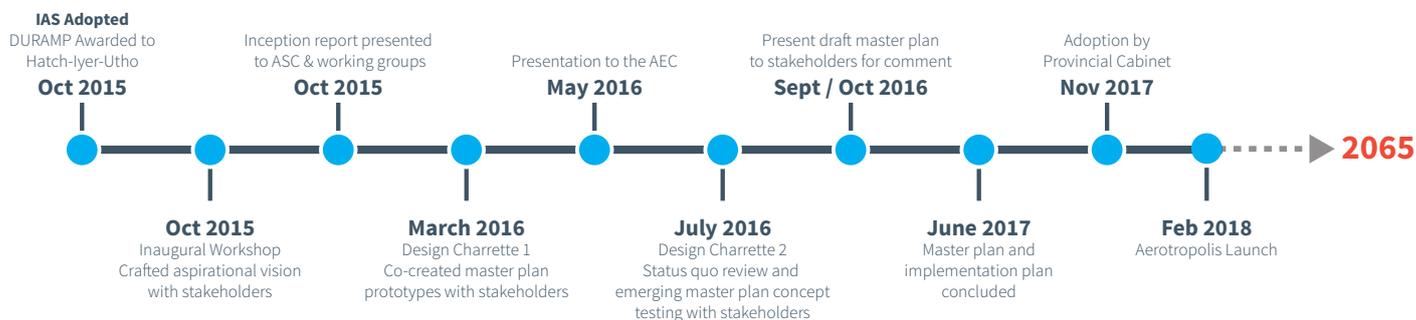
The process of creating the Durban Aerotropolis Master Plan was designed as a multi-disciplinary, multi-sector, multi-agency, and multi-jurisdictional effort to achieve a product that balances the needs of a variety of stakeholders.

Utilising previously established Aerotropolis working group structures that comprise KZN Provincial line departments, transit and other transport agencies, municipal authorities, and various special stakeholder groups, the development of the Aerotropolis Master Plan was underpinned by the principle of co-creation with stakeholders and owned by all.

Through a series of design charrettes, workshops, and one-on-one engagements,

shared concerns, ideas and solutions were socialised and incorporated into the plan.

The master plan represents the physical manifestation of the aspirational vision for a “work, live and play” urban development that makes a meaningful contribution to the local and national economy, drives social cohesion, and addresses legacy issues related to economic, social and spatial transformation. The master plan incorporates global trends and influences, but is strongly grounded in local realities, acknowledging the challenges and opportunities of South Africa’s diverse communities and businesses.



KEY INVESTMENT SECTORS

ADVANCED MANUFACTURING



HEALTH & PHARMACEUTICALS



AVIATION & AEROSPACE



TOURISM



AGRICULTURE & AGRIPROCESSING



ELECTRONICS & ELEC. COMPONENTS

As South Africa looks toward its next decades of growth, the Aerotropolis master plan facilitates a platform for public and private investment – a platform for economic transformation.

To facilitate this transformation, the Aerotropolis Master Plan spatially envisions a 50-year growth scenario between the benchmark of 3% GDP growth per annum and a goal of 6% growth per annum. In addition, it reflects the importance of the KwaZulu-Natal economy – and the particular advantages of the Aerotropolis site – in its ability to attract development and investment.

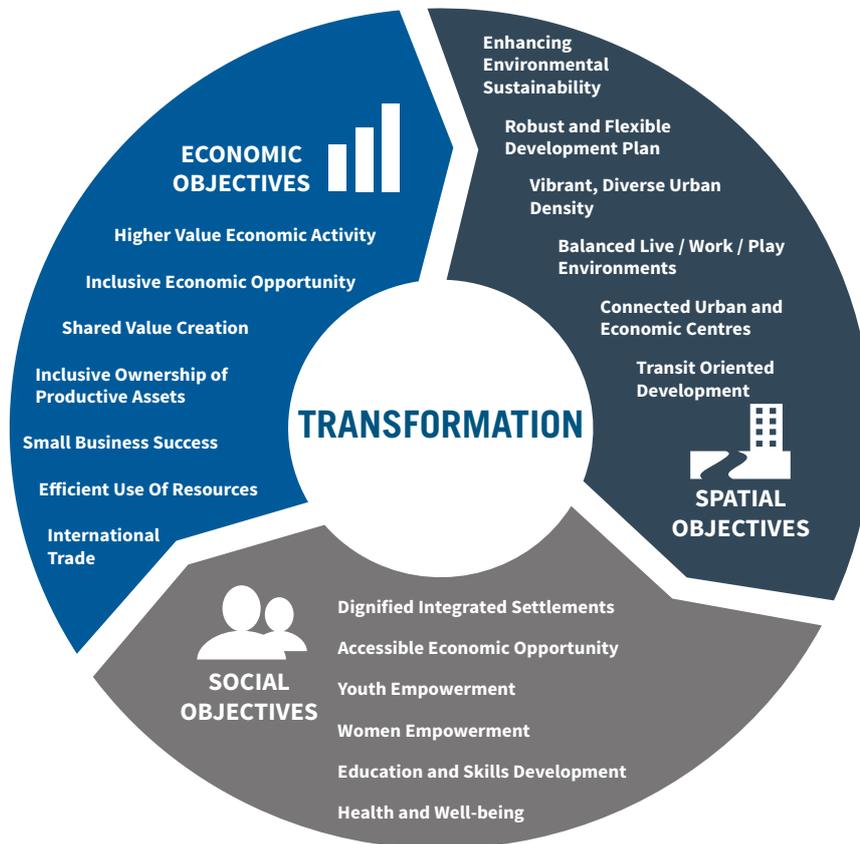
Six specific economic sectors were identified, and corresponding sectoral nodes have been identified within the master plan to cluster investment, leverage synergies, and exploit the airfreight connectivity and other local advantages of the Aerotropolis to propel these industries forward in South Africa. The master plan also

provides diversity and intensity of residential options to enable local residents to be co-located with employment opportunities in a live/work/play urban model.

Beyond providing a world-class platform for economic growth and industry, the Aerotropolis Master Plan also creates a new paradigm for inclusive, integrated urban communities. The implementation framework actively seeks the participation of black industrialists and the growth of an entrepreneurial class able to own, manage and develop businesses within these targeted sectors, positioning youth and women to engage effectively not just as workers, but as leaders in the future economy.

Through the innovative integration of economic analysis and spatial planning techniques, the Aerotropolis Master Plan represents a paradigm shift in integrated urban centres positioned for growth within the South African context.

DRIVING TRANSFORMATION



The master plan is firmly rooted in a transformative agenda and is based on three fundamental pillars of transformation.

Economic transformation is about broadening opportunities for all South Africans, but particularly for the historically disadvantaged. It is about raising employment, reducing poverty and inequality, and raising standards of living and education. It is also about equity in life chances and encompasses an ethos of inclusiveness that is presently missing.

Transformation strives to achieve inclusive growth and shared prosperity for the benefit of a broader population of South African citizens. Inclusive growth requires structural change; development programmes that grow the economy by facilitating the participation of all South Africans and ensuring access to socio-economic opportunities and job creation.

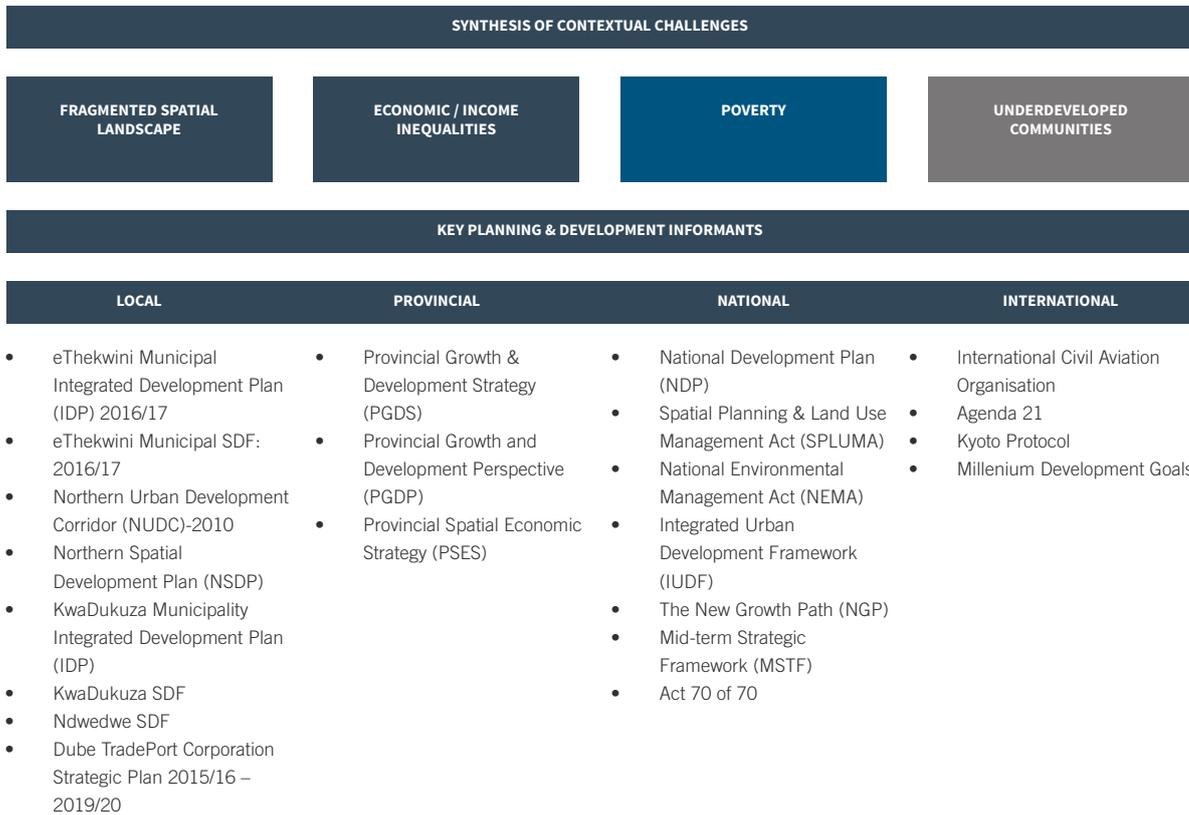
The Durban Aerotropolis will accelerate transformation through spatial and programmatic interventions that generate sustainable urban growth and economic development. It presents an integrated economic and spatial master plan positioned to address poverty, inequality, and growth for the next fifty years.

KEY LEGISLATION & FRAMEWORKS

Having developed a clear understanding of ‘what’ the plan needed to accomplish, over-arching legislation and frameworks that guide development within the country was acknowledged as an important context within which to ground the Master Plan.

The Republic of South Africa has three levels of government (National, Provincial and Local). International aviation guidelines were also considered in developing an approach to the crafting of the plan. Under each of these branches of government, are various policies, plans and programs in place to facilitate the effective and efficient development of land within the Republic provides an important supportive framework.

Each of these informants in one way or another attempts to address the contextual challenges identified and reflected in the adjacent graphic. Key to note are principles of both the NDP and SPLUMA that emphasise the need for ensuring spatial resilience of environments, spatially efficient landscapes, promoting sustainability, spatial justice, job creation and good governance.



CRAFTING THE PLAN

EMBRACING GLOBAL TRENDS

Considering that the master plan is a 50-year plan, an important element to crafting the plan was to consider the influence of global and regional trends shaping the Aerotropolis:

Big Data and the Tech Tidal Wave

Through seamless connectivity, automation, and the digital delivery of services, harnessing technology at an urban scale improves the way people inhabit cities.



Rapid Urban Growth

Countries are experiencing unprecedented urban growth and migration of those seeking a better life through the urban promise of economic growth, productivity, and wellbeing.



Hyperconnectivity

The world is experiencing an ever increasing need for connectivity. This drives economic growth, international trade, expands spatial boundaries and enables access. Physical and digital connectivity is vital to the success of cities in a global age.



Competition for Investment

Cities increasingly compete at regional and global scales to attract transformative investment resources and the best and brightest talent.



Finite Resources

City Leaders increasingly need to serve larger populations with more efficient and responsive infrastructure solutions. Designing for sustainability is an imperative.

Economic Transformation

To achieve future growth, South Africa must address inherited imbalances and ensure that the benefits derived from global connectivity are localised equitably, driving broader radical economic transformation.



Spatial Transformation

Connectivity creates belonging and access creates opportunity. Both help societies develop culturally, economically, and politically.



Growing Middle Class with Rising Consumption Expectations

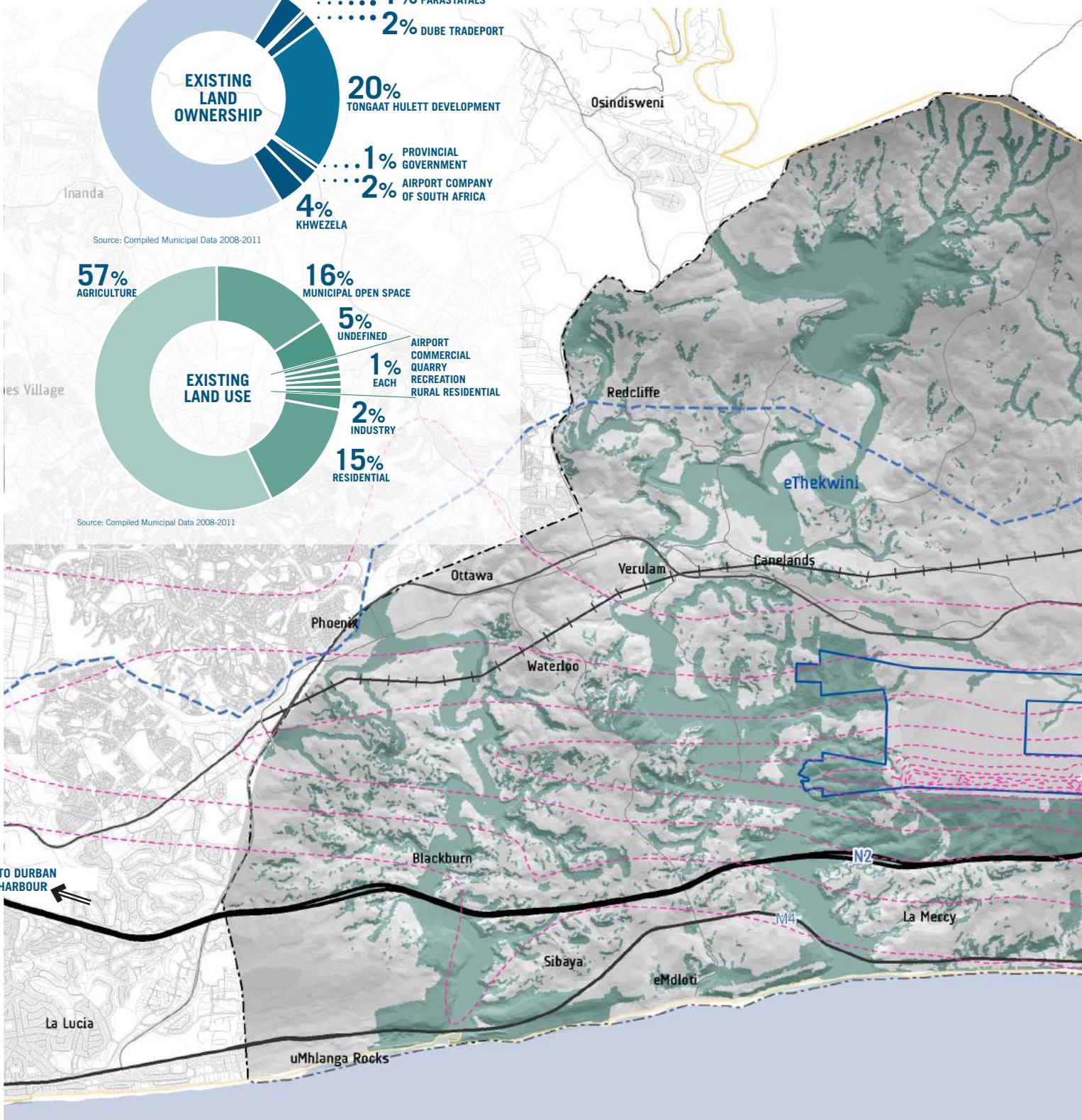
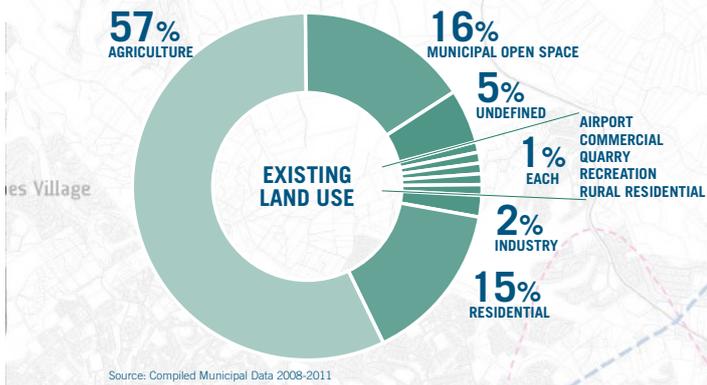
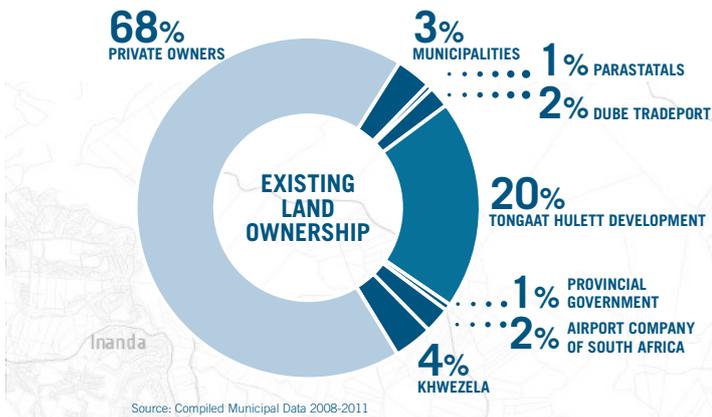
An emerging middle class is an engine of economic growth, fueling demand for a larger and more diverse range of goods and services.



Demographic Change

The growing segment of urban youth requires a city environment for learning and employment, powered by the digital infrastructure required to ensure their future participation in a world marked by disruption and change.

OPPORTUNITIES & CONSTRAINTS OF THE STUDY AREA



CRAFTING THE PLAN

A SMART FRAMEWORK FOR DECISION MAKING

The guidelines recommended throughout this Master Plan document are positioned to assist decision makers in two areas:

- Assessing Total Value – the sum total of resultant impacts from a planning and policy decision, including not only the financial/ economic impacts, but the social and environmental as well. Triple-bottom-line lifecycle analysis should be a key tool in understanding the full scope of value created or imperilled by various planning alternatives.
- Distributing Total Value – value generated through smarter solutions should be distributed in support of an equitable and sustainable future across stakeholder groups.

By adopting a set of fundamental principles, it is possible to construct a flexible framework for decision making that results in smarter solutions. The following set of smart principles have informed the Aerotropolis development guidelines set forward in this document, and provide a flexible approach to future decision making as the Aerotropolis project continues to evolve:

- Develop Multi-dimension Solutions that integrate the social, economic, physical and institutional realities of their context.
- Do More with Less by implementing solutions that leverage increasingly limited resources toward greater impact.
- Bring Solutions to Scale by leveraging easily replicable strategies or technologies.
- Unleash Enabling Technologies that are driven by their engagement of and adoption by an increasingly tech-savvy user base.
- Expand Choice and Opportunity by implementing decisions that create diverse future options, rather than decisions that narrow future possibilities.
- Capitalise on efficiency through Integration by exploiting the relationships between components of a system.
- Balance Protective and Productive Decisions (particularly in greenfield developments) by assessing their total future impact on social, economic, and environmental systems.
- Increase Openness and Access by providing opportunities for inclusive participation within a culture of transparency, responsiveness, and engagement.



BE MULTI-DIMENSIONAL



DO MORE WITH LESS



BRING SOLUTIONS TO SCALE



UNLEASH TECHNOLOGY



EXPAND CHOICES & OPPORTUNITIES



EXPLORE INTERCONNECTIONS



BALANCE PROTECTIVE & PRODUCTIVE DECISIONS



INCREASE OPENNESS & ACCESS

SMART CITY PRINCIPLES

The nature of a master planning project requires a multidisciplinary, holistic approach to ensure a smart, sustainable future city.

An eight pillar approach was developed for application in this project. It is based principally around city competitiveness and liveability and presents a wider, more comprehensive view of sustainable development, particularly from a strategic spatial planning perspective.

Whilst embracing the notions of ecological, economic, and social development, the Smart Cities Principles seek to move towards a more collective view of sustainability. This goes beyond the traditional understanding, with often a focus solely on the un-built, and the fixation with parts of the system, such as the environment, in isolation of other issues impacting on sustainability.

There is a fundamental need to understand the collective impact of city form - its shape, footprint, make-up, and ultimately the performance of places in delivering sustainability. The nature and pattern of cities has the most significant bearing on efficiency and opportunities. Therefore a much wider set of objectives needs to form part of the sustainable cities debate.

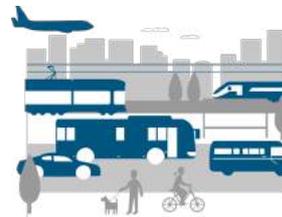
There are eight factors or 'pillars' that are essential to achieve a smart future Aerotropolis City, these are reflected in the adjacent graphic and will be detailed in the chapters that follow.



GLOBAL CONNECTIVITY



SMART ECOLOGY



SMART MOBILITY



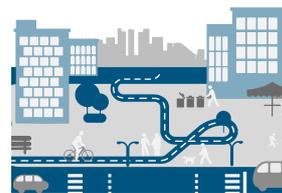
SMART LIVING



SMART ECONOMY



SMART URBAN UTILITIES

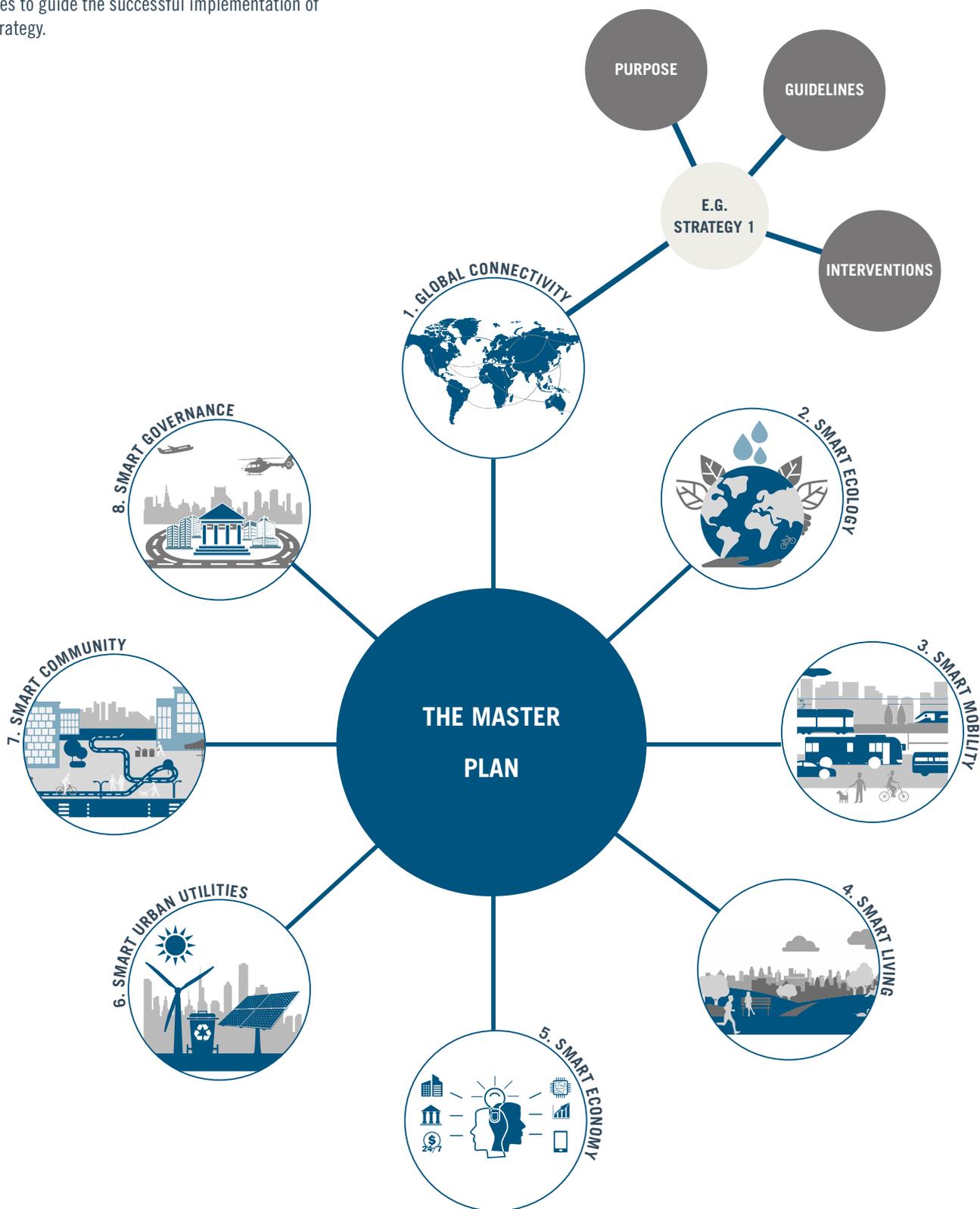


SMART COMMUNITY



SMART GOVERNANCE

The following chapter presents the proposals for the Aerotropolis Master Plan in line with the eight pillars presented in the preceding chapter on Crafting the Plan. Key strategies pertaining to each respective pillar are provided within this chapter. A purpose statement for each strategy is also provided along with specific guidelines and proposed intervention measures to guide the successful implementation of each strategy.



THE MASTER PLAN

DESIGNING THE DURBAN AEROTROPOLIS

A “Smart Aerotropolis” Master Plan leverages best-in-class urban intelligence from around the world toward achieving integrated solutions across physical, social, economic and institutional dimensions. The document proposes Aerotropolis Master Planning recommendations and guidelines within a broader Smart City model. It is intended to facilitate smarter and more holistic decision-making about the development of the Aerotropolis region as leaders engage with diverse stakeholders, including investors, businesses, developers, technical experts, and local communities.

The aim is for developers, businesses and investors to be able to use the master plan as a decision making tool that leads to solutions and outcomes that will enable the Aerotropolis to accelerate growth and competitiveness. The proposals of the plan are meant to unlock and optimise the use of finite resources, increase the efficiency and effectiveness of their use, and enhance market impact.

For local communities and visitors, proposed intervention measures should facilitate quality of life improvements. This includes increasing access to opportunity, removing barriers to participation in economic growth and civic engagement, and contributing to forward progress – the sense that the lived experience of tomorrow will be better than today. Ultimately, proposed solutions under each pillar should broaden the future set of options and choice, rather than narrowing them, allowing citizens to have greater influence in shaping their future.

Government and municipal decision makers play a key role in the creation and distribution of value created by smart city solutions. Planning and policy decisions about the development and operation of the Aerotropolis will shape how future value is created and shared among various stakeholder groups.

1

GLOBAL CONNECTIVITY

DESIGNING THE DURBAN AEROTROPOLIS





Cities and Towns that perform well are those which are globally connected. The Durban Aerotropolis offers its businesses speedy connectivity to their suppliers, customers and enterprise partners nationally and worldwide, ensuring a uniquely placed and globally competitive city region in Africa. These businesses are often more dependent on distant suppliers and customers than those located in their own metropolitan region. With connectivity as a key success factor for the Durban Aerotropolis, it is important to recognise that connectivity needs to have a broader consideration of its various potential facets and their associated implications.

Over the past two decades digital connectivity has become a cornerstone of successful economies in addition to strong transport and logistics linkages (GCI, 2016). Manuel Castells once said, the global city is “connected externally to global networks and segments of their own countries, while internally disconnecting local populations that are either functionally unnecessary or socially disruptive”. A distinctive feature of global cities is that they are “globally connected and locally disconnected, physically and socially”.

It is in this context that we see a re-evaluation of what it means to be connected in the 21st century. As we respond to the opportunities that may arise from a globally connected economy, we need to be acutely aware of the need to address our inherited imbalances and ensure that we localise the benefits derived from global connectivity.

Within the above context, for the Durban Aerotropolis, strategies that are considered to support Global Connectivity include:

- Transport and Logistics Platform
- Digital Platform



PURPOSE:

The Movement of People and Goods
 “In-the-Air” or “On-the-Ground” Durban has the potential to connect the African region to the world.

The development of the Durban Aerotropolis and KZN as a logistics gateway cannot be achieved solely by organic growth. Increased investment in infrastructure requires additional market capture. Infrastructure investment has to be complemented by more activity which requires a focus on strategic catchment areas and their transportation linkages.

Augmenting the Aerotropolis Model
 The purpose of the Durban Aerotropolis is to achieve accelerated economic growth which involves creating the necessary physical infrastructure while achieving increased levels of activity/productivity. This involves implementing a competitive strategy which creates a desirable operating environment.

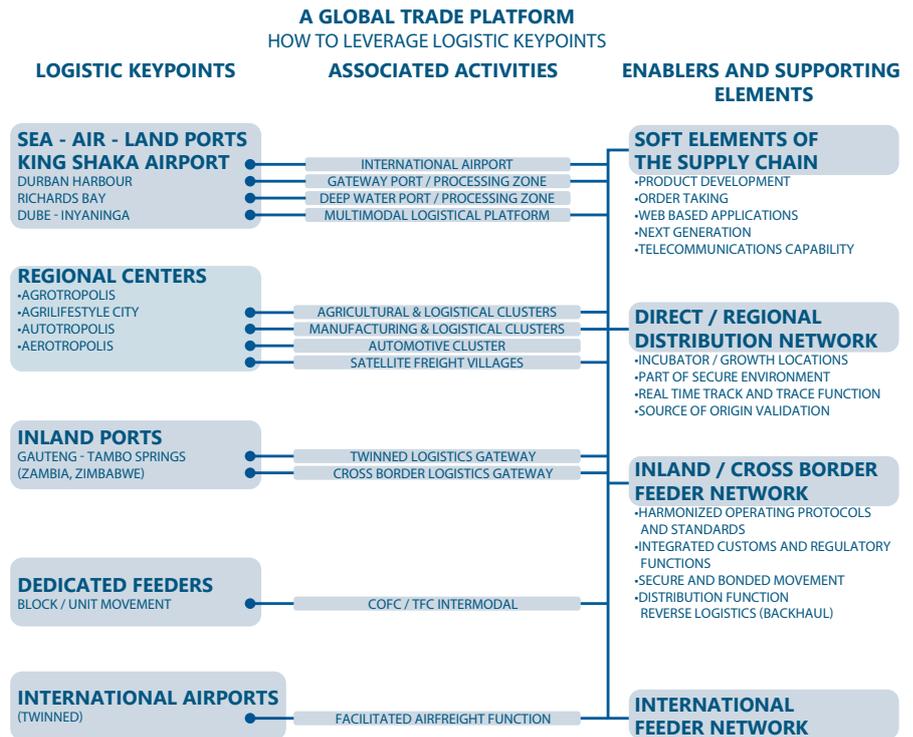
GUIDELINES:

Durban is located on shipping channels to America, Europe, Middle East and Asia, and offers further trade capacity through the Aerotropolis development. On the back of such connectivity, lies the potential for secondary economic development making use of these logistics nodes. The principle of twinned terminals/port is key to ensuring the Durban Aerotropolis can function in the larger South African economy efficiently. Without integrated operational functionality the supply chain will break down, and the time and financial benefits eroded. The OR Tambo Aerotropolis will need to be connected with Durban and almost function as one integrated operation. Common policies and standards will be required to facilitate global transportation and trade, in an effective and efficient manner. Time sensitive goods will have to be processed with the utmost precision.

1. GLOBAL CONNECTIVITY

1.1 TRANSPORT LOGISTICS PLATFORM

GUIDELINES (CONTINUED):



Economic development & market growth is driven by focusing on development motivators such as:

Facilitated Growth

Infrastructure development such as transportation, logistics linkages with suppliers and customers, warehousing spaces and telecommunication needs to be available for business attraction. In terms of the types of businesses to attract, the emphasis is on attracting lead firms and using this to attract key suppliers. A diversity of geographical sources of investment will be targeted, including both South African and international investment destinations (e.g. India, Middle East). Incentives are necessary to attract businesses from current environments into the Aerotropolis. Financial and regulatory incentives are a critical aspect and need to be clearly articulated.

Import Replacement

Deepen and broaden support of current manufacturing programmes focusing on automotive, metals, agro-processing, clothing, textiles, leather and footwear sectors. Support green energies, renewables, energy efficiency, advanced manufacturing and materials.

Government Intervention

New enterprise creation, transformation and job creation are at the forefront of government policy intent. Government needs to take a leading role in creating a conducive ‘business environment’. Examples of government interventions include; mandating ministerial departments to pursue technological advancement, development of legislation and policies that will promote private sector participation, and incentivising private business and public enterprises to work together and foster relationships.

Organic Growth

Organic growth is the expansion of existing operations and economic activity. The Airport has major potential to facilitate local economic growth through rapid trade.

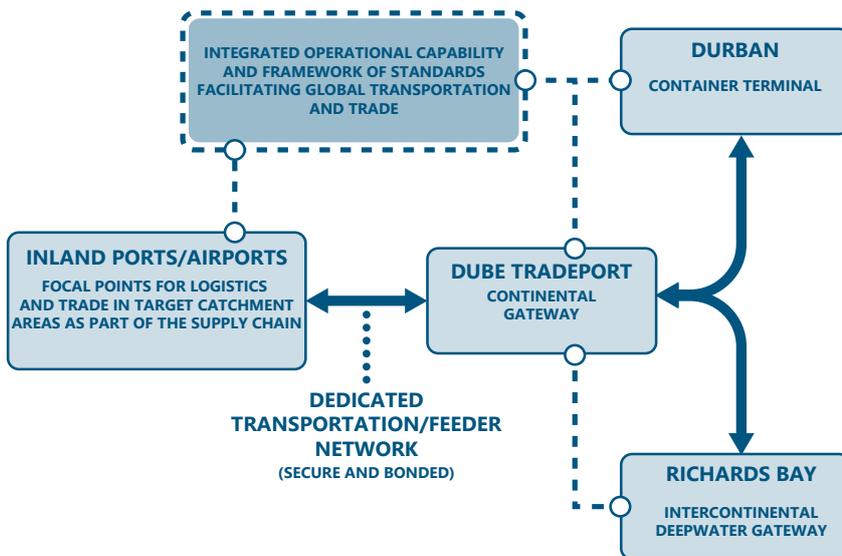
INTERVENTIONS:

Interventions for the Transport Logistics Platform include: the Seaport-Aerotropolis Synergy, the Dube Inyaninga Multimodal Logistics Gateway, Twinned Inland Ports and Logistics Gateways, Increased Air Connectivity and the Satellite Economic Zones (Industrial Economic Hubs).

1) The Seaport-Aerotropolis Synergy

DTP is both a Cargo Terminal and SEZ Operator, and is focused on both logistics and manufacturing. It is positioned to service global import and export markets via both sea and air. This is facilitated by excellent road linkages to the port of Durban and direct airside access on site.

As a manufacturing platform, tenants utilise both air and sea transportation dependent on a range of time and cost factors (refer to the second intervention, 'The Dube Inyaninga, Multimodal Logistics Gateway'). Although the DTP Air Services Strategy has greatly increased the ability to move air freight from Durban into regional markets, the large amount of freight destined for Africa from Durban moves via sea to major ports on the East and West Coast from where it is distributed by inland road and rail networks.



As the premier container port in Africa, Durban has the highest concentration of manufactured goods moving through it at any one time of any place in Africa. It is also home to South Africa's second largest manufacturing centre and in close proximity to the national economic hub.

Going forward it is critical to grow DTP's role as a continental trade gateway by:

- Increasing integration with the port to ensure support for sea to air product movement (an operational MoU already exists with Transnet to support this and critical regulatory agencies such as Customs are present at both locations).
- Focus on utilising DTP's AiRoad trucking service to move goods from the Aerotropolis to the Port of Durban.

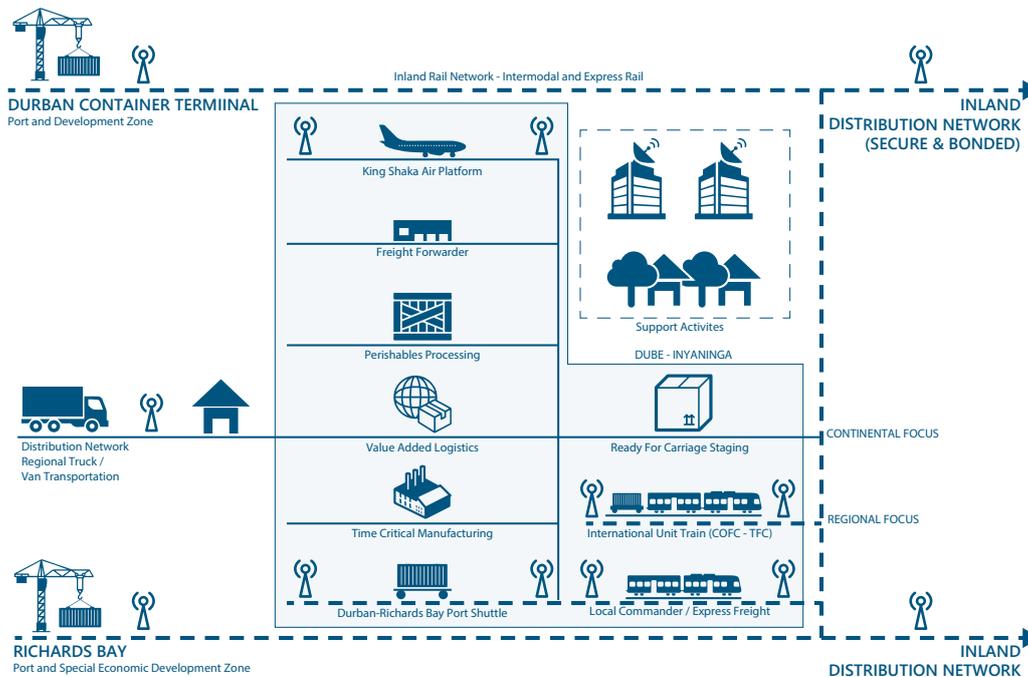
The longer term strategy is for a road to rail intermodal yard to be constructed adjacent to DTP at Inyaninga where rail shuttle services can move greater volumes of containerised goods between the Durban Port and wider Dube TradePort area. This will assist with the integration of modes such as sea, road, rail, air and specifically sea to air movement of freight.

1. GLOBAL CONNECTIVITY

1.1 TRANSPORT LOGISTICS PLATFORM

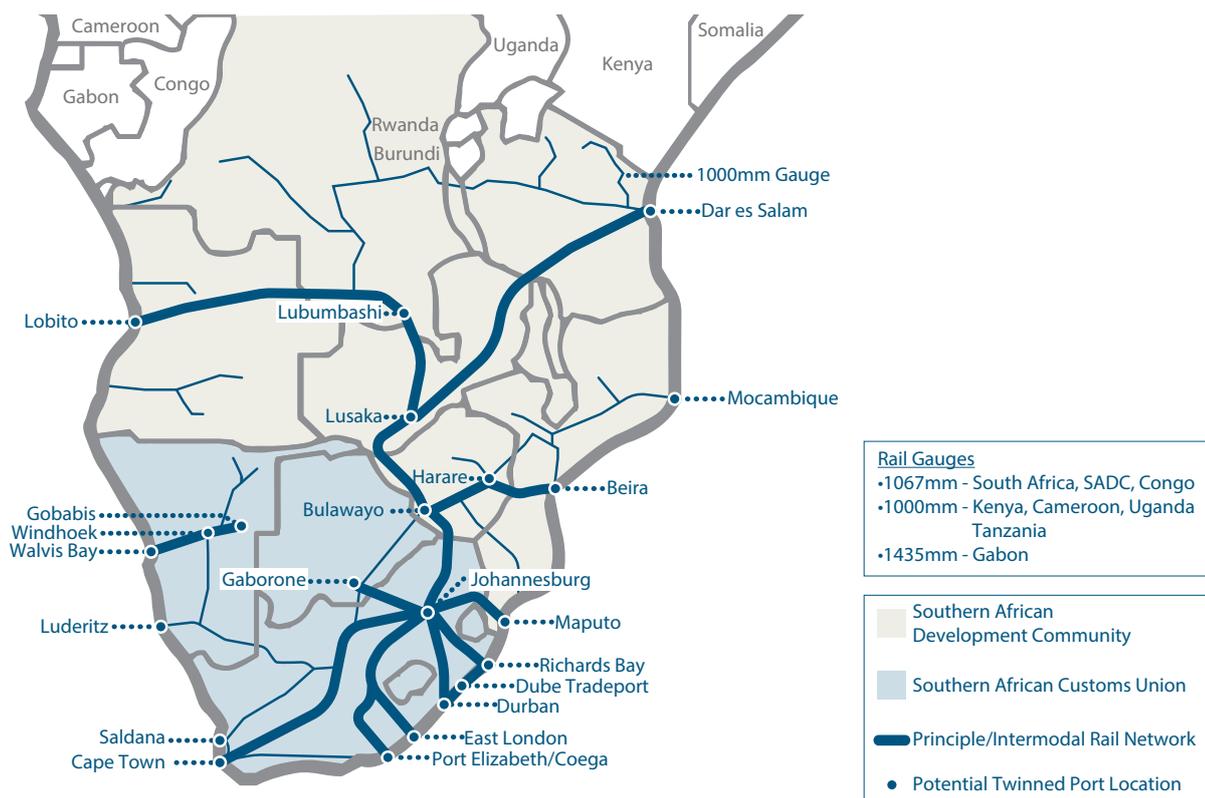
2) The Dube Inyaninga, Multimodal Logistics Gateway

- Create a Road-Rail-Air-Sea Capability: As a multimodal logistics gateway Dube Inyaninga must focus on a feeder network to major market catchment areas, in particular Gauteng as a twinned inland port and logistics gateway. Facilitate movement to and from Dube Inyaninga to the Durban Container Terminal and Richards Bay and provide rail access as an intermodal capability with regional and southern African focus.
- Provide Intermodal Rail Yard/Connectors: Provide rail access for industrial/warehousing sites, port-rail shuttle including container transfer and stuffing/destuffing activity and the option of different site sizes (including supersite) with direct rail access.
- Adopt 'Railrunner' Technology: Provide intermodal transportation solutions that enable shippers to combine the economics of rail with the flexibility of trucking.
- Capitalise on Secure, Bonded and SEZ Facilitation: Directly connect to air and seaports on a secure and bonded basis. This will require a secure area such as perimeter walls/fences with controlled entry/exit of vehicles and personnel, real time control of material inventory and location-according to function (manufacture for export – bonded movement and/or storage). Ensure no cross contamination of goods by tracking applications using Radio Frequency Integration (RFID)/Global Positioning System (GPS) and conducting cargo and vehicle inspection. Provide integral customs processes to SEZ/bonded areas and the adjoining support functions (airport-accommodation-office-recreation) and fast track entry points to secure and bonded areas meeting SARS requirements. It is important to implement a framework of standards to facilitate and secure trade (World Customs Organization Safe Framework and SARS).
- High Capacity and Efficient Transportation Networks: Facilitate movement to SEZ locations at a reduced drayage cost, ensure 'JIT' cycling distance to places of "work, live and play" and provide a commuter rail station option at Inyaninga to facilitate worker movement. The long term vision is to ensure high speed transportation shuttles within the Aerotropolis City, and to Durban and Richards Bay.



Dube - Inyaninga, A Multimodal Logistics Capability (Eleuteri 2016)

3) Twinned Inland Ports and Logistics Gateways



Trans-African Rail Network and Potential Twinned Port Locations (Eleuteri 2016)

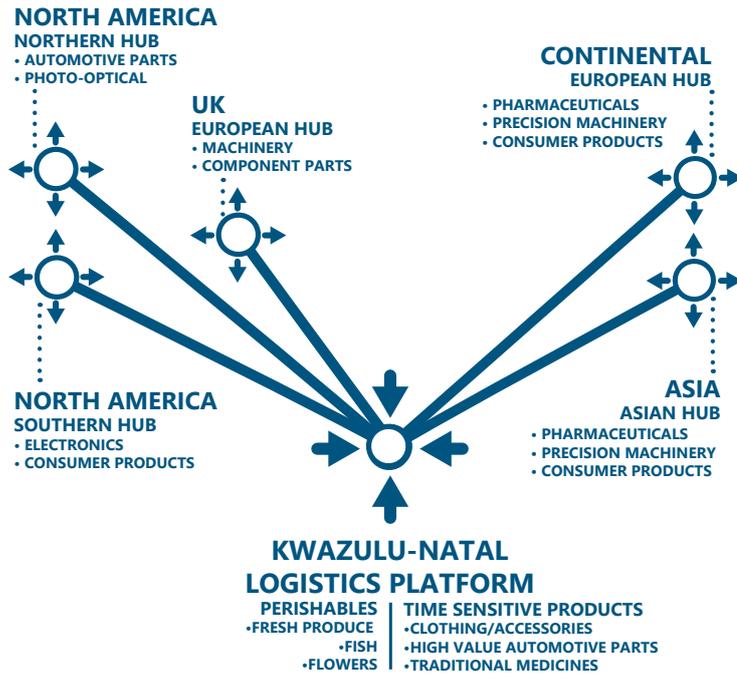
- Facilitate cross border and international trade: In terms of physical connectivity, and in order to strengthen KZN's role as part of a well-connected, broader South African logistics gateway (together with City Deep and OR Tambo Airport), the Airport needs to operate in conjunction with the Durban and Richards Bay seaports and through integrated freight rail links to inland ports in Johannesburg.
- Increase Market Capture: Catchment areas are expanded by use of road and rail feeder systems from targets locations. Create an internationally competitive operating environment. Focus on major market catchment areas (regional, SACU countries, and international destinations). Enter into win-win arrangements with other twinned locations to facilitate cross-border trade and attract private sector participation. Common policies and standards will be required to facilitate global transportation and trade, in an effective and efficient manner.
- Support Twinned Regional Incubators: Provide facilities to accommodate start up activities such as the establishment of new locally grown enterprises and on-shoring and import replacement ventures. The Ekurhuleni Aerotropolis is connected with Durban via the N3 corridor. Both Aerotropolis should function as an integrated operation.
- Support Time-Critical Manufacturing: Time sensitive goods will have to be processed with the utmost precision. Support value adding logistics, industry and manufacturing capabilities driven by private sector business such as perishable goods processing facilities.
- Establish a Staging Yard: Provide staging facilities such as container terminal facilities and warehousing with refrigeration and parking facilities. The physical character of the intermodal facility will vary according to the type of goods handled, the mode of transportation and the type of intermodal transfer.
- IDZ's in the area will benefit the area through: no import taxes on goods directly imported into IDZ, no inventory tax and reduced corporate tax for job creation.

1. GLOBAL CONNECTIVITY

1.1 TRANSPORT LOGISTICS PLATFORM

4) Increased Air Connectivity

- Grow KSAIA connectivity to defined target market areas:



- Focus on the following Air Route Development Strategy:

| INTERNATIONAL | REGIONAL | CARGO |
|--|----------------------|-----------------------------|
| 1) Direct London Service 2) The Middle-east and India Region 3) European Hub Access 4) Tourism Charters | 5) SADC 6) Africa | 7) International and Africa |

5) The Satellite Economic Zones (Industrial Economic Hubs)

There is a strong focus on the identification of areas in the province that can benefit, either directly or indirectly, from the establishment of the Aerotropolis. This is referred to as the “Satellite Economic Zones” which comprises Study Area 2 of the DURAMP.

A satellite is simply a word used to describe “something smaller that relates to, or is dependent on, something larger”. The focus of this Master Plan is then to start with a process of identifying and assessing existing or potential activities that will relate to and benefit from linkages with the Durban Aerotropolis.

The intention to date has been to identify specific sectors to be focused on, with a closer lens on the industrial and business hubs that will serve as satellites to the Aerotropolis. Taking this further, the objective is to understand both current and future sectors for KZN, and to link peripheral opportunities to the core Aerotropolis region (and vice versa) through:

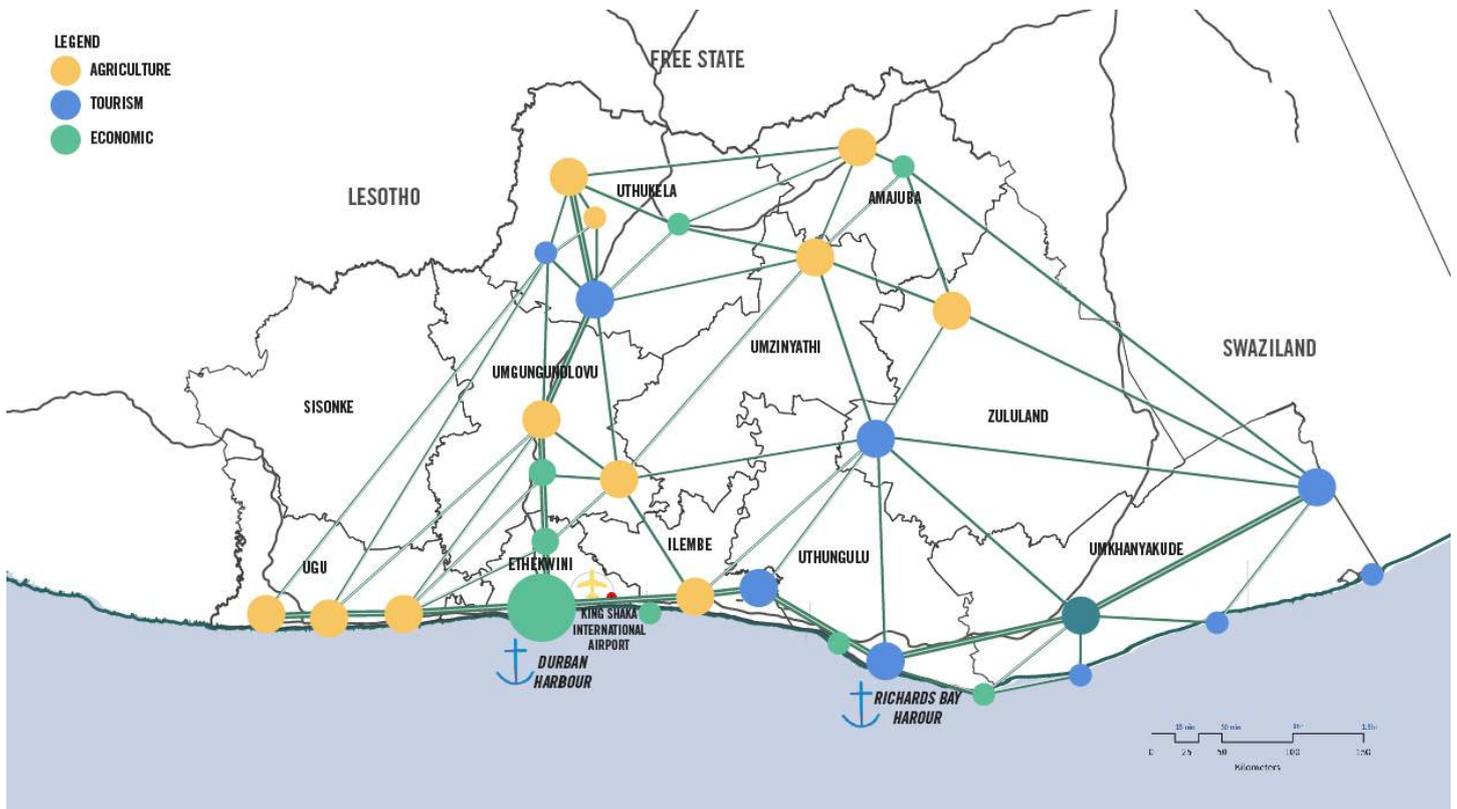
- The flow of information, i.e. communication systems.
- The flow of data, i.e. telecommunications and broadband.
- The flow of people, i.e. public and private transports (air and land).
- The flow of goods, i.e. freight transport including road, rail and sea.

These 7 sectors identified within KZN as having a dominant degree of influence by and upon Durban's Aerotropolis are:

- Commerce
- Aviation & Logistics
- Manufacturing
- Agriculture
- Mining
- Alternative Energy
- Tourism (Nature, Heritage and Beach)

These are broken down further into more detailed sub-sectors of opportunity:

- Manufacturing: Support development of complimentary industries in designated nodes along N2 and N3 Corridor (in line with PGDS and SIP focus)
- Business / Commerce: Strengthen linkages between Aerotropolis and existing and planned future commercial zones identifying opportunities for key sectors
- Agriculture: Focus on facilitating the growth of high value intensive agricultural production and associated processing linking specifically with the Dube AgriZone.
- Tourism: Improve linkages between range of tourism products and also between Aerotropolis and products. Focus on better clustering opportunities.
- Alternative Energy: Identify and develop opportunities for alternative energy generation. Focus on potential linkages with Aerotropolis (supply/production)





PURPOSE:

Connecting People and Goods through Digitisation

New technologies will continue to dramatically change the nature of how we do things. Technology has enhanced people's ability to do things faster, more efficiently, more conveniently. In doing so, it has helped create a quality of life for those that help create it for others.

Digital Economic Transformation
South Africa is ranked 31 out of 50 countries in the 2016 Global Connectivity Index (GCI). As an adopter to the digital economy our focus is on increasing ICT demand to contribute to high quality economic growth.

1. GLOBAL CONNECTIVITY

1.2 DIGITAL PLATFORM

THE
5 KEY ENABLERS
OF THE DIGITAL
ECONOMY RELATE TO



GUIDELINES:

| AEROTROPOLIS COMPONENT: | SMART CITY GUIDELINES: |
|--------------------------|--|
| Broadband Connectivity | >70% of the population have access to the Internet Wider 4G Coverage (>35%) Wider International Bandwidth (>300Kbps) Increase Download Speeds (>50Mbps) |
| Data Centres | Invest more in Data Centres (>0.1% of GDP) |
| Cloud Services | Invest more in Cloud Services (>3% of IT Investment) |
| Big Data | Develop robust policies that offer increased availability for data sharing |
| Internet of Things (IoT) | Grow investment and place IoT initiatives on national agenda |

KEY INTERVENTIONS:

1) *Preconditions for ubiquitous connectivity*

- The use of infrastructure is the main demand simulator of digital connectivity.

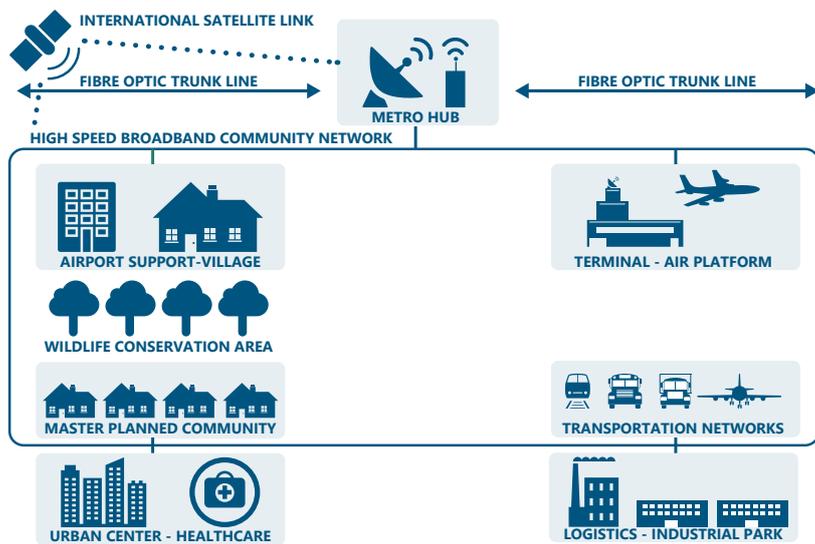


2) *Invest in the supply of ICT products and services:*

- Telecommunications Companies
- Data Centres
- IoT Infrastructure
- Cloud Service Providers

3) *Incentivise end-user ICT investment by providing reduced tariffs and subsidized smart devices such as:*

- IT Hardware
- Servers
- Smart Devices



4) Provide the enhanced communications environment:

- Enhance broadband (Gigabit backbone) to create a high speed broadband community network to facilitate web based applications and access to the virtual market.
- Investment in rural broadband by introducing high-speed broadband through fiber optic networks such as a “Fiber-to-Home” scheme.

5) To encourage industry digitisation, a virtual market and trade:

- Establish a ‘CyberPort’, a platform for web based trade facilitation.
- Ensure a global ecosystem with a set of common languages and standards.
- E-commerce to increase trade productivity and to open new markets.
- Provide proactive trade promotion programming.
- Provide incentives for independent software vendors.

2 SMART ECOLOGY

DESIGNING THE DURBAN AEROTROPOLIS





Enhancing the ecological and open space structure of cities is paramount to sustainable urbanism. It is important to understand the inextricable relationship between human well-being and the natural environment. The positive integration of green space within cities, and planning for the various dimensions of green space, is an absolute fundamental of sustainable urbanism.

The overall concept of smart, sustainable urbanism is dependent on the positive integration of high quality urban environments with an integrated green/ecological structure. At an ecological level, it is important to understand the significance of protecting natural systems. An essential starting point is the restoration and enhancement of natural functioning systems and the preservation of those elements considered irreplaceable.

Smart ecological networks should include resilience planning and open space opportunities for both passive and active recreation. This is tied directly to enhancing human well-being, health and liveability.

Another dimension of smart ecology is the incorporation of productive open space within cities.



PURPOSE:

The natural environment supports the economic and social performance of our cities. Without it, humanity is unable to thrive, let alone live.

The receiving environment of the Durban Aerotropolis is home to a multitude of natural spaces including coastal forest, grassland, wetlands, estuaries, rivers and coastline. Together, they form a critical structuring element to future regional planning, but more than that, they provide a series of critical ecosystem services, such as those tabled below.

Natural areas have been vastly impacted by agricultural practices, polluting industrial activity and urbanisation in the past. All remaining habitats of ecological importance are vitally important for retention, protection and rehabilitation in future

| | |
|-------------------------------|-------------------------------------|
| PROVISIONING SERVICES | Food |
| | Genetic Resources |
| | Mineral Resources |
| | Energy Resources |
| SUPPORTING SERVICES | Bio- Derivative Products |
| | Habitat Provision |
| | Primary Production |
| | Nutrient Cycling |
| REGULATING SERVICES | Water Cycling |
| | Climate Regulation |
| | Carbon Sequestration |
| | Filtration/ detoxification |
| | Nutrient Regulation |
| CULTURAL SERVICES | Water supply/ hydrology |
| | Shoreline stabilization/ protection |
| | Water Disposal |
| | Tourism and Ecotourism |
| | Recreation |
| | Historical and Heritage Value |
| Religious and Spiritual Value | |
| Aesthetic Value | |
| Knowledge and science value | |

2. SMART ECOLOGY

2.1 BASELINE ECOLOGY

GUIDELINES:

The masterplan, in terms of both design and roll-out, must follow a process of mitigation hierarchy, as detailed in the guideline below:

| LANDSCAPE ELEMENT: | SMART CITY GUIDELINES: |
|---------------------|--|
| Terrestrial Ecology | Retain, as far as possible, over 90% of all natural/ remaining ecosystems in the study area. Where impacts to natural areas are unavoidable, the following must apply on a case basis: |
| Aquatic Ecology | <p>AVOIDANCE Alternative sites or technology to eliminate impacts e.g. DENSIFICATION</p> <p>MINIMISATION Actions during design, construction, operation to minimise or eliminate the impacts e.g. TUNNELLING/ SUSPENSION BRIDGES</p> <p>COMPENSATION Used as a last resort to offset impacts e.g. OFFSETS</p> |

INTERVENTIONS:

Based on the above guideline, the approach is to protect and retain all environmentally sensitive areas identified in terms of current Environmental Impact Assessments (EIAs) in the area, Durban’s Metropolitan Open Space System (DMOSS), KwaDukuza’s Biodiversity and Open Space Map (BOSMap) and the Conservation Plan (C-Plan) areas identified in Ndwedwe. In order to avoid any impact on these areas, various sustainable planning and development principals such as densification are proposed as part of the overall ‘tread-light’ approach being adopted especially where road crossings are required in sensitive areas like estuary, watercourse and floodline crossings (e.g. through tunnelling or suspension bridges) – essentially following the top two tiers of the mitigation hierarchy scale.



NOTE: Open space zones indicated on the plan are subject to further detailed studies where the exact delineation of sensitive/ecological areas will be refined through detailed environmental studies at a project specific level, and therefore, the Aerotropolis Masterplan merely serves to indicate development intent.



PURPOSE:

The onset of climate change means that our natural and built systems are at the mercy of environmental fluxes: storm surges, associated flooding and violent winds.

Local Climate Change Resilience Studies (CCRSs) in eThekweni and KwaDukuza have revealed that the study area will be impacted in future as follows: 1.5°C - 2.5°C by 2065, and 3°C - 5°C by 2100. Increase in long duration and aggregated rainfall of up to 500 mm by 2100 Rate of sea level rise is set to increase.

Furthermore, a series of proposed developments (e.g. Inyaninga, Wewe, Sibaya and uShukela) are likely to occur in this region in the short and medium term, which could result in habitat losses and losses to ecosystem integrity through edge effects.

As such, from an environmental resilience standpoint, the future Aerotropolis natural areas need to be protected from future disturbances, development and edge effects. One of the most effective methods of doing so is through environmental buffering, a co-benefit of which is carbon sequestration provided by vegetated areas.

2.2 RESILIENCE & REHABILITATION

GUIDELINES:

The global discourse on natural ecology has shifted and now goes beyond talk of sustainability in the sense of preservation of existing natural environmental assets, to that of resilience. The idea of cities adopting ecological resilient approaches hinged on the acknowledgment that natural ecology has been disrupted directly or indirectly. As such resilient approaches go a step further in that they are aimed at ensuring that disrupted environments are able to recover and still serve their intended natural purpose functions. Local precedent from recent EIAs, the recent offset study (undertaken by Dube Tradeport and Tongaat Hulett Developments), traditional planning guidelines and the laws (such as NEMA and its Integrated Coastal Management Act) have resulted in the following proposed buffer requirements for enhanced resilience in the future Aerotropolis region:

| LANDSCAPE ELEMENT: | SMART CITY GUIDELINES: |
|---------------------------------|--|
| Watercourses (wetland & rivers) | Minimum 30m Buffer zone and/ or 10m from 1:100 year floodline and/ or applicable EIA or offset study buffers/ delineations (whichever is the more accurate for each site in question) |
| Estuaries | |
| Coastline | 100m avoidance zone (in line with admiralty reserve) but subject to detailed study and/ or in situ development where infrastructure already exists and is not in high risk coastal erosion areas |
| Forest/ Grassland | 0-30m buffer depending on local studies on sensitivity of habitat |

INTERVENTIONS:

First and foremost, the Umhlanga, Umdloti and Tongaat estuaries have been strategically identified as conservation management zones and possible future "offsets" areas should development in the area encroach upon sensitive areas (with the caveat that offsets are a last resort).

All other watercourses have been buffered by a minimum 30m buffer zone and the appropriate floodlines have been mapped along major river systems. The 100m coastal buffer area has been avoided in all greenfields areas, while existing developed areas along the coast have been retained but not expanded.

Terrestrial buffers have not been added to forests or grasslands but may be revised following more detailed planning or EIA studies (eThekweni Municipality, pers comm, 2016).



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PURPOSE:

It is critical to encourage the future city inhabitants to interact with their environment and to allow them to develop a heightened appreciation of green spaces. An appreciation of natural spaces will enhance their sense of ownership, and simultaneously help improve people's overall health and well-being (e.g. through the provision of fresh, clean air).

As testament to the intrinsically wide benefits provided by natural open space, a study by the Foundation for African Real Estate Research in 2013 showed that people will in fact pay a premium for a property with a view of a waterbody for example (on average, 47.9% extra). Thus, protecting the environment and enhancing human interaction with it has positive implications.

Furthermore, in terms of global tourism – it is the cities and countries that protect and enhance their natural assets, that will be stronger contenders for tourism and the Durban Aerotropolis has a unique advantage in this regard as a biodiverse, greenfields site.

2. SMART ECOLOGY

2.3 HUMAN INTERACTION

GUIDELINES:

Best practice metrics/guidelines for the provision of transformed and untransformed public open space and natural open space have been developed by the United Nations (2015) as follows:

| LANDSCAPE ELEMENT: | SMART CITY GUIDELINES: |
|------------------------------|---|
| Public Open Space | 20% of an urban area should be allocated to squares, parks and natural open spaces. |
| Access to Natural Open Space | |

INTERVENTIONS:

In response to this, the following key interventions are proposed within the Aerotropolis area:

- Minimum 20% of the total Aerotropolis 'core' area to both public open space (e.g. parks, playlots or pocket parks) and natural open space.
- A respectful network of trails, boardwalks, promenades, and picnic sites embedded within these open space areas with a light footprint.
- Promotion of key attractions and core conservation-based areas such as Umhlanga Lagoon Reserve, Mt Moreland, Hazelmere Dam and beach nodes as destinations through place marketing.

These are denoted schematically on the image below (oHlanga estuary example):



An example of a pocket park, embedded within an urban environment:



Core regional conservation initiatives (below):



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PURPOSE:

The Aerotropolis region will be the recipient of major future development. Thus, a proactive approach to future development planning is required. In this respect, a multi-criteria analysis (MCA) of environmental sensitivities was undertaken to understand the most important areas to avoid from a future development standpoint.

2. SMART ECOLOGY

2.4 STRATEGIC ASSESSMENT

GUIDELINES:

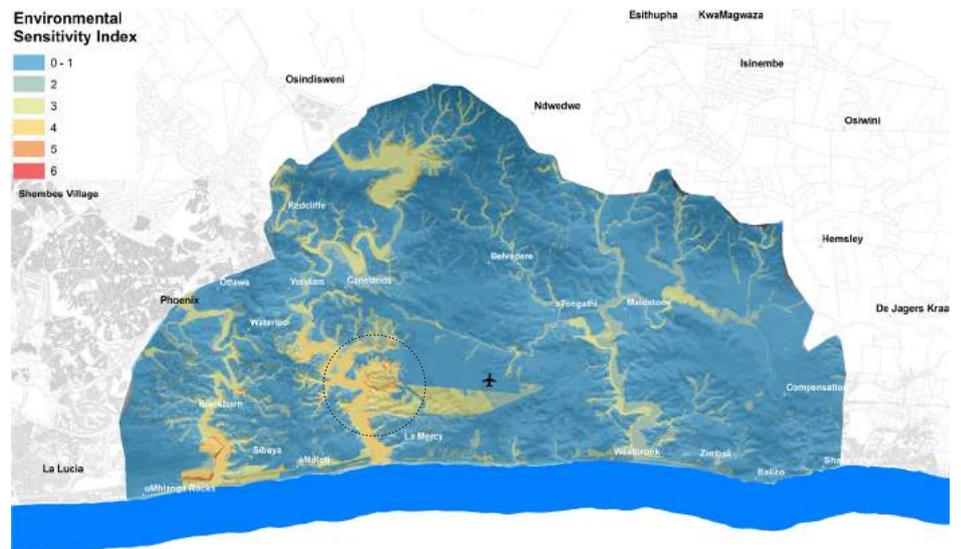
The following environmental planning layers were used to generate a spatial 'heat map' of sensitivity ranging from 1 (low sensitivity) to 6 (high sensitivity):

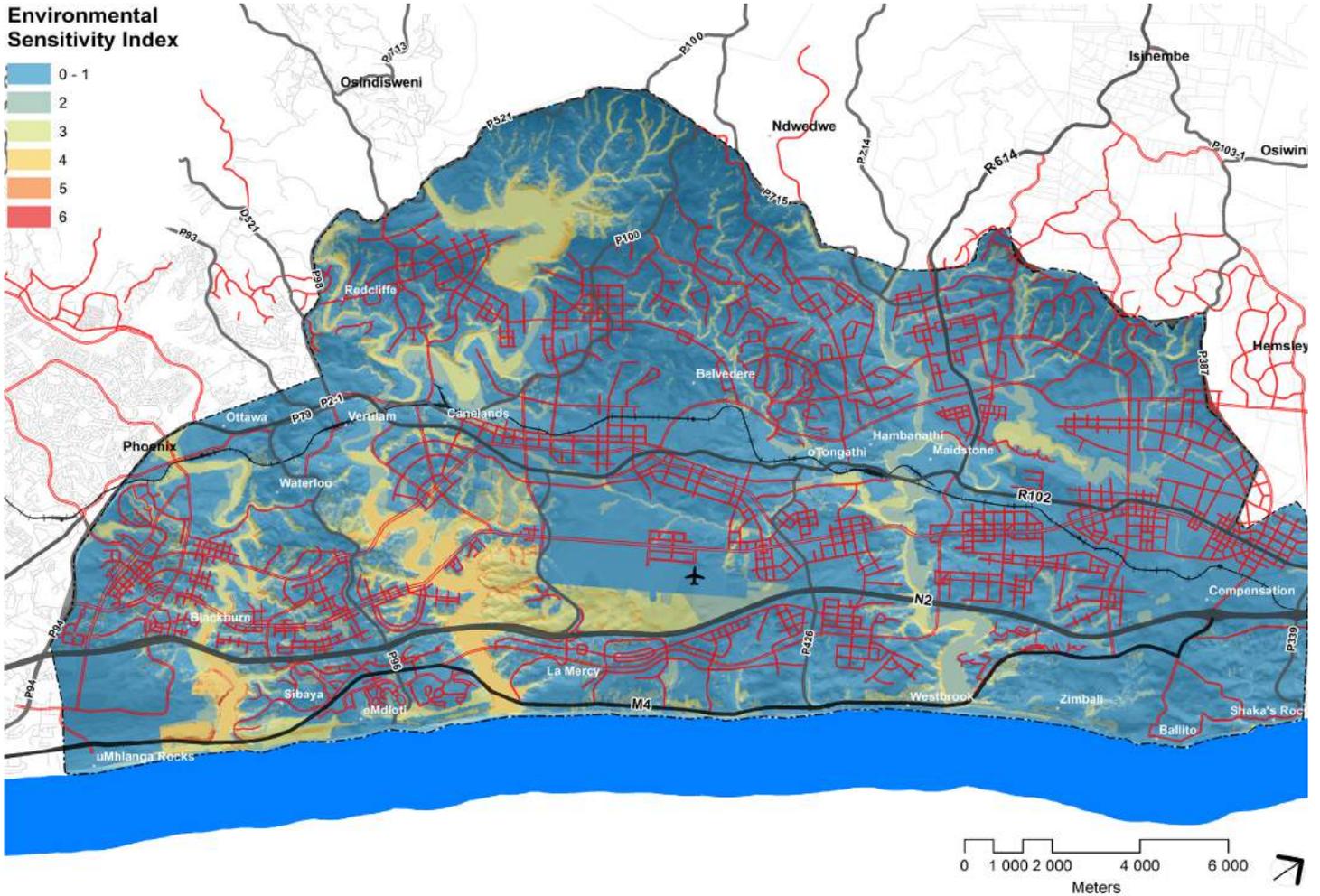
1. DMOSS, BOSMap and C-Plan for the 3 local municipalities
2. Hydrology (rivers, floodplains, tributaries and wetlands with the relevant 10-30m buffers)
3. Estuaries with the associated resilience framework offsets areas (identified by Dube TradePort, Tongaat Hulett and eThekweni)
4. Steep slopes
5. Protected areas, as well as conservation initiative areas.

The plan below reflects the findings of the MCA, while the plan to the right reveals how the preferred movement network option (in red) and their associated linear crossings have been tailored to the sensitive environmental context (note: existing roads and rail are in black).

By extension, proposed development (see sections that follow) is also tailored specifically to avoid these sensitive areas. The three estuaries (oHlanga, uMdloti and Tongaati) reveal major sensitivity and road crossings and have thus been limited as far as possible.

In the case of the watercourse crossing and road through Mount Moreland (encircled below), the most direct route through the broader wetland system should be taken to avoid an otherwise major crossing/route through this very sensitive area of the Aerotropolis. This will require further discussion with authorities as there are current offset agreements that dictate another, longer route through this sensitive area.





NOTE:
 The crossing of the conservation area at Mount Moreland, as indicated on the plan above, is subject to a detailed study where the exact delineation of the crossing of Umhlanga River at Mount Moreland should be investigated and refined where possible to ensure that the best route is defined from an ecological and urban connectivity point of view. There are current offset agreements that dictate a longer route crossing through possibly a larger sensitive area. The intent is to allow for a more direct route through the broader wetland system and thereby reducing the spatial footprint of the crossing. The current alignment depicted on the DURAMP is based on the original alignment, and it is recommended that this is further investigated as a project emanating from the DURAMP process.

2. SMART ECOLOGY

2.5 ECOLOGICAL FRAMEWORK

Plan Reflecting Ecological Infrastructure

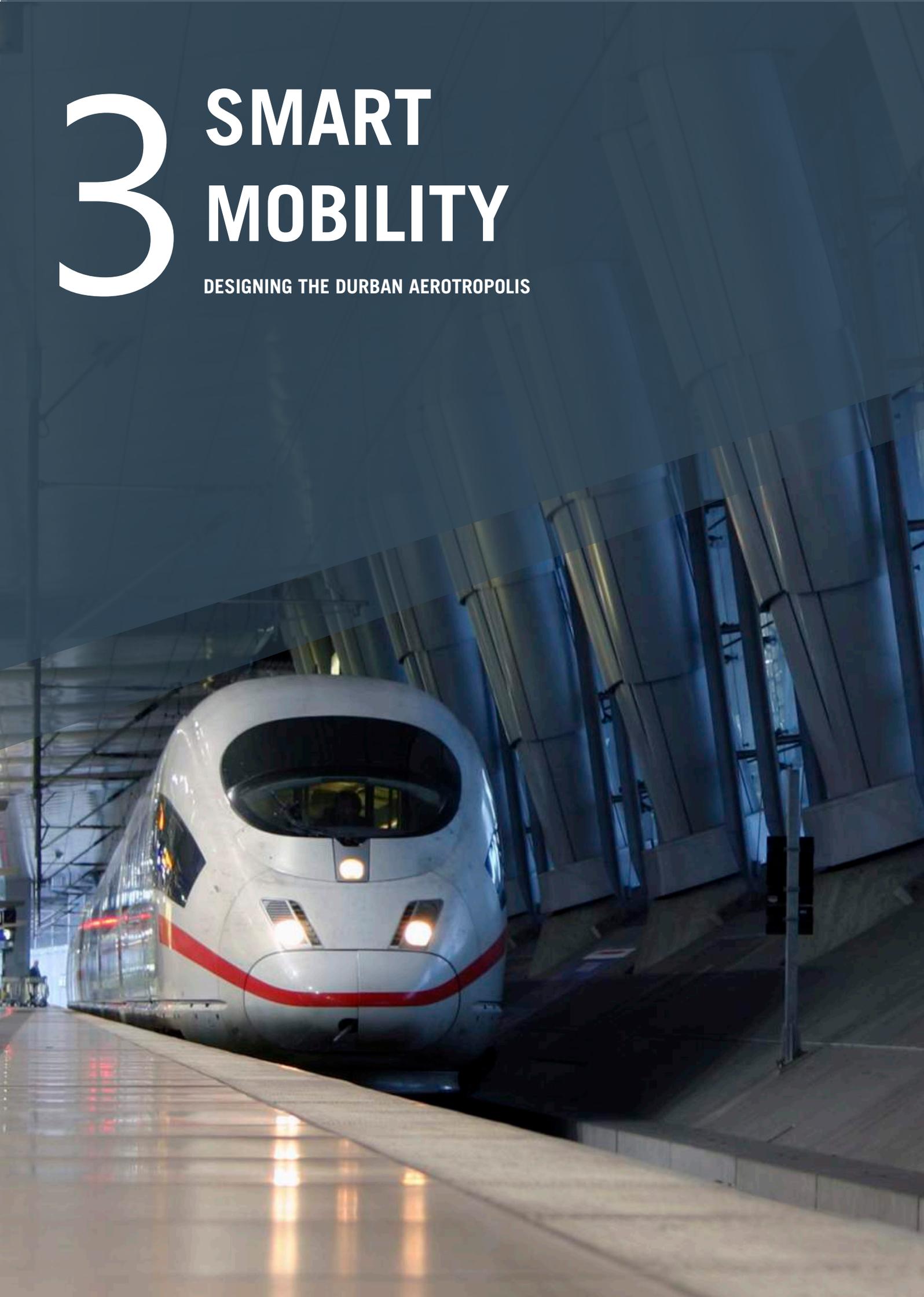


NOTE: Open space zones indicated on the plan are subject to further detailed studies where the exact delineation of sensitive/ecological areas will be refined through detailed environmental studies at a project specific level, and therefore, the Aerotropolis Masterplan merely serves to indicate the development intent.



3 SMART MOBILITY

DESIGNING THE DURBAN AEROTROPOLIS





Welcome to Industry 4.0. Technology experts use the term to refer to the 'fourth industrial revolution' - the merging of the real and virtual worlds through digitisation. The future cannot be predicted, but it is clear that smart technology will set the stage for innovations in seamless connectivity, automation, and the digital delivery of services. Digitisation (the conversion of information to digital form) facilitates mobility by enabling multimodal, integrated and connected transportation networks and systems.

Time is one of life's most precious commodities. It cannot be bought or borrowed, but it can be saved by opting for more efficient and effective means of transportation. Imagine moving seamlessly from the Airport terminal, to a rapid rail link, to a public transport bus or to a shared vehicle or free bicycle or even an autonomous vehicle. Combinations of transportation modes that are supported by on-demand mobile applications, real-time travel information and electronic payment systems allow users to prepare their multimodal trips for maximum efficiency. Multimodal connectivity enables commuters to economise on time when accessing places of "work, live and play".

Historically, transportation planning responses to the growing desire for private mobility has increased congestion and pollution. This threatens the quality of living in an urban environment. To minimise urban mobility's environmental impact, sustainable solutions seek to optimise the effectiveness of existing infrastructure and transport operations by serving more users more efficiently.

Expanded mobility ecosystems create the opportunity for "modal shift" to efficient transportation options such as non-motorised transport, the use of alternative fuels in vehicles and the use of connected and autonomous vehicles. Modal diversity is essential to provide varied service types, capacities, speeds and levels of accessibility in the transportation system, with the potential to more effectively accommodate a variety of trip types, purposes and trip lengths. Areas with balanced, integrated, multimodal transportation systems such as "Transit Orientated Developments" are far superior and more liveable than those only served by systems with the primary focus on one mode.

Smart mobility changes the context in which people make travel decisions. Smarter physical infrastructure creates the enabling environment, whilst smart technology encourages behavioural change makes the shift to sustainable ways of travel possible. By investing in robust transportation networks, we allow people to connect to each other both physically and digitally, bridging the gap between resource availability and economic opportunity.

In response, the strategic transport vision for the Durban Aerotropolis is a system that is seamlessly integrated, easily accessible, more efficient, faster and "greener". Within the context of the above, the following strategies are proposed:

The Durban Aerotropolis Movement Network

- Integration of Land Use and Transport Planning
- Inclusive Mobility
- Green Mobility
- Shared Mobility



PURPOSE:

The Aerotropolis Movement Network

Activities associated with the movement of people and goods using a growing, integrated, multimodal transport network around the Core Airport City will sustain life for the Durban Aerotropolis. Transportation is often referred to as the “lifblood of cities” and has a strong influence on the physical condition of metropolitan areas and the quality of life in them. Transportation is not an end in itself; it is however, a means to an end. We need transportation networks so that people can access places of “work, live and play” and businesses can access services and logistics hubs. Growth brings development and with that comes more opportunity which must be accessible to meet the needs of a growing community. The Aerotropolis Movement Network needs to be characterised by an effective access management system, which is integrated with the land use it serves. The road network is the system of movement that sustains and supports a healthy operating environment in the Core Airport City. With growth comes the associated demand for movement and access with the associated need to do things smarter and more sustainably to ensure a more connected future for all.

Connected and Accessible Aerotropolis

A connected and accessible Aerotropolis is based on key urban structuring systems, namely: access to open space and the structure of movement. These systems are influenced by appropriate types and levels of access and mobility serving the development. It is critical to ensure that the Aerotropolis has the highest level of connectedness while ensuring that it ties into the broader urban context. There is also a strong acknowledgement of the need to integrate the hinterland with opportunities within the core of the corridor. To this end, it is essential that a supergrid of mobility and access is developed.

Quality of life and human well-being is fundamentally tied to adequate access to open space. Open space and natural ecosystems are the foundational planning layer.

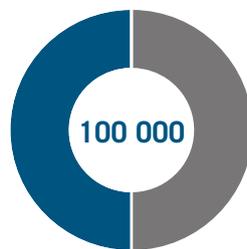
3. SMART MOBILITY

3.1 THE MOVEMENT NETWORK

GUIDELINES:

| PLANNING ELEMENT: | SMART CITY GUIDELINES: |
|--------------------------------|--|
| Public Open Space & Ecosystems | 20% of urban areas dedicated to the natural public realm (POS, natural ecosystems) |
| | 30m buffers along watercourses |
| | 100m buffer along the coast |
| | 0-30m around forest and grassland (depending on detailed study) |
| Grid Connections | 30% of urban areas dedicated to the road-based public network (road reserves) |
| | Super grid of a maximum of 2km to be used to structure space |
| | Local grid of maximum 200m to be used for local urban mobility |
| | Grid of 100m to enhance local pedestrian movement |

PEAK PERIOD (3hr) PERSON TRIPS

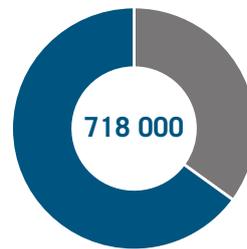


EARLY YEARS

50%
PUBLIC TRANSPORT
50%
PRIVATE VEHICLES

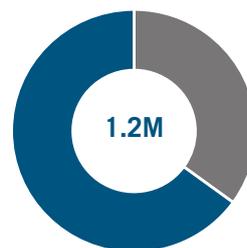
Planning for Smart Mobility

By bringing residential and employment opportunities closer together, commuter travel distance is dramatically reduced by up to 40% over time, lowering the overall cost of travel. Transit investments will strive to accommodate up to 70% of peak period of trips, reducing demand for road space. Highest land-use densities are planned adjacent to prominent transit corridors, enhancing transport accessibility and system sustainability.



YEAR 25

70%
PUBLIC TRANSPORT
30%
PRIVATE VEHICLES



YEAR 50

70%
PUBLIC TRANSPORT
30%
PRIVATE VEHICLES

UP TO 40%
REDUCTION IN TRAVEL DISTANCE

INTERVENTIONS:

The Road Network

In terms of the proposed supergrid, key north-south connections are proposed as follows:

1. The M4 and its realignment in the north through Westbrook, with a new interchange with the N2, just north of the oTongati River.
2. The establishment of Dube East as a central spine which merges with the R102 in the Compensation area.
3. The establishment of Dube West as an integrator from Phoenix Highway and 'INK', continuing west of the Airport and linking into the Watson Highway interchange with the N2.
4. Acknowledgement of the R102 as a critical north-south connector which merges with Dube East in the Compensation area.
5. The Western Bypass, which provides mobility in the Western Corridor as an extension of the R102 from the Inyaninga area.

In terms of proposed east-west connectivity the following are proposed:

1. Cornubia Boulevard -linking Cornubia to Umhlanga.
2. Blackburn link road -connecting Cornubia to Izinga.
3. The MR96 linking Umdloti to Verulam, with further connections west of Verulam to Inanda(via the M27 west) and Verulam to Oakford (via the P98)
4. The Airport access road (find name) through Canelands–realignment of R614 (via the P100 / Vincent Dickenson Road) through to Hazelmere and Ndwedwe.
5. A Watson Highway connection off the N2 towards Tongaat, and from Tongaat through Aberfoyle linking west to Emona.
6. Extension of the realignment of the M4 at interchange with Westbrook at the N2 –R614 from Lindokuhle, Wewe and eventually through to Ndwedwe.
7. An extension of the P339 from Ballito heading west.

Smart Transport Corridors

1. Initiate Freight Corridors: Establish a roadway hierarchy that distinguishes between local, regional and freight movement. Classify major freight corridors (mobility routes) to minimise conflict between commuter and truck traffic.
2. Manage Truck Lanes: Maximise air to surface connectivity through designated freight routes.
3. Construct Grade-Separated Interchanges: Construct grade-separated interchanges and elevated bypass lanes to minimise pedestrian vehicular conflict and reduce traffic congestion.
4. Explore Intelligent Transportation Services: Integrate real-time system management to optimise the operation of transportation services and facilities. Promote off-peak deliveries and operations to alleviate congestion.
5. Regional Connectivity: The airport city is reliant on regional connectivity, emphasising the importance of programmes like SIP2.
6. Integrated Road Safety Strategy: With an increase in freight traffic, issues related to safety need to be addressed through an integrated road safety strategy.

Public Transport System along Multimodal Corridors

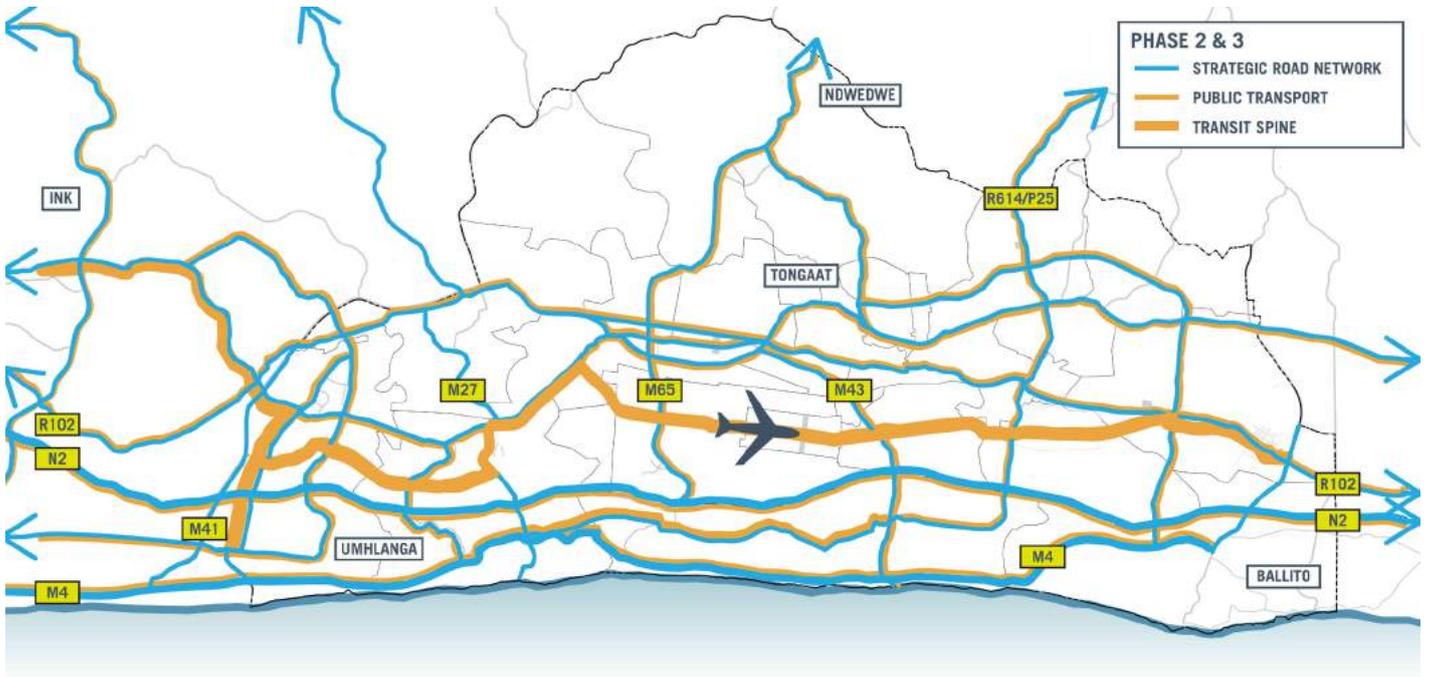
1. Provide a Strong Public Transport Corridor along Dube East: Maximise the use of sustainable modes of public transport along Dube East.
2. Ensure Regular Public Transport Operations: Ensure that the Airport is well serviced by the Public Transport operations.
3. Undertake a Complete Streets Approach: Adopt a 'complete streets' approach to connect activity nodes along key movement corridors. Provide safe and convenient NMT connections to places of "work, live and play" (major activity nodes). The transportation policy and design approach must be centred on people and not just vehicles - NMT must not be compromised by the needs of motorised traffic. Private cars are not excluded from the transport system; however they are not given priority.
4. Provide Last Mile Connectivity: Ensure that public transport hubs and intermodal terminals are served by safe and convenient pedestrian and bicycle connections to provide "last mile" NMT connectivity.
5. Establish Priority Lanes: Establish convenient public transport links by providing designated PT routes to facilitate traffic flow and conveniently connect the Airport with the greater Airport City and other major activity nodes.
6. Explore Personal Rapid Transit (PRT): Provide a dedicated express route to link the airport with the Core Airport City. The long term vision is to provide a link that can be used as a "test bed" for Personal Rapid Transit (PRT).

3. SMART MOBILITY

3.1 THE MOVEMENT NETWORK

Development Phases 1-3

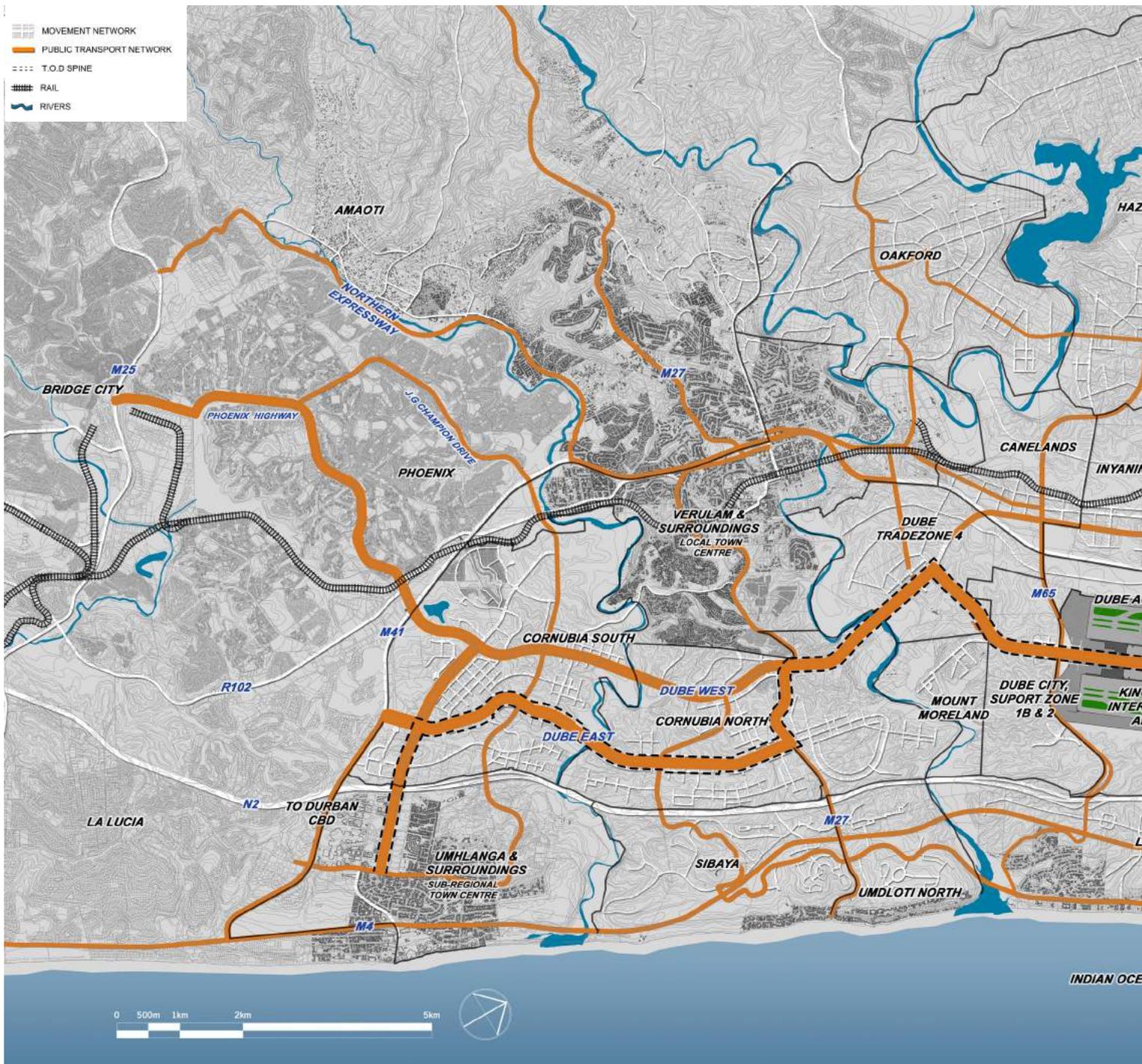




3. SMART MOBILITY

3.1 THE MOVEMENT NETWORK

AEROTROPOLIS CONNECTIVITY PLAN





PURPOSE:

A Holistic Approach

When multiple transport networks and systems come together there needs to be integration and alignment between different operating environments and management units. The integration of land use with transportation systems improves efficiencies, ensures liveability and caters for virtual and physical access to opportunity.

Institutional Alignment

The alignment of different institutions and key role players in the transport sector creates a platform from which to work towards a well-integrated transportation system for the Durban Aerotropolis. This integration is fundamental, catering for a diverse set of user groups and their needs.

Do More With Less

When we integrate the transportation system we create value by being able to “do more with less” through identifying and building upon the synergies that exist within the system. Synergy is the interaction of two or more organisations, structures or systems to produce a combined effort and/or result that is greater than the sum of the separate inputs or components. Within this context, combining and integrating transportation systems through smart mobility products and services, supports efficient, cost-effective and sustainable transportation systems and operations.

Information and Infrastructure

“Big Data” is a term used to describe the strategic use of information to forecast and help shift travel behavior in ways that improve the efficiency and reliability of transport systems and services. Effective use of this information leads to better strategic decisions regarding the redistribution of travel demand over time and across different transport modes and routes. By capturing traffic information from transport users; governments, transport operators and businesses can gain a complete overview of transport users’ needs. This allows for travel price optimisation which underpins the process of capacity planning and the efficient management and maintenance of transportation assets.

3. SMART MOBILITY

3.2 INTEGRATION OF LAND-USE & TRANSPORT PLANNING

GUIDELINES:

| PLANNING ELEMENT: | SMART CITY GUIDELINES: |
|--------------------------------------|---|
| Physical and Functional Integration | Transportation infrastructure should serve more than one function. In addition to the primary function of movement of people and goods, opportunity should be sought to provide other functions such as energy generation, advertising, marketing, and digital connectivity. |
| Institutional and Policy Integration | Transport policies at the three levels of government should be aligned to ensure that objectives do not conflict. Policy integration is also required laterally within each sphere of government. For example, land-use policies must align with transport and infrastructure policies. |
| Financial Integration | Treasury policies and requirements need to be aligned across the three spheres of government, in respect of their different programmes, grants and budgets. Investments must be planned within the public and private sector and should be collated into a common data management system to harmonise spending and avoid duplication. |
| Management Integration | Provincial, district and local municipal transport systems need to operate with an Integrated Fare Management System (IFMS) and related information support systems. |
| End User Integration | Outcomes focused approach to decision making by providing owners and operators with real-time information. This improves asset and system performance as well as user experience. |

INTERVENTIONS:

Transit Orientated Development (TOD)

1. **Make Efficient Use of Space:** Intensify, diversify and focus land-use and economic activity in areas where bulk infrastructure and mass movement/transportation options (roads and rail) are available. Optimise the use of space and appropriate use of development form, to serve a larger population catchment with less infrastructure than would typically be required to serve the same population at a lower density with sprawled urban form.
2. **Integrate NMT from a Policy, Physical Infrastructure and Management Perspective:** The design and implementation of NMT needs sufficient attention in urban planning to provide NMT routes for accessible and equitable last mile connectivity. For example, allow for shower and change room facilities to make the wide use of NMT (cycling and walking) a practical reality.
3. **Ensure Adequate Passenger Densities:** Concentrate activity around trunk routes, which will limit the need for extensive feeder services. Reduce commuter travel time and PT fleet size requirements by having employment opportunities closer to home. Reduce tidal peak effects to ensure PT vehicles recycling during the peak hour do not return empty.
4. **Provide Rail Connectivity:** Encourage institutional coordination to successfully implement rail linkages to service the Airport City’s resident, worker and tourist populations from the KSIA passenger terminal to other major activity nodes.

Intelligent Transport Systems (ITS)

1. **Inform Travel Decisions:** Combine ITS with smartphone applications and GPS devices to enable users to make informed travel decisions. Centralise traffic management control for the collection and provision of travel information relevant to the needs of different stakeholders.
2. **Provide Dynamic Messaging:** Provide dynamic messaging signs to alert users to traffic congestion, incidents, events, parking availability and weather conditions. Introduce other way-finding elements to better orient tourists around the Airport City.
3. **Adapt Signal Control:** Control and coordinate signaling according to live traffic conditions through a centralized traffic management system. Adaptive signaling improves traffic flow by optimising signal timings and balancing traffic flows. Use these tools to give intersection priority to public

transport and shared mobility services.

4. Provide Automatic Incident Detection (AID): Install incident detection tools such as AID sensors to reduce response times for incident identification and reaction.
5. Ensure Active Lane Management: Control the flow of traffic during peak periods through active lane management such as movable barriers, part-time running lanes and dynamic road markings.
6. Integrate Fare Collection: Provide integrated fare collection technologies such as a common fare structure that encourage free transfers within the network which will extend the range of destinations available to a user for single affordable network fare.
7. Provide E-payments: Provide an e-payment system which uses a smartcard to support integrated fare collection structures. The loading of the smartcard should be carried out at cash using registered and authorised vendors. Capitalise on smart technology and data by providing automatic fare collection with pre-boarding fare collection and fare verification technology. Capture passenger demand and supply data to reveal the patterns of movement to guide future infrastructure planning and transport operations and services. The long term vision for fare systems and ticketing is to ensure that an integrated transport network is underpinned by a single fare across all modes. Fares must be linked to a mechanism to improve the affordability for those living on the periphery of the Aerotropolis region.



PURPOSE:

Mobility for All

The goal of inclusive mobility is to put people first. The Durban Aerotropolis will be designed to meet the everyday needs of citizens. Everyone has the right to access opportunities with transport systems and services enabling people to access opportunities such as goods, services and activities. Improved, reliable, safe and affordable mobility are important factors to consider particularly when catering for the poor, the elderly, children and other special needs groups.

Overcoming Disconnections

Major arterials and interchanges create barriers for pedestrians to access opportunity. Inclusive mobility must be addressed to overcome the disconnections that disadvantaged population groups face. Appropriate modes, inclusive of NMT are required to support economic transformation by allowing all people to access resources, especially those who cannot afford a private car. When investment is made in inclusive and universally accessible transportation networks and ICT, it positions people to connect to each other both physically and digitally leading to increased social, cultural, educational and economic opportunities for all.

Connectivity Creates Belonging

Mobility influences everything we do. Connected and autonomous vehicles (CAVs) are disrupting traditional mobility systems by eliminating the need for human drivers. This greatly reduces the potential for human error, significantly reducing the number of crashes. For the elderly, children and people with disabilities, CAVs afford them the opportunity to connect to places of “work, live and play”.

IoT Meets Big Data

Everyone wants to be connected. The Internet of Things (IoT) refers to connected smart devices that collect and exchange data between physical devices, vehicles, buildings and other technologies. IoT supports smart connectivity between devices and human users by:

- Providing sophisticated processing and analytical capabilities to gather user information.
- Acting as a digital assistant to tailor individual travel plans.
- Linking movement requirements (choice of mode and cost of transportation) to environmental constraints (weather and traffic conditions) and behavioral preferences (e.g. music playlists) to provide the optimal travel experience.

3. SMART MOBILITY

3.3 INCLUSIVE MOBILITY

GUIDELINES:

| PLANNING ELEMENT: | SMART CITY GUIDELINES: |
|-------------------|--|
| Public Transport | 70% of commuters travel by PT |
| NMT | 30% of the working population walk/cycle to work |
| Telecommuting | 15% of the working population to work from home |
| People Centred | 85% of population within 1km/500m of PT or work |

INTERVENTIONS:

Put People First

1. Prioritise Public Transport (PT): Prioritise PT through road space management such as dedicated PT lanes. Ensure that transportation hubs and intermodal terminals are developed around state-of-the-art technology. Provide comfortable, convenient and accessible PT stops which as a minimum, have some form of shelter with route maps and timetables and seating depending on the level of activity. Further depending on the location and level of passenger demand lighting and real-time arrival information services should also be considered. At the same time ensure that all modes of PT are universally accessible to the greatest degree reasonably achievable.
2. Design for Universal Access (UA): It is essential to design intersections so that they are safe, understandable and easy to use for all users. For this to happen, pedestrian walkways/footpaths should be universally accessible and cross walks should feature kerb ramps for people with wheeled items. In addition, design should make provision for kerb extensions or islands of refuge, whilst signalisation along selected, publicised pedestrian routes may also include ‘audible’ pedestrian crossing facilities. Where required, provision should also be made for traffic calming etc. As part of the overall approach to UA, PT modes should also be designed to accommodate people with special needs.
3. Provide Non-motorised Transport (NMT): Provide NMT routes for accessible and equitable last mile connectivity. Enhance shared-use paths to accommodate both walkers and cyclists along a network that is separated from and complementary to the road network. Where demand warrants, ensure the availability of end-trip-amenities such as showers, change rooms and lockers.

In the longer term provision should be made for:

1. Explore Vehicle to Vehicle Technology (V2V): allow vehicles to “talk” to provide information regarding live traffic conditions and other road related incidents.
2. Explore Vehicle to Infrastructure Technology (V2I): Upgrade infrastructure to support wireless connectivity required by connected vehicle technologies for example, vehicle to traffic signal communication. Improve road safety and efficiency; for example allow vehicles to make emergency calls to a control center for rapid emergency response.
3. Ensure Cyber Security: Ensure that data is protected against external and internal attacks. Whilst, big data initiatives require open data networks and the integration of information and infrastructure, it is important for both users and operators to monitor these initiatives against threats 24/7.
4. Implement Truck Platoons: Optimise freight delivery using freight platoons on designated freight lanes.



Put People First - Prioritise Public Transport



Design for Universal Access



PURPOSE:

Sustainability Starts Today

In the area of “transport” a sustainable future starts today by implementing energy efficient travel solutions – we call it ‘Green Mobility’. The promise of Green Mobility supports the quality of a “work, live and play” environment for the Durban Aerotropolis which enables people and businesses to access goods, services, and other opportunities in a sustainable, efficient and safe manner. Green mobility preserves the natural ecosystem. Citizens of the Durban Aerotropolis will have the opportunity to change their mobility habits by being able to select clean transportation options.

Saving our Natural Resources

Congestion not only results in pollution in the form of carbon and related emissions but in wasted time, fuel, money and productivity. Green Mobility for the Durban Aerotropolis has a two-fold advantage. Firstly, it benefits people by reducing their carbon footprint allowing for a reduction in carbon emissions. Secondly, green mobility benefits future generations by reducing their urban footprint as it seeks to optimise the use of existing infrastructure to serve more users more efficiently helping to preserve and improve the quality of urban life.

Moving Beyond a Predict and Provide Mind-set

Adopting a ‘carrot and stick’ approach (incentives and disincentives to induce a behavioural change) to redistribute travel demand throughout the day and across different transport modes and networks will help improve urban mobility during the peak demand.

3. SMART MOBILITY

3.4 GREEN MOBILITY

GUIDELINES:

| GREEN MOBILITY PROPOSALS: | SMART CITY GUIDELINES: |
|---------------------------|--|
| NMT | 30% of the working population walk/cycle to work |
| Emission Reductions | ‘Zero Emission’ Ecosystem Creation |

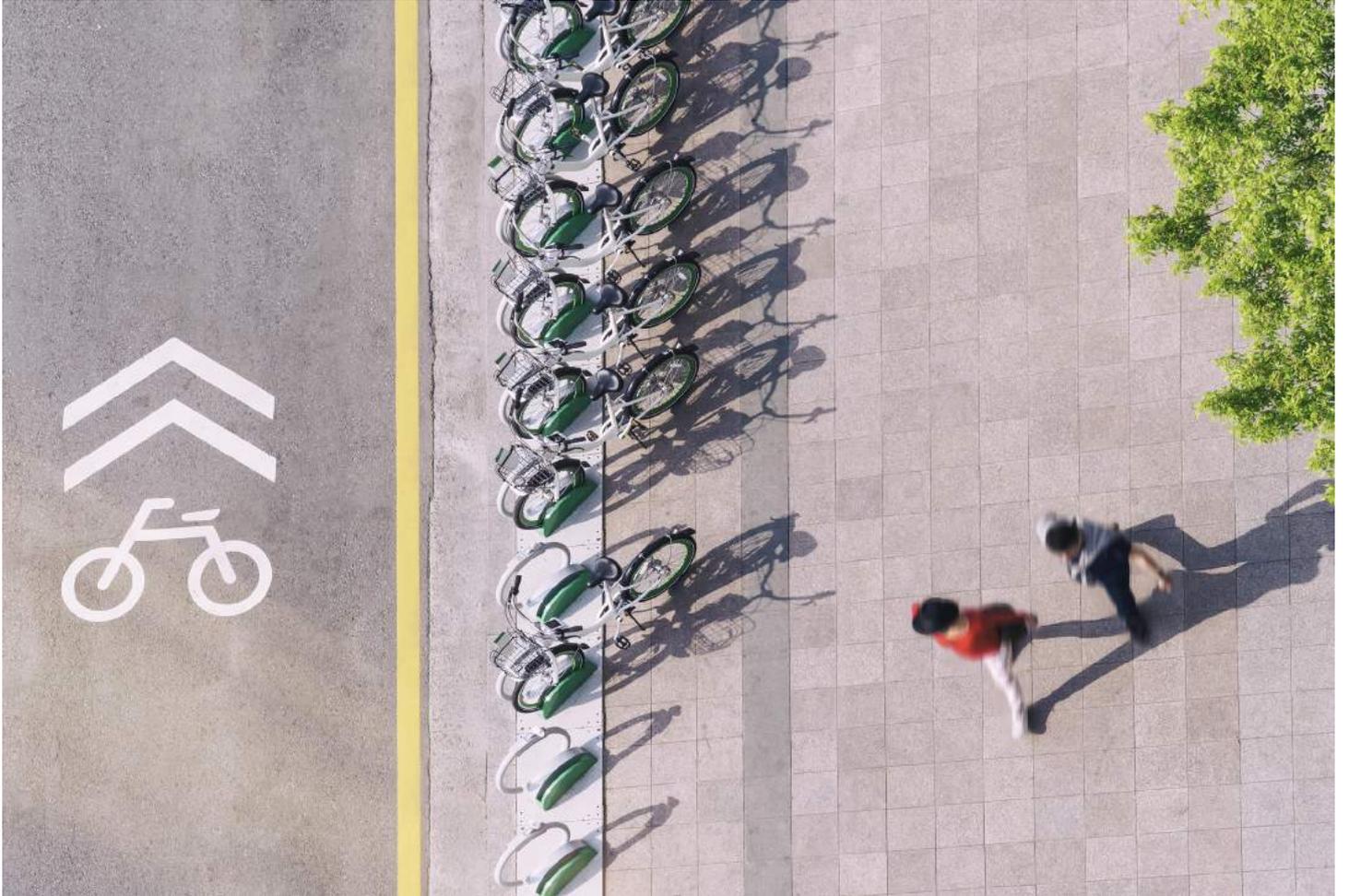
INTERVENTIONS:

Plan to Walk and Cycle

1. **Densify:** Promote increased density of development along NMT corridors.
2. **Create the Enabling Environment:** Integrate NMT planning amongst the sectors of public transport, urban and spatial planning, private developers, tourism and housing. Ensure that NMT is part of the evaluation process of future developments in the evaluation of TIAs and building plan approvals.
3. **Provide Bicycle Commuter Facilities:** Provide showers and lock up facilities in conjunction with public amenities, commercial developments and public transport hubs to support users of NMT, particularly cyclists.
4. **Prioritise NMT:** Consider NMT as an important feeder mode for public transport. Prioritise NMT access from areas around public transport interchanges, educational zones, tourism sites and within areas of intense pedestrian activity.
5. **Improve the Safety of NMT Users:** Create safer streetscapes for cycling and walking along high intensity pedestrian zones by restricting vehicle access, ensuring good lighting, providing CCTV cameras and deploying security personnel.
6. **Integrate NMT with the Aerotropolis’ Green Network:** NMT infrastructure should consist of permeable pavements which have water retention capabilities and bio-retention systems for irrigation.
7. **Encourage a Behavioural Shift:** Whilst much emphasis is placed on getting infrastructure right – it is equally important to motivate people to adopt to a walking and cycling life-style as a means of transport, through Transport Demand Management initiatives.
8. **Develop a TDM Website:** Develop and maintain a TDM website and smart phone based application to inform people of travel information.
9. **Conduct Awareness Campaigns:** Create sustainable transportation and safety campaigns to encourage the working population to walk and cycle to work. Conduct community outreach events such as ‘Shared Bicycle Programmes’ to facilitate bicycle training. Conduct public awareness campaigns such as ‘Ride to Work Days’ to promote cycling to work.
10. **Implement Telecommuting and Flexible Working Programmes:** Encourage businesses to implement telecommuting (the ability to work from home), flexi-work (varied work week) and flexi-time (varied working hours) to achieve peak-spreading of transit demand. Not only will this reduce emissions and improve air quality, it will also reduce congestion, economise on time and ensure more productivity.
11. **Initiate Smart-parking:** Use sensor networks to manage on-street and off-street parking. Disseminate real-time parking information to users through mobile phone applications and other software. By providing real-time parking information authorities are able to vary the price and proximity of parking in accordance to supply and demand to shift behaviour towards the use of transportation modes other than the private vehicle, significantly alleviating traffic congestion in the Durban Aerotropolis.
12. **Provide Park and Ride Facilities:** Provide park and ride facilities at selected locations. This will allow commuters to park their vehicles in secure areas and transfer to public or non-motorised transport.

In the longer term provision should be made for:

1. **Adopt Clean Freight Measures:** Integrate ‘Truck Stop Electrification’.
2. **Introduce Alternative Fuel Vehicles:** Establish laws and incentives for the use of alternative fuels and vehicles within the Durban Aerotropolis. Reconfigure the road network to accommodate Electric Vehicles (EVs) by providing access to charging stations within driving range.
3. **Introduce Alternative Power Generation:** Install piezo treadles under sidewalks to help generate power from energy released from sidewalk deflection. This technology will also collect footfall information which can be incentivised for rental purposes along streets.



Prioritise NMT



Plan to Walk and Cycle



PURPOSE:

New business models such as shared mobility are transforming traditional mobility patterns. Shared mobility changes the way commuters make transportation decisions by providing new opportunities for them to be multimodal transport users. Shared mobility includes:

| | |
|--------------------|--|
| CAR SHARING | Car-sharing follows a commercial business model of car rental over specific periods of time, providing all the benefits of car ownership without all the ownership costs such as purchase costs, insurance, maintenance and parking. |
| RIDE SHARING | Ride-sharing is commonly known as 'carpooling' and makes use of additional capacities in vehicles by sharing journeys so that more than one person travels in a car. |
| BIKE SHARING | Bike-sharing is the alternative to bicycle ownership and allows people to access bicycles from a complete city network. |
| ON-DEMAND MOBILITY | The use of online platforms to request transportation services. |

More Cars off the Road Means Less Urban Congestion

As more people use public transport and shared modes such as car-sharing, ridesharing and bike-sharing, less preference will be given to private car ownership. This will support a modal shift to more sustainable modes of travel for both choice and captive users. This shift in emphasis towards the development and promotion of public transport systems and services allows multi-vehicular homes to begin reducing the number of cars they own. The creation of a cycling culture has many benefits for the Durban Aerotropolis, particularly 'greener' and cheaper means of travel. Bike-sharing programs can also alleviate the 'last-mile' of travelling problem.

The Smart Phone is an Empowering Tool

Empty car seats are unused resources. Access to technology allows new and increased participation in the shared mobility value chain. This drives the expansion of shared vehicle services into more specialised customer segments. On-demand mobility is public transportation at our fingertips and will transform the way people use shared transportation services around the Durban Aerotropolis.

3. SMART MOBILITY

3.5 SHARED MOBILITY

GUIDELINES:

| SHARED MOBILITY SERVICES: | SMART CITY GUIDELINES: |
|---------------------------|--|
| Car-sharing | 6% of trips* via car-sharing Offer electric and autonomous vehicles as a car-sharing option |
| Ride-sharing | 6% of trips* via ride-sharing |
| Bike-sharing | 8% of trips* via bike-sharing |
| On-demand mobility | 10% of trips* via on demand mobility through smart phone based applications |
| Public Transport | 70% of trips* via PT Provide incentives for reducing private car usage |

*e.g. person trips within Aerotropolis peak period

INTERVENTIONS:

The Durban Aerotropolis Real-Time Journey Planner

1. Provide the Optimal Choice: Provide a shared mobility system that will allow commuters to choose between public and private transportation modes. Users are then able to select and optimise a travel option based on cost, convenience, or personal preference. Introduce real-time bus and taxi arrival information systems.
2. Inform Travel Decisions: Disseminate real-time mobility information to provide location-awareness to travellers across digital platforms, thereby enabling users to navigate to their destinations and allow operators to track locations and capture data about vehicle densities and speeds.
3. Easy Access: Ensure shared stations for car -sharing, ride-sharing or bike-sharing are easily accessible, near high intensity public transport nodes. This will allow users to continue on their journey through the rental or sharing of a vehicle or bicycle.

Car-sharing

1. Provide Better Options: Increase the availability of car sharing offers to incentivise people to shift from car ownership to car-sharing. Offer multiple vehicle types to specifically suit user needs
2. Prioritise Parking: Make public parking spaces available for car-sharing users.

Ride-sharing

1. Incentivise Ride-sharing: Subsidise transport costs for employers and residents who institute ride-sharing initiatives. Expand financial incentives to encourage the use of shuttles to supplement movement between the airport, airport city and other major activity nodes such as hotels and tourist attractions.
2. Plan to Carpool: Encourage and promote ridesharing through trusted channels. Move employees between common destinations and employment centres through private employer shuttle services. Educational facilities, large organisations and commercial districts attract and produce thousands of commuters daily. This provides the critical mass to arrange for carpooling initiatives amongst students, employees etc.
3. Promote Shuttle Services: Support mobility services for people with disabilities and the elderly through "para-transit" initiatives.
4. Prioritise Ride-sharing: Incentivise ride-sharing by providing dedicated HOV lanes along major arterials to the Core Airport City.

Bike-sharing

1. Connect the Airport City: Invest in and build cycling infrastructure along development corridors. Ensure that bike sharing stations are easily accessible throughout the Core Airport City.
2. Provide End-trip-amenities: Provide bike storage at intermodal terminals and transportation hubs.
3. Shift Bike-sharing Behaviour: Promote cycling as a safe and eco-friendly alternative for "last mile connectivity". Promote cycling as an activity directly linked to improved health outcomes. Create incentives for citizens and employers to become part of this programme.



Informing Travel Decisions



On-Demand Mobility

4 SMART LIVING

DESIGNING THE DURBAN AEROTROPOLIS





Smart Living is about establishing the timeless qualities of 'good, quality urbanism' that creates opportunity, facilitate choice, and promote safety. This has at its basis the development of places that work for all people, which is an essential ingredient of sustainable cities.

A key aspect of quality urbanism is encouraging density, compactness and complexity, coupled with quality residential environments. This is a foundation for sustainable urbanism. Apart from land being understood as a scarce resource, density and compact environments are generative in nature and can yield a wider range of urban opportunity.

Density and compactness leads to complexity allowing a greater mix of land uses, shared spaces and services, efficiency and reduced costs of infrastructure. The goal is to promote a particular pattern of fine grain urban form which is complex in profile, and which reduces the negative impacts of sprawl.

Mixed use environments increase the choices available to people, having the ability to "work, live and play" in an area. Providing the ability to access local needs is an essential aspect of sustainable urbanism.



PURPOSE:

A connected and accessible Aerotropolis is about understanding the urban structure of development based on key structuring systems, namely: access to open space and the structure of movement. It is critical to ensure that the Aerotropolis has the highest level of connectedness while ensuring that it ties into its broader urban context.

There is a strong acknowledgment of the need to integrate the hinterland with opportunities within the core of the corridor. To this end, it is essential to ensure that a super-grid of mobility and access is developed.

Secondly, it is widely understood that quality of life and human well-being is fundamentally tied to adequate access to open space. Further to this, it is clear that open space and natural ecosystems are critical and therefore acknowledging them as a foundational planning layer is the purpose in this chapter.

It is therefore about aiding critical connections both natural and movement based.

4. SMART LIVING

4.1 CONNECTED AEROTROPOLIS

GUIDELINES:

| PLANNING ELEMENT: | SMART CITY GUIDELINES: |
|--------------------------------|---|
| Public Open Space & Ecosystems | <ul style="list-style-type: none"> • 20% of urban areas dedicated to the natural public realm (POS, natural ecosystems) • 30m buffers on watercourses • 100m buffer on coast • 0-30m around forest and grassland (depending on detailed study) |
| Grid Connections | <ul style="list-style-type: none"> • 30% of urban areas dedicated to the road-based public realm (road reserves) • Supergrid of a maximum of 2km to be used to structure space • Local grid of maximum 200m to be used for local urban mobility • Grid of 100m to enhance local pedestrian mobility |

INTERVENTIONS:

In terms of the proposed super-grid, key north-south connections are proposed as follows:

- The M4 and its realignment in the north through Westbrook, with a new interchange with the N2, just north of the oTongati.
- The establishment of Dube East as a central spine which merges with the R102 in the Compensation area.
- The establishment of Dube West as an integrator from Phoenix Highway and 'INK', continuing west of the Airport and linking into the Watson Highway interchange with the N2.
- Acknowledgment of the R102 as a critical north-south connector which merges with Dube East in the Compensation area.
- The Western Bypass, which provides mobility in the western corridor as an extension of the R102 from the Inyaninga area.

In terms of proposed east-west connectivity:

- Cornubia Boulevard - linking Cornubia to Umhlanga.
- Blackburn link road - connecting Cornubia to Izinga.
- The MR96 linking Umdloti to Verulam, with further connections west of Verulam to Inanda (via the M27 west) and Verulam to Oakford (via the P98)
- The Airport access road (find name) through Canelands – realignment of R614 (via the P100 / Vincent Dickenson Road) through to Hazelmere and Ndwedwe.
- Watson Highway connection off the N2 towards Tongaat, and from Tongaat through Aberfoyle linking west to Emona.
- Extension of the realignment of the M4 at interchange with Westbrook at the N2 – R614 from Lindokuhle, Wewe and eventually through to Ndwedwe.
- An extension of the P339 from Ballito heading west.

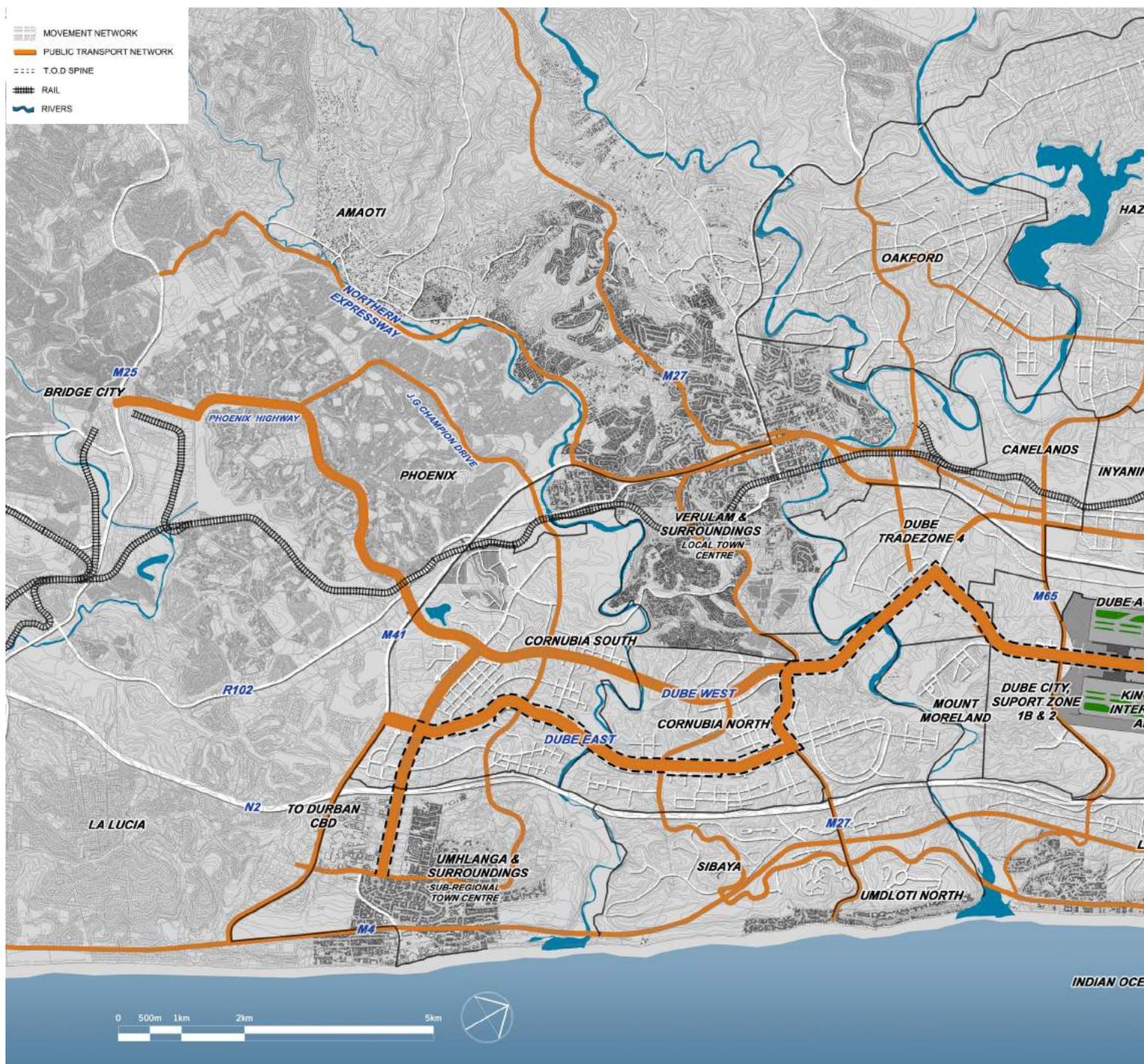


The Central Transit Corridor

4. SMART LIVING

4.1 CONNECTED AEROTROPOLIS

Aerotropolis Connectivity Plan



4. SMART LIVING

4.1 CONNECTED AEROTROPOLIS

Quality of the Main Movement Spine



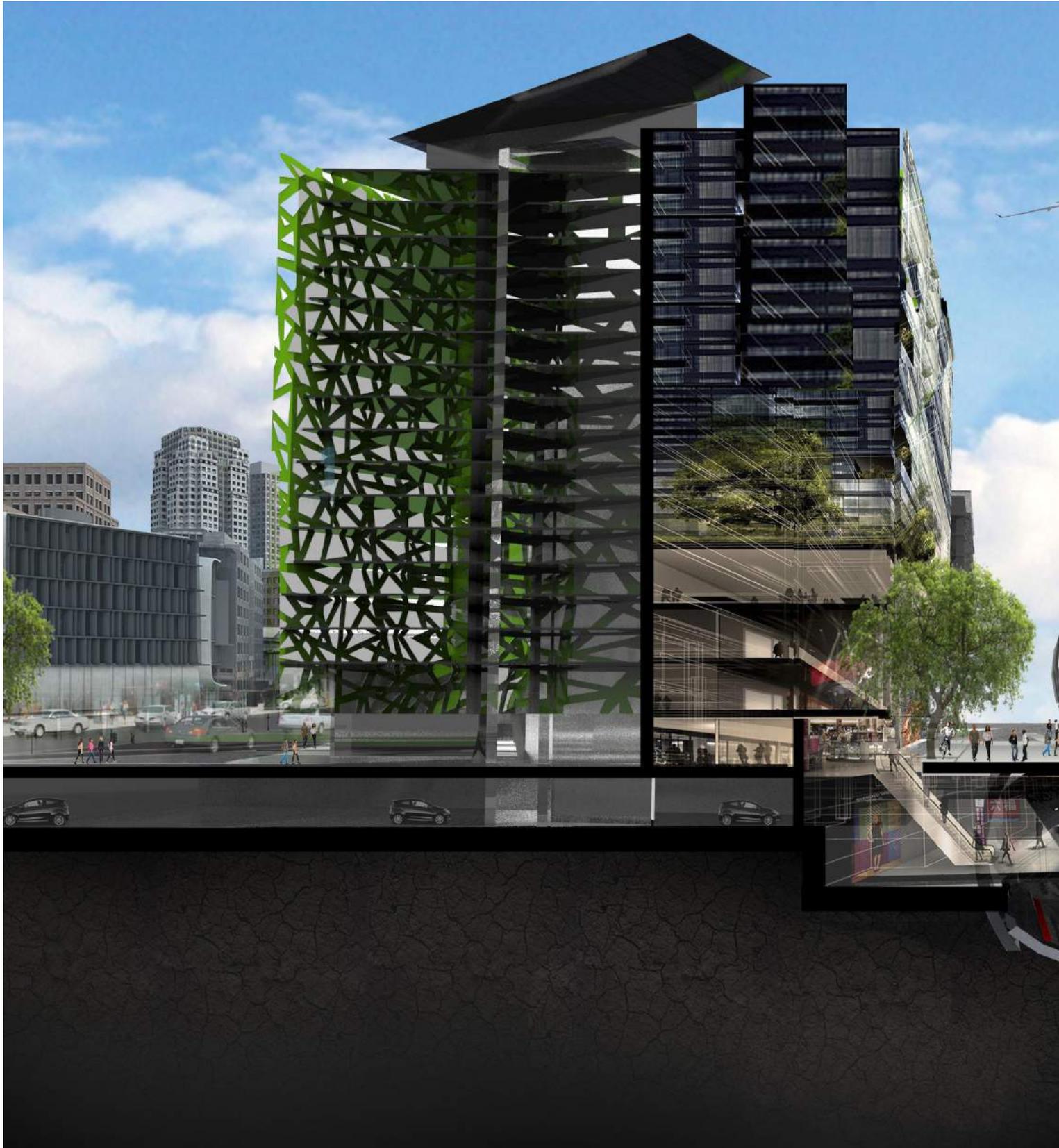
Image depicting the quality of the main movement spines as spaces for shared use with the focus on pedestrians and NMI



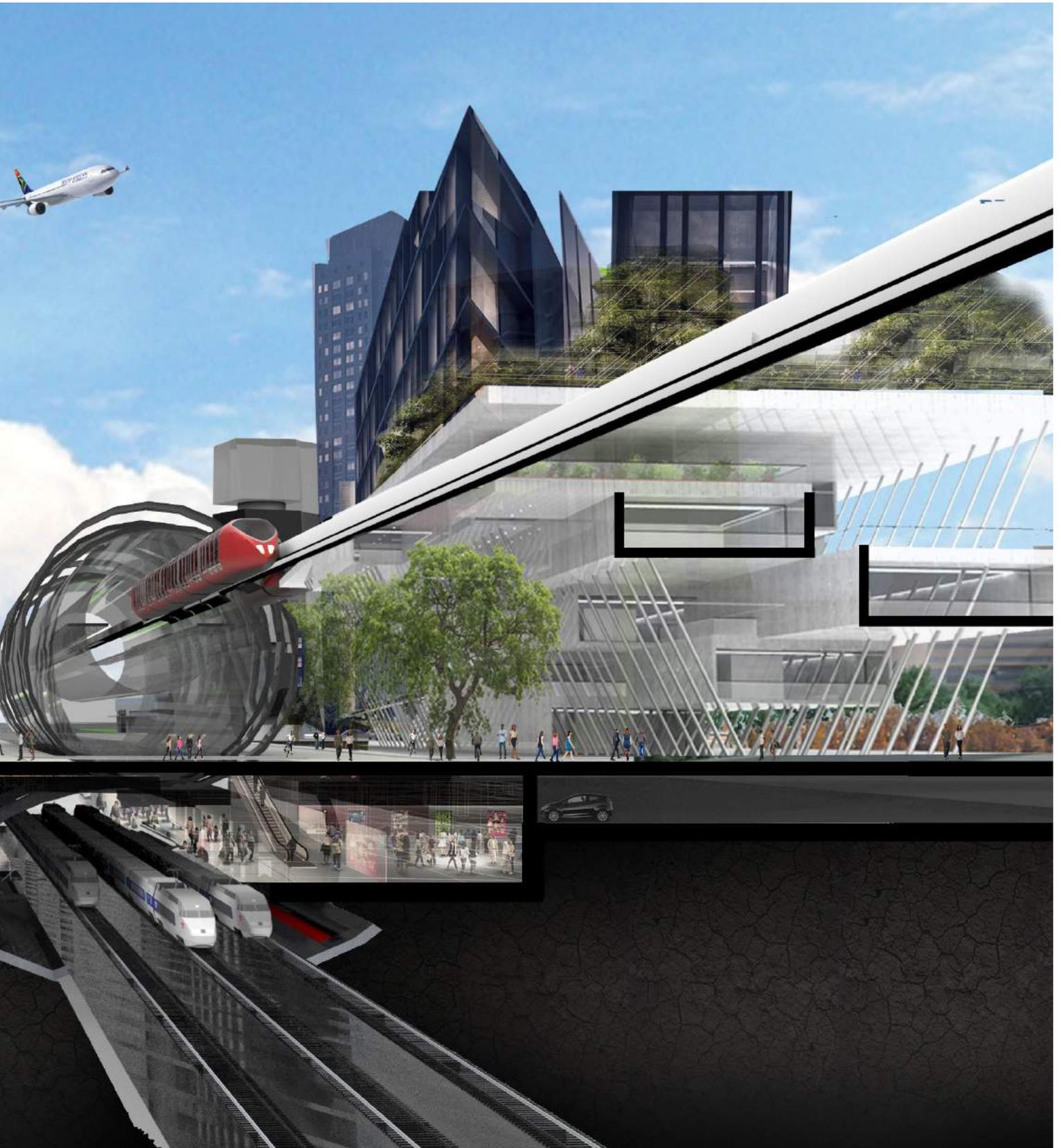
4. SMART LIVING

4.1 CONNECTED AEROTROPOLIS

The Central Transit Spine



The Central Spine as a Primary Transport Spine with supportive higher density. The could contain a range of differe modes for movement, including transit and NMI.





PURPOSE:

The purpose of a compact and diverse land use profile is to ensure a framework that creates greater choice and flexibility that can adapt to changes in a way that responds to future innovation, disruption and changes in the way our live-work-play environments operate in the future. Consideration is hereby given to the long-term nature of the plan (50 year) and its roll out.

It is also important to ensure flexibility in land use planning to enable greater responsiveness to changes in anticipated demand, and to be nimble to new energies that advance the development of the Aerotropolis and associated development opportunities.

Its widely understood that mixed use environments provide critical support to the attainment of sustainability. Density is a prerequisite of sustainable cities – they need to be compact, efficient and mixed use urban spaces. Innovation is also often prompted by density, due to the more rapid exchange of knowledge, learning and ideas between people.

4. SMART LIVING

4.2 COMPACT & DIVERSE LAND-USE PROFILE

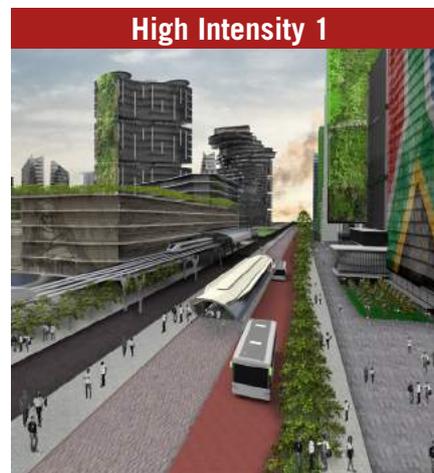
GUIDELINES:

Intensity zones in the table overleaf have been proposed, which start to provide a clear structure to allocated higher intensity zones as well as lower intensity zones. These zones are flexible and permit a wider range of land uses and controls to facilitate a more robust framework that can withstand growth over a 50year+ period. Presently, the central corridor within the study area is an unused, green agricultural belt that separates higher income areas along the coast with lower income communities in the west.

This condition is set to change significantly, whereby the proposed higher intensity Dube East corridor now runs centrally within the site as a dense public transit spine, and whereby the remaining zones transition from medium to lower intensity uses. This creates a graduated cross-section of intensities on either end of the Dube East central system.

The intensity zones are therefore not income-biased as per typical land use patterns. Instead, they are more opportunity driven and facilitate a multitude of land use permutations as reflected in the table overleaf. The graphics below provide a summary of each intensity zone, highlighting its role and some basic controls which should be seen as a guideline.

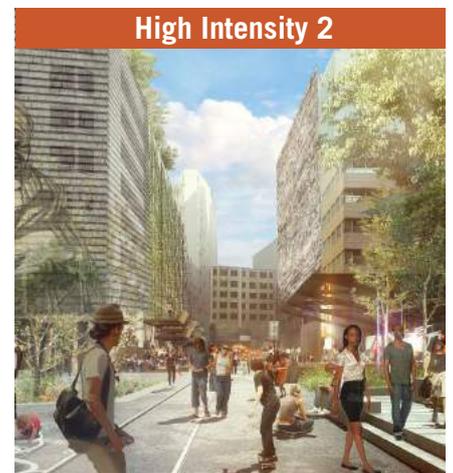
Additional transect guidelines on economic, ecological, road and built form conditions have been proposed throughout the various intensity zones. However, since the Aerotropolis area straddles three different municipalities, the current proposals need to be considered in a more detailed planning exercise at a later stage. Basic urban form-based guidelines have also been considered and proposed within each intensity zone.



Urban Core

20+ Stories
 FAR: 3.0 – 8.0
 Little or no surface parking

High Intensity 1 areas are the most dense areas along the main spine and serve as the urban core areas within the Durban Aerotropolis. They provide high intensity residential opportunities accommodating densities of of 400 dwelling units per hectare (Du/ Ha). The intent is for the zone to facilitate higher order intensity, value, and transit access as well as access to a range of mixed uses that create a hub of activity and promote a truly work, live and play environment in a 24-hour precinct.



Urban Nodes

6 – 10 Stories
 FAR: 1.5 – 3.0
 Little or no surface parking

This zone is less dense than High Intensity 1 but still predominantly residential. It promotes walkability, NMT and the use of public transportation through its compact make-up. Apart from residential use, the zone is also characterised by office, banking and related uses. The zone is a reflection of the anticipated character of the future city as an environment that offers multiple residential options with access to a variety of economic opportunities.

The Intensity Zones thus provide an ideal platform for the Durban Aerotropolis Master plan to evolve over time without compromising on the vision for the area, yet at the same time creates a structure that is true to the character and needs of the area.

INTERVENTIONS:

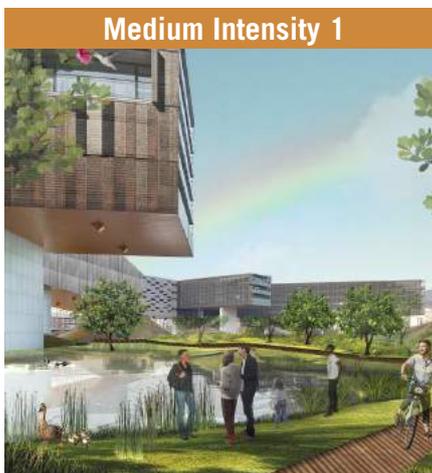
A range of intensity and character zones allows for a suite of land use activities. It has been based on a transect approach, which has the highest intensities of development associated with the most accessible movement systems and public transport networks, gradually becoming less dense the further away development gets from these spines.

The establishment of a powerful central spine as a linear, high intensity mixed use spine associated with Dube East is proposed. Thereafter, medium intensity zones are proposed on either side of the central corridor zone, while lower intensity zones are proposed along both the coastal corridor and western corridors – also out of respect for areas of higher environmental significance. Some coastal areas have been considered for a higher intensity mix to enable a more diverse and integrated approach in land use mix. So too in the western areas high

intensity corridors have been proposed with nodal opportunity. Thus a gradation from the highest levels of movement corridors - whereby highest levels of intensity follow primary super grid routes.

In terms of increased opportunity in the western corridor, new opportunities have been identified for higher intensity activities in the Oakford, Wewe and Hazelmere areas. It is about creating new high density housing and more diverse economic opportunities in these areas.

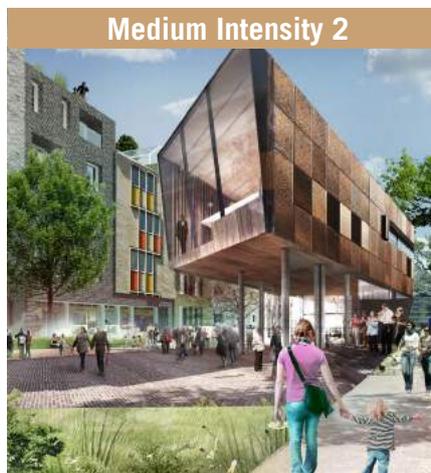
Multi-functionality and diversity in land use has been built into the plan, due to potential shifts in the way production is organised. It is important that future sites be multifunctional to accommodate various aspects of design, production and distribution of goods. It is thus essential that, in order to be able to respond to future demands and changes in the way urban areas are structured, a flexible approach to land use planning is undertaken.



Urban Frame

4 – 6 Stories
 FAR: 0.6 – 1.0 (commercial)
 1.0 – 2.0 (residential)

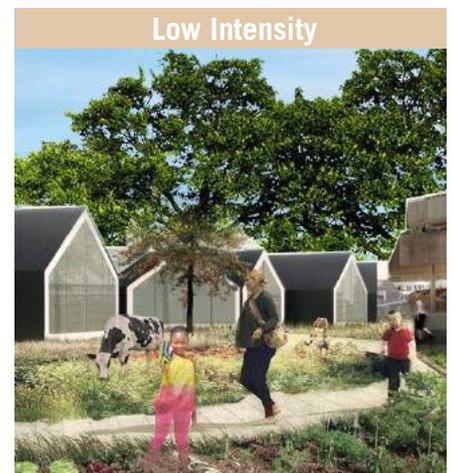
Considering the current spatial landscape within South Africa, this zone is aimed at accommodating developments that are more employment oriented. It is envisioned that Medium Intensity 1 will play a key role in ensuring that there are multiple accessible employment opportunities within the Aerotropolis.



Development Parks

2 – 4 Stories
 FAR: 0.8 – 1.5

Medium Intensity 2 accommodates developments that are predominantly residential however it has also been developed to accommodate employment oriented developments at a lesser intensity than Medium Intensity 1. This zone will ensure that employment opportunities are easily accessible.



Eco Developments

1 – 2 Stories
 FAR: 0.2 – 0.5

The Low Intensity zone is different to all other intensity zones as it is more suburban and agricultural in character. It accommodates low density residential opportunities and local neighbourhood and social facility uses.

4. SMART LIVING

4.2 COMPACT & DIVERSE LAND-USE PROFILE

Aerotropolis Character Zones and Niche Nodes



NOTE:

- The crossing of the conservation area at Mount Moreland is subject to a detailed study where the exact delineation of the crossing of Umdloti River at Mount Moreland should be investigated and refined where possible to ensure that the best route is defined from an ecological and urban connectivity points of view. There are current offset agreements that dictate a longer route crossing through possibly a larger sensitive area. The intent is to allow for a more direct route through the broader wetland system and thereby reducing the spatial footprint of the crossing. The current alignment depicted on the DURAMP is based on the original alignment, and it is recommended that this is further investigated as a project emanating from the DURAMP process.

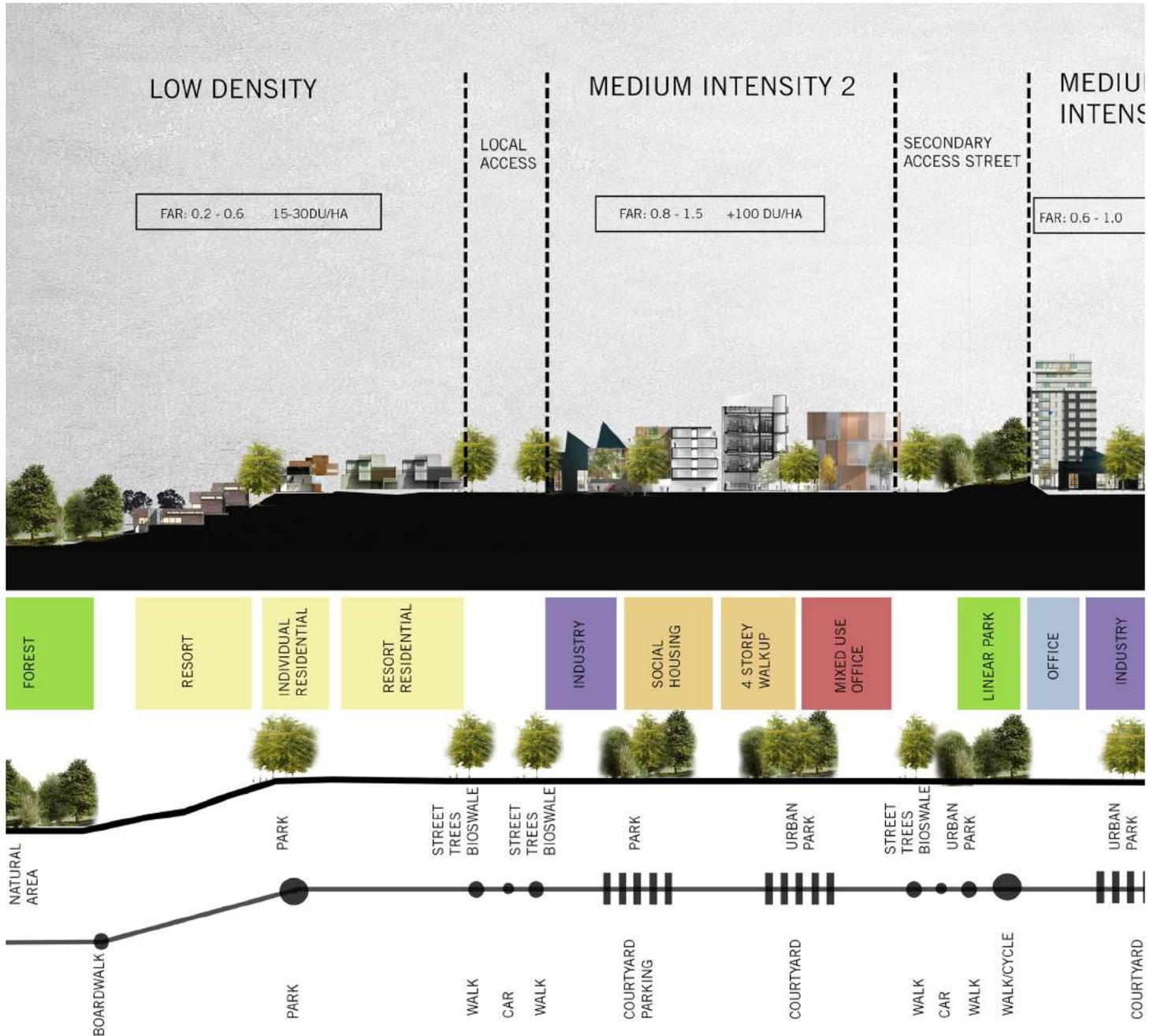
- At present the DURAMP encourages mixed use development, however for the proposed 'High Intensity' land use within the noise contour would not include 'noise sensitive land uses' until a detailed assessment can be undertaken to re-evaluate the noise contour position and to explore potential mitigation strategies to accommodate mixed uses within the 2035 55 db noise contour. The position taken in the development of the 50 year DURAMP framework is to promote a more mixed use development across the DURAMP study area including areas within the 2035 55 db noise contour that aligns to the shared stakeholder vision of a "work, live and play" environment developed at the inception of the DURAMP process. It is anticipated that the DURAMP framework will be evaluated every 5 years. Therefore, based on current trends on rapid innovation in Aircraft design and noise level reductions, this position should be reviewed accordingly. With this approach it does not compromise the DURAMP vision but allows for a more strategic and sustainable approach in developing in the noise contour areas.
- Open space zones indicated on the plan are subject to further detailed studies where the exact delineation of sensitive/ecological areas will be refined through detailed environmental studies at a project specific level, and therefore, the Aerotropolis Masterplan merely serves to indicate development intent.

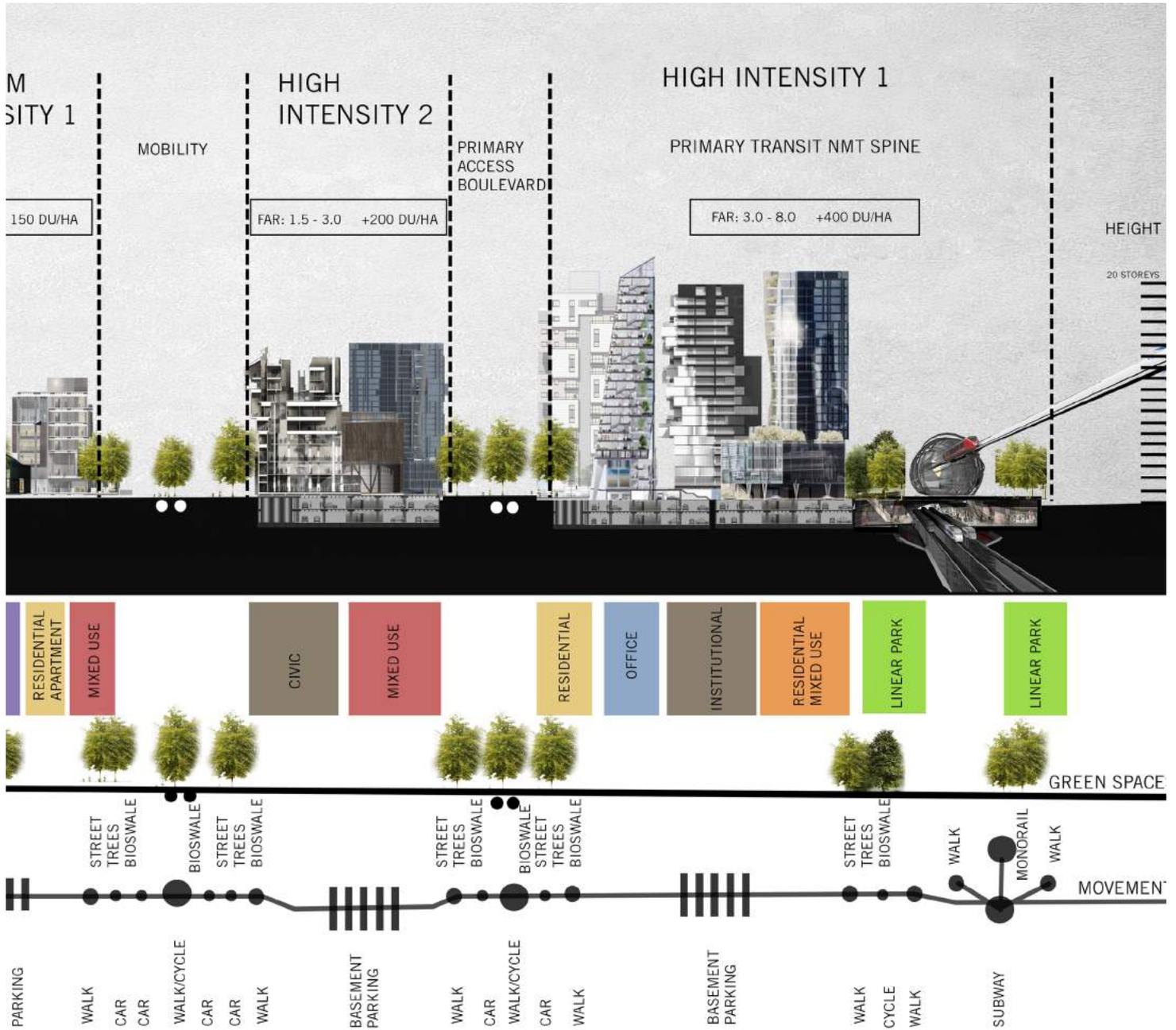


4. SMART LIVING

4.2 COMPACT & DIVERSE LAND-USE PROFILE

Intensity Zone Cross Section

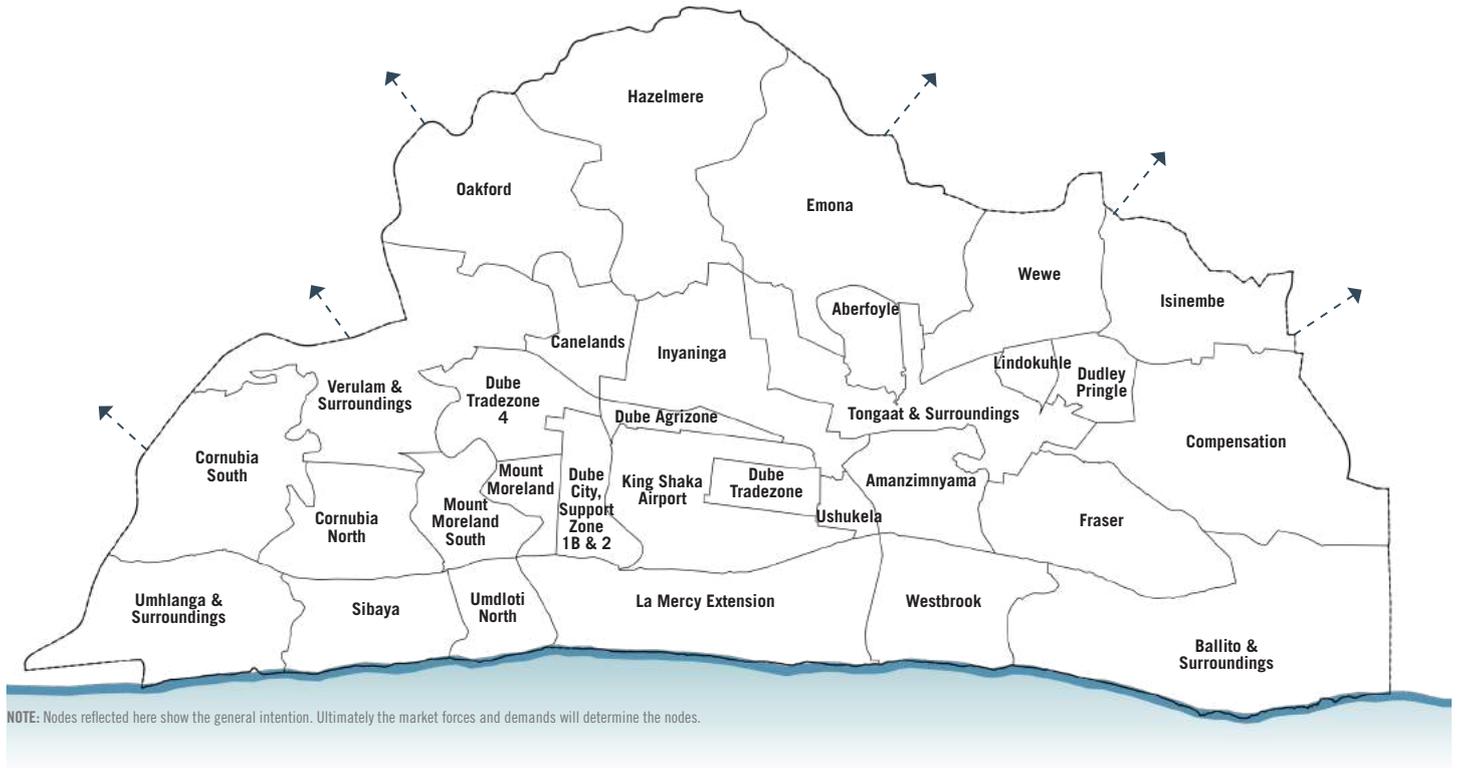




ANNEXURE- A Provides a more detailed explanation of each Niche Node.

4. SMART LIVING

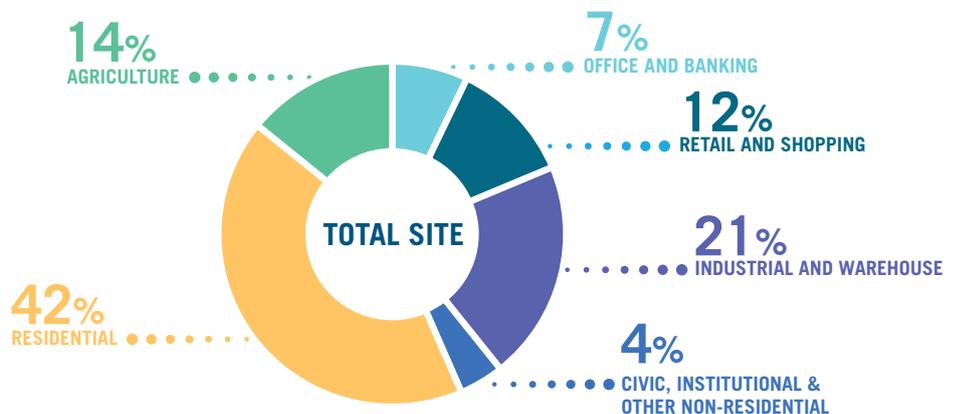
4.2 COMPACT & DIVERSE LAND-USE PROFILE



PROPOSED CHARACTER ZONES & NICHE NODES

The character zones describe what land use each precinct best exhibits. If a precinct has certain qualities that lend itself to the desired use based on its placement within the context of the Aerotropolis, the quality of the precinct i.e. its development desirability provides a basis on which certain niche land uses are likely to develop within the precincts identified.

The map above reflects the location of each niche node within the boundary of the Aerotropolis, while the adjacent infographic gives a summary of the broad land-use breakdown for the entire study area. This is further broken down to each of the niche nodes, with additional information relating to the anticipated job and housing unit yields based on the average FAR.





4. SMART LIVING

4.2 COMPACT & DIVERSE LAND-USE PROFILE

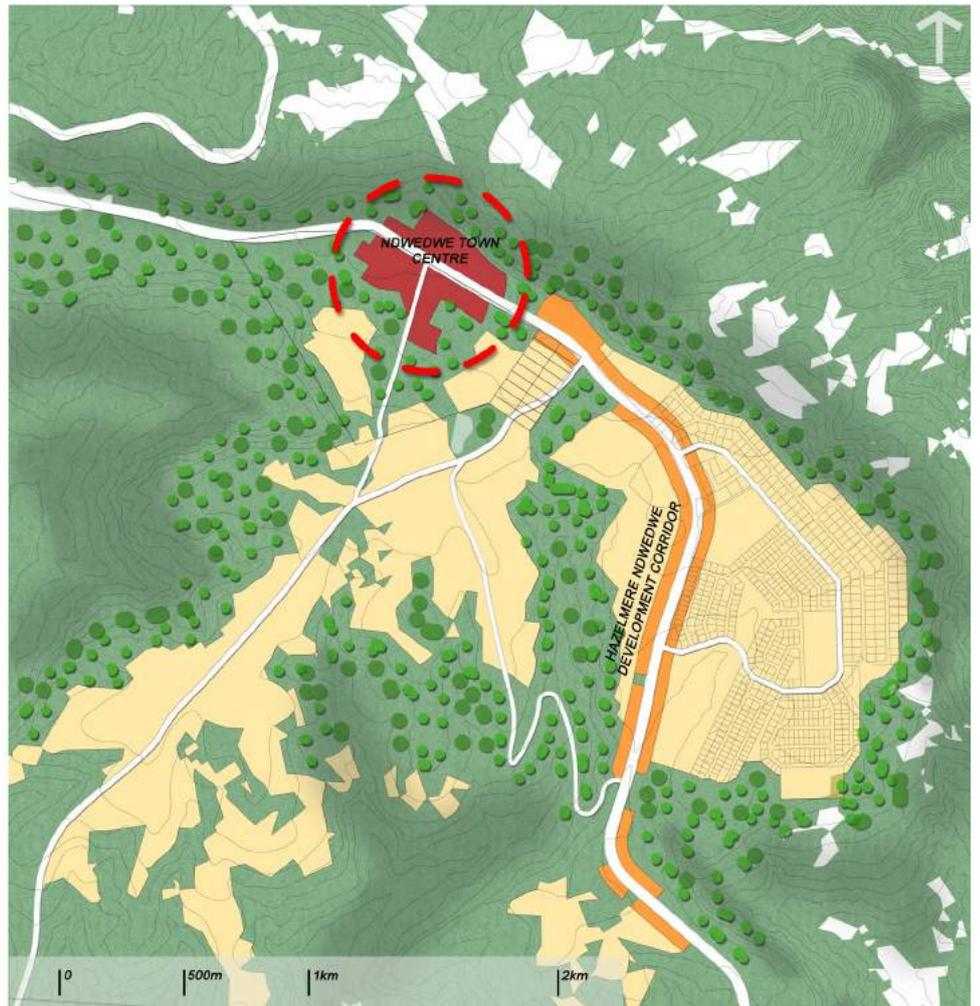
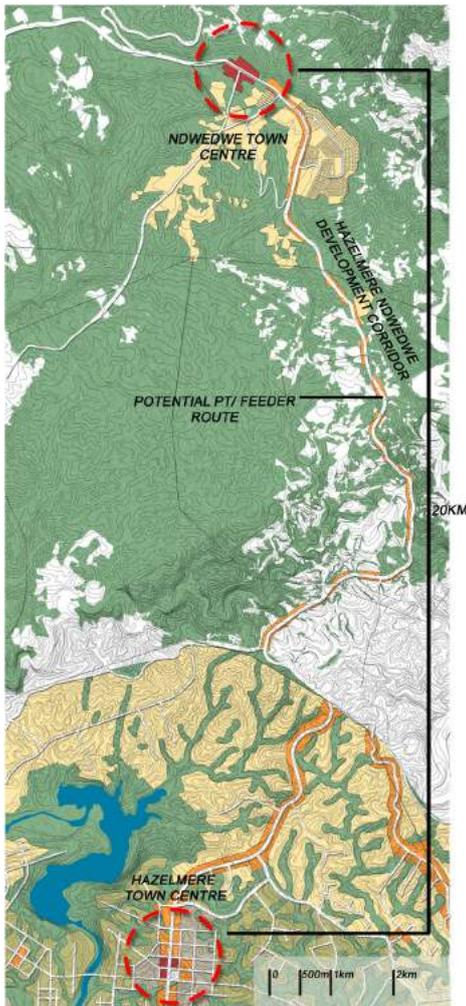
THE IMPACT OF THE DURBAN AEROTROPOLIS ON THE SURROUNDING AREAS

The Aerotropolis influence is not contained within the Study Area 3 boundary but it impacts on the surrounding areas. Areas such as Ndwedwe in the west, and Bridge city, INK, Phoenix and Amoati as part of the northern corridor are strategic areas that will provide key support to the Aerotropolis whilst at the same time benefiting from spin-offs anticipated from this development.

NDWEDWE

The plan illustrates the opportunity that the Aerotropolis will create for Ndwedwe. The connection between the Ndwedwe and Hazelmere is considered a critical connection, via the Vincent Dickenson Road, in developing this spine into a future public transport link and development

corridor. It allows for the establishment of two town centres 20km apart from one another which services the greater western areas. This brings opportunity closer to the people west of the area but at the same time connects them into a much larger development pool to draw on resources from an employment, social and recreational perspective.

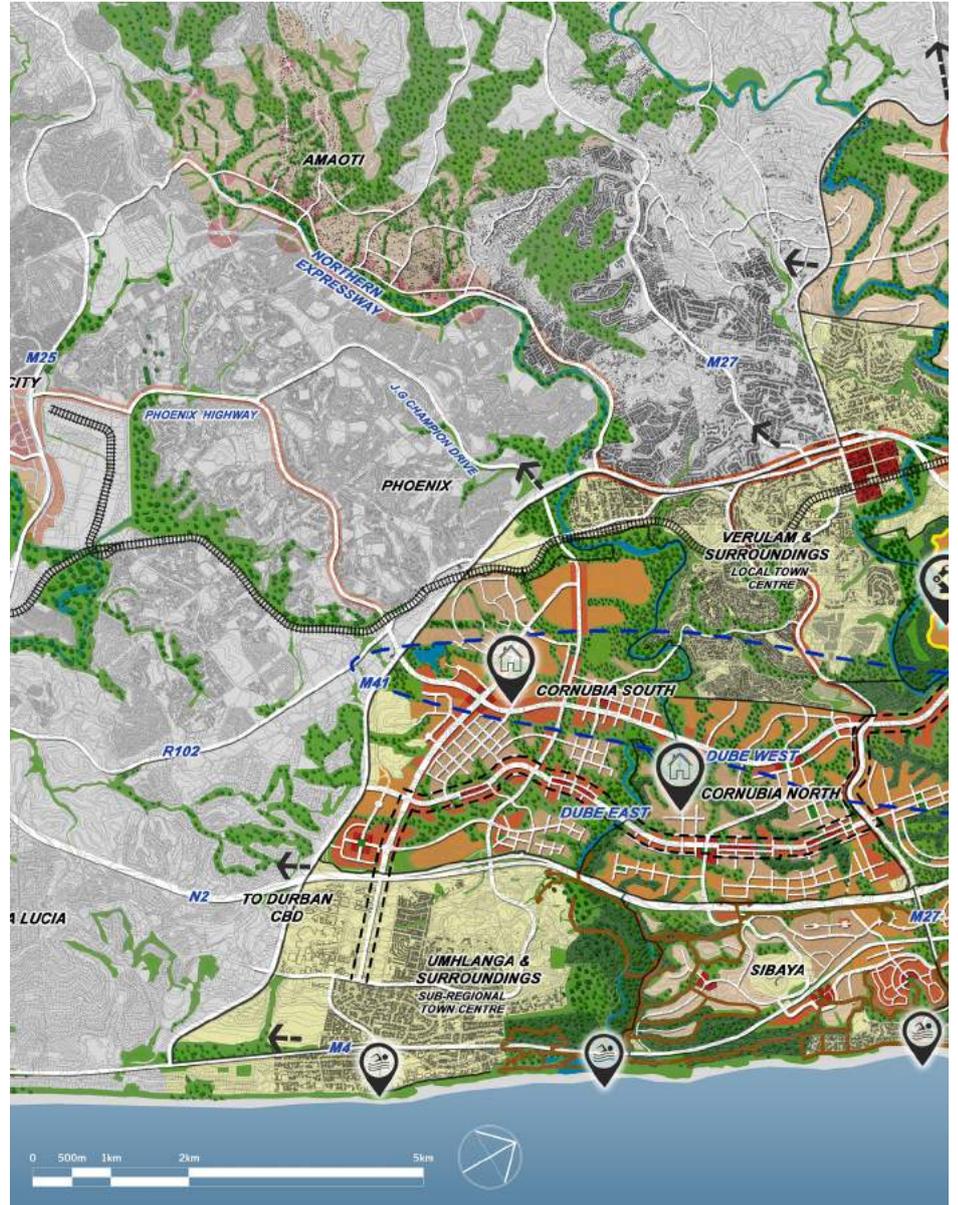


AMOATI/BRIDGE CITY

Bridge city is an emerging Town Centre in its own right. Being connected via the Phoenix Highway which is a future IRPTN network, C9 to the Aerotropolis precinct is advantageous as it connects virtually the entire INK area to future employment and development prospects.

This extends the Aerotropolis influence way beyond the arbitrary boundary delineated in the report which now starts to connect the greater Durban into this opportunity area once fully realised. Included in this mix, is the Amoati area which contains 20 000 households who are living in abject poverty. This area is currently been identified for an in- situ upgrade however has the potential to connect more meaningfully with the Aerotropolis development via the D403 which has been identified as a future public transport and activity spine.

For the residents of Amoati, to be connected into a larger catalytic development such as the Aerotropolis which targets large scale employment and human empowerment programmes, it can only bode well for the future residents of Amoati.



4. SMART LIVING

4.2 COMPACT & DIVERSE LAND-USE PROFILE

The Intensity Zones Allow for Flexible and Adaptable Land-Use Development





4. SMART LIVING

4.2 COMPACT & DIVERSE LAND-USE PROFILE

| DURBAN AEROTROPOLIS LAND USE INTENSITY - CHARACTER ZONES | |
|---|--|
| TRANSECT CONDITIONS | |
| LANDUSE INTENSITY TRANSECT | STATEMENT OF INTENT-CHARACTER |
| 1. HIGH INTENSITY 1 (CORE) | <ul style="list-style-type: none"> • Contain higher order intensive mixed land uses. • Predominantly mixed uses that promote a live, work and play environment. • Land uses include TOD, retail, municipal/govt/social facilities, institutions and entertainment. • Zone characterised by walkability, NMT and Public transport within core urban spaces. |
| 2. HIGH INTENSITY 2 (INTENSIFICATION ALONG CORRIDORS OR NODAL OPPORTUNITY) | <ul style="list-style-type: none"> • Intensification along corridors between nodes or at nodes. • Lesser intensity than the Higher Intensity 1 Core zone. • Promotes Mixed use and High Density residential development. • This zone encourages walkability, NMT and Public transport at key junctions. |
| 3. MEDIUM INTENSITY 1 | <ul style="list-style-type: none"> • This zone encourages developments that are more employment orientated land uses e.g. logistics, business, Light Industrial, Office Parks etc. • Residential may be considered provided that business/residential interfaces are considered. • This zone is generally oriented towards the motor vehicle however should be located in proximity to PT corridors. |
| 4. MEDIUM INTENSITY 2 | <ul style="list-style-type: none"> • Zone favours residential development however also may contain employment orientated land uses • Residential development, including social facilities, limited retail, appropriate office development, nurseries, medical centres, specialised health and educational facilities, including public services may be considered within this intensity zone • This zone is generally oriented towards the motor vehicle however should be located in proximity to PT corridors. |
| 5. LOW INTENSITY | <ul style="list-style-type: none"> • Zone promotes a lower intensity use. • Land uses include farming/ agriculture purposes or suburban development of a lower density, intensity and character. • Agricultural uses such as Agricultural allotments, Agri-Hubs and residential are a distinct characteristic of this area. • Lower density residential development including social facilities and services, limited retail, appropriate office development, nurseries, medical centres, specialised health and educational facilities, including public services. • These areas are generally oriented towards the motor vehicle as the primary mode of transportation. |

NOTE: THESE ARE INDICATIVE GUIDING CONTROLS AND ARE SUBJECT TO MORE DETAILED STUDIES AND SERVE AS A GUIDELINE TO INDICATE THE NATURE/ INTENT OF DEVELOPMENT.

| PARKING GUIDELINES | DU/HA - (SUBJECT AT ALL TIMES TO THE AVAILABILITY OF ENGINEERING SERVICES.) | DU/HA - (SUBJECT AT ALL TIMES TO THE AVAILABILITY OF ENGINEERING SERVICES.) | GUIDING FLOOR AREA RATIO (FAR) RANGE |
|---|--|---|--|
| Reduced or zero Parking are encouraged within this intensity zone if Public Transport is in operation- subject to the eThekwin. Ndwedwe and KwaDukuza Municipality approval | 20+ storeys subject to airport height restrictions where applicable | > or up to 400du/ha | 3.0 to 8 |
| Reduced or zero Parking are encouraged within this intensity zone if Public Transport is in operation- subject to the eThekwin. Ndwedwe and KwaDukuza Municipality approval | 6 to 10 storeys -subject to airport height restrictions where applicable | > or up to 300 du/ha | 1.5 to 3,0 |
| As per council requirements | 4 to 6 storeys | Maximum of 150 du/ha. | 0.6 to 1 for Business/Industry 1 to 2 for Residential |
| As per council requirements | 2 to 4 storeys | Minimum of 100 du/ha. | 0.8 to 1.5 |
| As per council requirements | 1-2 storeys | 15-30 du/ha (Provided that higher densities may be considered on merit and subject to the density guidelines of respective local policy guidelines) | 0.2 to 0,5 |



PURPOSE:

Structuring distinct places to be people-centered is about local identity, attractiveness and distinctiveness and a means to establish a polycentric structure.

The sustainable city is that in which one can access the widest range of opportunities at a local level. Part of the purpose is also to acknowledge local uniqueness related to natural assets as well as accessibility.

It is also necessary to create areas that offer a unique set of opportunities and socialisation that can contribute to the widest range of economic opportunity for the wider Aerotropolis and its users. It is widely understood that sustainable cities are about creating accessible quality, local opportunities.

4. SMART LIVING

4.3 PEOPLE CENTRED STRUCTURE OF DISTINCT PLACES

GUIDELINES:

| PLANNING ELEMENT: | SMART CITY GUIDELINES: |
|-------------------------|--|
| NMT & Nodal Structuring | <ul style="list-style-type: none"> • 1km spacing between urban space cores • NMT along major river corridors and key valley systems • Development is to define and secure natural edges (not turn its back on it) • Define urban spaces with higher density streets with related mixed use to activate urban space • Adopt a complete streets approach to the design of streetscapes • Design open grid and connected local access systems • Whilst there are niche nodes with specific characters, that each node is very much mixed use in composition (UN guide specifies 40-60% commercial floor area in mixed use nodes) |

INTERVENTIONS:

A key concept in creating distinctive local places is the development of local urban spaces, as the genesis of local nodes. The urban space becomes the focal point where the main cross-roads within local nodes become places of the highest social and economic exchange. These focal areas or ‘cores’ will provide breeding grounds for innovation. Each urban space proposed will be framed by the highest levels of urban intensity, and these will be well made from a “human-scaled” sensibility. These occur at key interceptory points approximately within a 1km radius along key routes.

NMT is ubiquitous within the network of connections – and finds itself along all transport corridors within the Aerotropolis, at all different scales. A key proposal is the development of a central spine as a shared public transport and NMT spine within the study area at the Aerotropolis scale. In addition to the incorporation of NMT to the urban and movement system, it is vital that natural open spaces be incorporated into NMT routes to promote appropriate connectedness between people and nature.

Local places have been designed in a way that encourages a structure of fine grain, permeable access systems, and in such a way that they be developed in future, based on their tendencies. The general approach, however, is mixed use throughout.



NMT & Nodal Structuring

4. SMART LIVING

4.3 PEOPLE CENTRED STRUCTURE OF DISTINCT PLACES

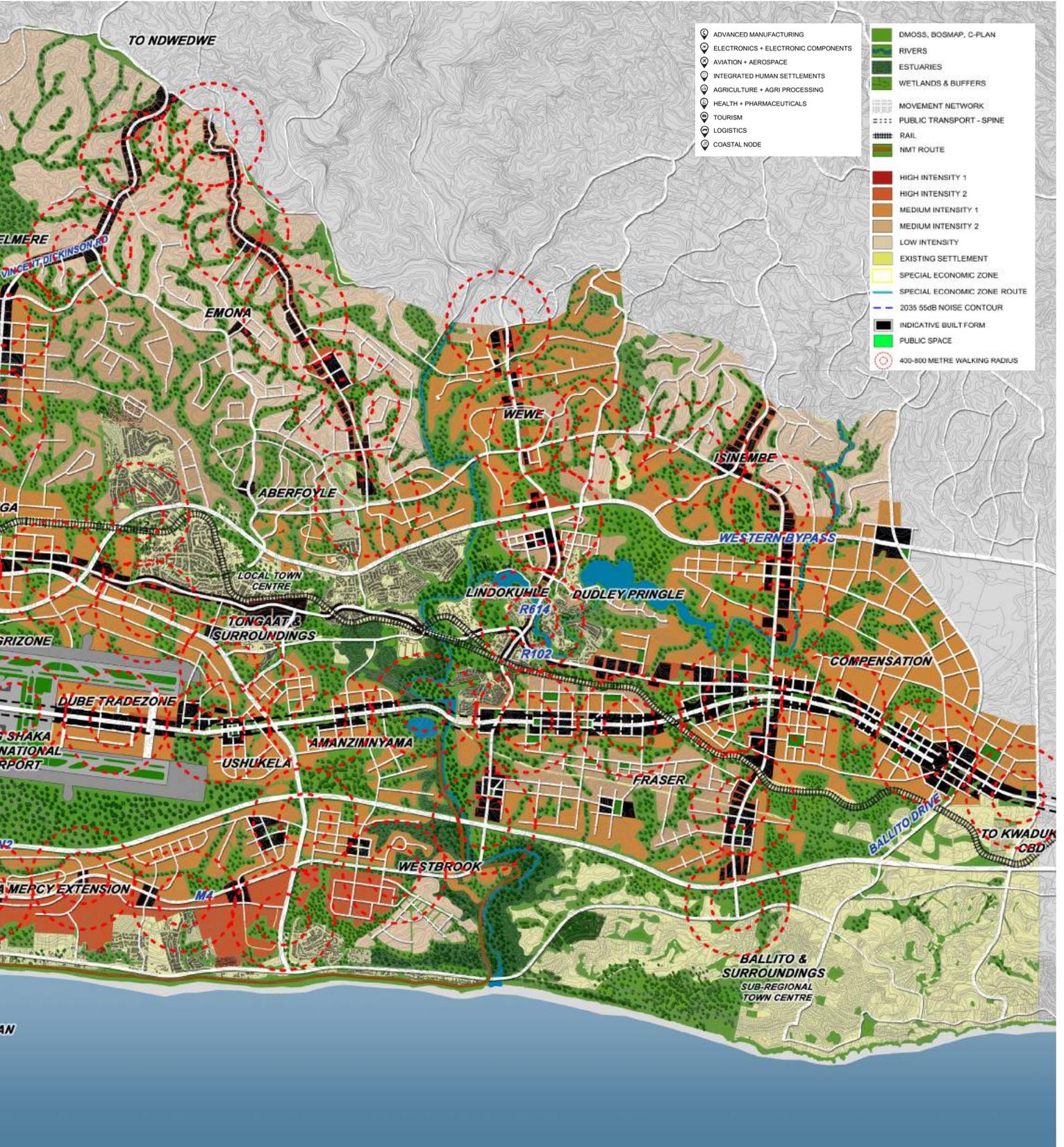
Plan Reflecting Framework with Indicative Building Footprints and 5 - 10 Minute Walking Radius



NOTE:

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- Open space zones indicated on the plan are subject to further detailed studies where the exact delineation of sensitive/ecological areas will be refined through detailed environmental studies at a project specific level, and therefore, the Aerotropolis Masterplan merely serves to indicate development intent.



4. SMART LIVING

4.3 PEOPLE CENTRED STRUCTURE OF DISTINCT PLACES

Creating Distinctive Active Public Places as Part of the Urban Fabric







PURPOSE:

Ensuring the widest available range of residential opportunity makes the region available to the widest set of users as possible. The idea is to ensure that the Aerotropolis balances the live and work opportunities throughout.

In doing so, this also provides opportunities for people to live in close proximity to work opportunities and promotes sustainability in that regard. The idea is to also provide for workers operating in different industries, as well as to provide investors with the opportunity to locate close to places in which they're actively involved, thereby encouraging the Aerotropolis as a place to invest in.

Introducing residential uses in the main corridor or spine is about restructuring – and creating opportunities in the corridor for those who have been precluded from centres of social and economic opportunity in the past.

Importantly, residential opportunities within the corridor are to be of a high and medium density to ensure there is critical mass to support and encourage economic and social activity - and to provide the critical thresholds to sustain the public transit system operating through it

4. SMART LIVING

4.4 WIDE RANGE OF RESIDENTIAL OPPORTUNITIES

GUIDELINES:

| PLANNING ELEMENT: | SMART CITY GUIDELINES: |
|-------------------|--|
| HOUSING DENSITIES | <ul style="list-style-type: none"> • Low density to be 15-30du/ha • Medium density to be 100-150 du/ha (heights between 2, 4 and 6 stories) • High density between 300-400 du/ha and greater (heights of between 6-20 stories) • Medium and high density should be compact in defined spaces and streets |

INTERVENTIONS:

The Aerotropolis' central spine is a corridor for high density mixed use from Cornubia to Ballito, and this includes densities of between 300-400 du/per ha, with buildings of up to 20 stories around key interceptory nodes and spaces.

Large scale residential opportunities have been afforded in Cornubia South and Cornubia North (developed on basis of compact urban environment, which includes public transport, economic opportunities and social facilities). The planning of these areas has been based on integrated human settlement, with mixed medium and high density housing typologies.

Coastal resort residential opportunities are offered for a range of densities and target markets in places like Sibaya, La Mercy and Westbrook Beach. New residential opportunities have been allocated around Hazelmere Dam, including high quality, low intensity, integrated human settlement and residential eco-tourism opportunities.

Low density residential is proposed on both the coast and portions inland to the more extreme west. Agri-residential opportunities are proposed in the Western corridor including places like Emona and Isenembe. High density, mixed use residential opportunities have also been proposed in the north of Amanzinyama and Compensation areas.



Agri-Residential Cluster



Alternative Low-Cost Housing Typologies

4. SMART LIVING

4.4 WIDE RANGE OF RESIDENTIAL OPPORTUNITIES

The Central Spine Accommodating Higher Density Residential Opportunities





4. SMART LIVING

4.5 CONSOLIDATED PLAN

Plan Reflecting the Consolidated Aerotropolis Framework



NOTE:

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4. SMART LIVING

4.5 CONSOLIDATED PLAN

Typical View of Central Spine as a Shared Space





4. SMART LIVING

4.6 DEVELOPMENT PHASING

APPROACH

The development phasing is informed by a GDP target growth rate of 4.5% per annum (see Technical Note Annexure A4 on the Economic Land Demand Projection). The following principles have further informed the spatial prioritisation of development growth:

- Growth will emanate from existing development nodes where bulk infrastructure exists during the early stages.
- In this regard, development emanating from Cornubia in the south and the airport centrally would be a prominent feature of phase 1.
- Development will be compactly released along public transport corridors and services to encourage TOD and create land value capture opportunities.
- The development of higher intensity zones and nodes will be prioritised in the short to medium term, with lower intensity development occurring in the outer development phases.
- With each phase, a balance between residential and employment opportunities is maintained.

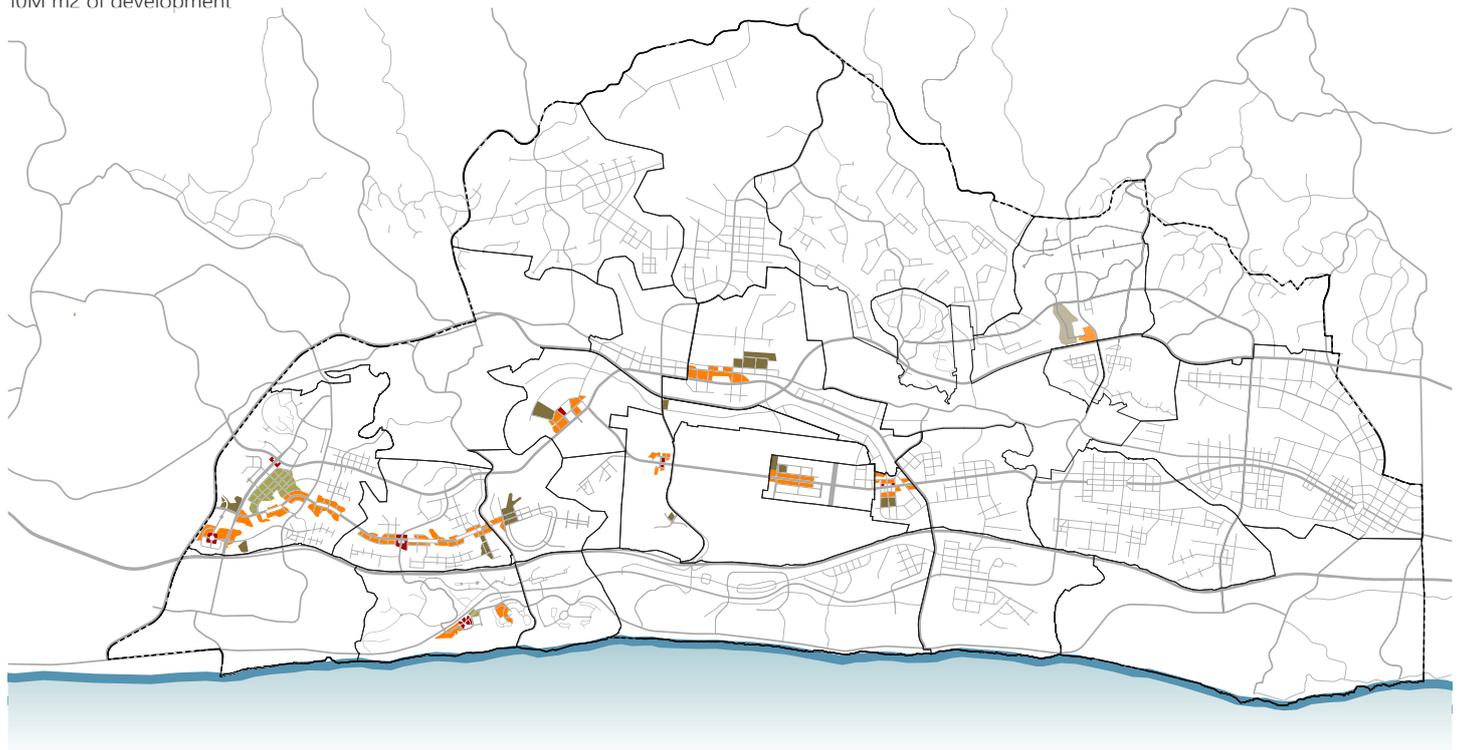
INTERVENTIONS:

Short Term Phase

25 000 jobs

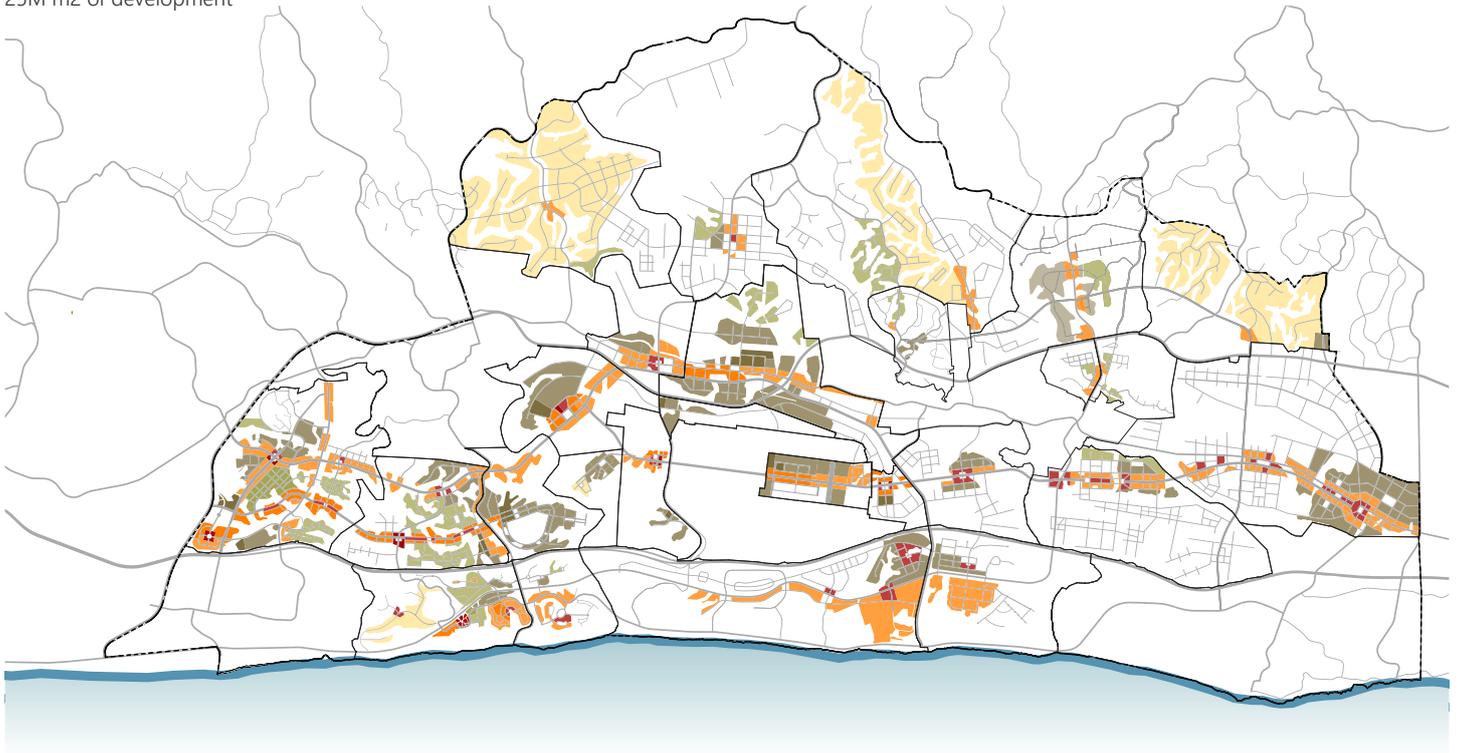
125 000 residents

10M m2 of development



Medium Term Phase

300 000 jobs
865 000 residents
25M m2 of development



Ultimate Phase

750 000 jobs
1 500 000 residents
42M m2 of development



5 SMART ECONOMY

DESIGNING THE DURBAN AEROTROPOLIS





Sustainable cities are productive cities. Securing production relates to economic production (the production of jobs and income) as well as agricultural production (securing food production).

Economic production involves the development of new businesses and jobs to create an employed and healthy population. Healthy cities require the development of productive economic regions. Given the significance of global competition, it is vital that Cities innovate and adapt to changes in the market.

Agricultural production relates to securing access and availability of food. This includes ensuring that all urban residents have access to a wide range of types of food in adequate quantities. Ensuring that areas are set aside for productive agricultural use within proximity to urban settlement is critical to food security.

Defining the competitive edge of particular regions and their infrastructure advantages are paramount to successful cities. It is vital therefore to retain, secure and expand, the productive capacity of cities, whilst adapting to new opportunities as a result of global markets and competition. Sustainable cities are diverse in land use providing for a range of opportunities. One of the most important of these is access to economic opportunity.



PURPOSE:

The objectives of the accessible economy are as follows:

- To transform the Aerotropolis economy from an agriculture base to a high tech manufacturing centre.
- To transform the agriculture sector for low employment multiplier crops to high intensity crops so as to ensure that the reduction in cultivatable land is labour neutral.
- To create the underlying residential patterns for supporting high tech manufacturing and agriculture production which requires the minimum amount of travel.

5. SMART ECONOMY

5.1 CREATING AN ACCESSIBLE ECONOMY

GUIDELINES:

Land Allocation for business purposes

- In order to achieve the desired business land uses minimum target development densities needs to be achieved. It is important to note that businesses closer to corridors and niche nodes will have higher densities, whilst those further away could be allowed to have lower densities.

The table below gives the following land use targets:

- Floor area ratio (FAR) was developed based on development patterns at the time of writing.
- Employment density is estimated from a range of established local and international business complexes.
- The percentage of area set aside for utility purposes was derived from experience with similar industrial estates, shopping complexes and office parks.

| BUSINESS TYPE: | FAR: | EMPLOYMENT DENSITY (M ² PER WORKER): | UTILITY SPACE ALLOWANCE: |
|--------------------------------|------|---|--------------------------|
| Office and banking space | 1.0 | 18 | 20% |
| Shopping space | 1.0 | 110 | 20% |
| Industrial and warehouse space | 0.6 | 70 | 20% |
| Other non-residential | 0.6 | 45 | 20% |

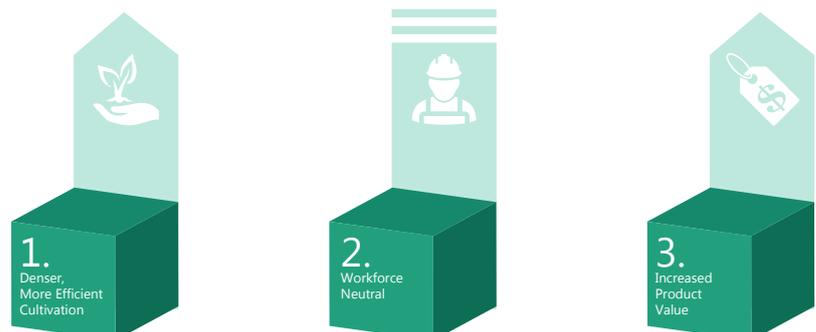
Transformation of the Agricultural Economy

The Aerotropolis site is currently largely under sugar cane cultivation. In order to retain the current level of agricultural employment, land taken up by development should be accompanied by developing higher intensity agriculture. As land is taken for business and residential uses, it was assumed that labour intensive agricultural activities would replace the sugar cane cultivation to offset the reduction in overall land available for agriculture.

After considering a range of options, vegetable cultivation would be a good proxy for some or other form of high intensity agriculture for the following reasons:

- Whereas sugar cane production requires roughly 0.15 full time person equivalent labourers per hectare, vegetable production needs about 1 permanent person equivalent per hectare.
- It is highly compatible with urban development. Due to the relatively high cost of transportation and the perishable nature of the product vegetables there are significant economies in producing vegetables as close as possible to the point of consumption or processing.

In addition to the impact on agricultural labour demand, we have also calculated the change in gross revenue from the shift to more intensive farming. The table below shows that not only is the yield per ha of vegetables higher than that of sugar cane, the market price is also more. In addition its higher gross revenue, the multiplier for vegetables are also higher than that of sugar cane.



Transforming Agro-Industry

For the purpose of this exercise it was, however, considered sufficient to demonstrate that agricultural revenue would not reduce as a result of a change in the type of cultivation.

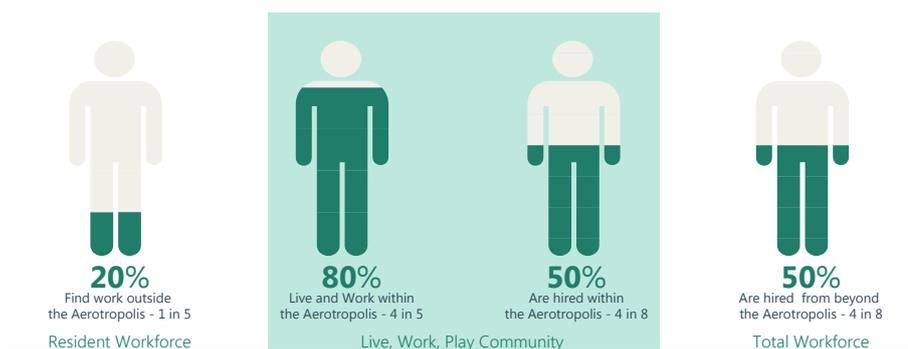
| TYPE OF AGRICULTURE: | TON PER HA: | PRICE PER TON: | WORKERS PER HA: |
|----------------------|-------------|----------------|-----------------|
| Sugar cane | 70 | R5,000 | 0.15 |
| Vegetable | 60 | R10,500 | 1.00 |

Balance between residential and commercial uses (and resulting transport implications/ access to economic opportunity)

The Aerotropolis site is currently largely under sugar cane cultivation. The demand for accommodation was based on the number of workers employed by businesses and agriculture at the Aerotropolis precinct, adjusted by the employment self-sufficiency (ESS), which is the proportion of local residents employed by local companies, and the employment self-containment (ESC), which is the percentage of local residents employed in local jobs. The area reserved for residential dwellings at Aerotropolis was calculated from the demand for dwellings, the number of workers per dwelling, the average plot size, and land reserved for utilities such as parks and roads.

The ESS, ESC targets, and land reserved for utilities are presented in the Table below.

| ASSUMPTION: | BUSINESS EMPLOYMENT: | AGRICULTURAL EMPLOYMENT: |
|---------------|----------------------|--------------------------|
| ESS | 30% | 90% |
| ESC | 80% | 80% |
| Utility Space | 30% | 30% |



Relative Attractiveness for Future Development

INTERVENTIONS:

1. Align living and working patterns should allow under resourced populations with improved access to opportunity.
2. Strategy for maintaining existing employment in agricultural sector, while moving toward higher value/more productive agricultural products.
3. Provision of appropriate transport infrastructure for moving people and freight.



PURPOSE:

The adjacent graphic is punctuated by a process defined on the right-hand side of the main triangle which ensures that the program of work is practical and implementable. The process on the left of the main triangle ensures alignment with the strategic intent as defined by the government stakeholders and is critical to demonstrate that a program of this nature can be implemented in a practical way, resulting in real and measurable outcomes. In the selection of the opportunities identified as possible projects for implementation a review of technologies will be undertaken which can be implemented as a means of leveraging growth and productivity to gain increased benefits and transitional benefits. One of the key aims of the re-industrialisation project is to break with the business-as-usual way of planning, and elevating the economy to a higher development trajectory. McKinsey&Company (2015) outline a transformational trajectory for South Africa their McKinsey Global Institute Report 'South Africa's Big Five: Bold Priorities for Inclusive Growth'.

The report identified the following transformational drivers for the South African economy:

- Infrastructure: Partnering for Productivity
- Agriculture: Unlocking the Value Chain
- Advanced Manufacturing: Creating a Global Hub
- Service Exports: Riding the Wave of Africa's Growth
- Natural Gas: Powering South Africa's Future

It provided a visual representation of the added benefit that a transformational approach proposed by McKinsey can deliver over and above an incremental (business-as-usual) approach. In the case of an incremental approach, the progress is seen as gradual whilst a transformational approach sets to achieve a step change in the journey towards the agreed vision. It is this transformational journey that is being sought for the residents of Gauteng.

5. SMART ECONOMY

5.2 ACHIEVING ECONOMIC TRANSFORMATION



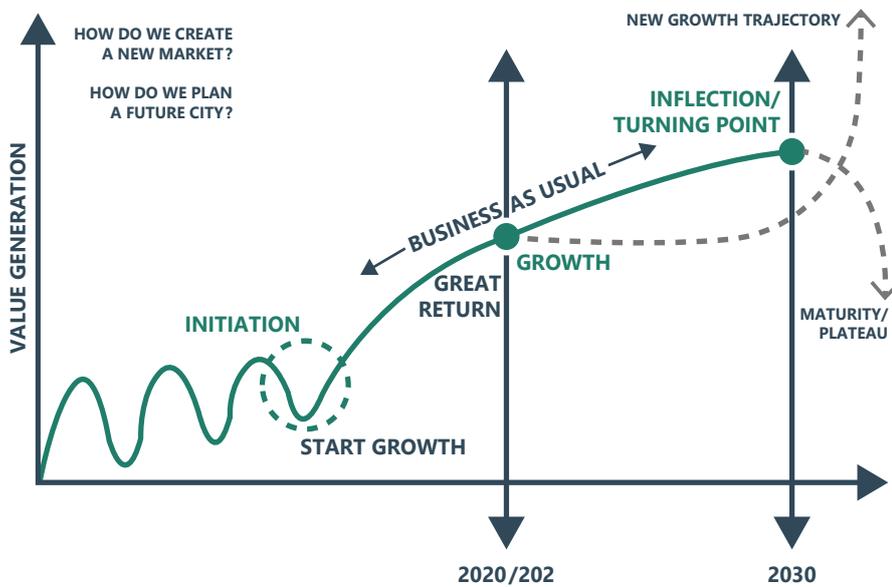
PURPOSE CONTINUED:

Following a transformational path means that progress and development occurs through a cyclical process of step changes followed by periods of incremental change. Each step requires a transformational change in providing infrastructure, adopting new technology, responding to demographic change, or embracing new ideas. Transformational change alters the landscape such that there is a significant response in the economy, environment and social behaviour.

In the context of this study, transformation is defined as a paradigm shift in the way the enabling environment is structured and shaped to enable industrial development for better and more sustainable living. Transformational change could be something that happens spontaneously, such as the advent of cars, giving people independence and freedom to choose where they live and work. However, it could be planned, as is illustrated by the Gautrain which allows large scale city shaping to allow people to choose where they live, work and trade in the city, resulted in the wave of urban expansion. Both these popular examples represent a step change in passenger transport provision underpinned by a transformational change in the shape and urban form of the city illustrate the dimensions of change and opportunity.

The distinction between incremental and transformational change is often erroneously seen as simply a matter of scale. Although they are both part of a renewal and improvement process, transformational change allows the pursuit of higher order goals which capture people's imagination and provides a common purpose or intent. Transformation is usually followed by periods of incremental improvement and refinement.

The main constraint to transformational thinking is that only the benefits which might occur over a 20-30 year appraisal period are considered. Significant incremental benefits beyond the 30 year horizon exist, even if an incremental path is followed. In addition, the transformational multiplier benefits which stimulate the economy over and above the conventional benefits sought in traditional cost-benefit appraisals are sometimes ignored. Furthermore, although transformation is essentially a long term vision, the immediate stimulus benefits which occur during implementation should be captured, particularly if one project follows another in a continuous cycle of an integrated implementation programme.



GUIDELINES:

Our approach was based on the premise that future land demand for business purposes would be driven by economic growth, i.e. land demand is a response to economic activity. Given the demand for land in future, residential land requirements were derived primarily from the need to provide housing for workers employed at Aerotropolis, as well as the number of workers expected to live but not work in the area. It therefore excludes an extensive demographic study, which would be more appropriate at a larger metropolitan or city level.

As the current land use at the site is dominated by sugar cane cultivation, we assumed that changes to agricultural usage would be motivated by the demand for business and residential developments, and the need to intensify agricultural cultivation to protect jobs in that sector when the overall area under cultivation reduces. On the principal that agricultural jobs should not be lost in the area, changes in agricultural usage would mostly be motivated by intensified agricultural cultivation on portions of the land to compensate for loss of agricultural land to business and residential development.

INTERVENTIONS:

- Need to upskill workforce to support future industries and business investments.
- Shift toward more advanced forms of economic production (advanced manufacturing, etc.).
- Develop Niche Nodes and clusters.



PURPOSE:

To leverage the Aerotropolis as an engine of diverse, inclusive economic growth for local populations as well as international investors

5. SMART ECONOMY

5.3 CREATING AN INCLUSIVE ECONOMY

GUIDELINES:

Residential needs for workers employed in the designated floor space categories were allocated according to housing types based on their income level (see Table below). In allocating workers to income level and housing category we took a long term view that the an adequate pool of skilled workers would be available to sustain the rate of economic growth over the next 50 years that will demand space at Aerotropolis.

This assumption has significant implications for the allocation of residential land, as mid-income workers, who comprise a large component of the future workforce, live on medium sized free standing houses. Half the residential land would be reserved for this category should this low density settlement pattern continue in future.

| FLOOR SPACE CATEGORY: | MULTI DWELLING (SMALL UNITS): | MULTI DWELLING (LARGER UNITS): | FREE STANDING (LOW COST): | FREE STANDING (MID-PRICE): | FREE STANDING (HIGH END): |
|----------------------------|-------------------------------|--------------------------------|---------------------------|----------------------------|---------------------------|
| Income Category | Low | Low | Low | Mid | High |
| Office and banking space | 5% | 5% | 5% | 50% | 35% |
| Shopping space | 15% | 10% | 5% | 60% | 10% |
| Industrial/warehouse space | 25% | 20% | 15% | 35% | 5% |
| Other non- residential | 20% | 15% | 10% | 45% | 10% |
| Agriculture | 5% | 5% | 80% | 10% | 0% |

INTERVENTIONS:

- Allocate sufficient land to the appropriate mix of dwelling types.
- Industry guidelines for investment to attract appropriate dwelling types.
- Productive green space.
- Public transit planning or empowerment through infrastructure.



Residential



Technology Hub

5. SMART ECONOMY

5.3 CREATING AN INCLUSIVE ECONOMY

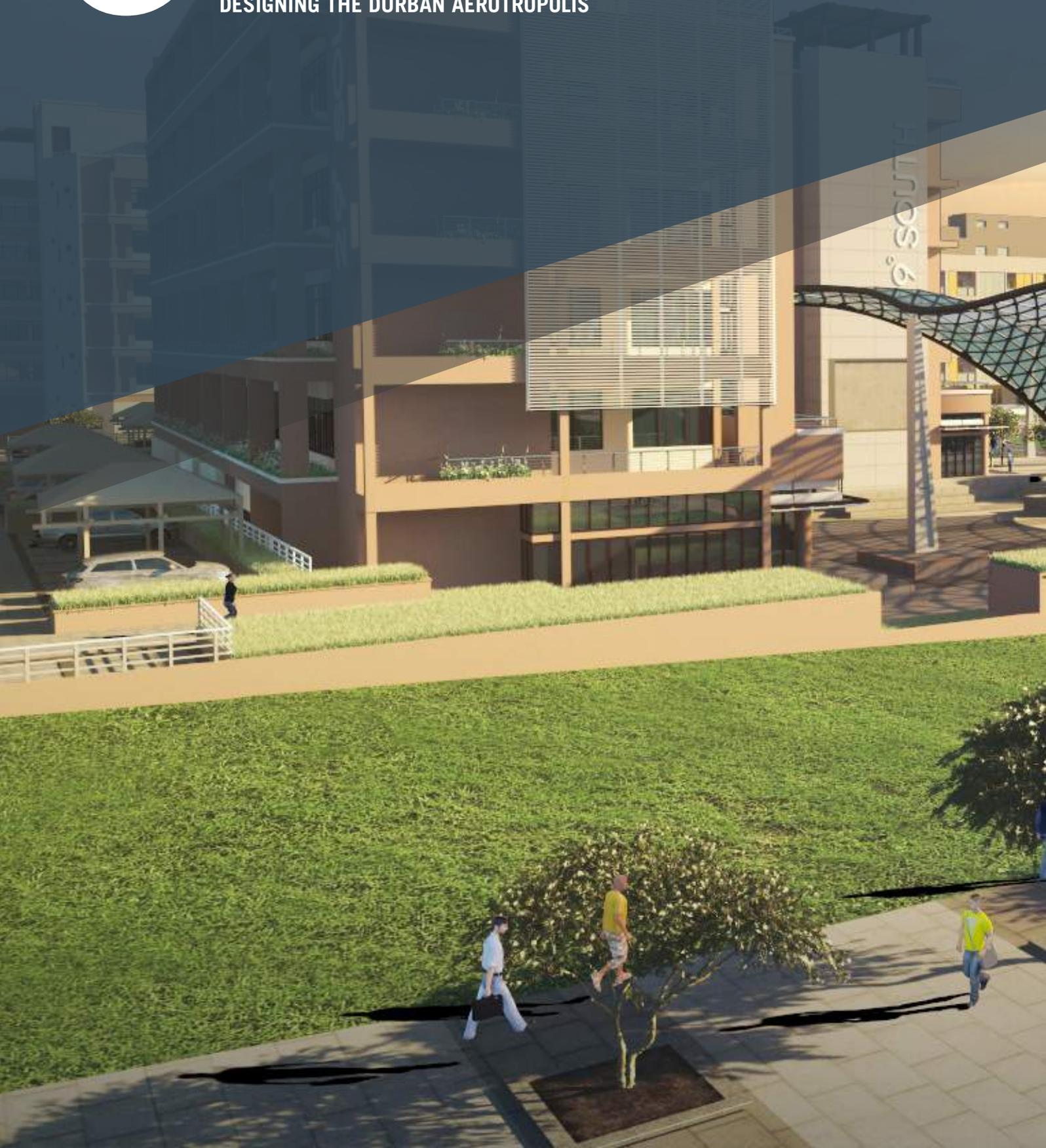
Future Business and Office Environments Focused on the Integration of Active and Quiet Green Spaces





6 SMART URBAN UTILITIES

DESIGNING THE DURBAN AEROTROPOLIS





Robust infrastructure is the bedrock of growth and job creation. It enables the efficient delivery of electricity, water, sanitation, telecommunications and transport services. It powers the economy, and supports manufacturing, trade and exports. It gives citizens the means to improve their lives.

The Durban Aerotropolis needs to provide adequate purpose-built urban infrastructure to meet increasing demands brought about primarily by urbanisation. Finite resources and a forecast of 66% of the world population living in cities by 2050 (UN 2014) mean that our city needs to be more innovative in driving the concept of “doing more with less” and adopting smarter initiatives.



PURPOSE:

“Smart” is more than implementing ICT solutions. Smart is doing things better through shifts in policy, behaviour and systems, within citizen buy-in and participation. Smart urban utilities for the Durban Aerotropolis means:

- Delivering urban services to residents and businesses timeously and more efficiently,
- Reducing costs for service providers, owners and end-users
- Reducing resource consumption per capita
- Active participation using communication technologies and other means to improve the quality of life
- Meeting economic, social and environmental needs of present and future generations
- Setting up appropriate structures of governance

6. SMART URBAN UTILITIES

6.1 OVERVIEW

There are multiple users of infrastructure, each with their own set of values, priorities and needs. Users of infrastructure have been identified and their associated values or needs are as follows:

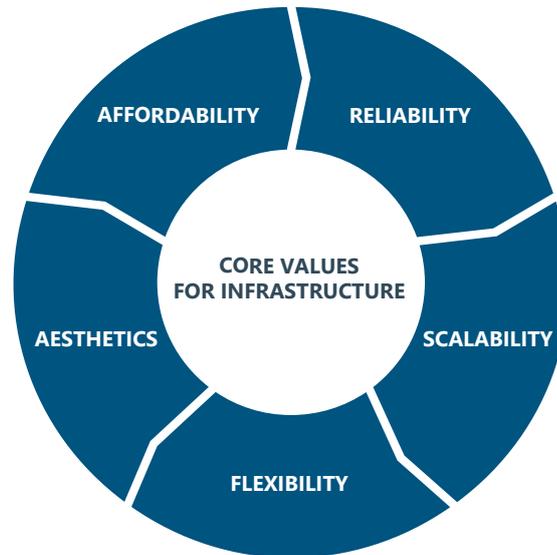
User:

- Businesses
- Passer by
- Tourists
- Investors
- Owners
- Residents
- Operators
- Government Line Departments
- Adjacent Communities

Values:

- Access
- Efficiency
- Mobility
- Aesthetics
- Asset Management
- Liveability
- Sustainability
- Convenience
- Safety Reliability
- Flexibility
- Scalability
- Affordability

Based on the generic values, 5 core values have been derived for smart urban utilities for the Durban Aerotropolis as shown in the graphic below. Some of the principles that guide infrastructure Some of



the principles that guide infrastructure interventions within Aerotropolis include:

- Centralised vs Decentralised: Is the service better provided and/or stored remotely or locally within the Airport City footprint?
- Shared Capacity: How do we use our assets to their full capacity to generate greater revenue with a reduced requirement for capital expenditure?
- Resilience: How do we ensure that infrastructure can withstand system shocks either from climatic change, economic circumstances or other technical failures?
- Operational Performance Improvement: How do we achieve more throughputs from existing assets through operational solutions and synergies?
- Connected Infrastructure / Systems Integration: How do we address more than one need with the same or similar type of infrastructure
- Demand Management: How do we transition away from a predict and provide model and focus on reduction, reuse and recycling?

DEMAND AND PROVISION OF CIVIL SERVICES IN DURBAN AEROTROPOLIS BEST PRACTICE GUIDELINES

Various authorities have, over time, developed their own “standards” for usage related to essential services namely water, sewage and electricity.

Undoubtedly there are different demands in various parts of the country and related to various economic levels. While there may be general consensus, standards are by no means uniform across South Africa. Standards currently in force relate to current, or even historical, usage practice, with little cognisance of the changes in user behaviour prompted either by restrictions, shortages of supply, tariff (cost) or changes in technology.

As an example, the introduction of alternative energy sources, and particularly solar water heating and photovoltaic electricity generation, have changed the demands made on the conventional grid electricity supply. New technologies have already reduced demand for electrical lighting and appliances.

Advances in technology and a growing shortage of water has led to use of alternative supplies of water for consumption. Sources such as desalination have been utilised and, under certain conditions, this is a viable source of both industrial and potable water.

Another major advance relates to the treatment of effluent and the growing trend towards recycling of effluent to provide, in the first instance, water for industrial use, but in particular circumstances and over the longer term, body contact and for human consumption. Harvesting of rainwater has become more widespread.

At the same time the introduction of smart technology has enabled suppliers to monitor consumption and, to some extent, control usage, but as importantly to be able to identify and rectify problems timeously and charge promptly and correctly for actual consumption. Remote meter reading is advancing in line with developments in ICT.

The advanced technology mentioned above together with changes in user behaviour has been found, elsewhere in the world, to lead to significant reduction in consumption and a growing acceptance of alternative sources. This has all lead to a reappraisal of demand and the development of a number of assumptions about consumption within the context of the future of Durban Aerotropolis.

With this in mind we have proposed what we have termed Best Practice Guidelines, alternative to the conventional consumption figures. These guidelines are presented alongside the “do nothing” current consumption standards.

Achieving the desired demand reductions will require behavioural change and the application of technology and will be realised through consumer sensitisation and education, along with the establishment of new standards and targets accepted by all stakeholders



PURPOSE:

Water is a defined scarce resource. Access to potable water and sanitation is a basic right of all South African citizens. Bulk water and sewer infrastructure is a prerequisite for any development to commence. The purpose of the water and sanitation management plan for the Aerotropolis is two-fold: improve the current conditions of the existing networks; and create a system that is sustainable, economical and viable.

The desired outcomes are:

- Financial savings: Reducing the non-revenue water percentage by identifying leaks and illegal connections, and using recovered revenue to maintain existing infrastructure, educate consumers and invest in improved technologies.
- Improved services: Providing more transparent water consumption information to water utilities and customers. Reducing supply interruptions and disruptions within the water distribution network.
- Improved efficiency in wastewater and water treatment: Improving water quality and source control of resource pollutants, making use of natural systems, thus reducing the potential treatment required for water supply systems or wastewater, and preventing infrastructure overload.
- Environmental protection and enhancement: Reducing demand for water from natural resources and improving environmental monitoring to maintain and restore ecosystems that rely on a healthy aquatic environment.
- Reduced carbon emissions: Reducing the amount of energy consumed for the abstraction, treatment and distribution of water resources.
- Greater resilience and improved decision-making: Improving data reliability and accuracy to enable better forecasting and predictions around future demand and supply. This would enable better planning, design and management around potential impacts of disasters on the system, direct investments and strategies more meaningfully; inform prioritisation of infrastructure investment and maintenance.

6. SMART URBAN UTILITIES

6.2 WATER & SANITATION

| TYPE: | BASED ON MUNICIPAL STANDARDS: | BASED ON PRACTICE GUIDELINES: |
|-------|-------------------------------|-------------------------------|
| Water | 496 ML | 285 ML |
| Sewer | 416 ML | 285 ML |

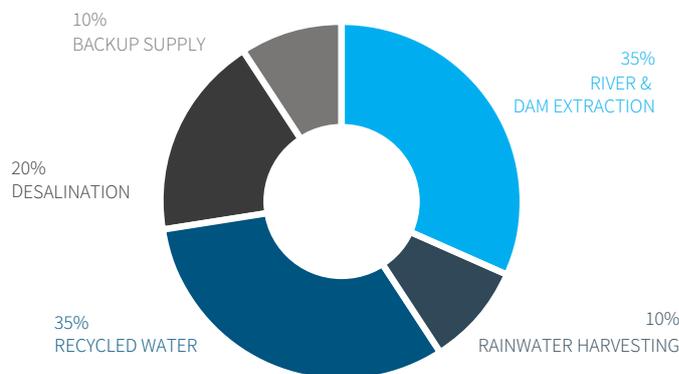
A comparison between the current standard usage and the best practice proposals indicate that the amount of new water required to enter the system could be reduced as much as 211 ML per day.

GUIDELINES:

It is proposed that the guidelines for the Airport City be adopted through a phased approach of shifting the water mix over time. The guidelines presented below will require adaptation as technology and time progress.

Reducing the amount of effluent generated from any given area is a greater challenge than reducing water demand. The reduction in water consumption will reduce the amount of effluent reaching treatment works and this will obviously reduce the required treatment capacity. However, additionally the following guidelines are proposed:

| | |
|---|--|
| Water Mix i.e. split in source to meet demand | Guidelines for 2035 <ul style="list-style-type: none"> • 35% from river and dam extraction • 35% from recycled water • 20% from desalination • 10% from rainwater harvesting • 10% from a backup supply of water i.e. new technologies and innovation |
| Water to be recycled | > 80% by 2065 |
| Effluent to be recycled | Over time, up to 80% of all effluent should be treated, either at source or at centralised treatment works, to a standard which can be reused, in the first instance, for industrial and commercial applications in high-intensity development areas, but in the longer term broadly by all users, including domestic users. Where appropriate dual pipe water reticulation systems will be implemented. |
| Recycled effluent water to be used for potable purposes | Short term 10-15 years: 25% Long term 15 years+: 60% |
| Industrial Waste Water | Industrial Waste Water should be separated to allow for reuse. |



Once a downward trend of “new” water is achieved reassessment of the future demand for new sources can be undertaken.

INTERVENTIONS:

WATER

Notwithstanding advances in technology and improvement in consumer behaviour towards consumption it is recommended that following interventions be introduced:

1. Water from rivers and dams will be centrally treated in plants strategically positioned for delivery areas and determined mainly by topographical considerations. Wherever possible water will gravitate.
2. Water storage will be optimised using agreed parameters with a recommendation that at the reservoirs nearest the point of delivery, 36 hours of storage is accommodated.
3. Conveyances of all types will be carefully considered to obviate leakage. Latest developments in pipeline materials and jointing must be employed.
4. Smart metering must be instituted with constant monitoring of pipe flow and end-user demand being utilised to monitor leakages and other forms of non-revenue water usage.
5. Utilise sensors throughout the systems to improve monitoring of water quality, source control of resource pollutants, monitor infrastructure load, detect theft and illegal connections.
6. Desalination will be considered when economically viable and where no other sources are economically justified.
7. Consumer education will be escalated to improve consumer consumption behaviour and awareness of the scarcity of the resource. Average consumption will be forced down either by voluntary behaviour or through tariff intervention. The use of water-saving appliances and delivery devices will be mandatory.
8. At every opportunity, and to the greatest extent possible, effluent water will be recycled. As little treated effluent as possible will be returned to natural resources, particularly where the return point is near to the ocean. Treated effluent will be used for industrial, irrigation and other non-potable uses. Where appropriate dual pipe water reticulation systems will be implemented .
9. Continual education and sensitisation will lead to the treated effluent being used for potable purposes.
10. Any industry which requires significant quantities of water for process will be required to treat and reuse the water on a continuous basis.

SANITATION

It is estimated that at least 80% of all water consumed in urban areas ends up as effluent . It is a statutory requirement that this effluent is treated, however there is currently no requirements that the water be reused (recycled). The following key interventions are recommended:

1. Siting of centralised waste water treatment works, serving the residential and low usage non-residential users, must, with due consideration to the environmental factors, be constructed at the lower end of catchments which are largely determined by topographical features.
2. Very large consumers of water (who generate a large percentage of effluent) will be required to treat and recycle their own effluent on site in treatment works managed by the consumer. The use of recycled water will be targeted at not less than 90% of the effluent generated.
3. Use natural systems to reduce the potential treatment required for water supply systems, or the separation of specific pollutants in wastewater.
4. Organic sludge must be pasteurised and utilised for agriculture or horticulture.
5. Low flush toilets using the latest technologies must be utilised.*
6. Solids-free sewers are to be used, particularly in areas of low water availability and where lower construction costs are critical.*
7. The recovery of biogas at WWTW's must be capable of generating sufficient energy to run individual plants.

*Widespread use of vacuum sewers reduces the amount of water necessary for flushing to approximately 10% of current norms. Low flush toilets generate 30% of "conventional" flush



PURPOSE:

South Africa’s economic policies support the promotion of alternative energy sources as a driver for economic growth. Renewable energy is key to preserving the earth for future generations. South Africans are fortunate to have non-depleting renewables sources. The purpose of the energy plan for the Durban Aerotropolis is to establish a smart energy system that is cost effective, sustainable, stable and secure.



A comparison between current standards and best practice indicates an overall reduction in the demand on grid electricity of 31%. This is to be realised well within the development cycle of the Aerotropolis and significantly reduce the “carbon footprint” of the development.

- The goals of the smart energy plan are:
1. Access to energy services: To provide access to reliable, affordable and sustainable energy services.
 2. Resilience: Maintaining the functions of the city energy systems through effective planning that enables dealing with unforeseen events.
 3. Energy Efficiency: To be highly resource efficient and specifically energy efficient.
 4. Renewable Energy: To become completely dependent on renewable energy and reduce the carbon emissions.
 5. Active and Engaged Users: To enable businesses and citizens to be actively engaged in the development of energy strategies and operational running of the Airport City.
 6. Sustainable Energy and Related Job Creation: To drive consistent innovation around cleaner energy technology. To improve the availability of “green jobs” and growth in the green industries and services.

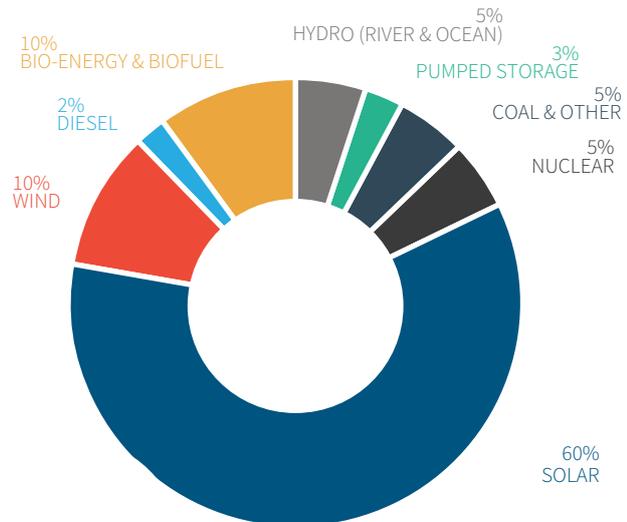
Within the Airport City, energy infrastructure is currently at capacity and any further developments require additional infrastructure.

6. SMART URBAN UTILITIES

6.3 ENERGY

GUIDELINES:

| TYPE: | GUIDELINE: |
|--|---|
| Energy Mix i.e. split in source to meet demand | <p>Guidelines for 2065</p> <ul style="list-style-type: none"> • 60% PV electricity and water heating • 10% bio-energy • 10% wind* • 20% hydro, pumped storage, coal, diesel, nuclear, other <p>*This could increase as a result of a more detailed assessment of wind energy potential and technology advancement in this area eg. installation of higher masts and larger diameter turbine blades to improve output.</p> |
| Ultimate energy mix | 100% renewable energy sources |
| Reduction in demand on grid electricity | 35% - 45% for the Airport City, with the option, under favourable circumstances, for certain developments or operations to be completely “off grid”. |



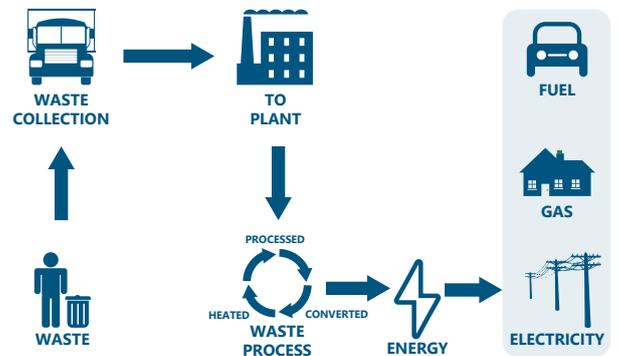
INTERVENTIONS:

South Africa has become dependent on centralised generation of electricity chiefly from coal powered sources. The advances in alternative energy generation technology, and associated converging comparative price of electricity, has allowed for the diversification of generation sites and for a reduced dependency on grid electricity.

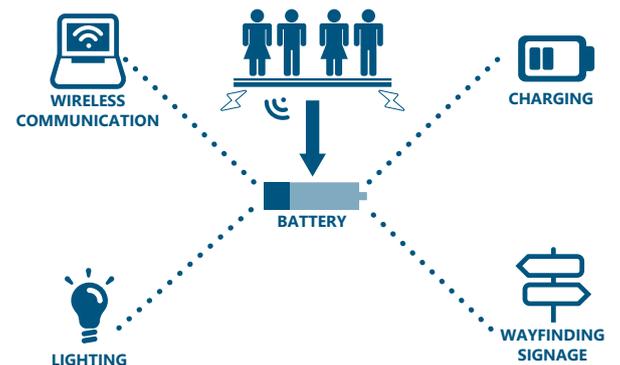
Alternative energy will undoubtedly lead to a reduction in electricity demand of the conventional group and while alternative systems of generation do not necessarily reduce consumption the parallel advances in technology will undoubtedly reduce consumption.

The following key interventions are considered necessary to attain a shift in the energy mix:

1. Generation of hot water for both industrial and domestic use by solar heating will be mandatory. This will reduce electricity consumption by approximately 30%.
2. All consumers will be encouraged to use Photovoltaic generation (PV). Large users of electricity, particularly those which have their peak demand during daylight hours, will be required to install PV systems to cater for no less than 30% of their total demand. The application of PV should utilise rooftops of individual buildings.
3. Industry will be encouraged to utilise their own waste to generate energy .
4. Construction of “mini grids” which will complement renewable energy generation and deliver on a defined relatively small area basis thereby regulating the source of energy at any time day.
5. Land for solar energy generation (either PV or concentrated solar) may be set aside within low intensity zones after due environmental consideration.
6. A more detailed assessment of the potential to increase contribution to energy mix by wind as the coast of KZN is regard as a favourable locality for Wind Farms.
7. The use of biomass to generate electricity is to be explored for the Aerotropolis. Waste in the form of agricultural waste, manure, municipal waste, plant material, sewage and food waste generated within the Airport City can be used to generate biogas. However considering constraints on water provision, a key requirement for energy production from biomass/ biofuels/ biogas will be that it must be sourced from waste, and not need to be grown or created.
8. A pilot study for Piezo treadles under a busy sidewalk is to be commissioned. These treadles help generate power from the energy released from sidewalk deflection.
9. The creation of strategically located Energy Storage Hubs is to be investigated to optimise the use of renewable energy. Integration of renewable sources without supporting storage technologies exposes the grid to stability issues. These power storage plants improve the power quality of grids, helping to pro long their lifespan and therefore cost effectiveness.
10. An increase in the number of independent power producers will be encouraged through incentives.



ENERGY FROM WASTE



SIDEWALKS USED TO GENERATE ELECTRICITY



PURPOSE:

Rapid urbanization, population growth, development and industrialization are contributing to the large scale increase in the total waste generation and have resulted in a change in the composition of solid waste generated. This issue together with the increased costs of landfills has driven the need for effective management of municipal solid waste (MSW) in KZN. It is therefore considered necessary to develop an integrated and sustainable waste management system for the Aerotropolis with the aim of driving both economic and environmental efficiency.



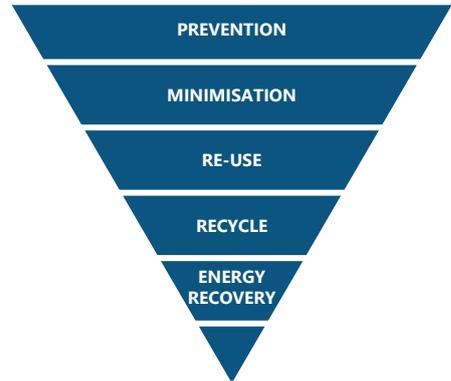
A comparison between current standards and best practice indicates an overall reduction in the generation of solid waste of 31%.

The primary objective within the Airport City is an environment of Zero Waste. Zero waste encompasses more than eliminating waste through recycling and reuse. It also focusses on restructuring production and distribution systems to reduce waste.

6. SMART URBAN UTILITIES

6.4 SOLID WASTE

GUIDELINES: Waste to be recycled: 60%



INTERVENTIONS:

1. The reduction of potential waste both during processing and in packaging will be a requirement for all businesses within the Aerotropolis.
2. Residents of the area will be encouraged to reuse packaging and to avoid products which generate high levels of waste.
3. In order to obviate new or enlarged landfill areas recycling of waste will be mandatory and will include:
 - separation of wastes at source
 - processing of separated waste to maximise its utility.
4. Specialist recycling of materials such as e- waste, light bulbs and batteries will be enforced and the establishment of specialised businesses for this purpose will be encouraged.
5. Waste collection will be carefully monitored and controlled with sanctions against those who ignore laid down guidelines.
6. Measure/baseline current waste generation
7. Pilot: Recycling of Rubber Waste by adding it to asphalt road surfaces to increase its durability and improve the road quality and safety conditions by absorbing the rubber elastic properties. It can also be incorporated into concrete roads for light traffic as an alternative aggregate.
8. Certain buildings within the Airport City are to be constructed from compressed earth blocks which compromise soil and builders rubble. It is specifically recommended that these blocks be used in construction of affordable housing units to reduce construction costs.
9. Waste material generated from the processing of sugar cane is to be reused as an effective organic fuel.
10. Waste collection is to be carefully monitored and controlled with sanctions against those who ignore laid down guidelines.
11. Develop a model (or use existing available models) to assess and compare the costs and benefits of different options for the collection of waste and recyclable materials, based on each municipality's unique requirements. With the Aerotropolis study area comprising 2 district municipalities, this will assist in identifying the most cost-effective option for implementing separation at source, evaluating tenderers for kerbside collections and material recovery facilities, and in motivating for funding for implementation for e.g. through tariffs or subsidies from natural government or industry.
12. Optimisation of waste separation and collection through sensors, sensor networks and data analytics.
 - Sensors are to feed real-time data into a database that monitors the refuse levels in the waste centres and dispatches a clean-up crew when required This system of collection will improve the cleanliness of public spaces and increase the utilisation of renewable energy products.
 - Smart solar powered trash compactor bins that compresses garbage so that it can hold up to 8 times more than standard bins. Communication via a transmitted signal to a database through wireless network systems is used to monitor the levels of waste within the collection container.
13. Road shows and educational "Indabas" to highlight the ultimate importance and impact that properly managed effective waste management systems.
14. Build partnerships with local authorities and the municipality to appoint a management association within the Airport City to enforce the regulations needed to achieve the objectives.



PURPOSE:

ICT needs to be embedded in infrastructure to enhance the quality and performance of public services, reduce costs, manage demand, improve governance and enable active engagement between government and citizens.

ICT infrastructure can, in itself, be “catalytic”. An open-access, ultra-high-speed broadband community network has the potential to attract development and can shape land-use activities. It also supports connected buildings and infrastructure while facilitating innovation and creativity.

Technologies can also be applied to advanced monitoring of existing critical infrastructure assets to quantify and define the extent of ageing and remaining design life of infrastructure, thereby ensuring resilience and reducing the risk of failure.

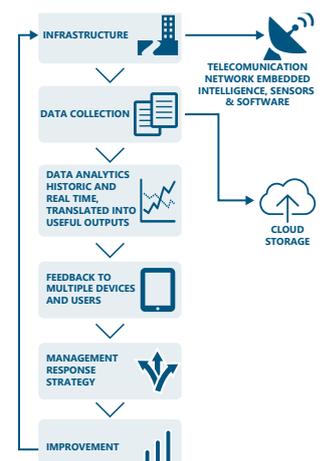
Fundamentally, the purpose of ICT is to provide access to information.

6.5 ACCESS TO INFORMATION

GUIDELINES: >70% of the population will have access to the Internet

INTERVENTIONS:

1. Standardise data legislation and data synchronisation between municipalities and stakeholders so that the Aerotropolis can function as one entity.
2. Create an intelligence operation centre aimed at providing an integrated view of the Aerotropolis’s strategic operational issues through effective information gathering and processing and efficient dissemination of intelligent information. This will enable well-coordinated, integrated and responsive service delivery.
3. Stakeholders and municipal service operators are to deploy connected devices that deliver large amounts of real-time data to cloud storage and can be analysed to enact changes in the physical environment.
4. Smart sensors are to be installed within infrastructure networks to collect input from the physical environment, use built-in computer resources to perform predefined functions upon detection of specific input and then processes the data and before passing it on. Installing smart meters and sensors within households and businesses will reduce utility losses, increase revenue and reduce energy consumption.
5. Develop a web-based application and e-services platform to allow the citizens in the Aerotropolis to log grievances and queries in a safe and effective format.
6. Build up human capacity to enable people to engage with the information they receive in a way that improves their quality of life. Local institutions at all levels need to promote new information interfaces scholars. This may also be done at other civic facilities.
7. Education and public health facilities should have access to broadband and wifi.
8. Investment in institutions and innovation hubs to develop the expertise in the required ICT fields.
9. Building Information Modelling (BIM) is to be deployed during the preliminary design of future projects within Airport City. This model will incorporate simulation, optioneering, better project delivery and maintenance and allow for faults, duplications, and any conflicts to be detected and resolved more easily.
10. Drones to be used for:
 - Farming, to do aerial surveys of crops. This will enable monitoring of farmlands by assessing if irrigation systems are operating effectively, checking on crop growth and detecting the health state of the crops and plants using infrared technologies.
 - Surveillance, to assist local government with search and rescue, security during crowded events, border control and maintaining an effective police “presence”.
 - Environmental management and assessments. During chemical or oil spills, drones will be sent to retrieve vital information so that authorities can address risk situations immediately while protecting humans from exposure.
 - Inspection of infrastructure for the detection of any leaks, faults structural deterioration and ensuring safety regulations are met in this regard.
 - Delivery of critical medication to citizens within the Airport City and to remote areas as a priority. Eventually manufactured goods and consumables are to be delivered via drones.



7 SMART COMMUNITY

DESIGNING THE DURBAN AEROTROPOLIS





FREE WIFI ZONE

Enhancing social inclusivity is a cornerstone principle of sustainable urbanism.

There are many aspects to social inclusivity, at the broadest level, it deals with the notion of people-centered cities, whereby citizens have an active role in shaping their futures. It is ultimately the human capital of cities that drives them, and an empowered community is a aspect key in this regard.

The physical environment is an important influence in social well being and in fostering inclusivity. A fundamental part of social inclusivity is ensuring equity in the distribution of opportunity for all residents. Successful urban places are those that adequately address the needs of the widest range of society, with a particular emphasis on those with limited means – including the young, the poorest and the old. A key determining feature of socially inclusive environments is the ability of an environment to cater for the youngest, poorest and at the same time, oldest members of society.

Creating physical environments that enhances quality of life, and which affords equal opportunities and enables integration is paramount to sustainable cities.



PURPOSE:

With the emergence of new economic opportunity within the Aerotropolis, as well the indicators which reflect a growing concern in housing and transformational growth, the key is to ensure the provision of a variety of housing opportunities thus giving people greater choice. It also helps ensure that housing delivery is not a matter of creating a standard template for housing roll out linked to current and future projections but rather, a more carefully calculated approach in the distribution and provision of new housing opportunities.

A range of income groups such as low (affordable) middle (GAP) and upper income must be accommodated, with different tenure arrangements being applied within each group thus giving people more choice. Tenure arrangements may vary from freehold to sectional title, rental with various typologies ranging from detached freestanding, attached row housing, 4 storey walk-ups, high rise apartments within mixed use environments so as to cater for the anticipated demands from an Aerotropolis region.

The objective is to ensure that these housing opportunities are connected, i.e. along accessible corridors linked to employment opportunities, social facilities as well as public transport facilities where the intention is to ensure that the poor have better access to social amenities and a host of economic opportunities.

7. SMART COMMUNITY

7.1 DIVERSITY

GUIDELINES:

- Residential and social amenity linked along higher order key routes.
- In proximity to or within Transport Corridors linked to employment opportunity.
- Within a 5 minute walking distance to social amenity/ schools, public facilities, recreation spaces, local neighbourhood clusters and other mixed land use nodes.
- Integration at all scales must be connected to the wider Aerotropolis opportunity



Quality enabling residential environments are required to help communities prosper

INTERVENTIONS:

The planning framework moves away from the traditional land use zoning to an intensity driven approach. Based on this guiding philosophy, the provision of a variety of housing opportunities, social amenity, economic opportunity is kept very flexible and market driven. For instance, the areas west of the Aerotropolis study area can accommodate more middle to upper income housing in areas around the Hazelmere dam in proximity to a new economic node so there is no difference between areas along the coast and western areas that share the same lower intensity character zone. Mixed housing settlements such as Cornubia already start to offer diversity in housing and economic diversification.

A large part of the planning for the Aerotropolis is focussed on a new north/ south multi modal transit corridor running centrally through the study area that starts to integrate both the western and eastern sides of the area via new routes in a more seamless fashion. Connections into this transit corridor, start to link all the residential precincts, economic districts in a more integrated manner and become the spine that bridges the previous divide between the rich coastal corridor and poor hinterland. Another added dimension of the framework is that new corridors radiating from the transit corridor run deep into the hinterland areas. These economic corridors offer added opportunities for entrepreneurs who want to apply their trade along key routes but also opens up new opportunity for high density residential typologies along these routes.



PURPOSE:

The Aerotropolis Institute Africa (AIA) is a centre of excellence and hub for Aerotropolis knowledge in Africa. The purpose of the AIA is to:

- Ensure the development of skills within Africa that support the growth and expansion of the Durban Aerotropolis and aerotropolis globally.
- Address the skills vacuum threatening the advancement of the Aerotropolis concept in SA & Africa.
- Provide optimum knowledge support, thought leadership & human capital meeting the industrial & commercial needs of the growing Durban Aerotropolis with the potential to export such skills and knowledge.

7.2 AIA

GUIDELINES:

Optimal planning & implementation of an Aerotropolis development requires a broad range of skills presently limited in supply:

- Broaden youth participation and enhance access to priority sectors beset by stringent barriers to entry.
- Fast track the supply of critical scarce skills through educational programmes.
- Provide quality education and research inputs that align to industry skills demand.
- Focused Aerotropolis skills development programmes focused at targeted groups, youth and SMME. Aerotropolis related learnership and apprenticeship programmes.



AIA Render

INTERVENTIONS:

The AIA should develop partnerships with other Higher Education Institutions, focusing on thought leadership to educate the next generation of Aerotropolis leaders. Interventions to create a knowledge economy are, but not limited to:

- Educational and Research Grants
- Short Courses
- Masterclasses on Aerotropolis Development and Sustainability



PURPOSE:

The population receiving the Aerotropolis is one in dire need of social and economic upliftment. Furthermore, the study area's current population of 550 000 people is set to grow to approximately 1.2 million (assuming medium growth of 2% p.a.) and thus the area's needs are set to grow.

As an example of current need, only 40% of the area's population currently has access to internet which is not in line with smart city standards.

The purpose of the Airport city is thus to improve individual lives through the promotion of social facilities at key locations of convenience, and in so doing, promote transformation and access to opportunity in historically disadvantaged areas.

7. SMART COMMUNITY

7.3 SOCIAL INFRASTRUCTURE

GUIDELINES:

- Ensure spatial equity: Create self sustaining towns with a range of social infrastructure at key nodes according to CSIR's Redbook Standards.
- Ensure spatial efficiency/convenience: Cluster key services within a 5-10 minute walking distance.

INTERVENTIONS:

The table below indicates a quantum of the full range of social facilities that are (ideally) required in the future Aerotropolis region, as per the CSIR Redbook standards. These facilities would need to be spread across the Aerotropolis region in key 'nodal' locations identified in the plan overleaf, in a clustered fashion, based on anticipated local population numbers. This exercise would need further ratification by local authorities, and importantly, in partnership with future developers.

| Design Population | |
|---------------------------|-----------|
| Estimated Households | 364,325 |
| Household Size (Assumed) | 4 |
| KwaDukuza Municipality | 1,457,300 |
| Assumed Design Population | 1,500,000 |

| Type of Facility | Population Threshold | Approximate Minimum Size of Site (sqm) | No. of Facilities Required As Per eThekweni Standards for Social Facilities |
|---|----------------------|--|---|
| Hospital L1 (District) | 450,000 | 35,000 | 3 |
| Sports Stadium (Regional) | 200,000 | 30,000 | 8 |
| Tertiary Training (not University) | 100,000 | 10,000 | 15 |
| Government Offices/Civic Centre | 100,000 | 5,000 | 15 |
| Fire Station (District) | 100,000 | 12,000 | 15 |
| Community Health Centre | 60,000 | 15,000 | 25 |
| Childrens Home | 60,000 | 10,000 | 25 |
| Police Station | 60,000 | 5,000 | 25 |
| Swimming Pool | 60,000 | 1,800 | 25 |
| Cemetery (regional) (medium) | 50,000 | 90,000 | 30 |
| Old Age Home | 50,000 | 15,000 | 30 |
| Local Library | 40,000 | 1,000 | 38 |
| Primary Health Clinic | 30,000 | 5,000 | 50 |
| Community Hall | 30,000 | 5,000 | 50 |
| Secondary School with Shared Sports Field | 12,500 | 30,000 | 120 |
| Primary School with Shared Sports Field | 5,500 | 20,000 | 273 |
| Creche/Early Childhood Centre | 3,000 | 500 | 500 |
| Sports Field | 1,000 | 5,500 | 1,500 |
| Park Space | 1,000 | 5,000 | 1,500 |



PURPOSE:

Promoting human capital and the youth is principally about knowledge support. Currently, over 75% of the receiving population are without matric level education, and over 92% households in Ndwedwe, for example, are dependent on social grants for income.

7.4 HUMAN CAPITAL & THE YOUTH

GUIDELINES:

The tenets of the current Tongaat Hulett Development's Socioeconomic Sustainability and Innovation Programme (SSIP) are key guiding tools for improving human capital and the lives of the youth for the region. The idea here is not so much to follow a 'guideline', but rather to build on the momentum of the SSIP as it provides a good example of investing meaningfully in the region's communities.

INTERVENTIONS:

The Aerotropolis should afford its citizens and future users (including the youth) the opportunity to engage with centres of creativity, technology, agri-business and the like.

The establishment of resource centres and centres of excellence throughout the region is proposed for the youth to access training, mentorship and the ability to actively engage in the 4th Industrial Revolution. A new education node is proposed north east of the airport, between Durban and Ballito at Frasers North.

Throughout the region, free wifi hotspots are proposed at community centres, social facilities (e.g. libraries) and public transport stations, so that locals and users alike can gain access to knowledge ubiquitously. Innovation clusters /creative campuses are also proposed at Mount Moreland South and Compensation East.



Knowledge Support

8

SMART GOVERNANCE

DESIGNING THE DURBAN AEROTROPOLIS





“Governance” means: the process of decision-making and the process by which decisions are implemented (or not implemented). In terms of Provincial and Local Governance, the term “Good Governance” is used when the process results in decisions in the best interest of the broader community being taken and the necessary actions for the implementation of those decisions being taken. Smart government is considered as one key component for a smart city. Smarter government will do more than simply regulate the outputs of economic and societal systems. It interconnects dynamically with citizens, communities, and businesses in real time to spark growth, innovation, and progress.

For the Durban Aerotropolis, it is about collaborative governance between citizens and Local and Provincial Government for sustainable urban development. It aims to optimise public service delivery and administration. Smart Governance solutions enable efficiencies, transparency and engagement between public officials and citizens in two forms:

Top down: officials engage with citizens for consultation and to drive policy implementation.

Bottom up: citizen participation and feedback in governance and service delivery issues.

United efforts create synergy, which allows individual projects to build upon each other for faster progress, resulting in the involved, informed and trained critical mass necessary for transformation of how the entire community carries out its work.

In the Durban Aerotropolis the institutional participation by way of the steering committees (in this case, the existing Work Groups) would mirror smart governance initiatives elsewhere in the world. What is missing and requires some attention to really achieve the smart governance is a process to continuously engage with and bring along the affected communities as part of this DURAMP.



PURPOSE:

Smart governance challenges national, provincial and local authorities to be more transparent in their actions regarding the development of massive programs like the Aerotropolis. They also challenge the authorities to really find ways of engaging with communities to meet the needs of and integrate those communities into the development opportunities presented. As an overall consideration there is the key question of “why is good governance important at all?”. As a response, international best practice has discovered the following key attributes of cities:

- Improved performance (sustainability)
- Higher credit ratings (better access to external finance, results in lower cost of capital)
- Reduced risk of crisis and scandals

Most large airports now anchor an extensive region with multiple aviation-oriented functions. Given that these functions often encompass multiple jurisdictions, planning and co-ordinating Aerotropolis development is frequently intertwined with issues of administrative control.

A successful Aerotropolis requires co-ordinated investments in land use and ground transportation that leverage each other to the economic and environmental benefit of businesses, land owners, local governments, and the broader region.

8. SMART GOVERNANCE 8.1 SOLUTIONS

GUIDELINES:

There are essentially four pillars of governance in traditional governance models, (which for our purposes have been modified to suit the Aerotropolis development considerations) namely:

- **Accountability**
 - Ensure that management is accountable to the Council.
 - Ensure that the Board is accountable to stakeholders.
- **Fairness**
 - Protect stakeholder rights.
 - Treat all stakeholders including minorities equitably.
 - Provide effective redress for violations.
- **Transparency**
 - Ensure timely, accurate disclosure of all material matters including the financial situation, performance, ownership and governance.
- **Independence**
 - Procedures and structures are in place so as to minimise and/or avoid conflicts of interest
 - Independent Councilors and advisors (i.e. free from (the undue) influence of others.

Further considerations that ought to be encompassed and included in any governance discussion would also include the following key themes:

- **Sustainability**, which entails:
 - “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.
 - Recognize stakeholder rights i.e. the rights of interested parties e.g. employees, the community, suppliers, customers etc.
 - Encourage co-operation between the Aerotropolis City and its stakeholders in creating wealth, jobs and economic stability.
- **Business Ethics**
 - Usually found in a code of ethics.
 - Established values and principles a company uses to inform and conduct its activities.
 - Should permeate an organisation’s culture and drive its strategy, business goals, policies and activities.

INTERVENTIONS:

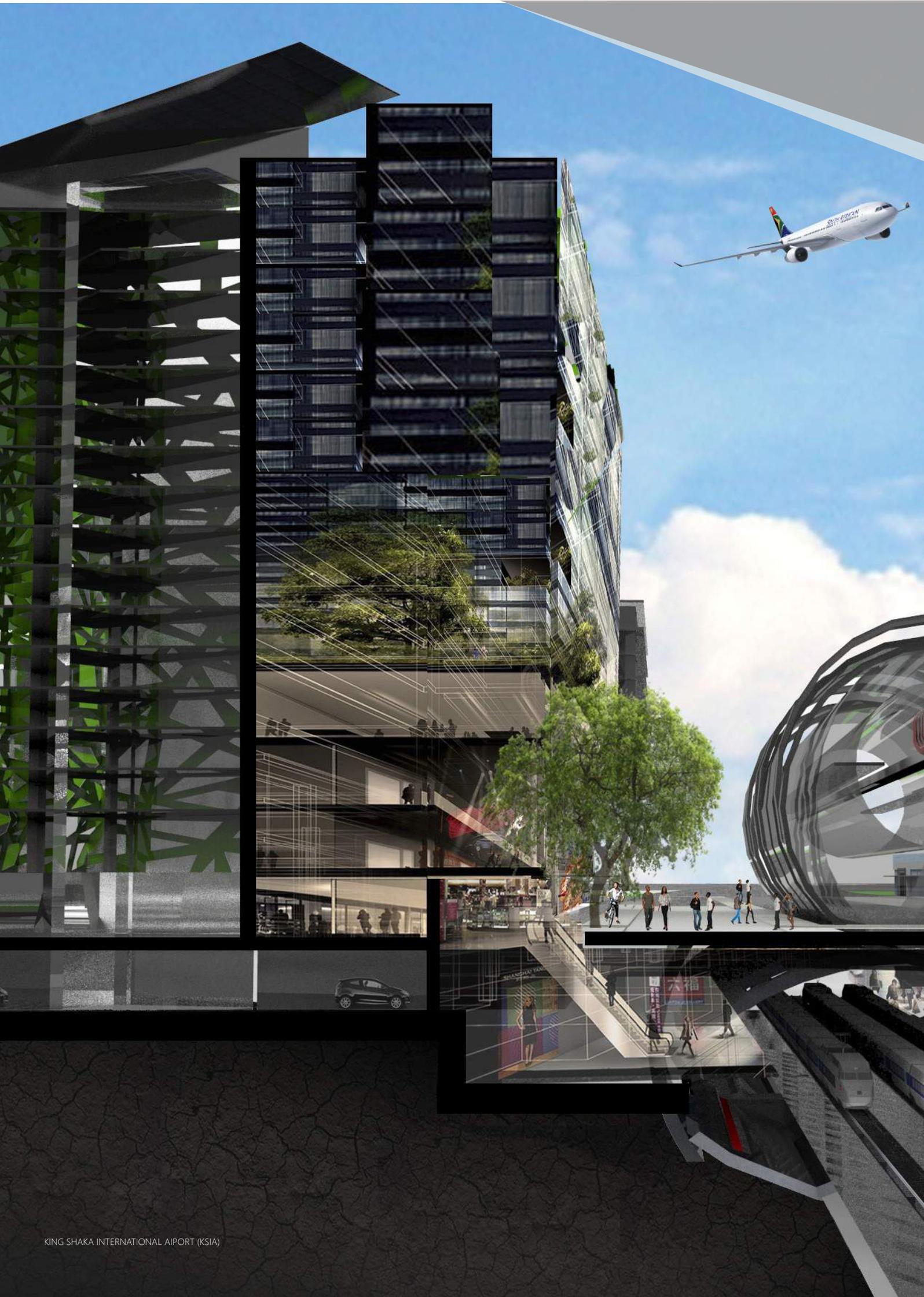
- Identify key planning and operational/delivery elements that require or would benefit from public participation.
- Develop smart city engagement channels through the innovative use of e-Government and social media.
- Ensure city-wide easy access to the internet, possibly including public access points specifically for the Smart Government channels.
- Educate both officials and the public on the concept and use of the Smart Government channels.
- Promote investment activity cooperation between various government departments.
- Establish one-stop shop investment centres to accelerate regulatory and licensing requirements encompassing:
 - Municipal permits
 - Home affairs and immigration requirements for work permits, etc.
 - Company registrations located to expedite this function
 - Registration of vat and other tax requirements
 - *The above could flow from the working groups and could incorporate coordinated infrastructure planning and development to support the commercial and residential developments driving the Aerotropolis*



Public Accessibility



Public Accessibility



IMPLEMENTATION PLAN

BUILDING THE AEROTROPOLIS



The implementation plan for the Durban Aerotropolis comprises both strategic and tactical interventions needed to pivot the Aerotropolis from plan to implementation.

THE IMPLEMENTATION PLAN

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INTRODUCTION

BUILDING THE AEROTROPOLIS

INTRODUCTION

OVERVIEW

The implementation framework for the Durban Aerotropolis, comprises both strategic and tactical interventions needed to pivot the Aerotropolis from plan to implementation. Recognising the large and long-term nature of the masterplan, the implementation framework is crafted to:

- **Generate immediate recognisable benefit** without compromising long term objectives, by creating early opportunities for investment focus.
- **Maximise inclusivity and benefit distribution**, even in the short term.
- **Create clear communication and coordination platforms** among all the stakeholders, government entities and agencies responsible for implementation and statutory development approvals.
- **Ensure longevity and continuous improvement** by embedding the outputs of the Aerotropolis masterplan in statutory planning processes and planning documents.
- **Communicate clearly** the physical manifestation of the Aerotropolis masterplan and the investor opportunity.
- **Identify alternative delivery models** that could help overcome constraints.

Statutory Plan Updates

Statutory plans that inform development definition, prioritisation and government budgeting are to be amended to reflect the cabinet approved Durban Aerotropolis Masterplan.

Governance & Institutional Arrangements

The Dube TradePort is the agency established to drive the implementation of the Durban Aerotropolis Masterplan, with a mandate to coordinate with stakeholders: inter-alia, planning, approvals, budget prioritisation, implementation and investor attraction.

Statutory Plan Updates

Governance & Institutional Arrangements

Lead Initiatives

Lead initiatives – initiatives with a short to medium term focus – initiate the transformation agenda of the Durban Aerotropolis Master Plan and catalyse further development.

Funding & Finance Options and Incentives

The funding plan sets out an outline of various tools and options for the Aerotropolis development. There are a number of different ways by which projects can be funded and incentivised to ensure viability and sustainability:

- Rate Ring Fencing
- Land Value Capture
- Tax Incentives
- Grants and Concessionary Loans
- Government Guarantee
- Municipal Bonds
- User Pay Principle

Lead Initiatives

Funding & Finance Options and Incentives

Delivery Model Options & Procurement

The implementation of the Aerotropolis Masterplan will rely on newer delivery models that are more relevant to prevailing global trends. Suitability of these models are assessed and the procurement principles that apply will be value and innovation centric with localisation, black economic empowerment and youth participation being an integral part of implementation.

Communication & Exhibition

The Dube TradePort as the cabinet mandated Durban Aerotropolis Development Corporation, is a single port of call for investors and other stakeholders that have an interest in the Aerotropolis, providing a clear and engaging experience for investors. A Durban Aerotropolis exhibition and engagement space with physical scale models, multi-media experiences live engagement opportunities has been established at Dube TradePort headquarters (29° South, Dube TradePort) to amplify the understanding of the scale of development and to support the mobilization of investors.

Delivery Model Options & Procurement

Communication & Exhibition

CONSTRAINTS TO IMPLEMENTATION

Multiple Authorities Responsible for Implementation

- EDTEA to enter into MOAs with implementing entities.
- DTPC to assume a facilitation responsibility.
- Authorities maintain their mandate for implementation. However, through agreement, DTPC will assume facilitation responsibility to augment an Authorities' capacity when needed.

Bulk Infrastructure

- Waste Water Treatment Capacity
- Roads to access land parcels
- Public Transport (C9 and C8 corridors)

Agriculture Act 70 of 1970

- National government to review act for amendment.
- eThekweni Municipality and KZN Province to establish a task team to resolve issues with National Government.

Environmental Constraints

- Master Plan undertook a strategic level scan.
- Provincial Government are to initiate a Strategic Environmental Assessment (SEA).
- Noise Impact of the Airport: At present the DURAMP encourages mixed use development, however for the proposed 'High Intensity' land use within the noise contour would not include 'noise sensitive land uses' until a detailed assessment can be undertaken to re-evaluate the noise contour position and to explore potential mitigation strategies to accommodate mixed uses within the 2035 55 db noise contour. The position taken in the development of the 50 year DURAMP framework is to promote a more mixed use development across the DURAMP study area including areas within the 2035 55 db noise contour that aligns to the shared stakeholder vision of a "work, live and play" environment developed at the inception of the DURAMP process. It is anticipated that the DURAMP framework will be evaluated every 5 years. Therefore, based on current trends on rapid innovation in Aircraft design and noise level reductions this position should be reviewed accordingly. With this approach it does not compromise the DURAMP vision but allows for a more strategic and sustainable approach in developing in the noise contour areas.
- TOD Development Spine Alignment: The crossing of the conservation area at Mount Moreland, as indicated on the plan, is subject to a detailed study where the exact delineation of the crossing of Umdloti River at Mount Moreland should be investigated and refined where possible to ensure that the best route is defined from an ecological and urban connectivity points of view. There are current offset agreements that dictate a longer route crossing through possibly a larger sensitive area. The intent is to allow for a more direct route through the broader wetland system and thereby reducing the spatial footprint of the crossing. The current alignment depicted on the DURAMP is based on the original alignment, and it is recommended that this is further investigated as a project emanating from the DURAMP process.

Downside Risks:

Investments

- Lack of investor interest and /or participation.
- Adverse perceptions of Political change.
- Fraud
- Negative impact on existing economic areas where potential stakeholders currently operate from, as well as on smaller enterprises in those areas supported by such stakeholders.
- Perceived as favoring (certain) outside investors versus internal (South African) investors.
- Lack of sufficient passenger to stimulate the required tourism growth.
- Lack of government funding and government guarantee support that may deter investors.

Institutional

- Perception created within grass roots communities of corporate bias and not promoting interests of private, lower income groups.
- Non-cooperation between municipalities.
- Ecological and agricultural damage and/or perception of such damage.
- Land claims, property disputes and forced evictions.
- Lack of institutional capacity to deliver on the implementation requirements.

STATUTORY PLAN UPDATES

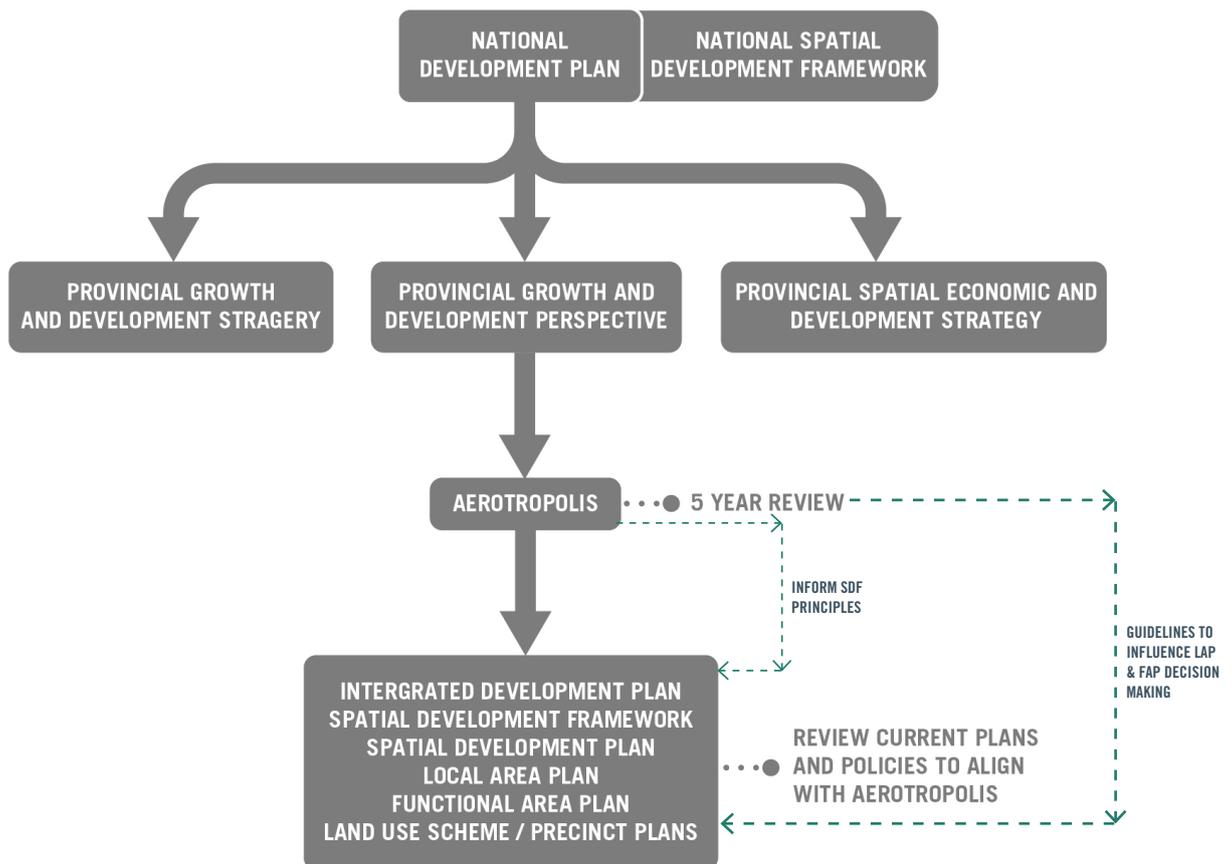
BUILDING THE AEROTROPOLIS

STATUTORY PLAN UPDATES

CURRENT PLANS & POLICIES

The figure below highlights the Aerotropolis planning being considered as an “umbrella” cover/filter over the current planning policies and plans. Whilst the plan is at a high level, the principles and objectives should filter down to local level policy and plans.

Each of the Municipalities directly affected by the Aerotropolis have their respective hierarchy of plans that guide land-use planning and development within their areas of jurisdiction. However, each share commonality in terms of the legal mandate to produce land-use schemes, IDP's and SDF's; plans that are critical in guiding and implementing the Municipalities' development vision. These plans in comparison to the DURAMP are detailed plans more relevant to implementation.



STATUTORY PLAN UPDATES

CURRENT PLANS & POLICIES

The Aerotropolis presents multiple development opportunities for communities within each of the Municipalities. However, these opportunities can only be unlocked and realised through an integrated effort by all three municipalities to review some of their more detailed plans in line with the objectives and principles of the Aerotropolis. This in its own would reflect the first step in the implementation and future realisation of the Aerotropolis. The review of these key plans at a municipal level gives legal status to the principles and provisions of the DURAMP.

The following table provides basic guidance for key plans that need to be reviewed in-line with the objectives and of the DURAMP:

| Municipality | Plan/Framework | Key Consideration |
|------------------------|-------------------------------------|---|
| KwaDukuza Municipality | Integrated Development Plan (IDP) | <p>KwaDukuza IDP vision already reflects some consistency with the Aerotropolis Smart City principles. Part of this is reflected through the vision statement and how it:</p> <ul style="list-style-type: none"> Promotes global competitiveness of the city. Acknowledges the existing ecological infrastructure and need to preserve this as an asset. Outlines the importance and need for smart governance to ensure the effective and efficient implementation of municipal objectives and development implementation. |
| | Spatial Development Framework (SDF) | <p>From a spatial perspective in the review of the SDF, key consideration should can be given to the following:</p> <ul style="list-style-type: none"> Acknowledgement and support of Ballito, Compensation and Fraser key investment nodes the municipality and leverage off based on their identification as Niche Nodes in the Aerotropolis Master Plan. The development or upgrade of East-West linkages within the southern edge of the municipality to better improve the accessibility of the above stated nodes to the communities situated in the west of the municipality. Support of the development of the Public Transit spine running North – South through the Aerotropolis. This will prove advantageous to KwaDukuza by improving access to the airport and other centres within the eThekweni Municipality. Promote the Development of Medium-High density residential, Office, Mixed-use and Industrial logistics opportunities within the Compensation and Fraser area inline with the proposed character of these nodes. |
| | Land-use Scheme | <p>Having reviewed the SDF and some of its land-use proposal with the aim of leveraging from the proposals of the Aerotropolis, the next step would be to revisit and if and where necessary review the land-use scheme in-line with the broad land-use proposals of the reviewed SDF. In doing this the following may be considered:</p> <ul style="list-style-type: none"> The review of current land-use zoning of properties within the Compensation and Fraser Niche node areas to ensure that the zoning is inline with the land-use proposals of the SDF and caters for the developments that will help grow Kwadukuza’s economy by leveraging off the Aerotropolis. Identify key precincts within the Compensation and Fraser areas for the development of more detailed precinct plans that incorporate form based coding principles as a means of attracting developers and creating smaller quality local centres. |

| Municipality | Plan/Framework | Key Consideration |
|------------------------|--|--|
| Ndwedwe Municipality | Spatial Development Framework | <p>As part of its SDF review process, the Ndwedwe Municipality will need to consider the following in-line with the proposals of the Master Plan:</p> <ul style="list-style-type: none"> • Leveraging off the proposed East-West public transport linkages. • Promote the development of High Intensity 2 related uses along this main spine. • Propose the development of Agri-business related and low intensity/resort residential uses within the South-Eastern region of the Municipality inline with the vision and proposals of the Master-plan. • Proposal of lead initiatives strategically located to leverage of the development of the Aerotropolis. • Reinforcing town centre at Ndwedwe and corridor development opportunity along Vincent Dickenson road. • Public transport consideration along Vincent Dickenson. |
| | Land-use Scheme | <p>In reviewing its Zoning Scheme, the Municipality needs to ensure:</p> <ul style="list-style-type: none"> • Existing zoning allows for the realisation of development yields that can support the proposed public transport links and provide adequate residential opportunities. • In cases where the scheme does not accommodate zoning that accommodates desired uses or yields inline with proposals of the Aerotropolis, the Municipality may look into developing new zones or amending scheme guidelines accordingly. |
| eThekweni Municipality | Integrated Development Plan (IDP) | <p>One of the key roles of the IDP is to facilitate and manage development within the Municipality. While the eThekweni Municipal IDP currently makes mention of a potential Aerotropolis, it is proposed that the review of the IDP possibly begins to:</p> <ul style="list-style-type: none"> • Promote the Aerotropolis as a key strategy and place more emphasise on investment within the Niche Nodes identified within the DURAMP; • Identify and prioritise projects within the niche nodes. • As far as possible ensure acknowledgement, support and possible adoption of lead initiatives as possible priority/ future priority projects within the Municipality. • Introduce incentives for any private developments within the Aerotropolis areas that lead to the creation of jobs. |
| | Spatial Development Framework (SDF) | <p>Due to the scale of the Municipality, land use proposals of the Aerotropolis may be considered misleading and possibly repelling to investors. As such in the reviewing the SDF, it may be more appropriate to ensure:</p> <ul style="list-style-type: none"> • The Aerotropolis core is identified as a priority investment node and additional economic centre within the municipality. • Possibly consider the adoption of the Intensity zone approach to framework planning. • Support and emphasis on developing a more connected movement network allows for better linkages between the east and western areas. |
| | Northern Spatial Development Plan (NSDP) | <p>In line with the Municipality's Hierarchy of plans the NSDP begins to provide more detail to broader planning instruments. As such considering that the Aerotropolis study area stretches over a significant amount of land within the Municipality's northern region it is proposed that in the review of the NSDP the following is to be considered;</p> <ul style="list-style-type: none"> • Possible delineation of the Aerotropolis area as a development incentive area that plays an integral role the northern regions role within the Municipality. • Identification of the various Niche Nodes of the Master plan as key sector specific investment nodes within the NSDP. • Propose selected Niche nodes as key areas of which local area plan may possibly developed. |

STATUTORY PLAN UPDATES

CURRENT PLANS & POLICIES

| Municipality | Plan/Framework | Key Consideration |
|--------------|---------------------------------|---|
| | Local Area Plans (LAP) | <p>At an LAP level, after acknowledging some of the Niche Nodes proposed in the Aerotropolis Master Plan as key Local Area, the Municipality can go on to:</p> <ul style="list-style-type: none"> Review current local areas to incorporate the Niche nodes identified in the Master Plan as local areas for more detailed planning (This would require extensive collaboration discussions with developers and land-owners currently investing in the respective areas). Identify possible local level neighbourhood nodes within the various niche nodes/ local areas. Review feasibility of the broad movement network proposals at a more local scale. Ensure alignment of the lower level movement network with broader level proposals of the Master Plan. Review of land use proposals within each local areas/ niche nodes in line with the niche node functions and intensity zone proposals of the master plan. |
| | Functional Area Plans (FAP) | <p>At an FAP level the Municipality will have to zoom into each of the local areas and considering the various project proposals of the SDF and various sector plans would need to:</p> <ul style="list-style-type: none"> Cadastrally assign broad land-uses within each of the local areas in line with the overall vision of the Aerotropolis master plan. Refine and Cadastrally formalise/ make recommendation to the formalisation and adoption of various roads within the proposed movement network. Identify locations for various civic and social facilities (schools, hospitals, church, municipal offices, community halls etc) in line with the projections of the Master plan, SDF and Sector plan priority projects. Propose the development of detailed Urban Design Guidelines for the various identified functional areas. Identify location of public housing projects in line with relevant sector plans and Municipal SDF. <p>(N.B. The assumption at this stage is that if the SDF has been review inline with the principles and aims of the Aerotropolis, the projects of the SDF will be inline with the implementation of the Aerotropolis vision and as a such the development or review of the various lower level implementation plans will also be in-line with the implementation of the Aerotropolis objectives.)</p> |
| | Zoning Schemes & Precinct Plans | <p>Depending on the development momentum within the Northern region, the Municipality will also need to review Land use schemes for the Northern region to ensure that the zoning controls on key parcels allow for the implementation of the proposal of overarching plans. In reviewing the scheme, it will also be key to consider the following:</p> <ul style="list-style-type: none"> Zoning controls on properties that situated within key transit corridors identified as areas of densification. Where relevant, propose land acquisition, consolidation or rezoning of sites for the development of public facilities. Identify key centres of development centres for which detailed precinct plans may be developed with the incorporation of form based coding guidelines and other relevant detailed urban design guidelines. |

CURRENT LEGISLATION

Environmental Legislation

The receiving environment of the Durban Aerotropolis is home to a multitude of natural spaces including coastal forest, grassland, wetlands, estuaries, rivers, and coastline. Together, they form a critical structuring element to future regional planning, but more than that, they provide a series of critical ecosystem services. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure (NEMA 2010).

Legislation such as The National Environmental Management Act of 2010 (NEMA 2010), National Water Act 36 of 1998 (NWA), National Heritage Resources Act 25 of 1999 (NHRA), Subdivision of Agricultural land 70 of 1970, and all other applicable and current legislation are applicable to all development within Aerotropolis. The principles of sustainable development are firmly entrenched in both the Aerotropolis Plan and National policy. Whilst the Aerotropolis plan has considered all environmental and ecological/ biodiversity areas, the plan is at a very high level and any new developments or more localised planning may refine the open space delineated areas through detail design in consultation with the relevant environmental departments and specialist environmentalist consultants. All developments must comply with environmental assessment and authorisation process's.

2035 55DB Noise Contours

One of the major concerns is the noise generated from the aircraft within the study area in particular the 2035 55 dB noise contour which runs linearly in a North-South direction along the study area. According to the eThekweni Health Department's policy and environmental conditions, no residential development must be developed within the 2035 55db noise contour. Whilst this position is acknowledged, there are differing views with regards to the permissible tolerance for residential developments. In many cities, additional guidelines are imposed on the developments such as acoustic isolation procedures for buildings to mitigate against the noise. One such example is in San Diego where "proposed residential uses in the 60-65 dB level area are required to attenuate indoor noise to 45dB or less. Residential development is not allowed where the dwellings would be exposed to noise levels of more than 65dB" (KEARNY MESA Community Plan Update, 2017). The city of Perth is also another example of a city that discourages residential development within close proximity to airports however, the city does make an exception by proposing guidance to the level of attenuation that would need to be attained should residential development be approved within the airport zone (Western Australian Planning Commission, 2004). Furthermore, recent developments in modern aircraft designs have seen a huge reduction of approximately 40% to 50% (Airbus 2017) noise reduction.

The position taken in the development of the 50 year DURAMP framework is to promote a more mixed use development within the 2035 55 noise contour that aligns to the vision of a "work, live and play" environment. It is anticipated that the DURAMP framework will be evaluated every 5 year. Therefore, based on current trends on rapid innovation in Aircraft design and noise level reductions this position can be reviewed accordingly. With this approach it does not compromise the DURAMP vision but allows for a more strategic and sustainable approach in developing under the noise contour areas.

Transport/Infrastructure Legislation

The DURAMP details new development spanning three different municipalities, namely; eThekweni Municipality, Ndwedwe Municipality, and KwaDukuza Municipality. The scale of the combined developments impacts each of these municipalities considerably and resulting requirements from a transportation and infrastructure perspective require that their existing plans and policies setting out future infrastructure plans need to be updated to account for the Durban Aerotropolis.

From a transportation point of view, the Aerotropolis is envisioned to be served primarily by public transport to meet the sustainability and density requirements to achieve economic growth targets. A secondary movement network catering to private transport will also need to be incorporated into master plans for each municipality. The Comprehensive Integrated Transport Plans (CITP) for eThekweni Municipality, Ndwedwe Municipality, and KwaDukuza Municipality will need to be updated factoring in the latest Durban Aerotropolis Master Planning outcomes.

Urban Utility demands such as Water, Waste Water, Electricity and Solid Waste from the Durban Aerotropolis will need to be accounted for in current master planning for each utility while also implementing smart technologies and policies that will enforce a change in the status quo to allow such cleaner smarter technologies to become mainstream. The Master Plans for Water, Waste Water, Electricity, and Solid Waste will need to be updated considering the new developments within the Durban Aerotropolis region.

The overarching Integrated Development Plans (IDP) for each municipality, considering the updated CITP and Master Plans must be updated to ensure effective implementation in a timely and cost effective manner.

FUNDING, FINANCE OPTIONS & INCENTIVES

BUILDING THE AEROTROPOLIS

FUNDING, FINANCE OPTIONS & INCENTIVES

KEY ELEMENTS OF A SUCCESSFUL FUNDING PLAN

Introduction

As the Aerotropolis development evolves, the need to compete for investment capital increases. Aerotropolis type development planning is long term in nature. A concerted and coordinated planning effort is required to ensure that development strategies are cohesive and consistent. As such, any outline funding plan needs to have elements that will make it:

- Adaptable to changing conditions.
- Relevant and current even as the environment shifts at a fast pace.
- Affordable and sustainable.
- Able to attract independent private sector investment to augment initiatives by the public sector development agencies.

It is imperative for Dube TradePort and all stakeholders to work together to develop and execute the DURAMP. Action plans that emanate from and in support of an overarching vision are key to ensure the successful establishment of the Durban Aerotropolis as a major economic region, not only in the KZN Province, but in Southern Africa.

Key elements need to be established to be an attractive destination for local and international investors. Government, as the likely major funder, must be clear of the social and economic benefits that will ensue from its leadership in the Durban Aerotropolis development. For a successful funding plan, it is imperative to have firm commitment of funding by the national, provincial and local government authorities with respect to:

- Infrastructure developments for the Durban Aerotropolis.
- Operational funding for the appointed implementation agent.
- Grant and guarantee support requirements for projects initiated by the private sector in the Aerotropolis region.

Lead Initiatives

As part of the DURAMP process, certain lead initiatives have been identified:

- Bulk Infrastructure
- Aerotropolis Institute Africa (AIA)
- Central Transit Orientated Development Spine
- Secure and Bonded Industrial Platform and Linkage
- Inclusive Agricultural Programme
- Integrated Human Settlement Programme
- Regional Waste Water Treatment Works
- Small Business Connector
- Aviation Maintenance Repair and Operations
- Eco-Tourism Hub (Conference, Convention and Hotel)
- Alternative Energy Cluster
- Open WIFI Programme
- Techno Hubs

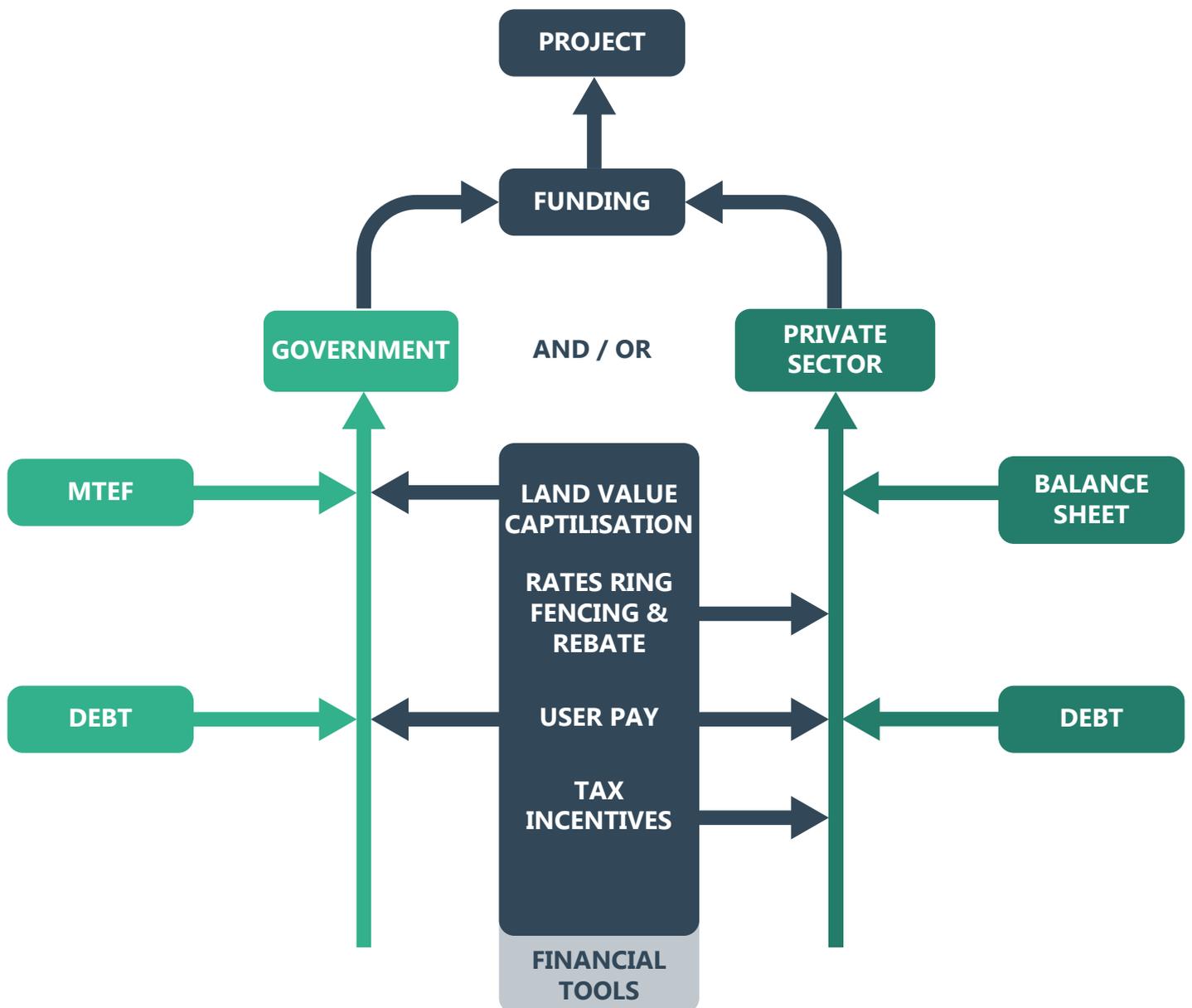
To progress some or all of these projects, it will be imperative that the funding framework outlined herein be investigated and areas where projects could be accelerated through private sector participation be identified and prioritised. Simultaneously, government can also identify which of these initiatives would work best with their leadership, funding and support.

FUNDING, FINANCE OPTIONS & INCENTIVES

FUNDING PLAN OUTLINE

This section deals with specific funding plan principles for the Durban Aerotropolis projects. Refer to Annexure B for a summary of different funding models that could be applied in the DURAMP implementation process.

The funding model principles have been split between public sector-led and private sector-led projects, as the two have different dynamics and dependencies.



Government-led Projects

The funding plan for public sector-led projects requires the following:

- Establishment of an investment committee (with representation by all key stakeholders) to review key projects.
- Identification of key projects.
- Development of concept notes by investment team.
- Review of projects for fit with overall master plan.
- Approval of projects for further investigation.
- Development of feasibility studies:
 - Highlight key investment criteria that will lead to approval:
 - Acceptable rates of return as defined by IRR, NPV, ROI, EIRR etc.
 - Development impact on the region by way of job creation potential for example.
 - Availability of affordable funding with no or limited recourse to government guarantees.
 - Appointment of technical, legal and financial professionals to assist with development of feasibility studies where appropriate review of completed feasibility studies by investment committee.
- Development of information memorandum for approved investments.
- Identification of potential funding sources:
 - Process for engagement of investment banking, financial and legal transaction advisors to assist with funding processes where appropriate.
- Conducting roadshows.
- Financial close processes.
- Commencement of construction for projects.
- Post-monitoring and evaluation processes.

Private Sector-led Projects

For projects that are and will be led by the private sector, the implementing agent shall act as an enabler. Their specific responsibility is to provide direction in terms of the projects' "fit" with the Aerotropolis Vision, as well as manage the roll out planning for those projects that are approved. This will ensure the development occurs in an efficient manner and at a pace that the Local Authorities can manage. The following is the proposed Funding Plan Prioritisation Methodology for the Private Sector.

- Determinants of methodology:
 - Private sector involvement required to develop and finance projects.
 - Project owners (public and private) may not be willing to divulge information outside a contained formal process.
 - Mechanism required to identify projects and zones where there would be a linkage to the Aerotropolis.
 - Institutional capacity required to motivate for developmental zones that may not be "popular" but where there are significant socio-economic benefits from focused economic activity.
- Propose an open EOI process:
 - Identify potential zones that have a natural affinity for and link with the Aerotropolis e.g. tourist areas.
 - Identify areas for specific economic development impact.
 - Highlight areas where there is infrastructure that could be leveraged to create concentric circle and ripple effects that can assist with wider economic spread.
 - Make it a part of the wider launch and marketing of the Aerotropolis.
 - Provide summary of the Aerotropolis Vision and broad Masterplan.

- Highlight selected clusters and potential satellite zones:
 - Suggest potential high impact zones that can be supported for accelerated development with IDZ incentive packages.
 - Develop packages and mechanisms to incentivise contribution by private sector to assist with infrastructure build for road access, electricity, water and sanitation.
- Invite interested participants (developers, investors, etc.) to participate in influencing the direction of development.
- Develop questionnaire response form to obtain the necessary information (keep it simple).
- Advertise openly as well as targeting selected parties directly to ensure widest response possible.
- Finalization of process:
 - Clarification engagements on requirements and submission received.
 - Screening of projects regarding relevance and fit with the Aerotropolis Vision.
 - Develop a scoring matrix with key elements that determine project priority e.g. economic stimulus impact of the project, job creation, etc.
 - Prioritise key projects based on developed criteria.
 - Indicate timing of projects to successful bidders.
 - Assist with permits and approvals as appropriate.
 - Assist with land access as appropriate.
 - Negotiate land sales where land owned by municipalities or the implementation agency.
 - Facilitate access to any applicable fiscal incentives.

FUNDING, FINANCE OPTIONS & INCENTIVES

FINANCIAL TOOLS & INCENTIVES

The table below captures financial tools and the party responsible for driving each strategy. Financial tools allow projects to generate revenue to ensure viability and sustainability. These tools attract and incentivise investors and developers to the Aerotropolis:

| Financial Tool | Description | Responsible Party |
|---|--|--|
| Tax Incentives | Various types of incentives: <ul style="list-style-type: none"> • Property Tax Abatements • Sales & Use Tax Credits • Jobs Tax Credits • Tax Increment Financing | National Government through SARS |
| Grants and Concessionary Loans | Grants and low interest loans can be used to support outcomes such as SME development, job creation and on-the-job training. | National Government through the DTI, the Jobs Fund |
| Government Guarantee | Issue Treasury Guarantees for projects of strategic importance. | National Treasury with support from Provincial Treasury as appropriate |
| Municipal Bonds | A bond used to cover various Aerotropolis related projects. | Local Government |
| User Pay Principle | For revenue generating projects such as water and road infrastructure projects. | Developer |
| Land Value Capture (LVC) & Transit Orientated Development (TOD) | Amass lands within the corridors of transit development. | National Government |
| Rates Ring-Fencing | Bonds raised by ring-fenced incremental Property Rates from an area earmarked for development (the capital raised would be used to develop infrastructure in the designated area). | Local Government |

Tax Incentives

The DTP IDZ provides an opportunity for the DURAMP implementation team to develop tax incentive packages that could stimulate development in the Durban Aerotropolis region. These incentive packages could include the following:

- Lower taxation rates for company, personal and capital gains components
- Exemptions from customs duties and VAT elements
- Tax holidays for infrastructure developments
- Rates holidays on property developments
- Simpler tax code with a single and low rate of taxation that makes compliance easier and more straightforward

Grants and Loans

The following grants and loans are available from the Department of Trade and Industry (South Africa) and can be used to enhance viability of some Aerotropolis related projects:

- Critical Infrastructure Programme (CIP) – this grant funding aims to leverage investment by supporting infrastructure that is deemed to be critical, thus lowering the cost of doing business.
- Capital Projects Feasibility Programme (CPFP) – a cost-sharing grant that contributes to the cost of feasibility studies likely to lead to projects that will increase local exports and stimulate the market for South African capital goods and services.
- Aquaculture Development and Enhancement Programme (ADEP) – an incentive programme available to South African registered entities engaged in primary, secondary and ancillary aquaculture activities

in both marine and freshwater. The grant is provided directly to approved applicants for new, upgrading or expansion projects.

- The Manufacturing Competitiveness Enhancement Programme (MCEP) – grant or loans with preferential rates depending on the nature of the project.
- Sector Specific Assistance Scheme (SSAS) – a reimbursable cost-sharing incentive scheme whereby financial support is granted to organisations supporting the development of industry sectors and those contributing to the growth of South African exports.
- Black Business Supplier Development Programme (BBSDP) – a cost-sharing grant offered to small black-owned enterprises to assist them to improve their competitiveness and sustainability.
- Isivande Women's Fund (IWF) – an exclusive fund that aims to accelerate women's economic empowerment by providing more affordable, usable and responsive finance than is currently available.

More detail on each of the above facilities is available in Annexure X.

Government Guarantee

The overall government stance is to minimize the use of government guarantees and can therefore not be relied on as a major source of shoring up funding requirements. In addition the recent downgrades which have reduced government debt to junk status also make the area of government borrowing and indeed government guarantees one fraught with challenges and difficulties. Therefore the majority of funding consideration for the DURAMP implementation team will need to exclude considerations of government guarantees.

Municipal Bonds

Municipal bonds are a critical component for investment in municipal infrastructure. Long term funding provided by instruments such as municipal bonds is an important prerequisite for creating an environment conducive to faster, more inclusive economic growth and a reduction in poverty. In South Africa, due to the high number of indigent people municipalities are often constrained in terms of the levels of revenue that are available to fund infrastructure development. Consequently the high demand for infrastructure that continues to increase in response to population growth and urbanisation trends, and existing asset management requirements, needs to be met with creative funding mechanisms, including as a component municipal bonds.

In accordance with reports from the Department of National Treasury (2016) "These include the need to provide new infrastructure in areas experiencing population and economic growth, and to refurbish and replace ageing infrastructure. Historically poor maintenance of infrastructure magnifies these investment requirements. Municipalities have access to a variety of revenue sources and financing instruments to address these needs".

Funding of infrastructure cannot be achieved without long-term borrowing and indeed municipal bonds are in functioning and developed economies a key component of providing that funding. Indeed municipal bonds when appropriate are one of the most relevant and convenient mechanisms for funding infrastructure development.

South Africa's well developed financial sector provides a robust platform for financially strong municipalities to access long-term debt funding in the local and international markets at attractive funding rates. This is a mechanism that can be applied by the municipalities in the Aerotropolis region to access funding for specific projects, especially where there is revenue support on a user pays principle or supported by credible off-take agreements.

User Pay Principle

With burgeoning populations, governments have been forced to seek more creative mechanisms for funding infrastructure development to augment the support already provided from tax revenues. In many instances, governments are facing shrinking tax revenue bases and hence new mechanisms are required. The user pay principle, where infrastructure is developed and consumers pay for the usage thereof, have become more visible in recent times. Power and public transport (e.g. rail) are examples where the user pay principle can work well.

In South Africa, there has been some resistance to the user pay principle with respect to tolling. However, the concept of the user pay principle remains a firm government policy. With the appropriate consultation and education it will no doubt evolve in a critical component of the funding framework that is available to government. Internationally, the argument is that "The user-pay principle is also often a much fairer system, because only those who choose to enjoy the benefits of the infrastructure e.g. a toll road, pay for it, while those who do not, make no contribution. The model makes it possible to mobilise substantial capital resources upfront, usually through debt or public private partnership (PPP) arrangements" (SANRAL 2014).

Clearly judicious use of the user pays principle is appropriate in many instances. The challenge for South Africa is to find mechanisms for

engaging with and informing the paying public of the overall benefits, and to obtain support for use of the user pays principle, when appropriate to develop needed infrastructure utilising private sector funding.

Land Value Capture (LVC) and Transit Orientated Development (TOD)

Amass lands within the corridors of transit development

In the planning and development phases of transit programs, and preferably prior to public announcement, Governments should amass lands within the corridors in which they are planning to build transit. As there is significant value uplift of land in the presence of transit, Governments have the opportunity to sell of parcels, either as part of the procurement or after delivery of infrastructure, to help subsidize transit cost.

Controlling lands in close proximity to transit also gives Government the ability to influence land uses and community building within the vicinity of transit. This form of land-use planning makes the area more attractive to families, employers and visitors and often creates the foundation for sustainable city building, and encourages community focused, mixed-use developments of high public value around transportation.

Consider using voluntary and involuntary taxes and contribution payments subsidize transit construction costs

Government should consider imposing taxes on private developers who seek to benefit from the uplift created through transit investment through taxation. There are two ways in which this can be done.

- Voluntary: Density bonuses which are zoning exemptions which allow Government to participate in the incremental proceeds derived from additional density allowances in areas surrounding transit. This could take the form of a onetime fee, a fee per additional unit of buildable density, or a percentage of total additional proceeds. The ideal payment mechanism can be negotiated based on the development conditions at the time.
- Involuntary: Special area taxes which are allocated to new developments within the vicinity of transportation infrastructure.

Conduct market soundings

Ultimately, all LVC opportunities hinge on market demand for commercial, residential and retail development within the area that any transportation program is to be deployed. Governments must be diligent to test this demand through market soundings in advance of any acquisition of land, investment of capital, and finalization of transportation routes. In the context of transportation infrastructure projects, firms would include representatives from, but not limited to, the following disciplines:

- Infrastructure Construction and Operations;
- Urban Planning;
- Economic Development;
- Property Development; and
- Transportation Design

FUNDING, FINANCE OPTIONS & INCENTIVES

FINANCIAL TOOLS & INCENTIVES

Rates Ring-fencing

Ring-fencing refers to the practice of dedicating specific funds to a specific purpose, thereby separating them from other funds that are meant for general use. As a tool for financing infrastructure, rates ring-fencing is when a municipality sets aside the property rates and taxes earned or to be earned from a specific area for the purposes of developing and/or servicing that area only. Therefore, these funds would not flow into the general revenue pool, but are specifically pledged for use in the area from which they are derived. Future anticipated incremental rates and taxes that have been ring-fenced can be securitised to provide capital up-front for infrastructure development, normally in the form of a municipal bond issue. This type of financing is also known as Tax Increment Financing (TIF). This form of financing, though not yet widely used in South Africa, has the potential to unlock significant capital for infrastructure development by Municipalities with competing infrastructure priorities in other areas straining their existing capital budgets. It requires close cooperation between Local Government, Private Sector Developers and National Government, particularly National Treasury. While existing laws and regulations do not make such structures entirely unworkable, some aspects of TIF structures are not adequately catered for by the MFMA and other local Government regulations. Therefore, interactions with National Treasury will be necessary as these instruments are developed (McGaffin et al 2016).

This form of funding infrastructure could prove invaluable for the Durban Aerotropolis due to the fiscal constraints currently faced by the national and provincial government departments. It could prove to be a spur for the development needed to encourage further private sector participation.

As such, rates ring-fencing enables municipalities to unlock development potential in specifically identified high priority areas. The ring-fenced rates revenues create opportunities to leverage external financing as there is predictable and secure revenue that can be applied towards those funding mechanisms.

Conclusion

All projects have unique features and characteristics that will demand different funding solutions. The funding plan outline proposed herein provides guidelines for the implementation team to utilize to develop detailed funding plans in due course.

The final plans will need to take cognizance of available funding sources, prevailing government policy, as well as market conditions at the time. They will also need the funding strength of the implementation agency and any support by way of guarantees provided by the local, provincial and national government authorities. It is imperative that where appropriate the implementation team consider appointing experienced financial advisors to assist with the funding process.

GOVERNANCE & INSTITUTIONAL FRAMEWORK

BUILDING THE AEROTROPOLIS

GOVERNANCE & INSTITUTIONAL FRAMEWORK

OPTIONS ANALYSIS

Following our document review and findings (refer to Annexure B5) , a number of institutional structure options emerged. These are as follows:

- Independent Municipality to be formed covering the identified area;
- Establishment of a new SPV to implement the DURAMP;
- DTPC to facilitate implementation, management and oversight; and
- A Hybrid solution.

The first option is a new option being introduced, and was not included in the 2014 opinion report by Pegasys and Webber Wentzel. The next two are further discussed. Given our findings, the Hybrid solution presented differs from that which was previously proposed.

| Option | Description | Pros | Cons |
|-----------------------------|--|--|---|
| Independent Municipality | This option entails the geographical definition of the Aerotropolis area and its demarcation into an independent Municipality. Whilst the establishment of a separate Municipality incorporating the area of the Aerotropolis may have some advantages in a form of independence or autonomy, there are various obstacles that would deem this solution as unsuitable. | Avoid the prospect of disputes between Municipalities or projects being delayed due to differing priorities within Municipalities. | The Demarcations Board advised that the question of new Municipalities or the applications therefor are not being entertained until at least the year 2021. |
| | | An independent municipality would have the mandate of fast tracking development within the Aerotropolis region as its core focus and this could lead to accelerated development. | Furthermore, the process of applying for and succeeding in obtaining a new Municipality is both difficult and often unsuccessful. |
| | | | It is likely an endeavour such as this would also result in objections and challenges from the Municipalities in which the area is presently located by reason of potential and prejudicial losses that would be suffered by those Municipalities especially in the form of reduction in income. |
| | | | Finally, were a separate Municipality to be established, that would require the implementation of an entire Municipal infrastructure with all the services to be provided. This would not only be a costly and lengthy process, but would also no doubt potentially hamper and delay the implementation of the master plan. |
| New Special Purpose Vehicle | A new SPV is established specifically to carry out the implementation of the DURAMP and take care of management and oversight of the Aerotropolis development. This would likely be a subsidiary of DTPC. | Separate entity with a clear focus and ring-fenced budget. | Any special purpose vehicle would have to be under the supervision of DTPC and therefore we see no rationale or advantage in having it as a separate legal entity when in fact DTPC's own infrastructure could be expanded to provide the necessary services and fulfil the necessary duties incumbent upon it in terms of the Act. |
| | | | Cost of establishing a new separate entity could be prohibitive given constrained financial resource availability. |
| | | | Delays in funding the structure optimally would delay the implementation of the Aerotropolis development zone. |

| Option | Description | Pros | Cons |
|---|--|---|--|
| DTPC to Facilitate Implementation, Management & Oversight | In terms of this solution, whilst the DTPC may have to increase and/or supplement its infrastructure and employee base, this appears to be the most viable and optimal solution. | It is DTPC that has been mandated in terms of the Act to attend to such implementation, management and oversight. | In its current form, DTPC does not have the capacity nor the financial resources to see to the full implementation of the DURAMP. |
| | | The legislation referred to above may be restrictive in allowing for other parties to attend to the duties in question as the function is already delegated and mandated to the DTPC. | Both this option and other options would require an increase in resources and staff. |
| | | Even were a third party entitled to do so, the functions and responsibility and role would be subject to the control of the DTPC in terms of current legislation. | |
| | | DTPC is already entitled to attend thereto in the instance of its own organisation in terms of the Act, whereas in order to do so, an independent body may require further legislation and/or enactments. | |
| | | There is precedent (for example, the National Parks) where this solution works successfully. | |
| A Hybrid Arrangement | This is the system that was recommended in the previous opinion obtained by DTPC in this regard. In terms of that opinion, the hybrid system would see a separate body being formed that would in fact oversee the operations of the DTPC. | A hybrid system would be fairer to all stakeholders in that, inter alia, it would prevent the DTPC from putting the interests of its own organisation first. | <p>There is a risk that any other stakeholders that would form part of the hybrid arrangement would in fact only be attempting to further their own goals and requirements and therefore detract from the aims of the Act. This would perhaps be more so in the case of private sector developers being part of the hybrid arrangement in a formal way.</p> <p>There is an existing precedent successfully implemented by other Schedule 3 companies for the resolution of any disputes between the stakeholders in alternative structures, which favours DTPC as the implementation agent.</p> <p>The hybrid solutions suggested in the previous opinion obtained by the DTPC would still require the DTPC to attend to the implementation of the master plan, which would result in duplication of activities and possible conflict between the structures.</p> <p>Cost of establishing a new separate entity could be prohibitive given constrained financial resource availability.</p> <p>Delays in funding the structure optimally would delay the implementation in the Aerotropolis development zone.</p> <p>There is already a consultative framework in place in the form of the various workgroups. While these structures have not been established by statute, given their relative success thus far, we do not see the addition of a parallel structure as adding value.</p> |

GOVERNANCE & INSTITUTIONAL FRAMEWORK

ROLES & RESPONSIBILITIES MATRIX

The following matrix identifies actions required to fulfil responsibilities per institution.

| INSTITUTION | ROLE | RESPONSIBILITIES | ACTIONS REQUIRED TO FULFIL RESPONSIBILITIES |
|---|----------------------------------|--|---|
| Department of Economic Development, Tourism and Environmental Affairs | Sponsor Department | <ul style="list-style-type: none"> Assistance with legislative framework Strategic direction and support for the implementing agent Lead coordination with other government organs Dispute resolution between municipalities | <ul style="list-style-type: none"> Appointment of oversight liaison personnel to monitor the project and ensure any referral from DTPC is tasked to the correct parties and ensure expedience Suggest the appointment of two people This could be parties who have other roles who take on this additional task. The idea of two is to have institutional memory and back up in the event that one person fails to attend |
| National & Provincial Treasury | Funding Support | <ul style="list-style-type: none"> Provide seed funding to assist with projects Provide guidance and support on allowable tax incentives Expedite release of budget funding required for infrastructure projects (through COGTA structures as appropriate) | <ul style="list-style-type: none"> Draw up pre-formulated framework, requirements and conditions for any funding support mechanisms Provide clear guidance and support re-accessing applicable incentives through direct contacts with relevant people in the department Appointment of oversight liaison to ensure any referral from DTPC is tasked to the correct parties and ensure expedience Ditto other comments re-back up |
| Department of Trade & Industry (National & Provincial) | Trade Investment Support | <ul style="list-style-type: none"> Regulatory oversight of IDZ status Guidance and support on trade promotion incentive packages Assist with government liaison Assist with expediting regulatory approvals in support of increased trade investment in the Durban Aerotropolis area | <ul style="list-style-type: none"> Implement trade promotion incentive initiatives Implement positive promotion of the project amongst the wider community and potential opposition bodies Appoint or identify direct liaison personnel to ensure any referral from DTPC is tasked to the correct parties and ensure expedient execution |
| Various Provincial Government Departments | Cooperation & Dispute Resolution | <ul style="list-style-type: none"> Coordinate joint multi-municipality projects where the portfolio of such Department is of relevance Dispute resolution between various municipalities where the portfolio of such Department is of relevance | <ul style="list-style-type: none"> Appoint or identify coordinator for multi-municipality projects. This could be an existing person/ (people) who get(s) expanded role(s) Create framework and procedures for efficient dispute resolution |

| INSTITUTION | ROLE | RESPONSIBILITIES | ACTIONS REQUIRED TO FULFIL RESPONSIBILITIES |
|----------------------------|--|---|--|
| Municipalities | Create Enabling Environment for Investment | <ul style="list-style-type: none"> • Expedite zoning approvals • Assist investment acceleration by providing incentives such as rates holidays • Stimulate development by co-operating in the planning and implementing necessary infrastructure developments and upgrades (particularly where such infrastructure may cross municipal boundaries) | <ul style="list-style-type: none"> • Conduct early investigations of all possibilities and risk assessment of potential land claims. • Identify provincial and national budgets to assist with land claim compensation as applicable • Appoint inter-municipality liaison team for joint cooperation • Ensure sufficient human and technical resources to implement infrastructure developments and upgrades. This may require additional appointments in the municipalities. • Identify project managers at DTP to drive implementation with the relevant municipalities |
| Private Parties | Sponsor Project Initiatives in the Aerotropolis Region | <ul style="list-style-type: none"> • Undertake surveys to identify potential projects for investment • Package and initiate project development • Make land available for development at mutually beneficial prices • Identify funding sources for the projects | <p>Conduct appropriate due diligence on private parties to ensure that they have:</p> <ul style="list-style-type: none"> • Technical capacity to implement projects • Funding capacity to fulfil obligations as appropriate • Their willingness and ability to meet socio-economic and BBBEE requirements |
| Dube TradePort Corporation | Facilitation Agency | <ul style="list-style-type: none"> • Undertake surveys to identify potential projects for investment • Package and initiate project development • Make land available for development at mutually beneficial prices • Identify funding sources for the projects | <ul style="list-style-type: none"> • Gear up for all phases of the project by employment of necessary human resources and planning all internal infrastructure upgrades <p>Areas that would need attention and additional personnel would include:</p> <ul style="list-style-type: none"> • Technical project management personnel • Personnel to fulfil liaison with municipal, provincial and national government structures • Project development and funding requirements • Legal |

BUSINESS PLANS

BUILDING THE AEROTROPOLIS

BUSINESS PLANS

OBJECTIVES, NEEDS & GOALS

Purpose

All stakeholders need to develop a business plan that will provide an adaptable framework, allowing them to meaningfully contribute to the implementation of the Aerotropolis Master Plan. Having reviewed the various institutional role players that will be necessary for the successful implementation of the Aerotropolis Master Plan, for most of the institutions, their responsibilities lie within the realms of their current mandated activities and they are appropriately staffed and resourced. As part of the rollout process, certain key role players will need to review their capacity and capability to enable the project roll out namely, inter alia:

The Municipalities

The rapid acceleration of infrastructure development may require some of the affected municipalities to bulk up their implementation teams. This does not mean a shift in their business plans per se, but rather a possible increase in personnel. Such personnel increases would have budgetary implications which each municipality would have to determine independently. Also, to the extent that rate-ringfencing (land value capture) instruments (e.g. TIF Bonds) are to be utilised, there may be a need to bring that capability in-house, as these instruments tend to be complex in nature.

DTPC

A project management unit will need to be set up to manage the roll out of the Aerotropolis. This is to ensure a dedicated and focused approach, as the current staff at DTPC may not have the capacity to take on the additional significant responsibilities that come with fulfilment of the statutory mandate to drive the implementation of the Aerotropolis.

Objectives

Business planning is important for two main reasons – internal planning and motivation for funding.

Internal Planning

Going through the business planning process enables an organisation to analyse its vision, goals and objectives and formulate a dynamic plan to meet these objectives. The business plan is intended to identify the organisational needs of each stakeholder to enable them to meaningfully contribute to the implementation of the Aerotropolis Master Plan. Each organisation would need to clearly identify its role in the implementation process, develop an operational plan linked to its deliverables, then identify staffing and skill needs, systems and tools requirements, procedures and authority delegations, communication protocols, etc. The operational plan will determine the budget requirements for each stakeholder.

Motivation for Funding

As part of the business plan development, each organisation playing a part in the implementation of the Aerotropolis Master Plan will identify capital and/or operating expenditure needs. The financing of these needs will have to be sourced and motivated for either from public or private sources. It is important for any potential funder to satisfy themselves that the organisation seeking funding has demonstrated that there is a clear plan on how the funding will be utilised to achieve the desired objectives and there is a realistic forecast as to how debt would be serviced and returns earned by the funders. A comprehensive risk analysis and risk mitigation plan are essential as part of the funding motivation.

Ultimately, good business plans ensure the efficient deployment of resources to ensure successful outcomes for all stakeholders.

DTPC Facilitation Needs

DTPC, with the mandate to facilitate the implementation of the Durban Aerotropolis Master Plan, will require adequate resourcing over time to enable it to carry out its functions, which will include:

- Creating awareness of the Aerotropolis and its roll out plan;
- Attracting developers and investors to the region;
- Facilitating land negotiations;
- Facilitating investor access to Government incentives, e.g. from the DTI;
- Influencing the direction of development within the Aerotropolis region;
- Assisting the municipalities in terms of strategies to enable roll out of key infrastructure;
- Stakeholder engagement and coordination; and
- General project management throughout the implementation period.

DELIVERY MODEL OPTIONS & PROCUREMENT

BUILDING THE AEROTROPOLIS

DELIVERY MODEL OPTIONS & PROCUREMENT IMPLEMENTATION MODELS

The implementation of the Aerotropolis master plan will rely on newer delivery models that are more relevant to prevailing global trends. The suitability of these models also varies from project to project. The following implementation models considered include, inter-alia:

| Options | | Design | Finance | Build | Operate | Train | Transfer |
|-------------|--------|--------|---------|-------|---------|-------|----------|
| TRADITIONAL | D | ● | | | | | |
| | F | | ● | | | | |
| | C | | | ● | | | |
| | O | | | | ● | | |
| | T | | | | | ● | |
| NEW | DBF | ● | ● | ● | | | |
| | DC | ● | | ● | | | |
| | DFBO | ● | ● | ● | ● | | |
| | DBO | ● | | ● | ● | | |
| | DFBOTT | ● | ● | ● | ● | ● | ● |
| | DBOTT | ● | | ● | ● | ● | ● |

The procurement principles that apply to the above implementation models will be value and innovation centric with localisation, black economic empowerment and youth participation being an integral part of the way the DURAMP is implemented.

LEAD INITIATIVES

BUILDING THE AEROTROPOLIS

The following lead initiatives are intended to support the transformation agenda of the Durban Aerotropolis Master Plan by creating short to medium term focus that can catalyze further development.

- Bulk Infrastructure
- Aerotropolis Institute Africa (AIA)
- Public Transit Development Spine
- Investigate & Consider a New Town Centre at Compensation
- Inclusive Agricultural Programme
- Integrated Human Settlement Programme
- Regional Waste Water Treatment Works
- Small Business Connector
- Aviation Maintenance Repair & Operations
- Eco-Tourism Hubs
- Alternative Energy Cluster
- Open Wifi Programme
- Techno-Hubs

LEAD INITIATIVES

BULK INFRASTRUCTURE

APPROX. VALUE
ZAR 160BN

IMPLEMENTATION START DATE
2018



PHASE 1 PRIORITY BULK INITIATIVES

Waste Water Treatment Capacity
Road Infrastructure (Dube East, Dube West)
Public Transport (C8 & C9 Corridors)

WATER STRATEGIES

By driving changes in consumption habits and adoption of smart technologies, the ultimate demand is anticipated at 198MI/day.

Sources: 30% Dam & River Extraction 30% Recycled | 20% Desalination 10% Rainwater harvesting | 10% Other

ELECTRICITY STRATEGIES

The changes in water consumption will have follow-on impacts for waste water treatment where an ultimate volume of 195MI/day is projected.

Approximately 80% of this will be recycled locally and 20% regionally treated for discharge into dams and rivers.

TRANSPORT STRATEGIES

(Refer to the transportation upgrade schedule on page 187)

- N2 - Mt Edgecombe IC
- N2 - Blackburn IC
- N2 - Mt Edgecombe IC TO Tongaat IC
- Cornubia roads
- Sibaya roads
- Greater Umhlanga roads
- M4 - CBD to Durban North
- M4 - Durban North to Virginia
- M4 - Virginia to M41

WASTE WATER STRATEGIES

The changes in water consumption will have follow-on impacts for waste water treatment where an ultimate volume of 195MI/day is projected.

Approximately 80% of this will be recycled locally and 20% regionally treated for discharge into dams and rivers.

SOLID WASTE STRATEGIES

The changes in water consumption will have follow-on impacts for waste water treatment where an ultimate volume of 195MI/day is projected.

Approximately 80% of this will be recycled locally and 20% regionally treated for discharge into dams and rivers.

- M4 - Umhlanga to Umdloti
- M4 - M41 to Umhlanga
- M4 - Umdloti to Watson Highway
- IRPTN C8 & C9
- Tongaat Eastern Bypass
- Northern Expressway
- Eastern Arterial
- Western Arterial Cornubia to DTP
- Cornubia - DTP Link
- M4 Realign

LEAD INITIATIVES

AEROTROPOLIS INSTITUTE AFRICA (AIA)

APPROX. VALUE
ZAR 50M

IMPLEMENTATION START DATE
2019

FUNDING / IMPLEMENTATION
OPTIONS
**PPP, GOV. (LOCAL, PROVINCIAL,
NATIONAL)**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- Addresses the skills vacancy threatening the advancement of the Aerotropolis concept in SA & Africa
- Optimum knowledge support, thought leadership & human capital meeting the industrial & commercial needs of the growing Durban Aerotropolis with the potential to export such skills and knowledge.
- Optimal planning & implementation of an Aerotropolis development requires a broad range of skills presently limited in supply

PROJECT DESCRIPTION

- Centre of excellence and hub for Aerotropolis knowledge in Africa to ensure the development of skills within Africa that support the growth and expansion of the Durban Aerotropolis and aerotropoli globally.

TRANSFORMATION BENEFIT

SOCIAL

- Broaden youth participation and enhance access to priority sectors beset by stringent barriers to entry.

ECONOMIC

- Fast track the supply of critical scarce skills through educational programmes.
- Provide quality education and research inputs that align to industry skills demand.

RET, SMALL BUSINESS, YOUTH

- Focused Aerotropoli skills development programmes focused at targeted groups, youth and SMME.
- Aerotropolis related learnership and apprenticeship programmes.

PUBLIC TRANSIT DEVELOPMENT SPINE

APPROX. VALUE
ZAR 15B

IMPLEMENTATION START DATE
2020

FUNDING / IMPLEMENTATION
OPTIONS
**PPP, DEVELOPMENT LEVIES / LAND
CAPTURE, GOV. SUBSIDY**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- 70% of future travel needs to be by public transport. Poorest communities live furthest away from employment
- A world class airport facility currently lacks public transport connectivity
- Rectify spatial imbalances and drive more intensive use of land
- Investors, value connectivity and seamless access

PROJECT DESCRIPTION

- A development corridor extending from Durban CBD to the KSIA via Cornubia and BC
- High quality public transport that will keep pace with development
- Intense land use activity adjacent to the public transport alignment
- Development characterised by integrated accommodation and employment opportunities

TRANSFORMATION BENEFIT

SOCIAL

- Opportunity to bring accommodation and jobs closer to public transport
- Build more integrated communities
- Provide social facilities where they can be easily accessed

ECONOMIC

- Economic benefits accrue earlier than expected during design and construction job creation
- Sustainability, supports higher development thresholds than entrenching private car use
- Addresses investor concerns over public transport connectivity - Enhances accessibility of Airport City

RET, SMALL BUSINESS, YOUTH

- Smaller contract packaging to make opportunities viz, financial construction, operations, accessibility
- Strong localisation focus through procurement
- Precedent of 70% achieved elsewhere
- Value chain opportunities throughout life-cycle (esp. operations) are significant

LEAD INITIATIVES

INVESTIGATE A NEW TOWN CENTRE AT COMPENSATION

APPROX. VALUE

ZAR 5M

IMPLEMENTATION START DATE

2018

FUNDING / IMPLEMENTATION
OPTIONS

PPP



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- To respond to the growing development momentum within the region and reinforce the main North-south transport spine of the Aerotropolis.
- Increase access to employment opportunities for poorest communities.
- Address historic spatial imbalances.
- Drive denser sustainable urban growth and investment

PROJECT DESCRIPTION

- Planning and Urban Design investigation of the feasibility of establishing a new Town Centre at Compensation/ Ballito.
- Assessment of economic and demographic trends and demands within Compensation/ Ballito and surrounding areas.
- Town Centre viability proposals and identification of Niche based on the relevant research and investigation.

TRANSFORMATION BENEFIT

SOCIAL

- Enhancing job creation opportunities within KwaDukuza Municipality
- Opens the door for the creation of more community related facilities/ amenities within KwaDukuza Municipality.

ECONOMIC

- Increases economic linkages and presence of KwaDukuza within the Aerotropolis.
- Increases economic investment opportunities for KwaDukuza Municipality communities.
- Reinforce the development of a Town centre node with an economic core to support the future envisioned outlying industrial component.

RET, SMALL BUSINESS, YOUTH

- Opportunities for small business incubators integrated into supplier parks and support zones
- Prescribed internship target

INCLUSIVE AGRICULTURAL PROGRAMME

APPROX. VALUE
ZAR 36M/annum

IMPLEMENTATION START DATE
2018

FUNDING / IMPLEMENTATION
OPTIONS
**PPP, GOV. (LOCAL, PROVINCIAL,
NATIONAL)**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- RASET
- Under utilised agricultural land
- Future food security
- Black farmers with limited commercialisation opportunities with a high barrier to entry
- Low value, mono-culture in the sector

PROJECT DESCRIPTION

- Agency for Agricultural Transformation:
- Establish small scale, high impact agricultural businesses, in the west, including Ndwedwe
 - Define technology, processes, business model, markets, logistics that can create a sustainable livelihood for agricultural entrepreneurs
 - Support business establishment through grants and competitive commercial loans

TRANSFORMATION BENEFIT

SOCIAL

- Maintain agricultural livelihoods and enhance job creation within an evolving sector
- Maintaining rural lifestyles within a productive economic space

ECONOMIC

- Promote export of diverse agricultural products to global markets
- Support import replacement
- Beneficiation of agricultural products locally
- Resiliency against food inflation and shortage

RET, SMALL BUSINESS, YOUTH

- Growing the small scale agricultural sector
- Reduces the barrier to entry to commercial farming for black farmers

LEAD INITIATIVES

INTEGRATED HUMAN SETTLEMENT PROGRAMME

APPROX. VALUE
ZAR 30M/annum

IMPLEMENTATION START DATE
2018

FUNDING / IMPLEMENTATION
OPTIONS
**PPP, GOV. (LOCAL, PROVINCIAL,
NATIONAL)**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- The broader corridor experiences a substantial backlog in housing provision, evident in the extent of informal settlements and backyard dwellings within established townships
- In addition to the backlog, the Aerotropolis will need to cater for a future increase in population & housing demand for approximately 400k units
- There is a need to ensure that spatial transformation occurs through human settlement design

PROJECT DESCRIPTION

- An inclusive human settlement programme aims at co-ordinating and championing the provision of affordable housing opportunities for low income earners within the corridor and ensure that such provision furthers transformational objectives
- To support the development of integrated settlement through the co-ordination of social facilities
- To provide for dense, compact and sustainable accommodation in well located areas within the corridor

TRANSFORMATION BENEFIT

SOCIAL

- Providing for dignified settlements that enhance the quality of life
- Ensuing that minimum travel time and cost is spent by individuals through well located housing programmes

ECONOMIC

- Housing provision forms an important part of the construction sector and has the ability to create significant job opportunities for skilled and semi-skilled workers
- Housing construction has a multiplier effect with an increased demand for household goods and services

RET, SMALL BUSINESS, YOUTH

- Procurement for construction projects to target black companies and small scale business
- Internship and bursary schemes for black students to form part of consulting design services for housing provision
- Coordinated skills development and young entrepreneurs programme to support inclusive housing provision

REGIONAL WASTEWATER TREATMENT WORKS

APPROX. VALUE
ZAR 2B

IMPLEMENTATION START DATE
2018

FUNDING / IMPLEMENTATION
OPTIONS
**PPP, GOV. (LOCAL, PROVINCIAL,
NATIONAL)**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- Bulk services (in particular WWT) are limited in the Northern areas
- Development is currently constrained by bulk service provision
- The relevant authorities are focussed on delivery across the Municipal area, with limited resources to service the North

PROJECT DESCRIPTION

- Increase Waste Water Treatment Capacity through the Regional Waste Water Treatment Works and Tongaat Treatment Works Upgrade
- Include co-generation (energy) functionality into the scheme
- Consider a PPP delivery model, to address funding, operational management capacity issues and other risks
-

TRANSFORMATION BENEFIT

SOCIAL

- Creates capacity for integrated human settlements as well as social facilities.

ECONOMIC

- Ensure development can happen at a pace in line with demand
- Creates private sector investment opportunity

RET, SMALL BUSINESS, YOUTH

- Strong localisation focus through procurement
- Precedent of 70% achieved elsewhere
- Value chain opportunities throughout life-cycle (esp. operations) are significant

LEAD INITIATIVES

SMALL BUSINESS CONNECTOR

APPROX. VALUE

ZAR 72M/annum

IMPLEMENTATION START DATE

2018

FUNDING / IMPLEMENTATION
OPTIONS

**PPP, GOV. (LOCAL, PROVINCIAL,
NATIONAL)**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- The Aerotropolis is likely to create unprecedented opportunity that local small business has not had the benefit of access and experience of
- Young entrepreneurs require freedom to grow and develop their businesses in their vision but require guidance, mentorship, training and the building of strong networks

PROJECT DESCRIPTION

- Function to support small business development and partnership with established and newer sectors of growth within the Aerotropolis.
- Facilitate connections between various organs of state and small business
- Cultivate next generation corporates and entrepreneurs

TRANSFORMATION BENEFIT

SOCIAL

- Creating skills, development and capacity to enable small business to participate effectively within the 4th generation industrialisation
- Creating a generation of people in control of their own destiny

ECONOMIC

- Enhancing investment opportunities but without monopolistic behaviors by encouraging an inclusive economy
- Attractive for investors to find suitable, informed small business partners

RET, SMALL BUSINESS, YOUTH

- Targets small black owned businesses
- Focusses on the youth entrepreneurs in terms of skills and capacity to participate in the economy

AVIATION MAINTENANCE REPAIR AND OPERATIONS

APPROX. VALUE
ZAR 2B

IMPLEMENTATION START DATE
2018

FUNDING / IMPLEMENTATION
OPTIONS
PRIVATE



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- Numerous airlines operate routes to and from KSIA. These are expected (and are needed) to grow over the coming months and years
- This growth presents an opportunity to encourage some of the airlines to locate their MRO activities at KSIA, decongesting other hubs

PROJECT DESCRIPTION

- Develop value proposition for airlines along with incentives
- Develop hanger and maintenance facility space that can be leased by airlines
- Food preparation facilities enhancement and growth
- Associated skills development programmes

TRANSFORMATION BENEFIT

SOCIAL

- Creates skills development programmes – migration to higher value activities

ECONOMIC

- Diversification of economic activities within the province
- Localising benefits and leveraging initial airport investment to create downstream opportunities

RET, SMALL BUSINESS, YOUTH

- Strong localisation focus through procurement. Precedent of 70% achieved elsewhere
- Value chain opportunities throughout life-cycle (esp. operations) are significant

LEAD INITIATIVES

ECO-TOURISM HUBS

APPROX. VALUE

ZAR 10M

IMPLEMENTATION START DATE

2018

FUNDING / IMPLEMENTATION
OPTIONS

PRIVATE



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- The Aerotropolis aims at being the “greenest” Aerotropolis globally with a rich abundance of natural beauty and opportunity
- Mt Moreland is an area of significant natural systems that offers a unique setting to attract investment in the hospitality & tourism sector related to eco-tourism and business travel
- Ensuring that through positive development that mutually sustainable benefits can be derived and that custodianship of large open spaces becomes feasible.
- Reinforce the proposals of the iLembe Tourism Route Project by developing an Eco-tourism Hub in KwaDukuza Municipality

PROJECT DESCRIPTION

- Establish a feasibility study for land acquisition, design and management of a Business Tourism hub at Mount Moreland
- Secure potential operators for the facilities
- Design for meaningful engagement, access and management of the natural resource base within the broader Mount Moreland precinct
- Explore an expanded network of open space connections from the hub, to river and estuary
- Identify a potential site for the development of Eco-tourism Hub within KwaDukuza inline with the iLembe District Tourism Route Project.

TRANSFORMATION BENEFIT

SOCIAL

- Providing for a centre for the demonstration of broader environmental and sustainability objectives.

ECONOMIC

- Provides for a centre for eco-tourism economic opportunities in Mount Moreland and KwaDukuza Municipality.
- Supports the services sector.
- Attracts the foreign business tourism sector and growth of the knowledge economy.

RET, SMALL BUSINESS, YOUTH

- Provides for the environmental, tourism and hospitality entrepreneurs.
- Creates opportunities for small business through prescribed partnerships with established operators.

ALTERNATIVE ENERGY CLUSTER

APPROX. VALUE
ZAR 1B

IMPLEMENTATION START DATE
2018

FUNDING / IMPLEMENTATION
OPTIONS
PRIVATE & ACADEMIC



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- The scale of the ultimate Aerotropolis development demands an alternative approach to energy supply
- There is a need to have a focus on sustainability and supply resilience.
- High transmission losses
- Address the need of most global manufacturers needing to comply with “green” production practices

PROJECT DESCRIPTION

- Establish a alternative energy cluster to:
- Evaluate applicability of alternative energy technologies
 - Prototype technologies and local manufacture processes
 - Produce components for alternative energy systems

TRANSFORMATION BENEFIT

SOCIAL

- Creates local equipment to support alternative energy supply to integrated human settlements.
- A distributed generation approach enhances rural servicing

ECONOMIC

- The supply of energy creates opportunity not just in the energy itself, but the entire generation and production process.
- Localisation of opportunities – drive manufacture/assembly activities.

RET, SMALL BUSINESS, YOUTH

- Strong localisation focus through procurement. Precedent of 70% achieved elsewhere.
- Value chain opportunities throughout life-cycle (esp. operations) are significant.

LEAD INITIATIVES

OPEN WIFI PROGRAMME

APPROX. VALUE

ZAR 0.5B + ZAR 10M/annum

IMPLEMENTATION START DATE

2018

FUNDING / IMPLEMENTATION

OPTIONS

**PPP, GOV. (LOCAL, PROVINCIAL, NATIONAL),
ADVERTISING REVENUE, ETC.**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- Technology is the next barrier to access local and global opportunity
- Access to the internet is rapidly becoming the next basic service and is often a key indicator for progress and maturity

PROJECT DESCRIPTION

- The DEMOCRATISATION OF TECHNOLOGY is an important step in transforming the way current and future generations access information, learn about their world and ultimately decide how they are going to contribute to their communities. Universal internet connectivity is a modern day imperative

TRANSFORMATION BENEFIT

SOCIAL

- New ways for government to communicate with citizens
- Youth and other citizens can have access to information freely

ECONOMIC

- 4th basic service

RET, SMALL BUSINESS, YOUTH

- Small business opportunities exist in establishing networks and ongoing maintenance.

TECHNO HUBS

APPROX. VALUE
ZAR 0.5B

IMPLEMENTATION START DATE
2018

FUNDING / IMPLEMENTATION
OPTIONS
**PPP, GOV. (LOCAL, PROVINCIAL,
NATIONAL)**



STATUS (@2017)

NOT STARTED

PLANNING

DESIGN

CONSTRUCTION / IMPL

PROJECT MOTIVATION

- It is essential that residents within the Aerotropolis context, particularly the youth have adequate access to the fourth industrial revolution
- Currently high levels of skills shortage with an increasingly underemployed youthful population presents a huge challenge and barrier to access jobs within the technology sector.

PROJECT DESCRIPTION

- The establishment of techno-hubs as centres of excellence that provides access to the most cutting edge technology support and training
- This facility will include, 3D printing labs, a robotics centre and design and innovation studios to SUPPORT THE GROWTH OF THE CREATIVE CLASS AND YOUNG INNOVATION ENTREPRENEURS

TRANSFORMATION BENEFIT

SOCIAL

- Enhanced access to international level skills and capacity.

ECONOMIC

- Stimulation of technology sector and job readiness for active citizen participation in the fourth industrial revolution
- Provides adequate skills and human capital as an attraction for investors

RET, SMALL BUSINESS, YOUTH

- Specifically targeting the youth in terms of skills development within the technology sector through, subsidised learning programs
- Creating a platform for the growth of technology entrepreneurs

INFRASTRUCTURE PROJECTS

BUILDING THE AEROTROPOLIS

INFRASTRUCTURE PROJECTS

TRANSPORTATION UPGRADE SCHEDULE

The road network modelling results (refer to Annexure B) informed a transportation upgrade schedule which was primarily based on the road upgrades proposed in the eThekweni Municipality Transport Master Plan for the different phases. The transportation upgrade schedule and high level cost estimates are shown in the table below:

| TRANSPORTATION UPGRADE SCHEDULE | | | | | |
|---|------------------------|------------------------|-------------------------|-------------------------|-----------------------|
| Projects | Phase 1 ZAR | Phase 2 ZAR | Phase 3 ZAR | Total | Funding Options |
| Total Estimated Cost | R 7 716 768 380 | R 8 370 642 173 | R 24 643 590 130 | R 40 731 000 683 | |
| Development of Internal Roads | R 586 768 380 | R 3 820 642 173 | R 2 843 590 130 | R 7 251 000 683 | Private Sector |
| N2 - Mt Edgecombe IC TO Tongaat IC | R 1 800 000 000 | | | | SANRAL |
| Cornubia Roads | R 2 310 000 000 | | | | Private Sector |
| Sibaya Roads | R 940 000 000 | | | | Private Sector |
| Greater Umhlanga Roads | R 800 000 000 | | | | Private Sector |
| M4 (Ruth First Highway) - CBD to Durban North | R 670 000 000 | | | | eThekwini |
| M4 (Ruth First Highway) - Durban North to Virginia | R 250 000 000 | | | | eThekwini |
| M4 (Ruth First Highway) - Virginia to M41 | R 360 000 000 | | | | eThekwini |
| IRPTN C8 & C9 | R 10 000 000 000 | R 10 000 000 000 | | | eThekwini & DOT |
| N2 - Mt Edgecombe IC | | R 800 000 000 | | | SANRAL |
| N2 - Blackburn IC | | R 300 000 000 | | | SANRAL |
| M4 (Ruth First Highway) - Umhlanga to Umdloti | | R 460 000 000 | | | eThekwini |
| M4 (Ruth First Highway) - M41 to Umhlanga | | R 310 000 000 | | | eThekwini |
| M4 (Ruth First Highway) - Umdloti to Watson Highway | | R 580 000 000 | | | eThekwini |
| Tongaat Eastern Bypass | | R 360 000 000 | | | DOT |
| Northern Expressway | | R 650 000 000 | | | DOT |
| Western Arterial Cornubia to DTP | | R 560 000 000 | | | DOT |
| Cornubia - DTP Link | | R 530 000 000 | | | DOT & Private Sectors |
| Eastern Arterial | | | R 590 000 000 | | DOT |
| M4 (Ruth First Highway) Realignment | | | R 630 000 000 | | eThekwini |
| Tongaat Western Bypass | | | R 580 000 000 | | DOT |

**Based on 4.5% GDP growth & Development Take-up at current costs. Growth rates will influence the actual timing of projects.

INFRASTRUCTURE PROJECTS

CURRENT PLANNED UPGRADES

Various master planning documents were consulted to determine current planning initiatives for the Aerotropolis study area, with two relevant documents standing out - the SMEC Bulk Services Report for the Northern Regions and the EWS Master Plan 2012/2013. The projects listed in the tables below were extracted from these reports and present an extensive list of recommended upgrades for the Aerotropolis Study Area.

| PLANNED WATER NETWORK UPGRADES | | | | | | |
|-----------------------------------|----------------------|------------------------|------------------------|------------------------|-----------------|--|
| Water | | | | | | |
| Projects | Phase 1 ZAR | Phase 2 ZAR | Phase 3 ZAR | Total | Funding Options | |
| Total | R 627 719 601 | R 3 172 115 400 | R 2 761 176 366 | R 6 561 011 366 | | |
| Development Reticulation | R 222 072 225 | R 1 646 834 021 | R 2 710 544 141 | R 4 579 450 388 | Private Sector | |
| Proposed Reservoirs | R 218 473 481 | R 414 429 332 | R - | R 632 902 813 | | |
| Izinga - Izinga (Prop) | R 25 316 113 | | | | EWS/Private | |
| Cornubia - Blackburn (Prop) | R 193 157 368 | | | | EWS/Private | |
| Cornubia North - Blackburn (Prop) | | R 135 952 094 | | | EWS/Private | |
| Inyaninga - Inyaninga 2 (Prop) | | R 151 896 675 | | | EWS/Private | |
| Westbrook - Zimbali South (Prop) | | R 126 580 563 | | | EWS/Private | |
| Upgraded Reservoirs | R 127 993 092 | R 935 283 633 | R 50 632 225 | R 1 113 908 950 | | |
| Ridgeside 1-3 - Umhlanga 1 & 2 | R 20 111 138 | | | | EWS/Private | |
| Ridgeside 4 - Umhlanga 1 & 2 | R 5 204 974 | | | | EWS/Private | |
| Cornubia North - Waterloo | | R 102 064 873 | | | EWS/Private | |
| Sibaya - Waterloo | | R 104 753 428 | | | EWS/Private | |
| Mt. Moreland South - Waterloo | | R 75 690 911 | | | EWS/Private | |
| Umdloti North - Waterloo | | R 71 916 363 | | | EWS/Private | |
| La Mercy Beach - La Mercy | | R 201 116 370 | | | EWS/Private | |
| Ushukela - La Mercy | R 26 728 642 | | | | EWS/Private | |
| Mt. Moreland North - Inyaninga 1 | | R 30 026 087 | | | EWS/Private | |
| King Shaka Airport - Inyaninga 1 | | R 197 818 926 | | | EWS/Private | |
| Bridge City - Phoenix 3 | R 75 948 338 | | | | EWS/Private | |
| Amanzimyana - Mamba Ridge | | R 25 316 113 | | | EWS/Private | |
| Aberfoyle - Emona | | R 126 580 563 | | | EWS/Private | |
| Dudley Pringle - Burbreeze | | | R 31 231 931 | | EWS/Private | |
| Lindokuhle - Burbreeze | | | R 19 400 294 | | EWS/Private | |
| Supply Pipelines | R 59 180 803 | R 175 568 414 | R - | R 234 749 216 | | |
| URTC | R 948 038 | | | | EWS/Private | |
| Westbrook | R 12 224 037 | | | | EWS/Private | |
| Cornubia North (Local) | R 16 043 925 | | | | EWS/Private | |
| Sibaya | R 16 466 548 | | | | EWS/Private | |
| Mt Moreland South | | R 11 898 112 | | | EWS/Private | |
| Umdloti North | R 11 304 778 | | | | EWS/Private | |

**Based on 4.5% GDP growth & Development Take-up at current costs. Growth rates will influence the actual timing of projects. Major regional connections are excluded.

PLANNED WATER NETWORK UPGRADES

| Water | | | | | |
|---------------------------|--------------------|--------------------|--------------------|--------------|------------------------|
| Projects | Phase 1 ZAR | Phase 2 ZAR | Phase 3 ZAR | Total | Funding Options |
| La Mercy Beach | | R 33 192 141 | | | |
| uShukela | | R 28 414 068 | | | |
| Amanzimnyama | R 2 193 477 | | | | |
| Inyaninga | | R 45 732 126 | | | |
| Cornubia North (Regional) | | R 27 799 837 | | | |
| Sibaya (Regional) | | R 28 532 130 | | | |

**Based on 4.5% GDP growth & Development Take-up. Growth rates will influence the actual timing of projects.

INFRASTRUCTURE PROJECTS

CURRENT PLANNED UPGRADES

| PLANNED WASTE WATER UPGRADES | | | | | |
|--|----------------------|------------------------|------------------------|------------------------|-----------------|
| Waste Water | | | | | |
| Projects | Phase 1 ZAR | Phase 2 ZAR | Phase 3 ZAR | Total | Funding Options |
| Total | R 636 472 225 | R 1 857 761 796 | R 1 576 954 570 | R 4 071 188 591 | |
| Development Reticulation | R 222 072 225 | R 1 424 761 796 | R 1 507 854 570 | R 3 154 688 591 | Private Sector |
| Phoenix/Umhlanga | | | | | |
| Cornubia West Pipeline | R 68 500 000 | | | R 68 500 000 | |
| Tongaat | | | | | |
| Tongaat Works - DTP Southern Water-shed | R 82 500 000 | | | | |
| Hlawe River Trunk | | R 37 800 000 | | | |
| Tongati River Tunnel | | R 47 900 000 | | | |
| Tongati River Trunk & Collectors | | R 48 800 000 | | | |
| Wewe Trunks & Collectors | | R 91 800 000 | | | |
| Tongaat Works South East to Watson HW & N2 | | | R 22 500 000 | | |
| Tongaat Works Eastwards on Southern Bank of Tongati River | | R 73 400 000 | | | |
| Tongaat Works Northwards towards Frasers | | R 32 600 000 | | | |
| Tongaat South Sewer Extension | | | R 2 000 000 | R 439 300 000 | |
| Umdloti Regional | | | | | |
| Transfer of Wastewater to New Umdloti Regional Works | R 144 800 000 | | | | |
| DTP to Umdloti Regional | R 58 400 000 | | | | |
| Sewering of Sibaya | R 35 800 000 | | | | |
| Extensions to Genazzano Reticulation | | R 52 100 000 | | | |
| Mdloti River Trunk | | R 48 600 000 | | | |
| Inyaninga Trunk | R 24 400 000 | | | | |
| Redcliffe Trunk (A) to (M) | | | R 44 600 000 | R 408 700 000 | |
| **Based on 4.5% GDP growth & Development Take-up. Growth rates will influence the actual timing of projects. | | | | | |

URBAN DESIGN GUIDELINES

BUILDING THE AEROTROPOLIS

URBAN DESIGN GUIDELINES

URBAN DESIGN PERSPECTIVE



The Durban Aerotropolis Master Plan can be seen as an innovative and broad decision making tool that has been well thought out and produced through a much required integrated approach that considered the physical, social, economic and institutional dimensions. Having taken this initial 'bold' step and statement of intent through the master plan, the next step is to develop a strategy to guide and direct the implementation of the plan. The Urban Design Guidelines form a key component of the Implementation guidelines for the Durban Aerotropolis.

Urban Design and the application of its principles in design and development plays a key role in enhancing the peoples experience of cities and spaces and places within the Urban environment. At the same-time, poor urban design decisions will result in cities that restrict opportunity, hinder growth. Urban design is about the physical relationships of the elements of the urban environment and how these collectively play a part in a cities performance and the ability of its spaces to meet the needs of society.

As such, in developing broad urban design guidelines for the Aerotropolis, is important to understand the envisioned character of the Aerotropolis. Durban's Aerotropolis city can be envisioned from two perspectives. The first is that of the Aerotropolis as a city that is true to its African and South African context and the second is based on the Aerotropolis as the future city.

Recent trends within South African Cities, and for that matter, many cities in the developing world, indicate the rise of 'newer' and more different forces from the past, that shape cities. Some of these 'newer' influences include the growth of the informal economy, increases in pedestrian based activity and movement, and an increasing interdependence of public transport with urban activity as a result of the generative capacity of public transport nodes for economic activity.

The impact of these influences has contributed to a new vibrancy within city cores and in secondary urban centre. Cities more specifically African

cities are once again being understood as centres for people. As such when one considers the typical South African city, its success is largely hinged on how well it accommodates the people and facilities/ accommodates public transportation and the rising informal economy.

In looking at the Aerotropolis from the perspective of the future city, what one begins to consider is the nature of future business, housing and mobility and how these impacts on the way spaces within the future city will need to be designed to facilitate liveable healthy and sustainable urban life. Fast improving technological advancement in the business world, call for us to reconsider the manner in which we design. In the context of the Aerotropolis there is a need for business spaces that are more people centred and supported / integrated with multiple support services that may include banking, shopping, child minding facilities and recreational spaces.

With the change in business, there is also a need for design to begin to consider more flexible workspaces. This may be in the form of a shift from the conventional office block buildings to more open campus type environments that allow or foster an office sharing culture where a singular building caters for multiple users and different times.

When considering the global connectedness that the Aerotropolis will bring about, the ability of the City to cater for 24 hour city activity also becomes an important aspect to consider. With this comes the need for access to 24 hour facilities and services such as libraries, cafeteria's, shops and multiple transportation options. Safety also becomes an even more key issue to address through design with the need for more well lit public spaces that are still vibrant and active in the evenings.

The role of access and mobility is essential to the success of the future Aerotropolis city. With this come the need to promote and support the development and use of alternative systems such as Non-motorised transport (NMT), bike-sharing, autonomous cars and various personal transport systems.

GUIDING PRINCIPLES

The following guiding principles have been extracted from the preceding urban design perspective and are proposed as basis for the urban design proposed for the Aerotropolis.

EMPHASIS ON THE PUBLIC REALM

The Aerotropolis will primarily be a space inhabited by people. As a result of this, the public realm becomes a very crucial element in the make up of the Aerotropolis city. The public realm in South African cities is the stage upon which the essence of urban African life is lived out. It is a platform for individual interaction and exchange, trade, expression of art, celebration and a platform for the voiceless to be heard. Based on this the first principle acknowledges and promotes the role of the public realm as a basis of activity within the city proposes the need for emphasis to be put on the design of the public realm which serves people, offers opportunity and is pleasant and inviting for all its users.

INTEGRATING TRANSPORT PLANNING

It is essential that transport planning be undertaken in conjunction with urban spatial planning, serving as a supportive discipline in what must be a common pursuit for better performing cities. Often the separation of these city structuring disciplines leads to fragmentation, where the optimisation of a traffic function occurs at the expense of good quality urbanism. As such, an approach to transport planning as an enabler of good urbanism is required when addressing urban design within the future Aerotropolis.

SUSTAINABLE AND EFFICIENT MOVEMENT SOLUTIONS

Efficient and reliable movement and access has and continues to be one of the essential ingredients for the success of any city. The challenge in modern and future cities is that of providing sustainable and efficient movement systems. The move from more private to public means of transportation thus becomes important. As such it is important that the urban design proposals proposed for the Aerotropolis promote and support the implementation of public transport movement solutions.

COMPLETE AND INTEGRATED ENVIRONMENTS

A large amount of the challenges experienced in South African cities today are a result of Apartheid spatial policies. A number of settlements are fragmented with low income communities having very limited if any access to social and economic opportunities and services. The Aerotropolis master plan proposed the development of multiple east - west linkages to better connect the disadvantaged communities to the opportune areas within the Aerotropolis. Building on this, it is important to ensure that the Aerotropolis is characterised by complete and integrated community environments. These are environments where people of all races and income bands have equal access to a range of social and economic facilities of the same quality and standards.

CLEAR URBAN LOGIC AND STRUCTURE

The creation of quality and pleasant urban environments is a purposeful action. The well thought out arrangement of development blocks, streets, buildings, open space and landscapes that make up urban areas is what is referred to as urban structure. The manner in which these diverse elements interrelate with each other, is key to creating places with clear logic and structure. A good urban structure allows for the development of an integrated landscape, a spatial landscape that is functional and efficient, ecologically sensitive, commercially viable and able to create a sense of places for all.

NATURAL ECOLOGY AS CITY INFRASTRUCTURE

Natural ecology and the protection of it is often viewed from a negative perspective. Protected ecological corridors tend to be considered as no go areas and in essence a hindrance to development. The irony is that the natural ecology provides multiple benefits to human life. As such it is essential that natural ecology be treated as a key infrastructural component of the city. Developers and authorities must see the protection of ecological assets as being an opportunity. By ensuring that developments are design in a manner that preserves, protects and celebrates the ecological infrastructure, cities are able to become more inviting and pleasant to users.

M.C

MAKING CONNECTIONS

Development should seek to integrate with its context by establishing connections to and from surrounding urban systems, maximising permeability through the site, and ensuring continuity of movement through the neighbourhood.

P.E

CREATE POSITIVE EDGES

Development should promote positive edge conditions between new and existing, between built and natural, and a clear transition between public, semi-public, semi-private and private realms.

P.R

ENHANCE PUBLIC REALM

Development should seek to enhance the overall public environment, reinforcing the character of an area, and creating usable and memorable public space opportunities.

A.R

ACTIVITY RESPONSE

Development should reinforce and enhance existing patterns of activity where appropriate, promote diversity and layering of uses, and provide opportunities for as wide a range of user groups as possible.

S.R

SUSTAINABILITY & RESILIENCE

Development should consider sustainable development responses, enhance protection of and access to biophysical resources, and adopt a physical response that can adapt to changes over time.

NMT

NON-MOTORISED TRANSPORT

Development should reinforce the role of non-motorised transport systems, providing for safe pedestrian & cycling movement, and linking to public transport systems.

U.M

URBAN MANAGEMENT

Development must respond to the open space management system in place as this will enable easier and successful management of the public areas than in essence bring added value to the entire Metropolitan Precinct.

URBAN DESIGN GUIDELINES

BROAD GUIDELINES/SITE CONTROLS

This section propose a set of broad Urban Design Guidelines that are meant to serve as a guide for developers within the Aerotropolis. It is important to note that these guidelines merely serve as a basic tool for future development and more detailed controls may be applied to specific schemes/ precinct plans and development manuals at a more detailed level of planning.

The purpose of the design guidelines is to ensure discipline and integrity in development through the control of building form & scale and through the screening of service yards, storage areas or other more private/ unappealing areas from the public environment.

Furthermore, it is the intention to address the issue of sustainability through the use of natural resources such as sun, wind and rain and to recycle waste water. All materials specified should be scrutinised in terms of their embodied energy, both in terms of their manufacturing process as well as the distance from which they are transported to site. As far as possible materials from the least distance from the site should be specified.

Each building development should also be interrogated in terms of natural ventilation & air-conditioning, orientation. In terms of landscaping the approach should be to use natural light and insulation with the view to establishing developments which are as environmentally responsive as possible.

OVERARCHING ARCHITECTURAL DESIGN APPROACH

Notwithstanding the functional requirements of buildings within the various intensity zones and specifications of each land use, the intention in the design of buildings is to:

- Encourage creative contemporary design that aims at developing the most effective, highest and best use of sites, while supporting the vision of the Aerotropolis,
- Create buildings that relate well to each other and to the public environment as a group form;
- Create an architecture that yields a timeless quality which is not fashion, theme or style dependent and one which reflects the inherent use for which the building is intended;
- Ensure that only building materials of high quality are used so that buildings maintain their appearance over time with the minimum of maintenance,
- Notwithstanding the above, all buildings within the Aerotropolis must adhere to the operational height and light restrictions that may be applicable to development in close proximity to the airport.

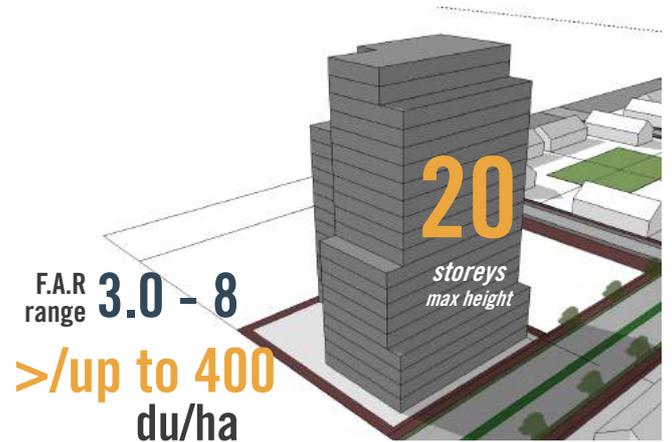
Due to the broad nature of the Aerotropolis master plan, the different characteristics and land uses envisioned for the various areas within the Aerotropolis, some broad guidelines can only be applicable within specific intensity zones. The guidelines provided on the following page are broad guidelines pertaining to the various intensity zones, to assist in the process when detailed plans are prepared.

HIGH INTENSITY 1 (CORE)

DESIRED SCHEME PERMITTED USE

(WILL VARY WITHIN RESPECTIVE MUNICIPALITIES)

Business Purposes, Shops, Places of Public Worship, Places of Instruction, Places of Education, Dwelling Units, Residential Buildings, Restaurants, Medical Consulting Rooms, Gymnasium, Plant Nurseries (on a non-agricultural scale), Service Industries, Parking Bays, Parking Garages, Filling Stations, Places of Entertainment, Funeral Parlours, Social Halls, Institutions, Hotels, Conference Centres, Clinics, Hospitals, Police Stations, Post Offices, Sport and Recreation Clubs,

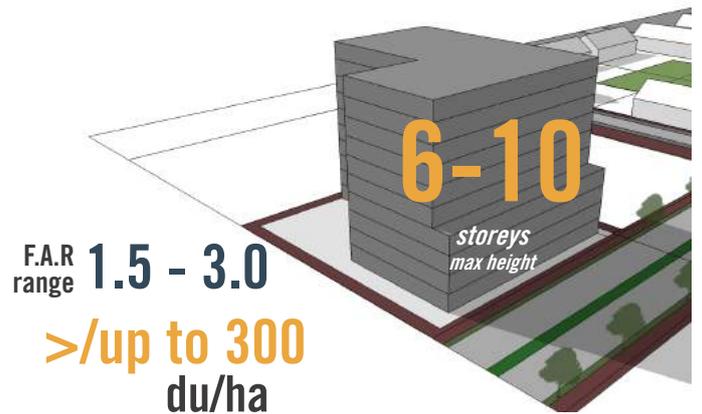


HIGH INTENSITY 2 (INTENSIFICATION ALONG CORRIDORS OR NODAL OPPORTUNITY)

DESIRED SCHEME PERMITTED USE

(WILL VARY WITHIN RESPECTIVE MUNICIPALITIES)

Business Purposes, Shops, Places of Public Worship, Places of Instruction, Places of Education, Dwelling Units, Residential Buildings, Restaurants, Medical Consulting Rooms, Gymnasium, Plant Nurseries (on a non-agricultural scale), Service Industries, Parking Bays, Parking Garages, Filling Stations, Places of Entertainment, Funeral Parlours, Hotels, Conference Centres, Clinics.

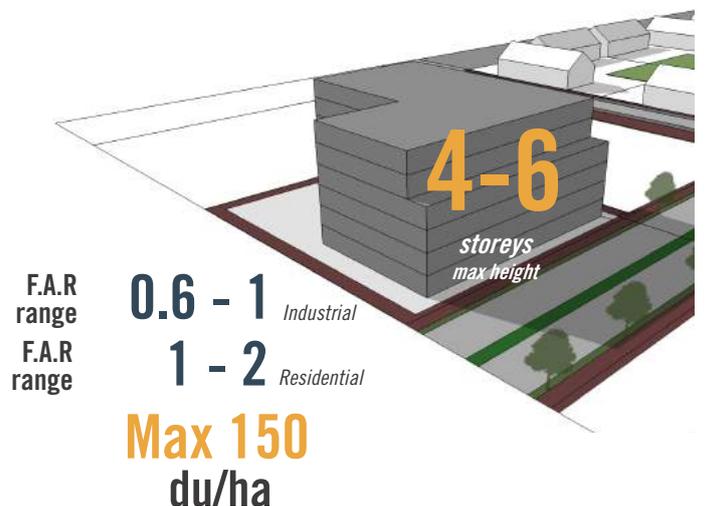


MEDIUM INTENSITY 1

DESIRED SCHEME PERMITTED USE

(WILL VARY WITHIN RESPECTIVE MUNICIPALITIES)

Assembling and packaging, distribution centres, storage, mini storage units, warehouses, cartage and transport services, laboratories and computer centres, Offices, Showrooms, Motor Dealers, Builder's Yards, Service Industries, Auctioneers, Panel Beaters, Motor Workshops, Light Industries, Fitment Centres, Dwelling Units, Warehouse Retail.



N.B. These are indicative guiding controls and are subject to more detailed Land Use Management studies within the respective Municipalities and serve as broad guidelines to indicate the nature/ intent of development'.

URBAN DESIGN GUIDELINES

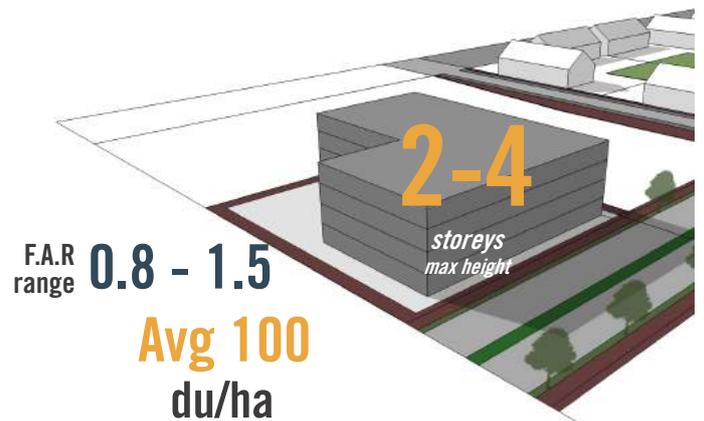
BROAD GUIDELINES/SITE CONTROLS

MEDIUM INTENSITY 2

DESIRED SCHEME PERMITTED USE

(WILL WITHIN RESPECTIVE MUNICIPALITIES)

Dwelling Units, Residential Buildings, Hotels, Conference Facilities, Offices, Business Purposes (compatible with a residential area), Places of Instruction, Places of Education, Social Halls, Places of Public Worship, Libraries, Child Care Facilities, Sport and Recreation Clubs, Sports Grounds, Monasteries, Convents, Hospitals, Clinics, Libraries, Police Stations, Law Courts, Fire Stations, Municipal and Government Offices, Institutions, Old Age Home

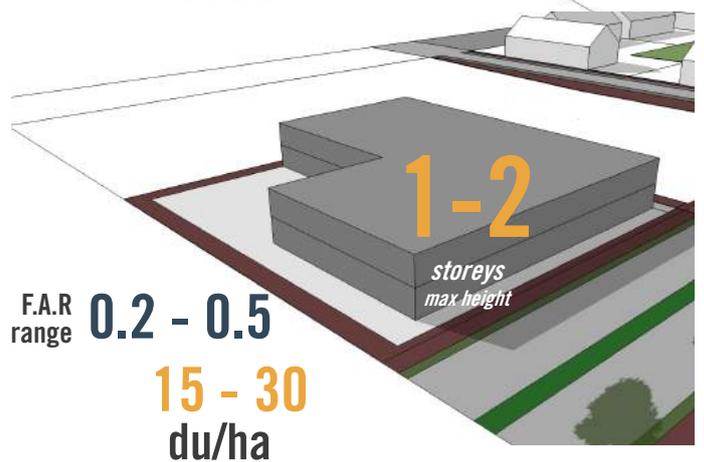


LOW INTENSITY

DESIRED SCHEME PERMITTED USE

(WILL WITHIN RESPECTIVE MUNICIPALITIES)

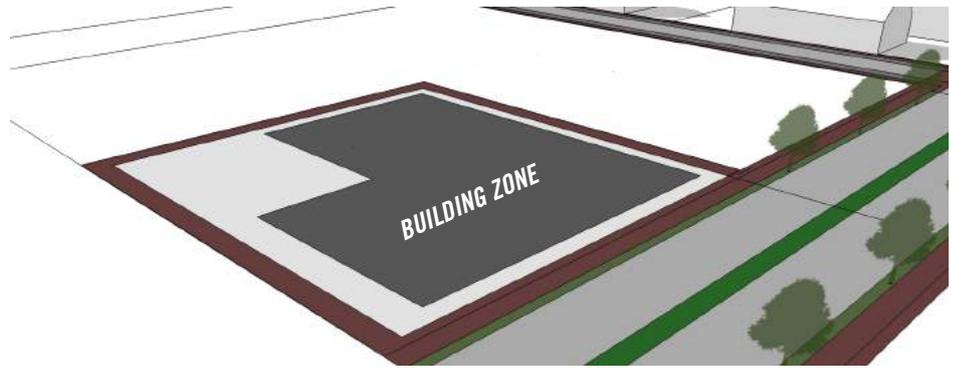
Dwelling Houses, Agricultural Uses, Retirement Village, Places of Public Worship, Places of Instruction, Social Halls, Child Care Facilities, Guest Houses, Home Care Facilities, Catteries.



The following basic urban design performance guidelines are to be applied through more detailed and local level planning exercises in all intensity zones and across each land use. Discretion will be that of the designer/ architect responsible for preparing the more detailed plans. The principle is that these performance guidelines must be incorporated in more detailed planning exercises and developers must adhere to these as this will ensure an enhanced public realm and overall quality of environment within the Aerotropolis. The implementation of these will need to be overseen by a design review panel or relevant line department of respective local authority.

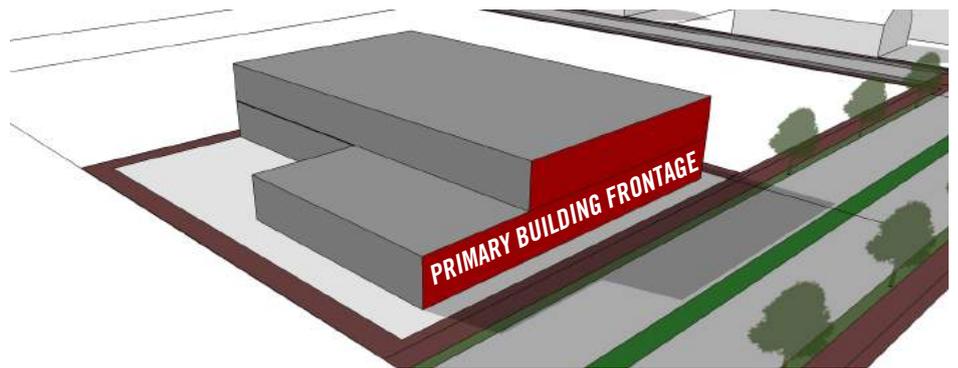
PROPOSED BUILDING ZONES:

As reflected in the adjacent graphic, the building zone indicates the area of the site that should be occupied by the building so as to define particular edges to create a positive street frontage. Deviations of the building form are subject to motivation of the Design Review Process or respective local authority. The purpose of the Building Zone is to ensure that general building placement accords with the development of a supportive public and private open space network, transit spines/ general public realm.



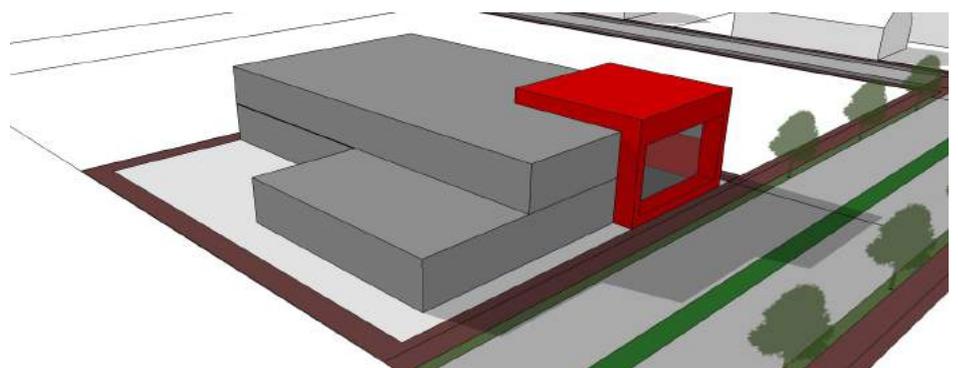
PRIMARY BUILDING FRONTAGE:

The primary building frontage indicates the frontages which need particular definition and design quality, subject to the Design Review Process. This helps frame the street and ensure that the interface between the building and the street is one that enhances the public realm and commuter comfort.



ARCHITECTURAL ACCENTUATION:

This denotes a portion of a building, such as a prominent corner, where specific architectural accentuation is required which may vary in form, including individual detailing and/ or change in building form distinguishing the particularly portion of the building, or through vertical accentuation by introducing tower elements or an increase in building height at that particular position. The primary purpose of this condition is to enhance the landmark quality and potential of particular building. The architectural accentuation may exceed the height envelope provided that such space is non habitable/ useable and does not block site lines from air traffic control tower.



URBAN DESIGN GUIDELINES

BROAD GUIDELINES/SITE CONTROLS

BUILD WITHIN ZONE:

A build within zone is proposed to allow for some modulation on the primary building frontage. The modulation should not account for more than 50% of the front façade. In most instances, particularly corner sites the building form is encouraged to be developed up to the building line whereas in mid-block sites, it is proposed a 5m building line within the 20m setback line. However, such detailing to the guidelines can and should be done at a more detailed planning stage e.g. scheme and precinct plan level.

BUILD-TO LINES:

A build-to line is prescribed line at which construction of a building facade must occur on a site, often running parallel to the front property line without setback. This helps ensure that there is a uniform (or more or less even) building facade line along the street. Once again this will have to be specified on a site by site basis at a more detailed level of planning.



INTENSITY ZONE SPECIFIC GUIDELINES

The following guidelines provide how the various urban design principles may possibly be applied to the generic land-uses within each intensity zone.

HIGH INTENSITY 1 (CORE)

High Intensity 1 areas are the most dense areas along the main spine and serve as the urban core areas within the Aerotropolis. They provide high intensity residential opportunities accommodating densities of 400 Du/ Ha. The intent is for the zone to facilitate higher order intensity, value, and transit access as well as access to a range of mixed uses that create a hub of activity and promote a truly live, work and play environment in a 24-hour precinct.

MIXED-USE DEVELOPMENTS

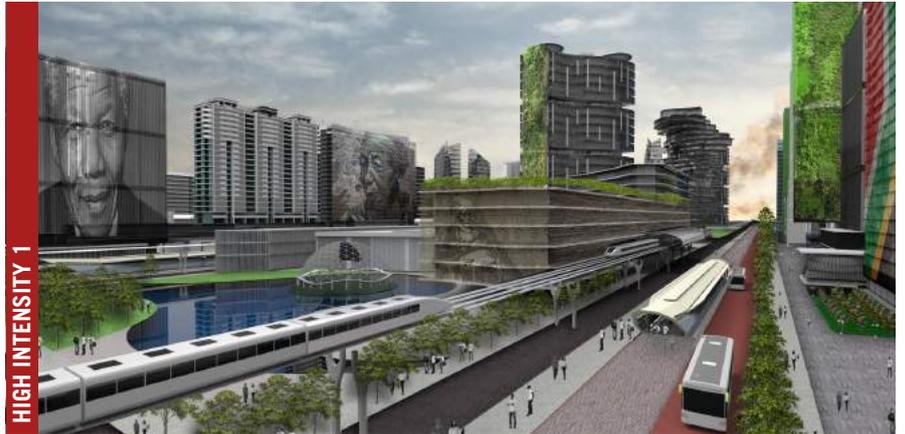
The High intensity 1 zone has been developed to accommodate a range of uses that include Residential, Office, Institutional Residential Mixed-use and linear parks. While this may be the case, the intention is for these uses to be accommodated in a compact fashion. This would lead to the uses most likely being accommodated as part of Mixed-use developments where the land-use split will vary as per requirements of the developer. Considering the scale of buildings within this zone, the graphic to the right provides overall guidelines that can be applied to a fully office, residential, institutional or mixed-use development within the High Intensity 1 zone.

The aim is to create a very vibrant atmosphere along the street. As such the ground floor of the building can be dedicated to retail activities that can spill-out on to the side-walk. By applying a building line of zero, the building is able to frame the street. In order to improve pedestrian comfort and further define the street space, the 1st floor slab cantilevers over the side-walk thus creating a colonnaded effect.

Depending of the use split specifications of the development, offices can be accommodated above the retail. In order to ensure that the scale of the building is not imposing on the public realm a set-back can be applied after 4 storeys and residential or more office uses can be accommodated on the floors above. Modulated balconies are applied to the primary facade that interfaces the street to allow for passive surveillance of the public realm and add to the overall character of the building and environment.

Parking within this zone will need to be restricted to basement parking or parkade parking on the second and third floors depending on site specific restrictions and challenges. after 4 storeys and residential or more office uses can be accommodated on the floors above. Modulated balconies are applied to the primary facade that interfaces the street to allow for passive surveillance of the public realm and add to the overall character of the building and environment.

Parking within this zone will need to be restricted to basement parking or parkade parking on the second and third floors depending on site specific restrictions and challenges.



URBAN DESIGN GUIDELINES

INTENSITY ZONE SPECIFIC GUIDELINES

HIGH INTENSITY 2

The High Intensity 2 zone is less dense than Intensity zone 1 but still predominantly residential. It promotes walkability, NMT and use of public transportation through its compact make-up. Apart from residential use, the zone is also characterised by office, banking and retail related uses. The zone is a reflection of the anticipated character of the future city as an environment that offers multiple residential options with easy access to a variety of economic opportunities. As such it has been proposed along key transit spines so as to provide adequate residential densities and human traffic to make public transport viable along the spines.

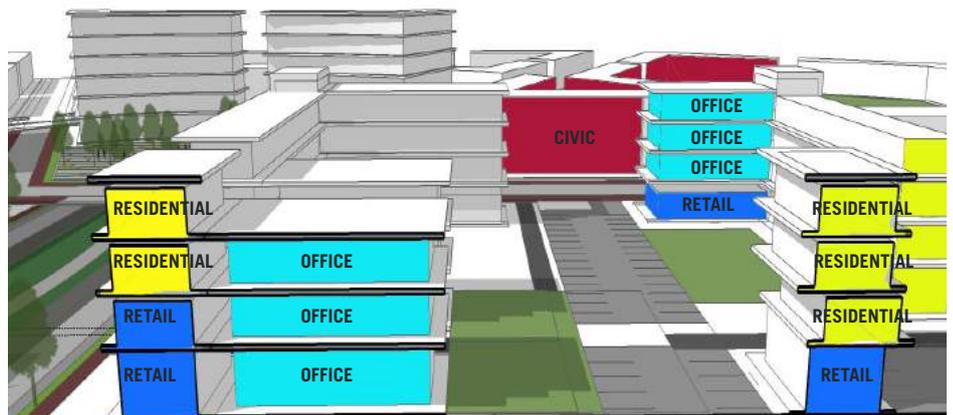
MIXED-USE

While it accommodates mixed use developments, the scale and intensity at which this will be, is less than that found within High Intensity 1. The adjacent graphic reflects an example of the possible land use mix for developments within the zone.

As in the High Intensity example, the aim is to try and create a vibrant public realm. As such retail use is proposed for the ground floor. In keeping with the character of African cities, the corner of the building should be set-back thus creating a small public square that accommodates street traders and also serves as a meeting point.

A building line of zero may be applied so as to ensure the building frames the street. A colonnade may be created by cantilevering the first floor slab so as to improve pedestrian comfort and further define the street space. The upper floors are residential and as such, modulated balconies may be created on the primary facade of the building that interfaces the main transport spine. This plays both a safety and aesthetic function as it allows for better passive surveillance of the public realm and also adds character and interest to the overall environment.

Parking and vehicular access to the site from main transit spines must be discouraged. Access to the site may be provided along the local access road. Residents' parking can be provided in the rear courtyard of the building or be provided as basement or parkade parking provided that it is adequately screened. It is important to also note while the building is well detailed, adequate consideration and detail must be given to the street, with clear demarcation of street planting zones, cycle lanes and pedestrian walk-ways, thus making the entire public realm more legible and pleasant.



OFFICE

In the event that a building is developed in its entirety as an office development, the same guideline proposed for the development of the a Mixed-use building would need to be applied. Considering the height limits within the zone, developers would need to consider the imposing nature that 6-10 storey buildings would have over the public realm. As such it is proposed that high rise building be set back after the fourth floor to create some sense of human scale in the overall public realm.

RESIDENTIAL

While the the zone does accommodate residential, it is envisioned that residential developments to be accommodated within this zone will be mostly be in the form of high rise developments ranging between 6-10 storeys.

Nevertheless, on the basis that these developments would primarily be residential buildings, it is important to ensure that the public front of the building (side interfacing the street) is desirable, appealing and adds to the character of the rest of the public realm.

In order to provide some element of privacy to the residents, a minor set-back of the ground floor would be proposed in the event that the ground floor is serving a residential purpose as opposed to retail. However in cases where the intention is to create a more active and positive edge, the ground floor of the building may serve a retail/ commercial purpose while the rest of the building is residential.

Should the building interface a minor road, minimal on street parking may be provided for visitors. Given the high rise nature of the buildings within the zone, residents parking can be provided in the form of basement or parkade parking. If the building is designed in a way that it frames the street, the rear courtyards would be able to accommodate some parking. Also in the spirit of densification, consideration must be given to green roof gardens, sports and recreation zones on high density buildings.



URBAN DESIGN GUIDELINES

INTENSITY ZONE SPECIFIC GUIDELINES

MEDIUM INTENSITY 1

This zone is aimed at accommodating developments that are more employment oriented such as business and logistics type of uses. It is envisioned that the Medium Intensity 1 zone will play a key role in ensuring that there are multiple accessible employment opportunities within the Aerotropolis.



MIXED-USE

As with the High intensity zones, the Medium Intensity zone accommodates Mixed-use developments however at a lower intensity as the maximum building height within the zone is 4-6 storeys.

While it accommodates mixed use developments, the scale at which this will be, is less than that found within High Intensity 1. It is important to try and create a vibrant and active public realm and as such, retail use is proposed for the ground floor. The corner of the buildings should be set-back thus creating a small public square that accommodates street traders.



The buildings must be used to enhance and celebrate the public realm. This can be achieved by applying a zero building line. This allows the building frames the street. Cantilevering of the first floor slab so as to improve pedestrian comfort and further define the street space helps improve commuter comfort by offering shade to pedestrians while the modulation of balconies on the primary facade brings additional character and allows for passive surveillance of the public realm.

Parking must be restricted to the rear courtyard of the building, or screened parkade parking provided in the rear courtyard of the building.

RESIDENTIAL

In regard to resident apartment developments, the same approach proposed for residential developments within the High Intensity 2 zones can be applied for this zone. However within the Medium Intensity 1 zone, developments will be restricted to 4-6 storeys.

OFFICE

In the case of office developments, two approaches are proposed for the implementation of Urban Design guidelines. Key to note is the way in which the street typology interfacing the development contributes to the application of Urban Design Principles.

The first example of applying urban design principles in the context of an office development is reflected below, with the development interfacing an activity Street on one end and, a local access street on the other. The first scenario is intended to create a development that directly interacts with the activity street. In order to achieve this, principles of creating a positive edge are applied. These include applying build-to lines to ensure that the building defines the street edge and relates to the activities along the walkway.

In order to create a suitable level of human scale in the Public Realm, the development is restricted to a height of 4-6 storeys. To add to the aesthetic character of the public realm, the corner point of the building is to be accentuated. Parking is for both visitors and those working in the building, and are restricted to the rear of the building. Vehicle access onto the site is discouraged along the activity street but rather permitted on the edge that interfaces the local access road.



URBAN DESIGN GUIDELINES

INTENSITY ZONE SPECIFIC GUIDELINES

INDUSTRY

Industrial developments by nature do not require a lot of interaction, activity nor exposure to the general public but rather only attract specific people requiring very specific services. As such, direct interaction with the street edge would not be necessarily warranted.

Modern trends of logistics institutions require their offices and warehousing facilities on the same property, as such the approach reflected in the adjacent example is proposed.

In order to maintain a uniform street frontage line along the entire street, it is proposed that the office component of the development be positioned on the edge of the site to allow for creation of a positive edge.

The rest of the building which houses the warehousing component is set-back enough to allow for the provision of minimal visitors parking along the edge interfacing with the main activity street. As in the retail example, this parking should be screened so as to not impede on the visual quality of the rest of the public realm.

Access onto the site is obtained from the local access street. As reflected on the image, a larger building set-back is applied along this facade so as to allow for adequate circulation of any larger vehicles associated with this type of development. Nevertheless this would be adapted to in line with the relevant height restriction and site controls of each zone.



MEDIUM INTENSITY 2

The Medium intensity 2 zone accommodates developments that are predominantly residential however it has also been developed to accommodate employment oriented developments at a lesser intensity than Medium intensity zone 1. As such key consideration must be given to the public realm as places of interaction and gathering.

MIXED-USE

The same guideline pertaining to mixed use developments within the Medium Intensity 1 zone may be applied within the Medium intensity 2 zone. However in this scenario, as reflected in the adjacent graphic, developments will be restricted to a height limit of between 2-3 storeys.

RESIDENTIAL

In regard to guidelines to residential developments, it is envisioned that the Medium Intensity 2 will generally accommodate social housing residential opportunities. These are commonly developed as 2-4 storey walk up apartments. As such the guidelines proposed for residential developments within Medium intensity 1 may also be applied for Medium Intensity 2 residential developments.



URBAN DESIGN GUIDELINES

INTENSITY ZONE SPECIFIC GUIDELINES

INDUSTRIAL

As with Medium Intensity¹, industrial developments must be designed in a manner that ensures a uniform street frontage line along the entire street is maintained. This is done by designing for the office component of the development to be positioned on the edge of the site to allow for creation of a positive edge.

Access onto the site must be restricted to the local access street. A larger building set-back should be applied along this facade so as to allow for adequate circulation of any larger vehicles associated with this type of development.

The warehousing component is set-back enough to allow for the provision of minimal visitors parking along the edge interfacing with the main activity street. As in the retail example, this parking should be screened so as to not impede on the visual quality of the rest of the public realm.



LOW DENSITY

The low intensity zone is different to all other intensity zones as it is more suburban and agricultural in character. It accommodates low density residential opportunities and other space expansive uses such as social and educational facilities.

RESIDENTIAL

The adjacent graphic reflects an example of how urban design principles may be applied to residential developments within the Low Density zone. The intention is to accommodate low density residential opportunities and as such, in the event that the unit is interfacing a main transport route a set back must be applied to ensure there is adequate space between the residents private space and the common public realm.

While the buildings may be set back, the street can still be defined ensuring that all units adhere to the prescribed set-back/ built to lines. This helps create uniform street edge that adds to the character of the overall environment. Adequate provision must be made for sidewalks. Parking may be accommodated per individual site. However access sites must be avoided directly off main transit routes.

RESORT & AGRICULTURAL

In the case of Agricultural and Resort residential developments, it is proposed that the buildings are designed to occupy the front of the site though with a slight set-back from the boundary. Agricultural or resort recreational spaces should be accommodated at the rear of the site. This ensures that the area reads and feels like a suburb yet still functioning as a resort residential and agricultural area.



MONITORING & EVALUATION

BUILDING THE AEROTROPOLIS

MONITORING & EVALUATION

DURAMP DASHBOARD MODEL

The Dashboard Model for Dube City will translate the objectives of DURAMP into a performance management tool to assist and guide stakeholders/private developers/ municipalities to measure and monitor various aspects of DURAMP.

The basic objective of the model is as follows:

- To create a sustainable model for development.
- Identification of key target indicators that will achieve a quality living environment that meets the objectives identified in the Master plan and which must be implemented/monitored by an organisation/ municipality.
- The emphasis is on creating an environment for renewed investment and developer confidence.
- Designing and monitoring for the primary, operator and the end user of the development – what are their expectations and challenges for sustained and managed growth

The DURAMP City dashboard model contains the following:

- Dashboard scenarios for predictive models/projects dependent on performance indicators;
- Performance indicators that benchmark and gauges the performance of the Master plan;
- Measurable Targets that are aligned to the indicators to measure the feasibility of the environment that is being created.

It must be emphasised that the plan is a 50-year vision and therefore benchmarking criteria realistically can only provide broad benchmarking criteria at this scale and resolution of the plan.

Approach

The approach in the preparation of a Dashboard Model for the DURAMP is to prepare an analytical model that measures and tracks the performance of projects/ strategies in a simplistic manner. Current applications of Dashboard models are very interactive, graphic and therefore considering DURAMP comprises of three Municipalities + private individuals it is, therefore, crucial that a very simple Dashboard Model is developed in order for the performance of the plan to be tracked and evaluated at regular milestone intervals.

The adjacent graphic represents a simplistic representation of the key pillars that make up/ guide the development of the Aerotropolis Masterplan. This is followed by a more in-depth table that provides more guidance into the measurable targets. The model description is as follows:

1. The four key Aerotropolis planning pillars that's sets up the foundation on which the Dashboard model operates:
 - Connected Economy
 - Integrated Community
 - Smart City
 - Inclusive Opportunity
2. From the key pillars, multiple theme/ strategies have been developed which starts to provide the base on which the benchmarking performance against these themes can be evaluated.

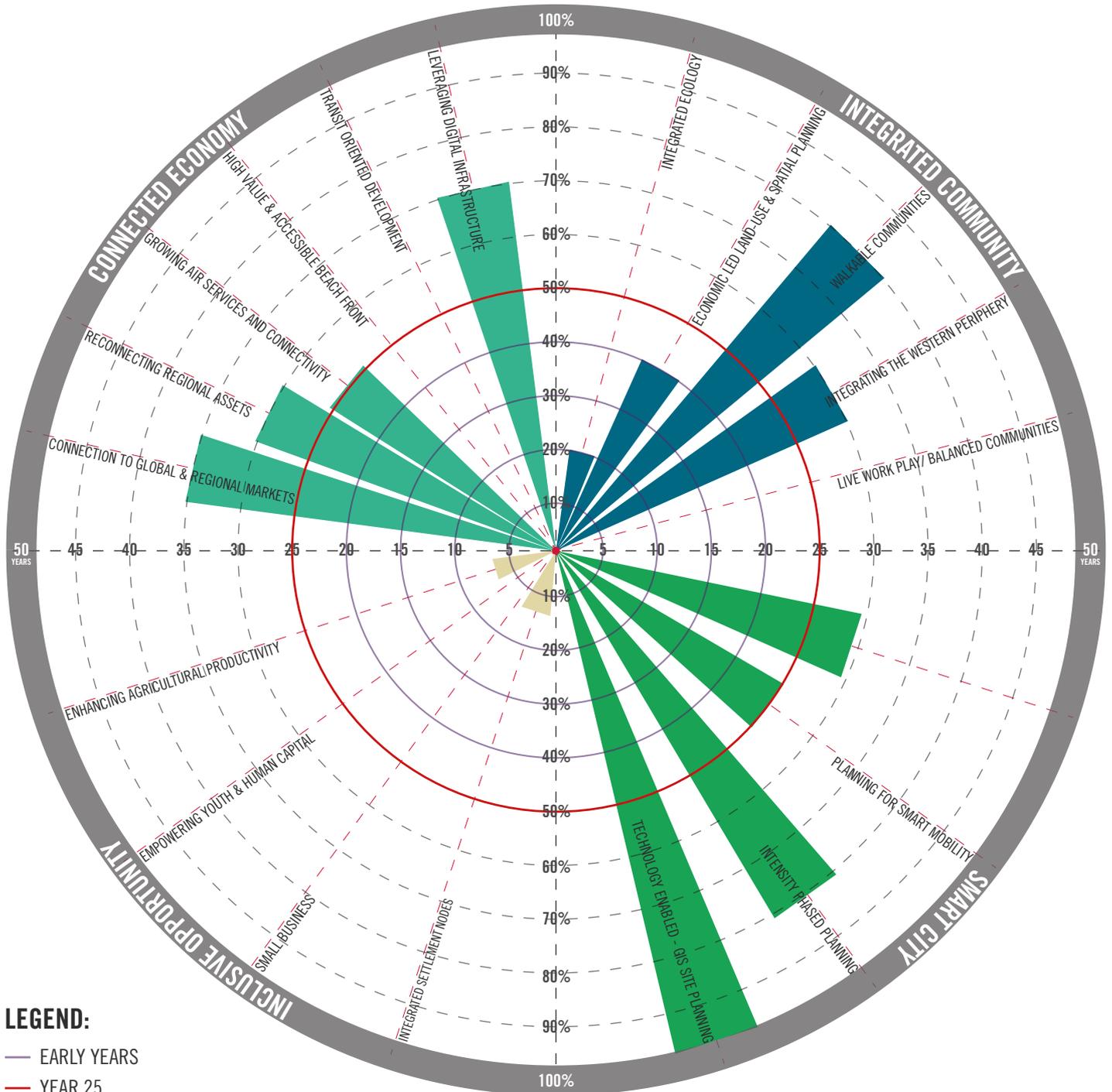
3. The graphic comprises of a time line on the X and Y axis of 50 years as well as percentage up to 100% to measure performance and time.
4. Within each of the themes, measurable targets have been projected where applicable to allow the suitable evaluation of each theme within its parent pillar.
5. The intention then is to determine the overall performance of the Master plan over the 50 years however a review of the plan and benchmarking indices can evolve and change as the plan develops over time.
6. Based on the Implementation roll out of the Plan, the Dashboard model reflects the Phasing over the 50 year period.

In the roll out of the Dashboard Model, and considering the challenges with three different Municipalities together with private sector developments, it may be advisable to develop the Dashboard Model above using a Computer aided software program linked to a GIS project database that captures each project undertaken within the core study area so it becomes more manageable to input data into the model.

The Dashboard model can then calibrate all sorts of important information for the Aerotropolis AMU unit and or the team tasked to manage the overall development and track the progress/ performance of the Master plan in line with the vision. At each review, the projected targets can be analysed and the specific sector could be isolated to determine why there has been a decrease in performance for any particular aspect and new strategies could be employed. Simply put, the above is merely a tool“ Towards the development of a Dashboard Model”, with more elements required to start the process in the evaluation of the Aerotropolis Master plan. line with the vision. At each review, the projected targets can be analysed and the specific sector could be isolated to determine why there has been a decrease in performance for any particular aspect and new strategies could be employed. Simply put, the above is merely a tool“ Towards the development of a Dashboard Model”, with more elements required to start the process in the evaluation of the Aerotropolis Master plan.

MONITORING & EVALUATION

DURAMP DASHBOARD MODEL



LEGEND:

- EARLY YEARS
- YEAR 25
- LONG-TERM
- YEAR 50
- CONNECTED ECONOMY GROWTH
- INTEGRATED COMMUNITY
- SMART CITY
- INCLUSIVE OPPORTUNITY

As outlined in the preceding page, the above reflects the strategy toward the establishment of a dashboard for the Aerotropolis. The realisation of a live and fully operational/ interactive dashboard would require the appointment of an ICT programmer who would be able to develop a software program that links and categorises projects within all Municipalities in the Aerotropolis study area. The aim of this would be to ensure that any development applications approved in the Municipalities is captured in the dashboard model, thus translating it into a development monitoring tool to help in the realisation of the Aerotropolis Vision.

| PILLAR COMPONENTS | THEMES | MEASURABLE TARGETS | DESCRIPTION OF MEASURABLE TARGET | TARGET |
|---------------------------------|--|---|--|---|
| 1. Connected Economy | | | | |
| | Connecting South Africa to Global and Regional Markets | % increase in local and foreign trade from core Aerotropolis zone | Develop an index measure to evaluate the areas connectedness to global markets- evaluate business revenues, GDP in province, economic integration and movement of goods and services- targets such as trade, capital, Information and People | 70% by 2066 |
| | Reconnecting Regional Assets | % of routes completed- Transport accessibility | The development of Regional Routes to Regional and National Centres | 60% by 2046 |
| | Growing Air Services and Connectivity | % increase of international/regional passengers through KSIA The number of new international/regional routes within KSIA | Measure all international and regional passengers as well as a number of new international routes + trade/investment | 50% by 2046 45m 2066pax 1m cargo tons 2066 |
| | High Value, Diverse and Accessible Beachfront | % of prime beachfront property opened to public access +Kms | Measuring direct access to beach- promenades, walkways, road infrastructure+ Recreation spaces | Kms of NMT network created +% opened for public access recreation |
| | Transit Orientated Development | GLA and/or housing units | Determine the number of TOD projects implemented within the Aerotropolis area and the number of units | X no of projects annually delivered by private sector/ municipality-housing department |
| | Leveraging Digital Infrastructure | % of the population to have access to the Internet | Wider 4G Coverage (>35%) Wider International Bandwidth (>300Kbps) Increase Download Speeds (>50Mbps) | >70% of the population to have access to the Internet |
| 2. Integrated Community | | | | |
| | Live/work/play balance Communities | % Quantification of the number of housing units versus employment opportunities | Determine the optimal/balance of residential versus employment opportunities created within the area | X no of mixed use or integrated projects annually delivered by private sector/ municipality |
| | Integrating the Western Periphery | % of Transport accessibility+Wider economic effects/impacts | Determine the level of connections to western periphery but also measure the local economic benefits | 60% by 2046 in the western areas |
| | Economics- LED Land use and Spatial Planning | The number of housing units + employment opportunities | Determine the number of residential units and employment opportunities created within the area | 40% residential opportunities+40% non-residential /commercial development approx 750000 jobs by 2066 |
| | Walkable Communities | Quality walking links to nodes within a 400metre radius linked with land use mix/ density | Assessing the NMT and road connectivity to nodes including the land use mix versus the residential density within a 5-minute walking radius | To promote 80 % of walkable nodal/ mixed use development projects by 2066 |
| | Integrated Ecology | % of the total Aerotropolis 'core' area to both public open space (e.g. parks, play lots or pocket parks) and natural open space. | Allow for a green Aerotropolis that considers integration of ecological assets | min of 20% to squares, parks and natural open spaces by 2066 |
| 3. Inclusive Opportunity | | | | |
| | Enhancing Agricultural Productivity | % of agricultural productivity | Measure of agricultural production within Aerotropolis zone | 14% to be developed for agricultural purposes by 2066 |
| | Small Business Incubators and Target Projects | The number of Small Business Incubator and entrepreneurial centers developed | Determine the number of Small business incubator/centers developed within the Aerotropolis area within a year | X no of projects annually delivered by private sector/ municipality |
| | Empowering Youth And Human Capital | The number of social infrastructural facilities + Youth development programs | Determine the number of youth development programs created within a year- measure its impact (jobs, capacity building properties) | X no of projects annually delivered by private sector/ municipality |
| | Integrated Settlement Nodes | The number of mixed housing units + employment opportunities + Transport accessibility | Determine the number of residential units and employment opportunities created within the area as well as the level of connections to surrounding areas | 7%of the total residential opportunities+8%of the total employment opportunities for Integrated Human Settlements by 2066 |
| 4. Smart City | | | | |
| | Technology enabled GIS site planning | % of data captured in a GIS database | All projects to be captured on GIS, includes spatial planning, bulk infrastructure, economic, environmental projects. | 100% of all current projects to be captured in GIS by 2022 and used in dashboard assessments |
| | Flexible Intensity Based Planning Approach | % of alignment of Master plan | Meets Market demands but doesn't compromise the vision or planning ethos | Overall 80% of Master plan alignment to spatial projections |
| | Planning for Smart Mobility | % of highest densities within the Master plan situated along PT spines | To achieve the principles of smart mobility with land use planning, the key north-south transit spine through the airport should be prioritised. | 50% of the key transit spine + corridor development to be developed by 2046 |
| | Smart Urban Utilities | % of future development using smart infrastructure technology | The intention to use smart technology to improve /optimize efficiency and reduce emissions, carbon footprint, renewable energy and conserve resources and therefore the need to quantify progress of transitioning from current practices | 60% by 2046 |

COMMUNICATION & EXHIBITION

BUILDING THE AEROTROPOLIS

COMMUNICATION & EXHIBITION **ENGAGEMENT SPACE**

The Dube TradePort is a single port of call for investors and other stakeholders that have an interest in the Aerotropolis. A Durban Aerotropolis exhibition and engagement space has been established at Dube TradePort headquarters (29° South, Dube TradePort) to help amplify the understanding of the scale of development and opportunity that exists and to identify the support needed by investors to mobilise their initiatives. This will be achieved by allowing investors and stakeholders to engage with the plan through physical scale models, multi-media experiences and talking to executives, ready to help.



Dube TradePort

ANNEXURE - A

SCHEDULE OF ASSUMPTIONS

DURAMP: Annexure A
 Schedule of Assumptions

| Economics (All assumptions from Economics Report (Botes) U.O.N. | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|---|-----------------------------|--|------------------------------|-----|----|-------------------------------|-----|----|--------------------------|-----|----|---------------------------|-----|-----|--------------------------|-----|-----|--|
| 1.0 | Assumption | | Possible Implication | | | | | | | | | | | | | | | | | | |
| 1.1 | A historic correlation between GDP growth and demand for commercial bulk exists, and that SA will experience between 3% and 6% GDP growth per annum over the next 50 years. (See also table 7) | | Projected GDP growth targets informed spatial planning by suggesting target commercial bulks to be accommodated | | | | | | | | | | | | | | | | | | |
| 1.2 | An attraction factor between 25-30% of future demand for commercial bulk among other likely development locations in KZN | | Higher or lower attraction factors have an important impact on the master planned commercial bulk | | | | | | | | | | | | | | | | | | |
| 1.3 | Employment density ranges for key commercial uses (given by Stratplan) | | Determines the anticipated jobs in relation to commercial bulk | | | | | | | | | | | | | | | | | | |
| 1.4 | Transition of agricultural crop focus from sugarcane (0.15 workers/hectare) to vegetables (1 worker/hectare) | | Directly impacts the jobs and associated land in the agricultural sector accommodated within the masterplan | | | | | | | | | | | | | | | | | | |
| 1.5 | Live/work ratios as follows: <ul style="list-style-type: none"> • 50% of aerotropolis jobs will be sourced from local residents • 80% of Aerotropolis residents will work locally | | These factors have a dramatic impact on the amount of housing required and accommodated within the masterplan. | | | | | | | | | | | | | | | | | | |
| 1.6 | <table border="1"> <thead> <tr> <th>Assumption</th> <th>Workers per dwelling</th> <th>Average dwelling size (m²)</th> </tr> </thead> <tbody> <tr> <td>Multi-dwelling (small units)</td> <td>1.1</td> <td>45</td> </tr> <tr> <td>Multi-dwelling (larger units)</td> <td>1.5</td> <td>60</td> </tr> <tr> <td>Free standing (low cost)</td> <td>2.0</td> <td>90</td> </tr> <tr> <td>Free standing (mid-price)</td> <td>1.3</td> <td>100</td> </tr> <tr> <td>Free standing (high end)</td> <td>1.1</td> <td>150</td> </tr> </tbody> </table> <p>*Dwelling sizes were amended from original economics report, per conversation with IYER.</p> | | Assumption | Workers per dwelling | Average dwelling size (m²) | Multi-dwelling (small units) | 1.1 | 45 | Multi-dwelling (larger units) | 1.5 | 60 | Free standing (low cost) | 2.0 | 90 | Free standing (mid-price) | 1.3 | 100 | Free standing (high end) | 1.1 | 150 | These parameters have an impact on the number of housing units and the residential bulk size that is accommodated in the masterplan. |
| Assumption | Workers per dwelling | Average dwelling size (m²) | | | | | | | | | | | | | | | | | | | |
| Multi-dwelling (small units) | 1.1 | 45 | | | | | | | | | | | | | | | | | | | |
| Multi-dwelling (larger units) | 1.5 | 60 | | | | | | | | | | | | | | | | | | | |
| Free standing (low cost) | 2.0 | 90 | | | | | | | | | | | | | | | | | | | |
| Free standing (mid-price) | 1.3 | 100 | | | | | | | | | | | | | | | | | | | |
| Free standing (high end) | 1.1 | 150 | | | | | | | | | | | | | | | | | | | |

DURAMP: Annexure A
 Schedule of Assumptions

| Economics (All assumptions from Economics Report (Botes) U.O.N. | | |
|--|---|--|
| 1.0 | Assumption | Possible Implication |
| 1.7 | Average household size of 4 (Confirmed with Iyer) | This frames the anticipated number of total residents at the Aerotropolis |
| 1.8 | A breakdown of workers employed by sector and housing type is included in Table 6 of the economics report | This helps distribute anticipated labor among housing types, and therefore, shapes residential bulk for the masterplan |
| 1.9 | Future economic sectors of growth are based on McKinsey Global Institute's report. | Informed the identification of potential niche nodes |
| 1.10 | Investment costs per m ² were provided by AECOM 2016 Construction Guide | Provides an estimate of potential investment represented by the masterplan |

DURAMP: Annexure A
Schedule of Assumptions

| Land Use Planning | | |
|--------------------------|--|---|
| 2.0 | Assumption | Possible Implication |
| 2.1 | That all Municipalities will adopt the Aerotropolis as a guiding framework through the hierarchy of plans. | Non-alignment- vision compromised- benefits are not distributed evenly. |
| 2.2 | Land uses intensity zones are considered in detailed level planning. | Compromise the Mix of employment verse residential provision. |
| 2.3 | Current development does- not align to the future vision. | Targets are not met- plan is compromised however schemes should be reviewed to allow/facilitate or encourage future development in line with Aerotropolis objectives. |
| 2.4 | A decision needs to be made on the Noise contours particularly residential development. | That the Noise contours will sterilise future residential development and lead to an unnatural growth or a lack of mixed use development with the noise contour zone compromising vision. |
| 2.5 | That municipalities rigidly follow the Aerotropolis plan and strictly follow the development parameters extents. | The Aerotropolis plan is 50-year plan and should be reviewed every 5 years against performance targets. The plan is a guiding framework and detail design will ultimately refine the proposals in the Masterplan. |

DURAMP: Annexure A
 Schedule of Assumptions

| Environment | | |
|--------------------|--|---|
| 3.0 | Assumption | Possible Implication |
| 3.1 | Aerotropolis Open Space Plan is a conceptual overlay and needs further refinement and specialist input in detail design. | That the open space overlay will be considered as the final demarcations when projects go into detail design. |
| 3.2 | Climate change must be considered in future planning along the coast. | Failure to do so could result in damage to both coastline and future development. |
| 3.3 | Open space is considered unusable and to be left untouched. | Whilst in the case of certain conservation and ecological areas this may be the case, however a large portion of open space identified within the Aerotropolis Masterplan should be considered for recreational opportunity whilst still retaining the ecological benefits. |

DURAMP: Annexure A
 Schedule of Assumptions

| Transport | | |
|------------------|--|--|
| 4.0 | Assumption | Possible Implication |
| 4.1 | Integrated land use planning reduces trip lengths in combination with alternate transport modes. | Economic performance drives development which in turn drives transport infrastructure. |
| 4.2 | Willingness to travel further distances is reduced by integrated land use and economic opportunity closer to home. | Dependent on economic conditions and land allocation. |
| 4.3 | Public transport becomes a primary means of travel. | Public transport systems need major upgrades to attract and accommodate future demands. |
| 4.4 | Private car use and ownership is discouraged and possibly penalised. | Changes to legislation regarding parking of private vehicles in residential and business situation. Possible tolling of private vehicles in the peak hour. |
| 4.5 | Spreading of the peak hour demand. | More businesses need to adopt flexible hours to allow staff to arrive earlier or later than the peak hour. |

DURAMP: Annexure A
 Schedule of Assumptions

| Infrastructure Services | | |
|--------------------------------|---|---|
| 5.0 | Assumption | Possible Implication |
| 5.1 | Innovative/alternate solutions to water use and treatment are proposed. | User alignment and education will be required. Possible need to alter legislation. |
| 5.2 | On site recycling of effluent as a primary source of water proposed. | Legislation to make water recycling mandatory required. |
| 5.3 | Long term reduction in demand for and use of water and hence reduction of effluent proposed and assumed in projections relating to bulk infrastructure. | Application of new technologies water saving devices such as showers, proximity faucets and vacuum sewers, together with user behaviour changes. |
| 5.4 | Alternate energy solutions. Mandatory solar water heating and the use of Photo voltaic and wind turbine sources. Possibly combined through "mini grid" supply management. | Changes to policy and possibly legislation relating to supply mechanisms, where reliance on central grid is minimised, by maximising local renewable sources. |
| 5.5 | Advanced use monitoring for early detection of leaks or other unaccounted for usage. Demand management and accurate metering and billing. Use of IOT for communication of activities and performance. | Changes to current practice and policy and possibly changes to legislation. |

ANNEXURE - B

TECHNICAL NOTES

B1: Transportation

B2: Water and Sanitation

B3: Electricity and Solid Waste Demands

B4: Economic Land Demand Projection

B5: Funding & Finance Precedents

Annexure B1

Transportation

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1. Introduction

The following document serves to highlight the approach and methodology of assessing the Transportation implications of the Aerotropolis on the surrounding road network within the study area and the rest of eThekweni Municipal roads.

The land use was provided by the Town Planners which was developed in conjunction with an Economist where the economic forecast was based on economic growth within the KZN Region for a number of different growth scenarios. The number of jobs to be created was provided which allowed the forecast for housing requirements. This fed into the demand analysis for the study area and each phase of development in the master plan.

2. Economic Forecasting

3. Strategic Modelling

3.1 Assumptions

The analysis was broken down according to the land use phasing determined by economic forecasts with certain key assumptions about transportation behaviours that will need to happen in future. These assumptions are shown in Table 1.

Table 1: Modelling Assumptions

| | Phase 1 | Phase 2 | Phase 3 |
|---|--------------|--------------|--------------|
| Planning Year | 2016-2026 | 2026-2041 | 2041-2066 |
| ETMP Road Network | 2025 | 2035 | 2035 |
| Land use | Phase 1 | Phase 2 | Phase 3 |
| Peak spreading factor | 50% | 40% | 40% |
| Aerotropolis Modal split | 50 PVT/50 PT | 30 PVT/70 PT | 30 PVT/70 PT |
| Background Modal Split (Average) | 46 PVT/54 PT | 46 PVT/54 PT | 46 PVT/54 PT |
| uMhlanga Modal Split | 65 PVT/35 PT | | |
| PVT Beta (β) | 0.054 | 0.112 | 0.15 |
| PT Beta (β) | 0.1 | 0.125 | 0.2 |

Some of the assumed transportation behaviours anticipated to be achievable at each phase are discussed below.

1. Wider peak period traffic spreading will allow more trips to take place outside of the peak hour, thereby extending the peak period over a longer time in the AM and PM.
2. Higher modal splits were targeted from Phase 1, gradually increasing in Phase 2 and 3. This modal split was adjusted only for the Aerotropolis study area. The land use has been tailored to be mixed use in proportions that will encourage shorter trips and public transport use.
3. Beta factors for the EMME Model trip distribution were adjusted across eThekweni to allow for shorter trips that will take place as a result of the mixed use development planning and improved economic conditions. The shift to shorter trip lengths was phased gradually over the study period with different beta's for private car and transit.

3.2 Transportation Demands

Person trip demands were estimated by assuming jobs per household as a trip origin with one job equating to one person trip, and the same for commercial uses as a trip attractor. This yielded demands in person trips split into productions and attractions that were further split into private car trips and public transport trips. This was input into the eThekweni Municipality EMME Master Plan Strategic model according to the various development based land-use plugins and road network scenarios.

3.2.1 Phase 1 (2016 – 2026)

The land use from Phase 1 projections yielded 2 500 000m² of Commercial development, with an accompanying 31 000 residential units of varying income types. The resulting person trip demand was 105 000 two-way person trips with a modal split of 50:50 for private and transit. Productions and attractions were at 38% and 62% respectively, deliberately creating a higher attraction by creating jobs for residents beyond the study area. This is summarised in Figure 1.



Figure 1: Phase 1 Demand and Modal Split

3.2.2 Phase 2 (2026 – 2041)

The second phase of development projected 21 500 000m² of Commercial development with 215 000 Residential units which includes the development from Phase 1 as shown in Figure 2. The total two way person trips amounted to 720 000 with the modal split further adjusted to 70% transit and 30% private car because of IRPTN operations and system maturity, together with a shift towards Transit as a sustainable means of Transportation. Productions and Attractions remain at 38% and 62% respectively with a net inflow of people from outside of the study area.

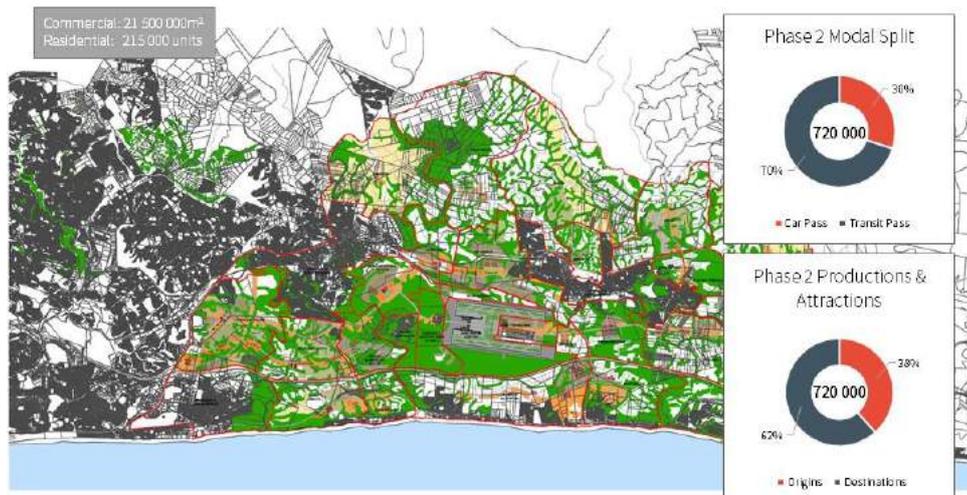


Figure 2: Phase 2 Demand and Modal Split

3.2.3 Phase 3 (2041 – 2066)

The Aerotropolis at its ultimate stage in Phase 3 will total a projected 36 500 000m² of Commercial development and 365 000 residential units which includes both Phase 1 and Phase 2 development as shown in Figure 3. The total person trips was estimated to 1 200 000 two way trips with the modal split and productions and attraction ratios remain the same as in Phase 2.

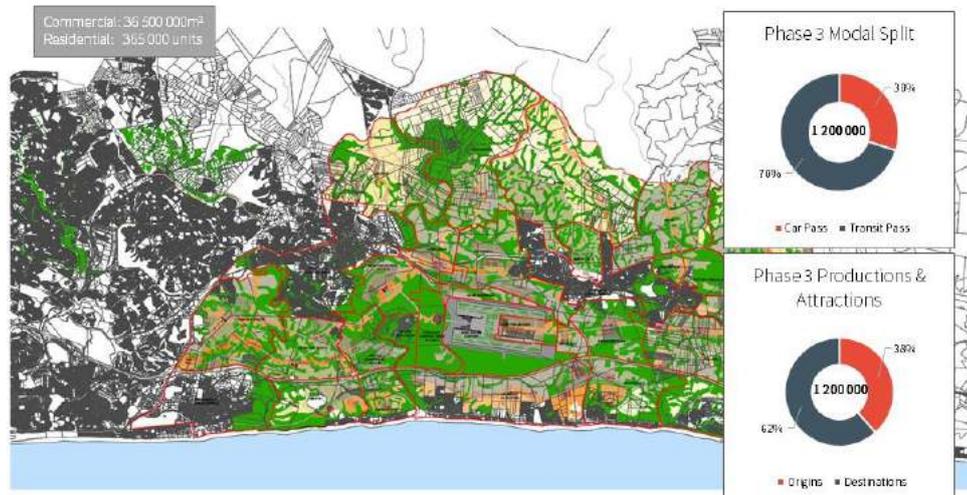


Figure 3: Phase 3 Demand and Modal Split

3.3 Implications

The transport demands for the three phases were input to the eThekweni Master Plan EMME Model and associated phasing with the updated relevant beta factors, modal split, and peak spreading factors. The output results from the model are as follows.

3.3.1 Phase 1 (2016 – 2026)

Aerotropolis Phase 1 traffic demands were modelled in the EMTMP using the 2025 approved road network upgrades. With the proposed modal split, peak spreading, and updated beta factors, the simulation results show minimal performance issues on the road

network in the immediate study area with the proposed approved road upgrades as shown in Figure 4. The modal split and travel times for transit, private car, and heavy vehicles is also shown. The adjusted beta factors only show minimal changes in the trip length distribution.

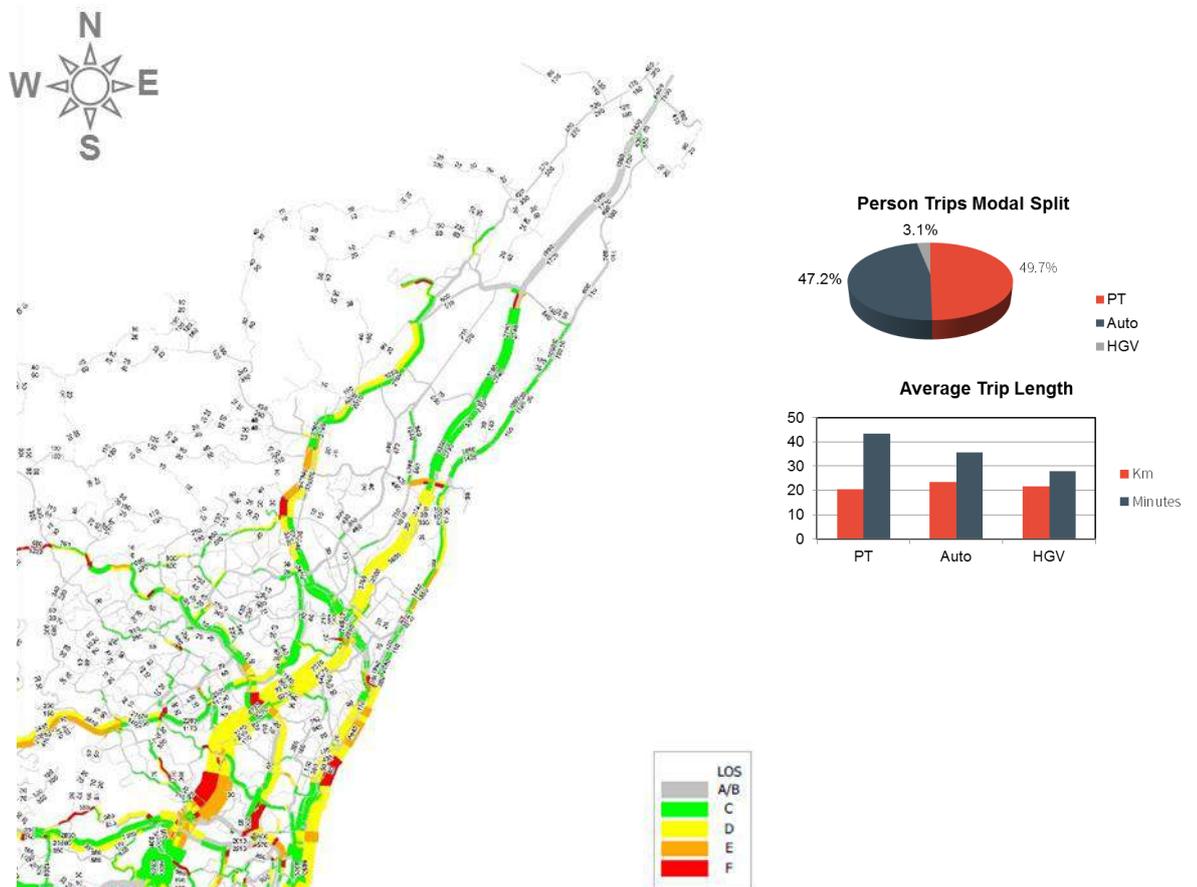


Figure 4: Phase 1 Road Network Performance

3.3.2 Phase 2 (2026 – 2041)

The EMTMP 2035 upgrades were modelled as approved with the Aerotropolis Phase 2 traffic demands and associated changes in modal split and beta factors discussed in the previous section. The bulk of the Aerotropolis forecast land uptake is scheduled for implementation in this phase and the resultant impact on the road network can be seen in Figure 5. Roads immediately surrounding the King Shaka International Airport namely, R102, M65 (Mdloti Street), M43 (Watson Highway), and the M4 (Ruth First Highway) are operating above capacity in the AM Peak hour. The N2 and M4 (Ruth First Highway) in the vicinity of Umhlanga show signs of stress with certain sections operating above capacity.

The average travel time and distance for Phase 2 has decreased from Phase 1, while the modal split has also shifted towards transit.

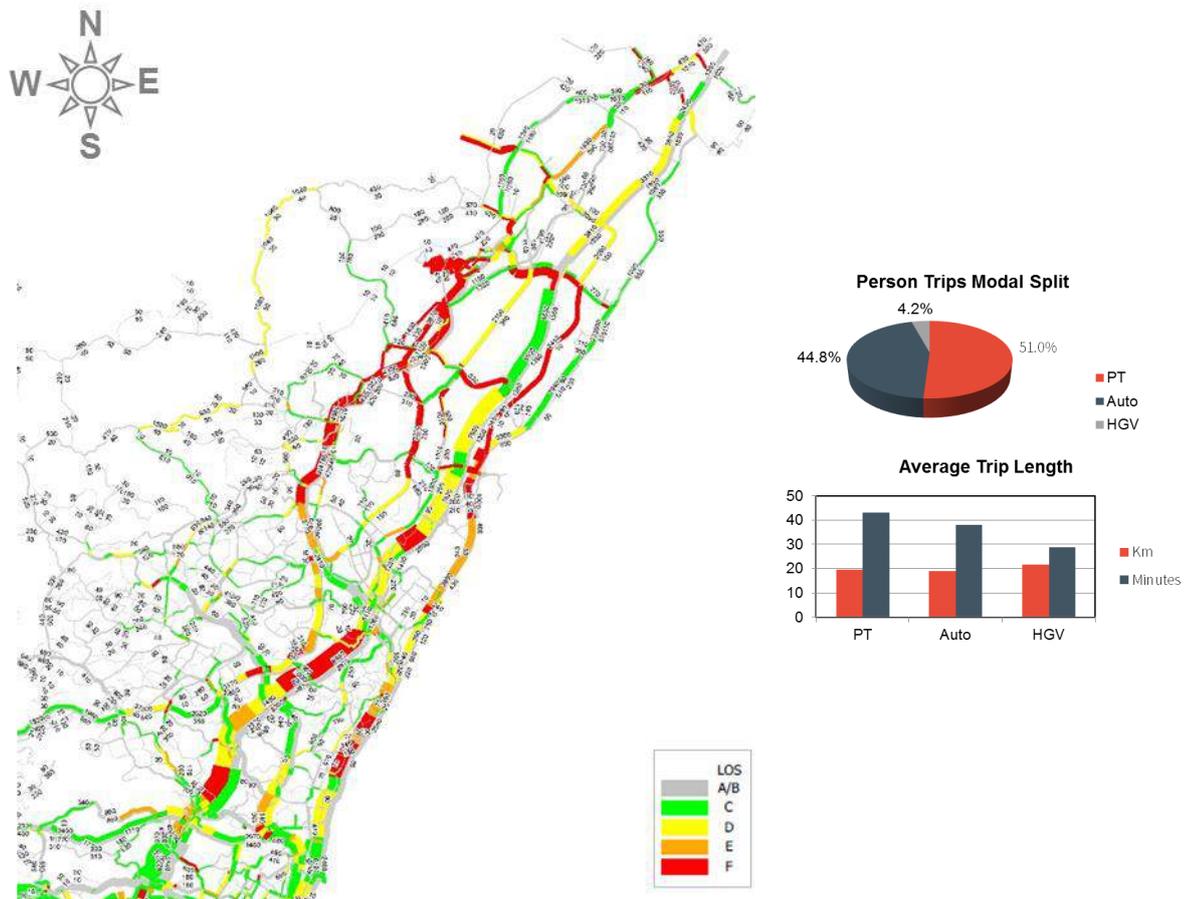


Figure 5: Phase 2 Road Network Performance

3.3.3 Phase 3 (2041 – 2066)

The road upgrade from the EMTMP for the year 2035 were brought in as is from Phase 2, while further shifting the beta factors for more local travel. The modal split was not adjusted from Phase 2. The Aerotropolis Phase 3 demand was applied accordingly, with the remaining projected land take up being implemented. The modelling results in Figure 6 show a slightly improved scenario even though there were no additional road upgrades implemented in this phase, primarily because of the shift in the Beta factor for shorter trips encouraged by targeted land use and healthy economic growth in the Aerotropolis region. Roads immediately surrounding the King Shaka International Airport remain over capacity but no further road upgrades were proposed.

The average modal split has remained the same from Phase 2 going into Phase 3, while the travel time and travel distance for both Transit and private vehicle use have decreased from Phase 2.

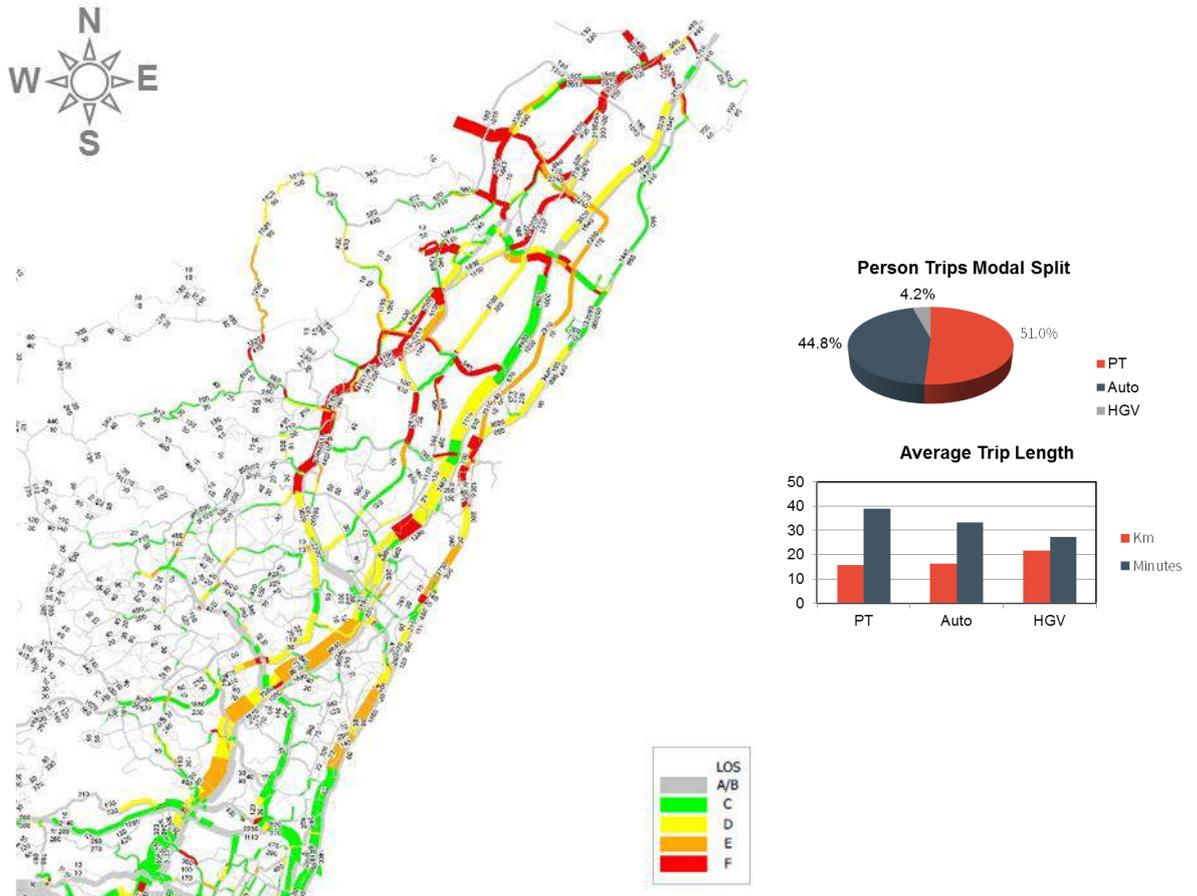


Figure 6: Phase 3 Road Network Performance

4. Transportation Upgrade Schedule

The road network modelling results informed a road upgrade schedule which was primarily based on the road upgrades proposed in the EMTMP for the different phases. The road upgrade schedule and high level cost estimates are shown in Table 2.

Table 2: Transportation Upgrade Schedule

| Projects | Phase 1 ZAR | Phase 2 ZAR | Phase 3 ZAR | Total | Funding Options |
|---|------------------|------------------|------------------|------------------|-----------------------|
| Total Estimated Cost | R 7 716 768 380 | R 8 370 642 173 | R 24 643 590 130 | R 40 731 000 683 | |
| Development Internal roads | R 586 768 380 | R 3 820 642 173 | R 2 843 590 130 | R 7 251 000 683 | Private Sector |
| N2 - Mt Edgecombe IC TO Tongaat IC | R 1 800 000 000 | | | | SANRAL |
| Cornubia roads | R 2 310 000 000 | | | | Private Sector |
| Sibaya roads | R 940 000 000 | | | | Private Sector |
| Greater Umhlanga roads | R 800 000 000 | | | | Private Sector |
| M4 (Ruth First Highway) - CBD to Durban North | R 670 000 000 | | | | eThekweni |
| M4 (Ruth First Highway) - Durban North to Virginia | R 250 000 000 | | | | eThekweni |
| M4 (Ruth First Highway) - Virginia to M41 | R 360 000 000 | | | | eThekweni |
| IRP IN C8 & C9 | R 10 000 000 000 | R 10 000 000 000 | | | eThekweni & DoI |
| N2 - Mt Edgecombe IC | | R 800 000 000 | | | SANRAL |
| N2 - Blackburn C | | R 300 000 000 | | | SANRAL |
| M4 (Ruth First Highway) - Umhlanga to Umdloti | | R 460 000 000 | | | eThekweni |
| M4 (Ruth First Highway) - M41 to Umhlanga | | R 310 000 000 | | | eThekweni |
| M4 (Ruth First Highway) - Umdloti to Watson Highway | | R 580 000 000 | | | eThekweni |
| Tongaat Eastern Bypass | | R 360 000 000 | | | DoI |
| Northern Expressway | | R 650 000 000 | | | DoI |
| Western Arterial Cornubia to DIP | | R 560 000 000 | | | DoI |
| Cornubia - DIP Link | | R 530 000 000 | | | DoI & Private Sectors |
| Eastern Arterial | | | R 590 000 000 | | DoI |
| M4 (Ruth First Highway) Realignment | | | R 630 000 000 | | eThekweni |
| Tongaat Western Bypass | | | R 580 000 000 | | DoI |

**Based on 4.5% GDP growth and Development Take-up at current costs. Growth rates will influence the actual timing of projects.

5. Conclusions

The Aerotropolis Land Use Forecasting was based on economic growth and job creation providing land uses that will satisfy these economic growth targets. The land use take up was phased in three stages with Phase 1 being 10 years from 2016 – 2026; Phase 2 being 25 years from 2026 – 2041; and Phase 3 being 25 years from 2041 – 2066. The majority of take up happens in Phase 2.

The jobs forecast were translated into a transportation demand by person trips, equating one job created to one person trip. Phase 1 yield 105 000 two-way trips; Phase 2 yield 720 000 two way trips; and Phase 3 yield 1 200 000 two way trips.

These person trip demands were modelled using the eThekweni Municipality Transport Master Plan EMME Model over the three phases and defining the modelling metrics such as peak spreading, modal split, and beta factors to provide a shift in typical Transportation behaviours as a result of the mixed use nature of the Aerotropolis Developments.

The modelling results showed that the Aerotropolis transportation demand can be satisfied with the approved road upgrades as part of the EMTMP, provided the shifts in travel behaviour are implemented i.e. using Travel Demand Management practices. There are portions of the road network immediately surrounding the King Shaka International Airport; however no upgrades are proposed to further encourage different modes of travel.

Annexure B2

Water and Sanitation

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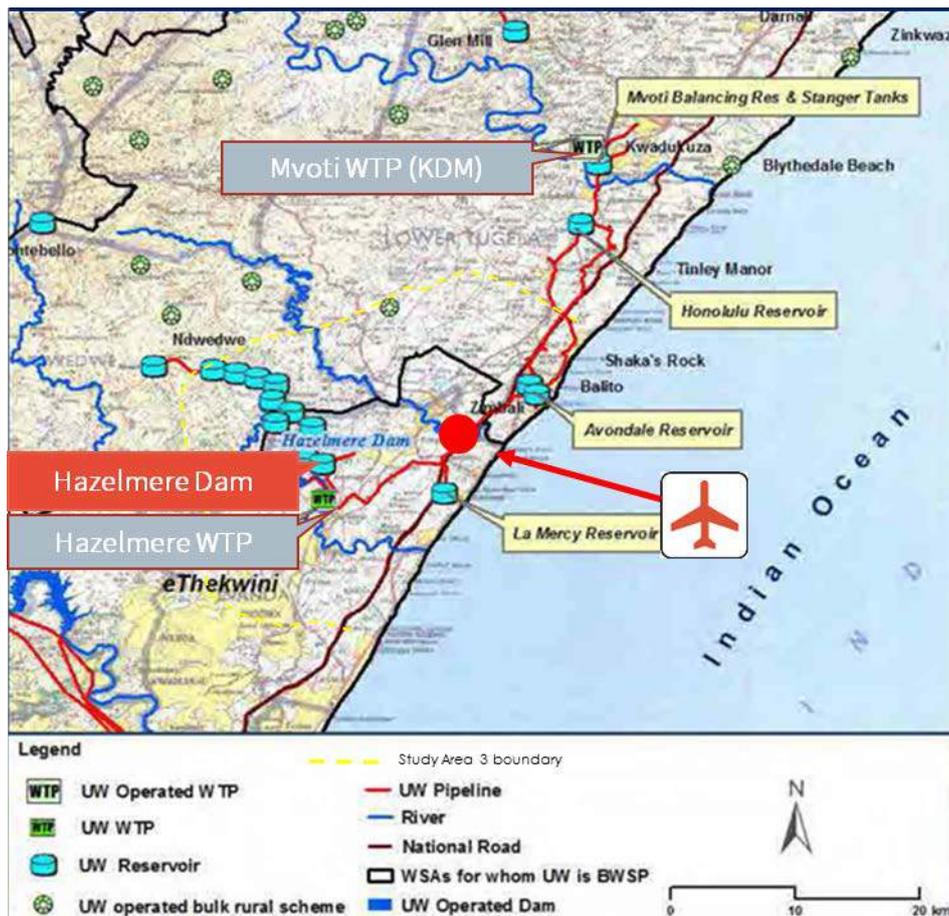


Figure 2: North Coast Water System

2.1.1 Northern Aqueduct

The Northern Aqueduct Project connects the Western areas of eThekweni to the Northern Areas with future extensions also proposed as shown in Figure 3.

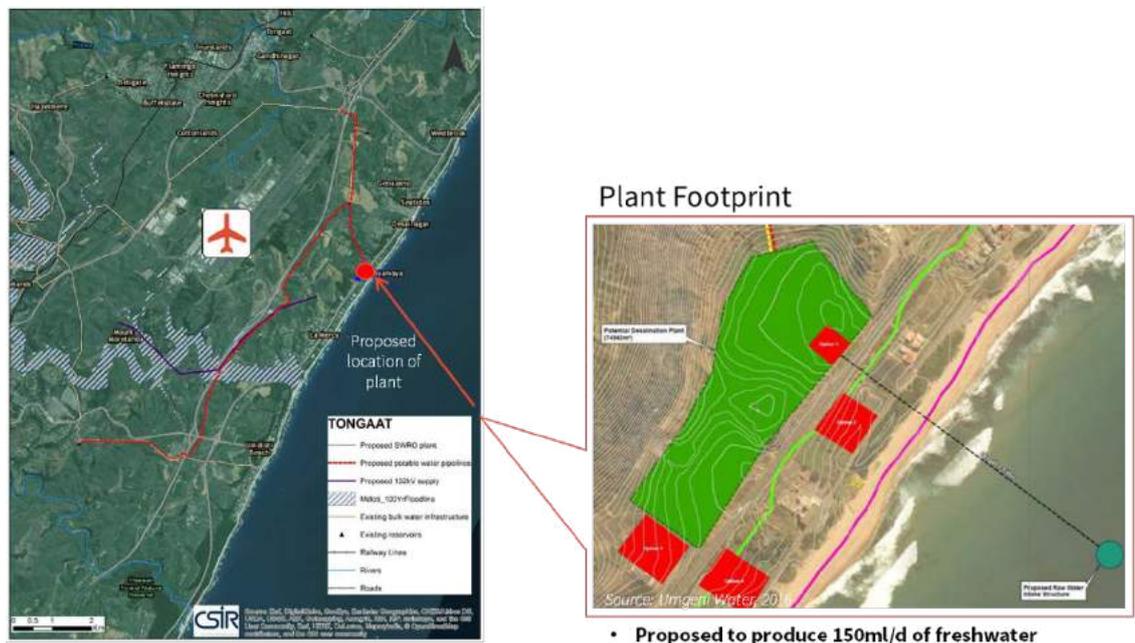
The Northern Aqueduct is aimed at supplementing water sources to the northern areas from the west, with the ultimate goal to add substantial capacity from the uMkhomazi Water Project which includes the construction of the Smithfield Dam. This project is currently in progress with the detailed feasibility being completed and now going into implementation however there have been delays and has since been postponed to 2028 due to bio-diversity issues.



Figure 3: Northern Aqueduct

2.1.2 Proposed Desalination Plant

A desalination plant is proposed in the northern areas as shown in Figure 4 with the anticipated supply of 150ml/day of additional water into the Northern System. The exact date if implementation is not known, however it will be in future when it is economically viable and required.



• Proposed to produce 150ml/d of freshwater

Figure 4: Proposed Desalination Plant Location

2.2 Sanitation Infrastructure

The study area is serviced by a number of existing Waste Water Treatment Works as shown in Figure 5. Upgrades are planned for the Phoenix and Tongaat treatment works,

while the Umdloti, Verulam, and Genazzano works will be decommissioned and replaced by a new Umdloti Regional Works.

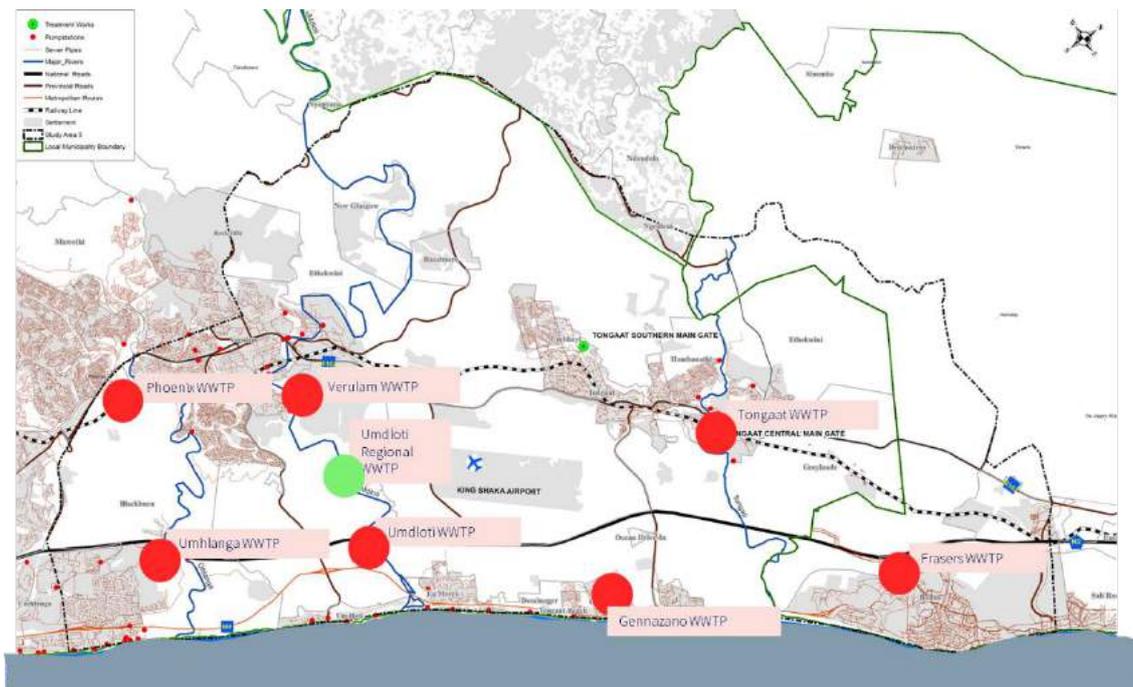


Figure 5: Existing Sanitation Infrastructure

3. Demand Generation

3.1 Generation Assumptions

Demand generation factors were taken from eThekweni Guidelines and adjusted through discussions and meetings as shown in Table 1. These demands do not allow for future reductions or efficiencies that can be achieved and as a result, a second “Smart Demand” scenario was analysed using by assuming an annual reduction in demands due to technological and behavioural changes, of 1.5% per annum from inception and capped after 25 years. This is based on current research and a conservative estimate according to the Environmental Science and Engineering Magazine in the USA (November, 2011).

Table 1: Water and Waste Water Generation Rates

| Land Use Type | Waste Water (Kl/m2 or unit/day) | Water (Kl/m2 or unit/day) |
|---------------------|------------------------------------|------------------------------|
| General Commercial | 0.005 | 0.004 |
| General Industry | 0.0015 | 0.0043 |
| General Residential | 0.75 | 0.88 |
| Urban Office | 0.005 | 0.004 |

The water and wastewater demands were estimated by catchment from the resulting demands per development within the Aerotropolis Master Plan. The demands were determined per phase with Phase 1 from 2016-2026; Phase 2 from 2026-2041; and Phase 3 from 2041-2066.

3.2 Water and Sanitation Demands

The Water and Waste Water demands were estimated in two scenarios with the first scenario being a “Do Nothing” analysis and a second “Smart Demand” using the

abovementioned 1.5% per annum reduction for the first 25 years of implementation. The results are as presented in the following sections.

3.2.1 **Do Nothing vs Smart Demand**

Figure 6 shows the comparison between the Do Nothing Scenario vs the Smart Demand Scenario. Over the full rollout of the Aerotropolis developments, the anticipated water demand is 496MI/day for the Do Nothing scenario, and 285MI/day for the Smart Demands scenario, resulting in an overall reduction of 35%.

Waste Water demands for the full development are 416MI/day for the Do Nothing scenario and 285MI/day for the Smart demand scenario with a 31% overall reduction.

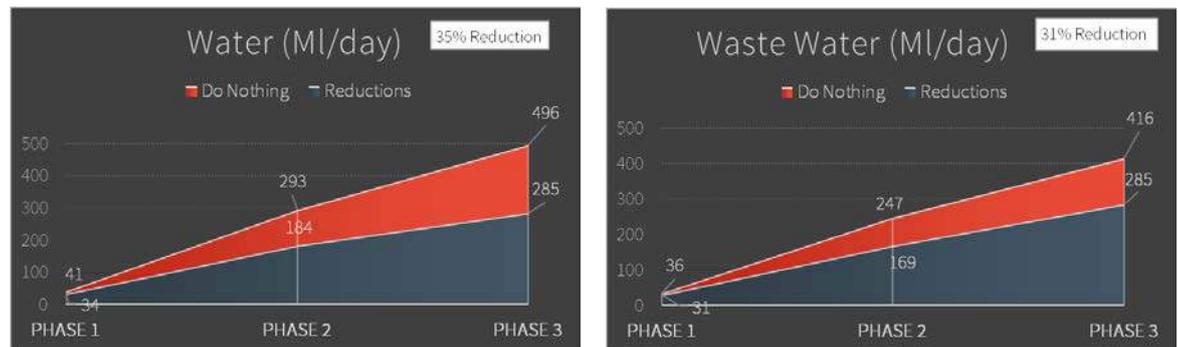


Figure 6: Do Nothing vs Smart Demands for Water and Waste Water

The following sections show the demands per water reservoir service area and wastewater treatment works catchments for each of the two scenarios. The demand per catchment was estimated using ground contours since the GIS Data for the catchment zones was not available at the time of writing this report.

3.2.2 **Do Nothing**

The do nothing demands for Water at a reservoir level and for Waste Water at a treatment works catchment level are shown in Figure 7 and Figure 8. Majority of the cumulative demand over the study area and study period occurs in Phase 2 of development, with Phase 3 being slightly less than Phase 2.

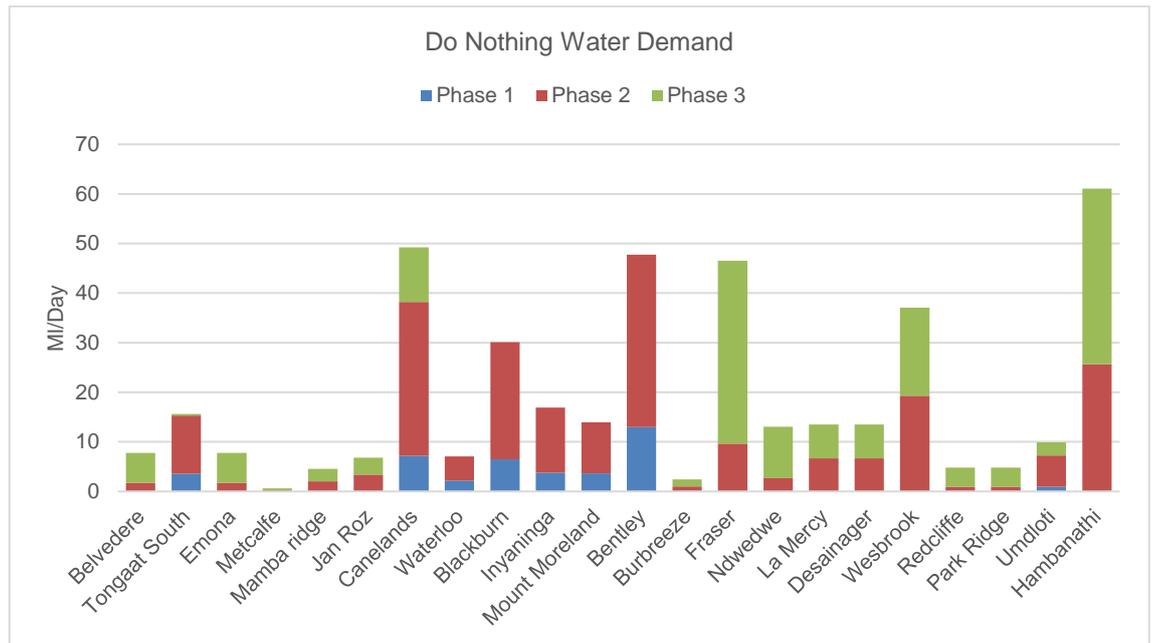


Figure 7: Do Nothing Water Demand

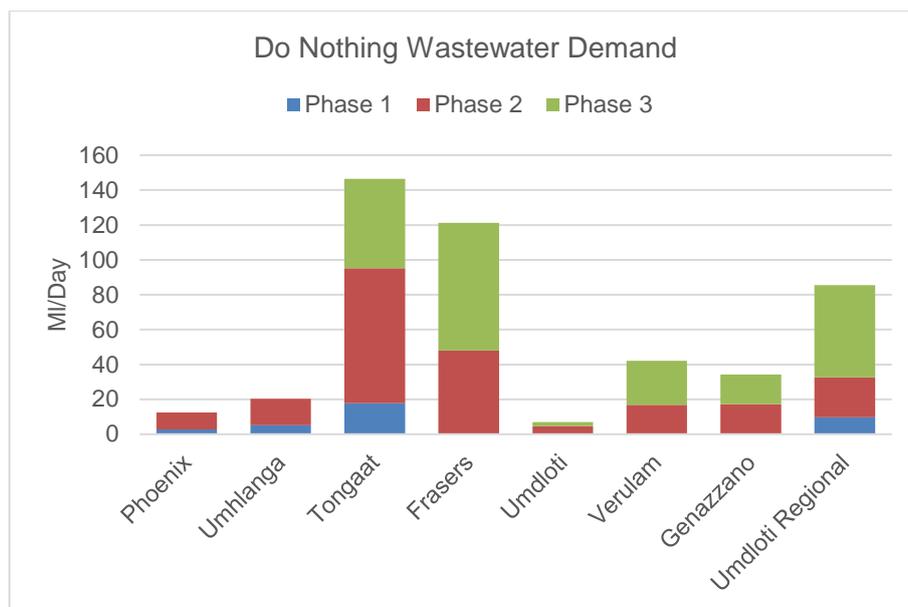


Figure 8: Do Nothing Wastewater Demand

3.2.3 Smart Demand

This scenario applies the annual reduction of approximately 1.5% per annum over the first 25 years of development and remains capped thereafter. Overall demand reductions as much as 20MI can be seen for the catchments with the highest demands. This shows the potential savings that can be achieved if the anticipated demand reductions are driven through policy changes and implementation of smart technology.

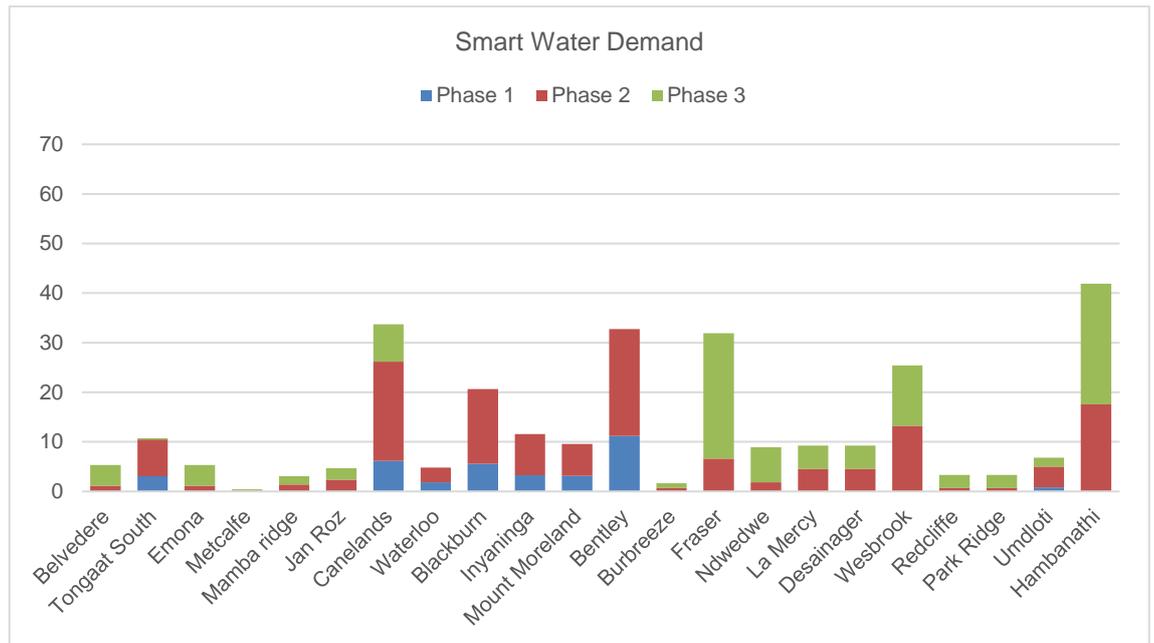


Figure 9: "Smart" Water Demand

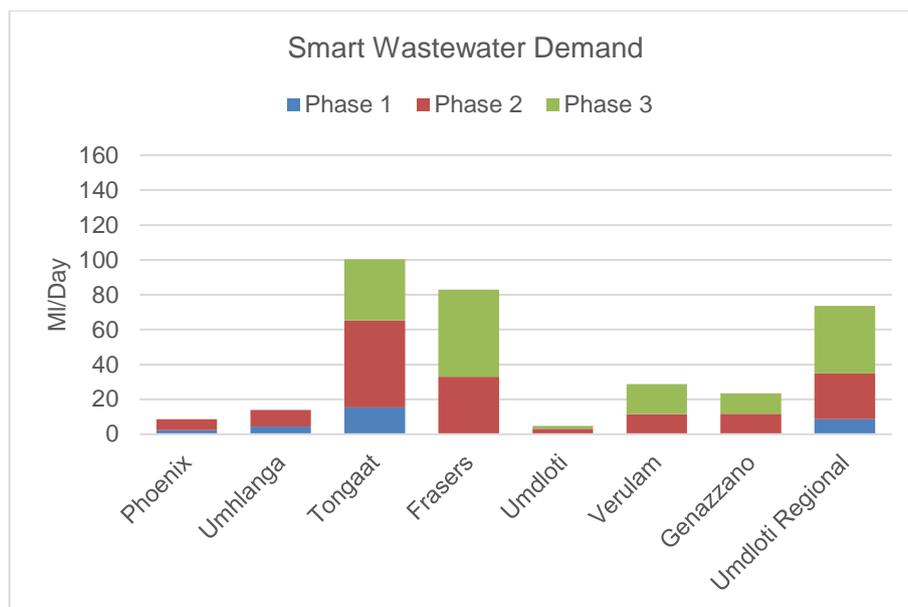


Figure 10: "Smart" Wastewater Demand

3.3 Implications for Waste Water

The potential implications for the expected demands from the Aerotropolis developments can be summarised in Figure 11 which shows the current planned capacity and potential shortfall for the two scenarios. The catchment demands were estimated because the exact GIS based catchment boundaries were not available at the time of analysis. This could explain the low demand for the Phoenix Treatment works catchment.

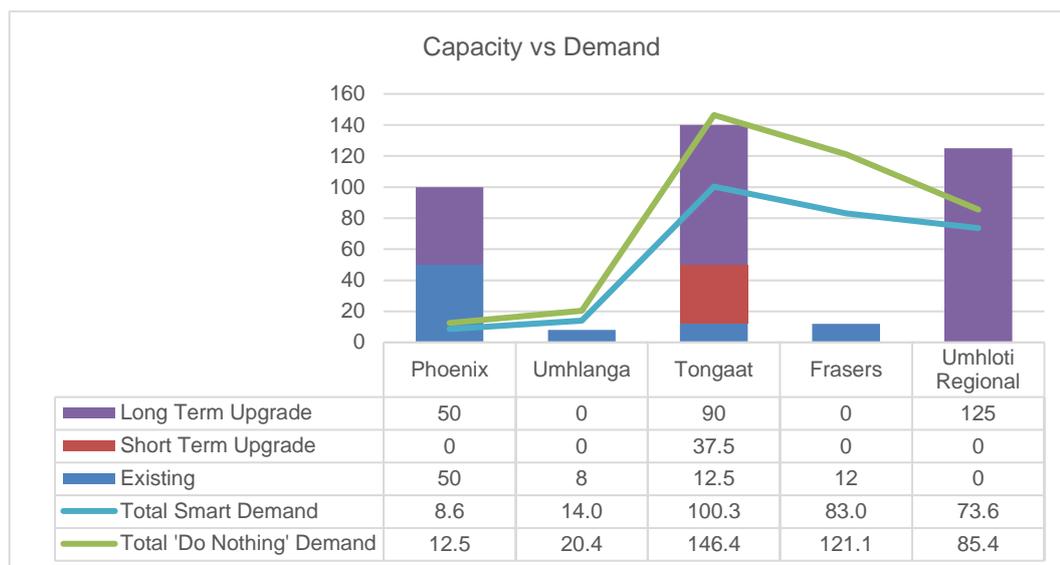


Figure 11: Waste Water Demand Implications

4. Future Thinking

Reduced demands for Water and Waste Water can be achieved through technological advances, such as smart systems integration which enables real time system performance monitoring and detection of abnormality which could indicate leaks or water theft etc. thereby enabling quick responses and preventative maintenance.

Pushing a shift in behaviours of both consumers and operators is also key in achieving long term efficiency, by creating consumer awareness of the importance of water conservation and means of saving or reusing water, while policy makers can enforce shifts of standards such as implementing a mixed water supply such that no single source is dominant, creating redundancy and a resilient system. Rainwater harvesting on a large scale combined with desalination plants in future both offer viable solutions to alternative water supply streams.

Industrial or residential graywater reuse are also viable methods of reusing water by operating two separate water streams such that there is no contamination of potable water. Full treatment of wastewater to potable standards is a viable alternative, allowing near full recycling of water and being less dependent on external sources.

5. Current Planned Upgrades

Various master planning documents were consulted to determine current planning initiatives for the Aerotropolis study area, with two relevant documents standing out. The SMEC Bulk Services Report for the Northern Regions and the EWS Master Plan 2012/2013. The projects listed in Table 2 and Table 3 were extracted from these reports and present an extensive list of recommended upgrades for the Aerotropolis Study Area.

Table 2: Planned Water Network Upgrades

| Water (SMEC Bulk Services Northern Region) | | | | | | |
|---|----------------------|------------------------|------------------------|------------------------|------------------------|--|
| Projects | Phase 1 ZAR | Phase 2 ZAR | Phase 3 ZAR | Total | Funding Options | |
| Total | R 627 719 601 | R 3 172 115 400 | R 2 761 176 366 | R 6 561 011 366 | | |
| Development Reticulation | R 222 072 225 | R 1 646 834 021 | R 2 710 544 141 | R 4 579 450 388 | Private Sector | |
| Proposed Reservoirs | R 218 473 481 | R 414 429 332 | R - | R 632 902 813 | | |
| Izinga - Izinga (Prop) | R 25 316 113 | | | | EWS/Private | |
| Cornubia - Blackburn (Prop) | R 193 157 368 | | | | EWS/Private | |
| Cornubia North - Blackburn (Prop) | | R 135 952 094 | | | EWS/Private | |
| Inyaninga - Inyaninga 2 (Prop) | | R 151 896 675 | | | EWS/Private | |
| Westbrook - Zimbali South (Prop) | | R 126 580 563 | | | EWS/Private | |
| Upgraded Reservoirs | R 127 993 092 | R 935 283 633 | R 50 632 225 | R 1 113 908 950 | | |
| Ridgeside 1-3 - Umhlanga 1 & 2 | R 20 111 138 | | | | EWS/Private | |
| Ridgeside 4 - Umhlanga 1 & 2 | R 5 204 974 | | | | EWS/Private | |
| Cornubia North - Waterloo | | R 102 064 873 | | | EWS/Private | |
| Sibaya - Waterloo | | R 104 753 428 | | | EWS/Private | |
| Mt. Moreland South - Waterloo | | R 75 690 911 | | | EWS/Private | |
| Umdloti North - Waterloo | | R 71 916 363 | | | EWS/Private | |
| La Mercy Beach - La Mercy | | R 201 116 370 | | | EWS/Private | |
| Ushukela - La Mercy | R 26 728 642 | | | | EWS/Private | |
| Mt. Moreland North - Inyaninga 1 | | R 30 026 087 | | | EWS/Private | |
| King Shaka Airport - Inyaninga 1 | | R 197 818 926 | | | EWS/Private | |
| Bridge City - Phoenix 3 | R 75 948 338 | | | | EWS/Private | |
| Amanzimyana - Mamba Ridge | | R 25 316 113 | | | EWS/Private | |
| Aberfoyle - Emona | | R 126 580 563 | | | EWS/Private | |
| Dudley Pringle - Burbreeze | | | R 31 231 931 | | EWS/Private | |
| Lindokuhle - Burbreeze | | | R 19 400 294 | | EWS/Private | |
| Supply Pipelines | R 59 180 803 | R 175 568 414 | R - | R 234 749 216 | | |
| URTC | R 948 038 | | | | EWS/Private | |
| Westbrook | R 12 224 037 | | | | EWS/Private | |
| Cornubia North (Local) | R 16 043 925 | | | | EWS/Private | |
| Sibaya | R 16 466 548 | | | | EWS/Private | |
| Mt Moreland South | | R 11 898 112 | | | EWS/Private | |
| Umdloti North | R 11 304 778 | | | | EWS/Private | |

| Water (SMEC Bulk Services Northern Region) | | | | | |
|---|--------------------|--------------------|--------------------|--------------|------------------------|
| Projects | Phase 1 ZAR | Phase 2 ZAR | Phase 3 ZAR | Total | Funding Options |
| La Mercy Beach | | R 33 192 141 | | | EWS/Private |
| uShukela | | R 28 414 068 | | | EWS/Private |
| Amanzimnyama R | 2 193 477 | | | | EWS/Private |
| Inyaninga | | R 45 732 126 | | | EWS/Private |
| Cornubia North (Regional) | | R 27 799 837 | | | EWS/Private |
| Sibaya (Regional) | | R 28 532 130 | | | EWS/Private |

**Based on 4.5% GDP growth and Development Take-up at current costs. Growth rates will influence the actual timing of projects. Major regional connections are excluded.

6. Conclusions

This report aimed to assess the Water and Waste Water demands that the proposed Aerotropolis Developments generate over the three phases and full study period. Two demand scenarios were assessed with the first being a “Do Nothing” and the second being a “Smart Demand” where the demands were reduced by 1.5% per annum over the first 25 years of development.

By applying the Smart Demand scenario, it was anticipated that a potential reduction of 35% for Water demand and 31% for Waste Water demand can be achieved through smart and efficient solutions and policies.

The potential shortfall of capacity for Waste Water was estimated based on current treatment works upgrades and existing capacities where it was found that more detailed information regarding the catchment boundaries is required to determine the actual shortfalls. This exercise could not be completed for the Water Reservoir catchments because no existing consumption data and no catchment boundary data was available.

Implementation of new efficient technologies such as wastewater recycling or reuse are viable and applicable right now for meeting some of the effluent treatment and water supply issues being faced. This technology can also be applied to existing treatment works to achieve better efficiency and reduce sole source reliance on rivers and dams for water to be treated to potable standards.

Annexure B3

Electricity and Solid Waste Demands

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1. Introduction

This document describes the assumptions and methodologies used in determining the new demands for Electricity and Solid Waste services resulting from the proposed Aerotropolis developments.

The land use was provided by the Town Planners which was developed in conjunction with an Economist where the economic forecast was based on economic growth within the KZN Region for a number of different growth scenarios. The number of jobs to be created was provided which allowed the forecast for housing requirements. This fed into the demand analysis for the study area and each phase of development in the master plan.

2. Current Infrastructure

Majority of the study area is Greenfield and will not have electrical grids to tap into. Solid waste will be transported regularly to nearby landfills which will be described accordingly.

2.1 Electricity

The Aerotropolis Study Area gets its electricity supply from three sources, eThekweni Electricity, KwaDukuza Municipality, and certain areas in the north which are directly supplied by Eskom. These are major supply points and internal electrification will still need to be supplied.

2.2 Solid Waste

From a solid waste perspective, the study area spans two municipalities, eThekweni and KwaDukuza. The Aerotropolis will be served by three landfills operated by the two municipalities, namely Bisasar Road, Marianhill, and Bufflesdraai landfill sites.

Bisasar Road and Marianhill Landfills have both reached capacity, with Bufflesdraai the only site having spare capacity to service the Aerotropolis. Bisasar Road will still collect garden refuse and builders rubble as part of its rehabilitation and Marianhill will continue to extract energy from the gases released by the site for up to 7 years.

3. Demand Generation

Various factors were used to project the service demands for electricity and solid waste which are both detailed in this chapter. Two scenarios were assessed to show potential savings that can be achieved if changes are driven from project inception.

3.1 Generation Assumptions

The factors used for demand generations for both electricity and solid waste are as shown in Table 1. The factors for electricity were based on the SANS 10142-1 and for solid waste were from the Guidelines for Human Settlements Planning and Design as well as the eThekweni Guidelines for the design of Foul Water Systems for the number of occupants in a commercial and industrial solid waste.

These factors do not allow for future reductions or efficiencies that can be achieved and a second "Smart Demand" scenario was analysed using by assuming an annual reduction in demands due to technological advances and behavioural changes, of 1.5% per annum from inception and capped after 25 years. This is based on current research and a conservative estimate according to the Environmental Science and Engineering Magazine in the USA (November, 2011).

Table 1: Demand Generation Factors

| Land Use Type | Electricity (Kva/m ² /day or unit/day) | Solid Waste (tons/per/year) | People per unit or m ² |
|---------------------|---|-----------------------------|-----------------------------------|
| General Commercial | 0.0375 | 0.12 | 0.4 |
| General Industry | 0.0625 | 0.12 | 0.4 |
| General Residential | 5.0 | 0.15 | 6.0 |
| Urban Office | 0.0375 | 0.12 | 0.4 |

3.2 Electricity and Solid Waste Demands

Two demand scenarios were assessed which took into account a “Do Nothing” scenario and the second “Smart” scenario which is based on the abovementioned 1.5% per annum reduction for the first 25 years. The results of each scenario is discussed below.

3.2.1 Comparison of Do Nothing vs Smart

Figure 1 shows the comparison of the two scenarios of “Do Nothing” vs “Smart Reductions” for both Electricity and Solid waste demands for the Aerotropolis. Up to 31% reductions in demand can be achieved through applying new efficient energy technologies and supplementing current supply streams with renewable energy sources. The same reductions could be achieved for solid waste with behavioral changes and focus on reuse and recycling. It is envisioned that recycling of up to 80% can be achieved if recycling systems are enforced with at source separation being incentivized to encourage these changes.

These interventions can greatly reduce the potential demands for electricity and solid waste, enabling a more sustainable Aerotropolis with a greener carbon footprint.

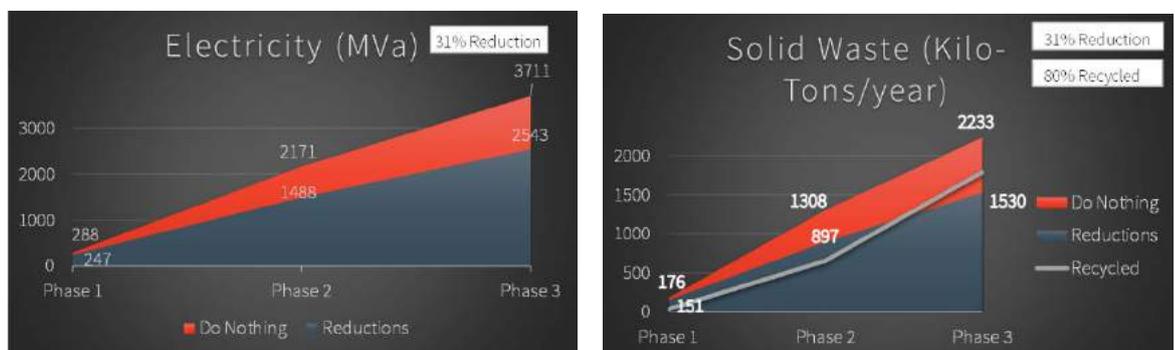


Figure 1: Do Nothing vs Smart Demand for Electricity and Solid Waste

3.2.2 Do Nothing

The “Do Nothing” scenario shows an overall demand of approximately 3700MVA across the three phases of development, with a majority of demand in Phase 2. The demands per development area or Township and per phase is shown in Figure 2.

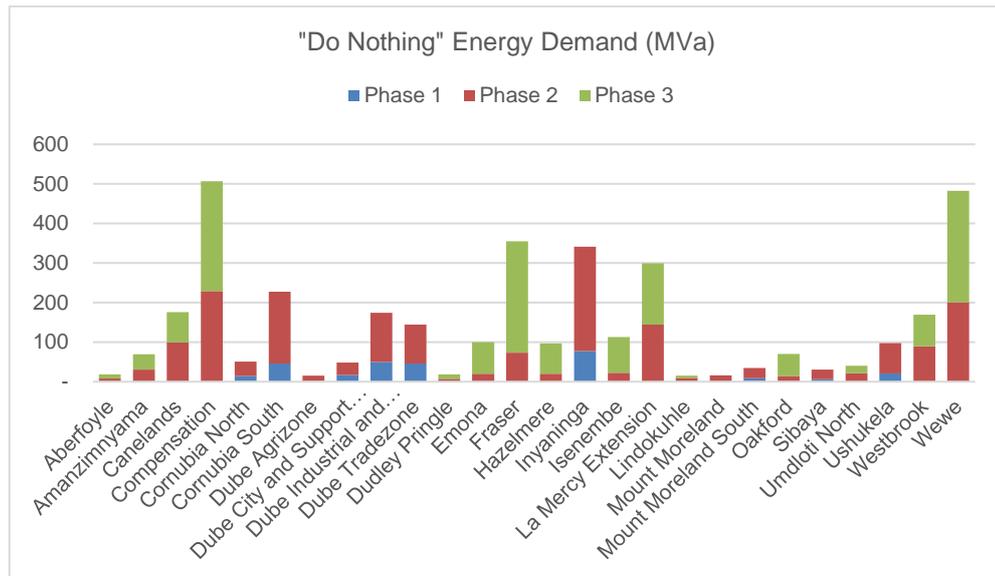


Figure 2: Do Nothing Energy Demand

The Solid Waste demand for the “Do Nothing” scenario shows approximately 2.2 million tons/year of waste generation across the study area at the ultimate year. Figure 3 shows the anticipated demand per development/township are and per phase.

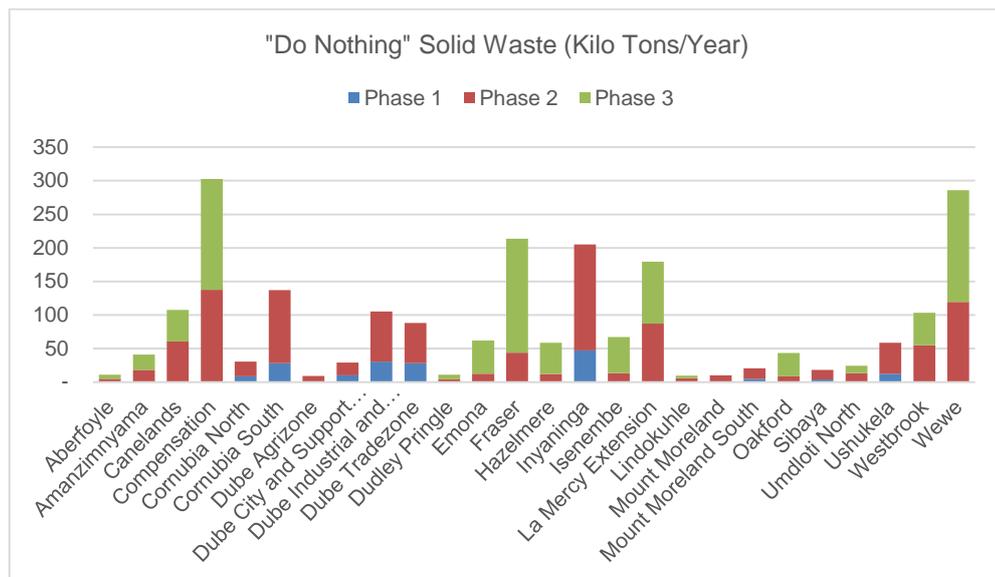


Figure 3: Do Nothing Solid Waste Demand

3.2.3 Smart

If smarter technology and electrical supply technologies are implemented, a reduction in demand of approximately 31% can be realized at the ultimate year. The total demand then amounts to approximately 2500MVa. Figure 4 shows the “Smart” energy demand for each development area/township broken down per phase. When compared to Figure 2, the contrast in demand can be clearly seen.

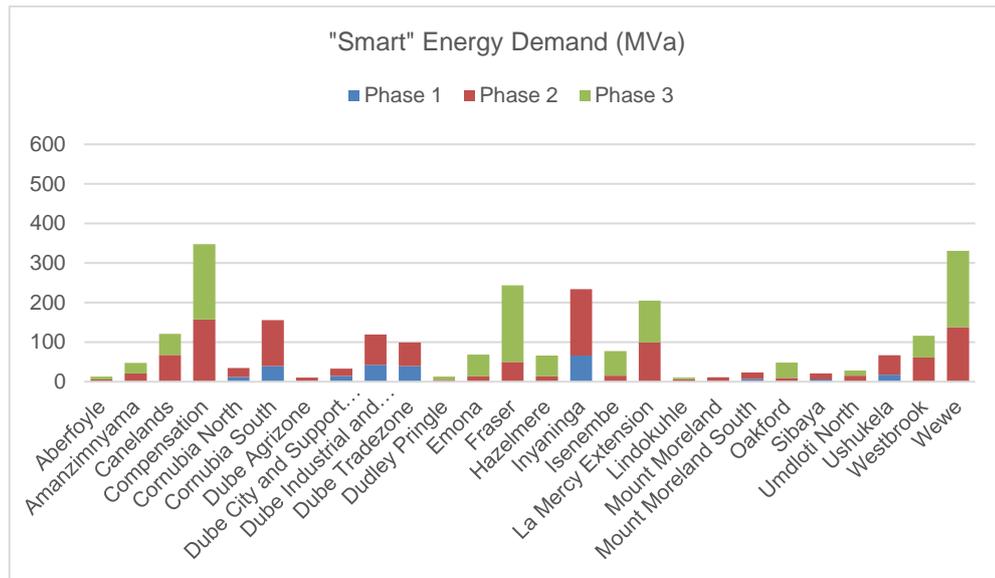


Figure 4: Smart Energy Demand

Solid waste generation can be minimised in different ways with primary focus being behavioral and a drive to implement recycling and reuse. Potential demand reductions of approximately 31% can be achieved resulting in an approximate ultimate demand of 1.5 million tons per year. Figure 5 shows the solid waste demand for the Smart scenario broken down by development/township area and per phase.

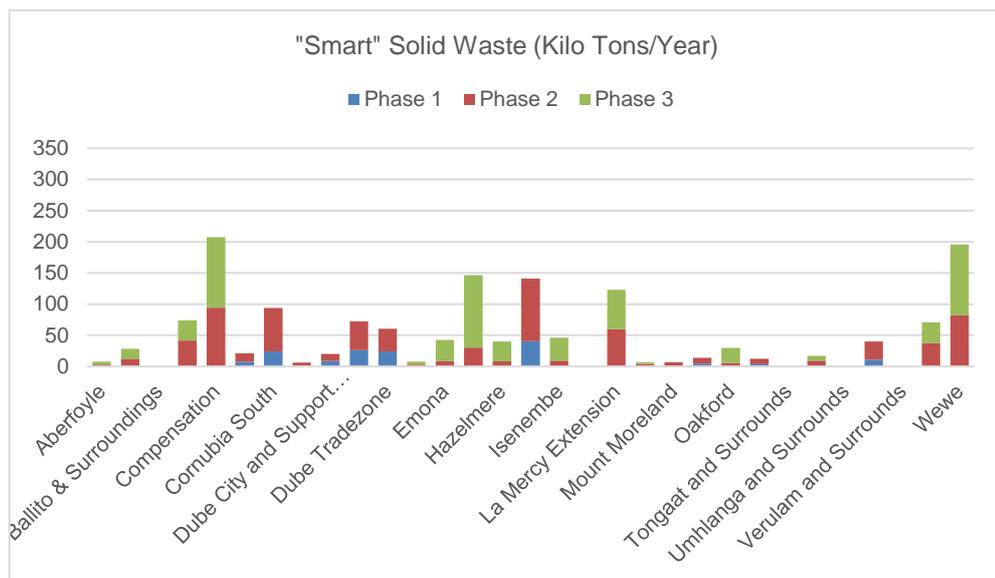


Figure 5: Smart Solid Waste Demand

3.3 Implications

3.3.1 Electricity

New electrical supply infrastructure will need to be installed as a majority of the site is greenfield. The exact infrastructure required will need a detailed demand analysis and accompanying high level design exercise. The report compiled by Bosch Projects for Tongaat Hulett Developments for the Northern Areas indicates potential requirements, however the calculations are conservative and do not include any allowance for greener smarter technologies.

Eskom are currently investigating the position of a new transmission station near the greater Inyaninga Area which will provide a 400/132kV supply into the eThekweni Grid. This transmission station will be required for the first phases of development in the Aerotropolis.

3.3.2 Solid Waste

With Bufflesdraai being the only landfill site in close proximity to the Aerotropolis study area, a detailed lifecycle study will need to determine the requirements of a second site, taking into account the push for recycling and reuse. A target of 80% waste recycling has been set, which will minimize the amount of waste sent to landfill.

4. Conclusions

This report aimed to assess the Electricity and Solid Waste demands that the proposed Aerotropolis Developments generate over the full study period. Two demand scenarios were assessed with the first being a “Do Nothing” and the second being a “Smart Demand” where the demands were reduced by 1.5% per annum over the first 25 years of development.

By applying the Smart Demand scenario, it was anticipated that a potential reduction of 31% for Electricity and Solid Waste demand can be achieved through smart and efficient solutions and policies. A target of 80% waste recycling should be implemented in order to minimize the waste that is sent to landfill.

Further studies are required to determine upgraded infrastructure requirements for electricity and solid waste. Since a majority of the Aerotropolis is greenfield, new electrical infrastructure will be required to supply these developments.

Annexure B4

Economic Land Demand Projection

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1. Introduction

This technical note describes the methodology and input parameters used in determining the future demand for land in the proposed Aerotropolis precinct. Broadly the demand for land was calculated in terms of the following three land use categories, with further detailed disaggregation described in the relevant sections:

- Land reserved for business purposes.
- Residential land for dwelling purposes.
- Land and the agricultural cultivation.

The intention is for the land demand to be allocated by the land use planners in precincts and parcels conforming to place making principles. The intention was therefore not to comment on how land should be distributed within the precinct.

Our approach was based on the premise that future land demand for business purposes would be driven by economic growth, i.e. land demand is a response to economic activity. Giving the demand for land in future, residential land requirements were derived primarily from the need to provide housing for workers employed at Aerotropolis, as well as the number of workers expected to live but not work in the area. It therefore excludes an extensive demographic study, which would be more appropriate at a larger metropolitan or city level.

As the current land use at the site is dominated by sugar cane cultivation, we assumed that changes to agricultural usage would be motivated by the demand for business and residential developments, and the need to intensify agricultural cultivation to protect jobs in that sector when the overall area under cultivation reduces. On the principal that agricultural jobs should not be lost in the area, changes in agricultural usage would mostly be motivated by intensified agricultural cultivation on portions of the land to compensate for loss of agricultural land to business and residential development.

2. Land Demand

2.1 Business land demand

We used the following approach for forecasting land demand for business purposes:

- Our first step was to determine the relationship between economic growth, as measured in gross domestic product (GDP) and the demand for floor space. This was done on the assumption that an amount of floor space (in square metres) would have to be added for a certain rand value increasing in GDP under the following underlying principles:
 - ◆ Economic growth drives the demand for business floor space.
 - ◆ An actual change in GDP, rather than the percentage shifts, drives the relationship between economic growth and demand for floor space. Although the changes could be related back to percentages for illustrative purposes, our analysis was based on the actual changes over time.
 - ◆ We acknowledge that economic growth, as measured by an increase in real GDP (i.e. excluding inflation), and the supply of floor space is seldom in short term equilibrium. However, it is safe to assume that there is a balance between supply and demand for floor space over the long term (>10 years).

- ◆ Although GDP growth in a particular sector (say manufacturing) would tend to impact more on the demand for the type of floor space linked to that sector (say industrial), it is better to base the need for more floor space in all types of business floor space on the total, rather than sector specific, GDP for the following reasons:
 - An increase in, say, industrial activity would not only increase the demand for industrial floor space, but would also require more office space, retail space, etc. These interdependencies is best accounted for by establishing the relationship between overall GDP growth and the floor space demand for each building type.
 - Floor space is interchangeable, e.g. industrial warehouses could be converted to retail or office spaces.
 - Large structural changes in the economy is unlikely to occur over the forecasted period.
- For purpose of determining the relationship between floor space demand and GDP growth we plotted the growth in GDP from Q1 of 1993 to Q2 of 2016 against the completed square metres of buildings over the same period. Buildings were categorised according to the official StatsSA classification as follows:
 - ◆ Office and banking space, including office parks, business parks, banks, commercial business, and showrooms.
 - ◆ Shopping space, including retail, shops, and shopping centres.
 - ◆ Industrial and warehouse space, including logistics, service, manufacturing, warehousing, and service industrial.
 - ◆ Other non-residential, including tourist facilities, hotels, government/municipal, institutional, schools and learning centres, and social facilities.
- The relative attractiveness of the Aerotropolis was based on the development patterns shown in Table 1. The allocation (up to 2066) was based on the premise that actual land demand at Aerotropolis would depend largely on its be attractiveness to high end light industrial and advanced manufacturing commercial property investors and tenants. Although esthetical, quality of life or other physical features could enhance its attractiveness, these could be built into the urban fabric. The primary determinant of attractiveness would therefore be its proximity and transport accessibility to the port and airport (as they say in the real estate industry: location, location, location). Given Aerotropolis' very close proximity to the airport, and the fact that it would be within a one hour drive from the port, it would be very attractive to settle there as the existing developable land closer to the CBD and port fills up. The following factors drove the specific long term allocation in Table 1¹:
 - ◆ The eThekweni municipal area contributes 65% of to the KZN economy², and would therefore have to supply at least that amount to the overall floor space.
 - ◆ The Durban/CBD/Port is fairly well developed with little developable land over the next 50 years. Added floor space would therefore be driven largely by redevelopment

¹ It should be noted that our intention was derive the attractiveness of Aerotropolis relative to that of other areas in KZN, rather than to forecast the actual development that would take place in these areas.

² Urban Econ. 2012. Economic Review for the eThekweni Municipal Region 2010/11, eThekweni Municipality, Graph 7, p24

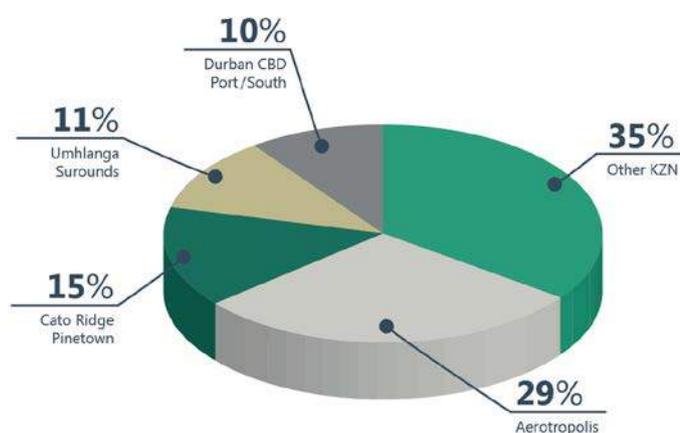
and infilling which has limited potential for large developments. The South is far from King Chaka Airport and would not attract the same level of airport related businesses.

- ◆ The Cato Ridge/Pinetown areas would cater more for heavy industries and the existing automotive sector. Its office and shopping developments would therefore be less than that of Aerotropolis.
- ◆ Umhlanga and surrounds is the main existing competition for Aerotropolis, but as developable areas fill up over the next 50 years, Aerotropolis will take over as the main development precinct.
- As Aerotropolis makes adequate provision for residential dwelling space, it was assumed that its attractiveness as a place to live would not be greatly influenced by distance travel time from other remote residential areas, but that proximity to work would encourage workers in the precinct to settle at Aerotropolis.

Briefly, the allocation in Table 1 was derived as follows:

Table 1: Relative attractiveness of the Aerotropolis

| Growth Distribution | Other KZN | Durban CBD/Port/South | Cato Ridge/Pinetown | Umhlanga ++ | Aerotropolis | Total |
|--------------------------------|------------|-----------------------|---------------------|-------------|--------------|-------------|
| Office and banking space | 35% | 10% | 10% | 20% | 25% | 100% |
| Shopping space | 35% | 10% | 10% | 15% | 30% | 100% |
| Industrial and warehouse space | 35% | 5% | 30% | 0% | 30% | 100% |
| Other non-residential | 35% | 15% | 10% | 10% | 30% | 100% |
| Average | 35% | 10% | 15% | 11% | 29% | 100% |



Other business land demand parameters are presented in

Table 2 give the following land use targets:

- ◆ Floor area ratio (FAR) was based on recently developed business parks and industrial estates³.
- ◆ Employment density was is estimated from a range of established local and international business complexes⁴.
- ◆ The percentage of area set aside for utility purposes was derived from in our experience with similar industrial estates, shopping complexes and office parks⁵.

Table 2: Business land demand parameters

| Business type | FAR | Employment density (m² per worker) | Utility space allowance |
|--------------------------------|------------|--|--------------------------------|
| Office and banking space | 1.0 | 18 | 20% |
| Shopping space | 1.0 | 110 | 20% |
| Industrial and warehouse space | 0.6 | 70 | 20% |
| Other non-residential | 0.6 | 45 | 20% |

2.2 Agricultural land take

The Aerotropolis site is currently largely under sugar cane cultivation. In order to retain the current level of agricultural employment, land taken up by development should be accompanied by developing higher intensity agriculture. As land is taken for business and residential uses, it was assumed that labour intensive agricultural activities would replace the sugar cane cultivation to offset the reduction in overall land available for agriculture.

After considering a range of options, vegetable cultivation would be a good proxy for some or other form of high intensity agriculture for the following reasons:

- Whereas sugar cane production requires roughly 0.15 full time person equivalent labourers per hectare, vegetable production needs about 1 permanent person equivalent per hectare⁶.
- It is highly compatible with urban development. Due to the relatively high cost of transportation and the perishable nature of the product vegetables there are significant economies in producing vegetables as close as possible to the point of consumption or processing.

In addition to the impact on agricultural labour demand, we have also calculated the change in gross revenue from the shift to more intensive farming. Table 3 shows that not only is the yield per ha of vegetables higher than that of sugar cane, the market price is also more. In addition its higher gross revenue, the multiplier for vegetables are also higher than that of sugar cane. For the purpose of this exercise it was, however, considered sufficient to demonstrate that agricultural revenue would not reduce as a result of a change in the type of cultivation.

³ Iyer, 2016

⁴ Stratplan, 2016

⁵ Hatch, 2016

⁶ Stuart Ferrer. Demographics of farms, farm workers and farm dwellers. University of KwaZulu Natal

Table 3: Agricultural cultivation intensity

| Type of agriculture | Ton per ha | Price per ton | Workers per ha |
|---------------------|------------|---------------|----------------|
| Sugar cane | 70 | R5,000 | 0.15 |
| Vegetables | 60 | R10,500 | 1.00 |

2.3 Residential land allocation

The demand for accommodation was based on the number of workers employed by businesses and agriculture at the Aerotropolis precinct, adjusted by the employment self-sufficiency (ESS), which is the proportion of local residents employed by local companies, and the employment self containment (ESC), which is the percentage of local residents employed in local jobs. The area reserved for residential dwellings at Aerotropolis was calculated from the demand for dwellings, the number of workers per dwelling, the average plot size, and land reserved for utilities such as parks and roads.

The ESS, ESC targets, and land reserved for utilities are presented in Table 4.

Table 4: Residential dwelling demand

| Assumption | Business employment | Agricultural employment |
|---------------|---------------------|-------------------------|
| ESS | 50% | 90% |
| ESC | 80% | 80% |
| Utility space | 30% | 30% |

We have further divided residential dwellings into five categories as shown in Table 5. Multi dwelling (small units), Multi dwelling (larger units) and Free standing (low cost) would typically be occupied by low income families, Free standing (mid-price) by mid-income families and Free standing (high end) by high income families.

Table 5: Residential land requirements

| Assumption | Workers per dwelling | Average dwelling size (m ²) | Gross FAR (incorporating coverage) | Average plot size (m ²) |
|-------------------------------|----------------------|---|------------------------------------|-------------------------------------|
| Multi-dwelling (small units) | 1.1 | 35 | 2.00 | 540 (30 units) |
| Multi-dwelling (larger units) | 1.5 | 45 | 1.50 | 700 (30 units) |
| Free standing (low cost) | 2.0 | 45 | 0.75 | 300 |
| Free standing (mid-price) | 1.3 | 175 | 0.35 | 500 |
| Free standing (high end) | 1.1 | 350 | 0.35 | 1,000 |

Source: Hatch, Iyer, and Stratplan

Residential needs for workers employed in the designated floor space categories were allocated according to housing types based on their income level (see Table 6). In allocating workers to income level and housing category we took a long term view that the an adequate

pool of skilled workers would be available to sustain the rate of economic growth over the next 50 years that will demand space at Aerotropolis.

This assumption has significant implications for the allocation of residential land, as mid-income workers, who comprise a large component of the future workforce, live on medium sized free standing houses. Half the residential land would be reserved for this category should this low density settlement pattern continue in future.

Table 6: Proportion of workers employed in business floor space categories

| Floor space category | Multi dwelling (small units) | Multi dwelling (larger units) | Free standing (low cost) | Free standing (mid-price) | Free standing (high end) |
|----------------------------|------------------------------|-------------------------------|--------------------------|---------------------------|--------------------------|
| Income category | Low | Low | Low | Mid | High |
| Office and banking space | 5% | 5% | 5% | 50% | 35% |
| Shopping space | 15% | 10% | 5% | 60% | 10% |
| Industrial/warehouse space | 25% | 20% | 15% | 35% | 5% |
| Other non-residential | 20% | 15% | 10% | 45% | 10% |
| Agriculture | 5% | 5% | 80% | 10% | 0% |

3. Land Requirements

3.1 Approach

Establishing the land requirements were undertaken according to the following two steps:

- Determining the demand for land given the economic growth projections. Land demand is expressed in hectares for each of the broad land use categories which are linked directly to the growth in GDP (see Section 2).
- Business land allocation according to the types of industries on which the Aerotropolis would be focussing.

3.2 Economic growth of 3% p.a.

3.2.1 Land demand

As stated earlier, land demand is a function of economic activity and was calculated on the basis of the rand value of GDP added to the economy (see Table 7). The significantly larger amount of industrial floor space added in KZN compared to the South African average reflects the relative importance of the industrial sector to the KZN economy. There is also a somewhat higher retail and shopping floor space addition for KZN which is a likely result of the sizable tourism sector requiring a larger floor space than that of the South African average.

Table 7: Floor space added per R100,000 in GDP growth (2010 rand values).

| | South Africa (m ²) | KZN (m ²) |
|--------------------------|--------------------------------|-----------------------|
| Office and banking | 3.7 | 3.0 |
| Retail and shopping | 3.5 | 4.1 |
| Industrial and warehouse | 5.6 | 7.7 |
| Other non-residential | 1.6 | 1.6 |

Our base case floor space demand until 2066 uses a 3% average annual growth rate over this period. The rationale for selecting an economic growth rate of 3% p.a. is twofold. Firstly, it reflects the historic average annual growth rate between 1993-2016. During this time South Africa emerged from a prolonged period of sanctions at the onset of the democratic dispensation, thereby releasing a latent economic growth, as well as an exceptional resources boom from the early 2000's until 2014. Going further back in history, it is also to be noted that South Africa's long term average annual growth from the period after the Second World War is also in the order of 3% p.a.

Secondly, when constructing a growth forecast from recent independent modelled projections by the IMF (over the short term) and the OECD (until 2060), the average annual growth comes to 3.2% p.a. We are therefore confident that the most likely long term growth in GDP would be in the order of 3% p.a. The 2030 and 2066 land demand in Table 8, and Aerotropolis' land balance sheet Table 9 was based on a average annual real growth in GDP of 3%.

Table 8: Land demand (ha) at a growth rate of 3% p.a. (includes utility land allocation)

| | 2030 | 2066 |
|---|--------------|---------------|
| Office and banking | 52 | 344 |
| Retail and shopping | 85 | 561 |
| Industrial and warehouse | 265 | 1,751 |
| Other non-residential | 55 | 360 |
| Agricultural (high intensity redeveloped) | 250 | 2,300 |
| Residential | 1,636 | 10,650 |
| TOTAL | 2,343 | 15,966 |

Table 9: Land balance sheet (ha)

| | 2030 | 2066 |
|------------------------------------|--------|--------|
| Land available for redevelopment | 20,000 | 20,000 |
| Business and residential land take | 2,093 | 13,666 |
| High intensity agriculture | 250 | 2,300 |
| Existing agriculture | 17,657 | 4,034 |

The following is worth noting from the outputs presented in Table 8 and Table 9:

- The projected land use demand could be fully incorporated on the existing land under the most realistic economic growth scenario.
- Residential land takes up 70% of the developed land. The amount of land reserved for residential dwellings are therefore highly sensitive to ESS, ESC and residential density targets.

3.2.2 **Business land allocation**

In order to allocate land to specific development nodes within the Aerotropolis precinct, it was necessary to further disaggregate the headline land use types within the context of the future development focus.

We considered on the following trends and development objectives that are elaborated on in Sections 3.2.2.1 through 3.2.2.3:

- Current KZN competitive advantages.
- Future economic drivers.
- Air freight advantage.

3.2.2.1 *Current competitive advantages*

Table 10 compares the contribution of each economic sector to the GDP of respectively South Africa. It can be expected that KZN would have an historical competitive advantage in sectors that make a relatively larger contribution to the KZN GDP than in the rest of the country. As can be seen from the table KZN has a substantial competitive advantage in the manufacturing; transport; and wholesale, retail, trade, catering and accommodation sectors. It also has a minor advantage in agriculture and forestry.

Table 10: Current competitive advantages

| Economic Sector | South Africa | KZN |
|--|--------------|-----|
| Utilities (electricity, gas and water) | 2% | 2% |
| Construction | 4% | 3% |
| Agriculture, forestry, fishing | 3% | 4% |
| Manufacturing | 14% | 19% |
| Wholesale, retail, trade, catering and accommodation | 15% | 17% |
| Transport and communication | 9% | 13% |
| Finance, real estate, business services | 22% | 18% |
| Personal services | 6% | 6% |
| Mining, oil and gas | 8% | 2% |
| Government | 17% | 15% |

3.2.2.2 *Future economic drivers*

Looking beyond historical competitive advantages, we also considered where future growth in South Africa might come from and assessed in which of these sectors KZN is likely to contribute best. For this we drew on the McKinsey Global Institute's report *South Africa's Big*

Five: Bold Priorities for Inclusive Growth (2015). As its title suggests, the report identified five economic key drivers as follows:

- Infrastructure: Partnering for Productivity
- Agriculture: Unlocking the Value Chain
- Advanced Manufacturing: Creating a Global Hub
- Service Exports: Riding the Wave of Africa's Growth
- Natural Gas: Powering South Africa's future

Given KZN's historical advantage in the manufacturing sector it would only be logical to focus development at the Aerotropolis on advanced manufacturing. The Aerotropolis' proximity to the airport, port and good road and rail connections to Gauteng, is likely to further cement KZN's position as a growing export driven advanced manufacturing centre.

Space allocation requirements for high intensity agriculture prompted us to take the view that there would also be opportunities for agro processing to unlock the agriculture value chain. To further leverage KZN's existing tourism industry, it would also support the service export driver identified by McKinsey.

3.2.2.3 *Air freight advantages*

If advanced manufacturing, together with agriculture and tourism, are the main focus of the Aerotropolis, the question is which industries would the Aerotropolis be able to best support advanced manufacturing. For this we considered industries which benefit most from good air connections, and recent decisions by major industry players to locate near the Aerotropolis.

Drawing from the work by B&M Analysts⁷, the Value Proposition Packs⁸, and the example of Brisbane Airport City (Australia)⁹, we selected pharmaceuticals, aviation and aerospace, and electrical and electronic components as the main focus of the Aerotropolis.

3.2.2.4 *Land allocation*

It would be appreciated that the allocation of space to each of the identified focus industries took a very long term view (50 years). Taking such long term views are generally based on a pragmatic planned future approach underpinned by both intuition and science. Our aim was therefore to allow flexibility in land allocation without losing focus on the drivers of growth. The spatial organisation of land provision within Aerotropolis falls in the domain of the spatial planners who would make provision for development clusters. Taking all the above economic factors into account, the planning team allocated land according to the distribution in Table 11.

Table 11: Distribution of business land at the aerotropolis

| | Pharma- ceuticals | Electronics | Aerospace | Tourism | Agro processing | Other | TOTAL |
|------------|----------------------|-------------|-----------|---------|--------------------|-------|-------|
| Office and | 10 | 10 | 10 | 5 | 3 | 13 | 52 |

⁷ Aerotropolis Joint Initiative 3: Value Chain and Market Research; Phase 1 Report: Identification of high level priority sectors, Figure 67.

⁸ B&M Analysts, Denel Aviation and Helicopter Centre for Excellence.

⁹ http://www.choosebrisbane.com.au/corporate/brisbane-marketing/what-we-do/australia-trade-coast/the-region/industry-sectors/aviation-and-aerospace?sc_lang=en-au

| | | | | | | | |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| banking space | | | | | | | |
| Shopping space | 0 | 0 | 0 | 0 | 0 | 85 | 85 |
| Industrial and warehouse space | 66 | 66 | 66 | 0 | 13 | 53 | 265 |
| Other non-residential | 3 | 3 | 3 | 27 | 3 | 16 | 55 |
| TOTAL | 79 | 79 | 79 | 33 | 19 | 167 | 457 |

The land allocation for 2030 and 2066 that are presented in

Table 12 and Table 13 were based on the on the land demand in Table 8 and the distribution in Table 11.

Table 12: 2030 business land allocation (ha)

| | Pharmaceuticals | Electronics | Aerospace | Tourism | Agro processing | Other | TOTAL |
|--------------------------------|-----------------|-------------|-----------|-----------|-----------------|------------|------------|
| Office and banking space | 10 | 10 | 10 | 5 | 3 | 13 | 52 |
| Shopping space | 0 | 0 | 0 | 0 | 0 | 85 | 85 |
| Industrial and warehouse space | 66 | 66 | 66 | 0 | 13 | 53 | 265 |
| Other non-residential | 3 | 3 | 3 | 27 | 3 | 16 | 55 |
| TOTAL | 79 | 79 | 79 | 33 | 19 | 167 | 457 |

Table 13: 2066 business land allocation

| | Pharmaceuticals | Electronics | Aerospace | Tourism | Agro processing | Other | TOTAL |
|--------------------------------|-----------------|-------------|------------|------------|-----------------|--------------|--------------|
| Office and banking space | 69 | 69 | 69 | 34 | 17 | 86 | 344 |
| Shopping space | 0 | 0 | 0 | 0 | 0 | 561 | 561 |
| Industrial and warehouse space | 438 | 438 | 438 | 0 | 88 | 350 | 1,751 |
| Other non-residential | 18 | 18 | 18 | 180 | 18 | 108 | 360 |
| TOTAL | 524 | 524 | 524 | 215 | 123 | 1,105 | 3,016 |

3.2.3 Residential land allocation

Residential land allocation presented in Table 14 was derived from the demand for workers in each type of industry outlined in Table 6.

Table 14: Residential land allocation by dwelling type (ha)

| Dwelling type | 2030 | 2066 |
|-------------------------------|------|------|
| Multi dwelling (small units) | 11 | 70 |
| Multi dwelling (larger units) | 11 | 71 |

| | | |
|--------------------------------|--------------|---------------|
| Free standing (low cost - RDP) | 22 | 90 |
| Free standing (mid-price) | 806 | 5,232 |
| Free standing (high end) | 786 | 5,188 |
| TOTAL | 1,636 | 10,650 |

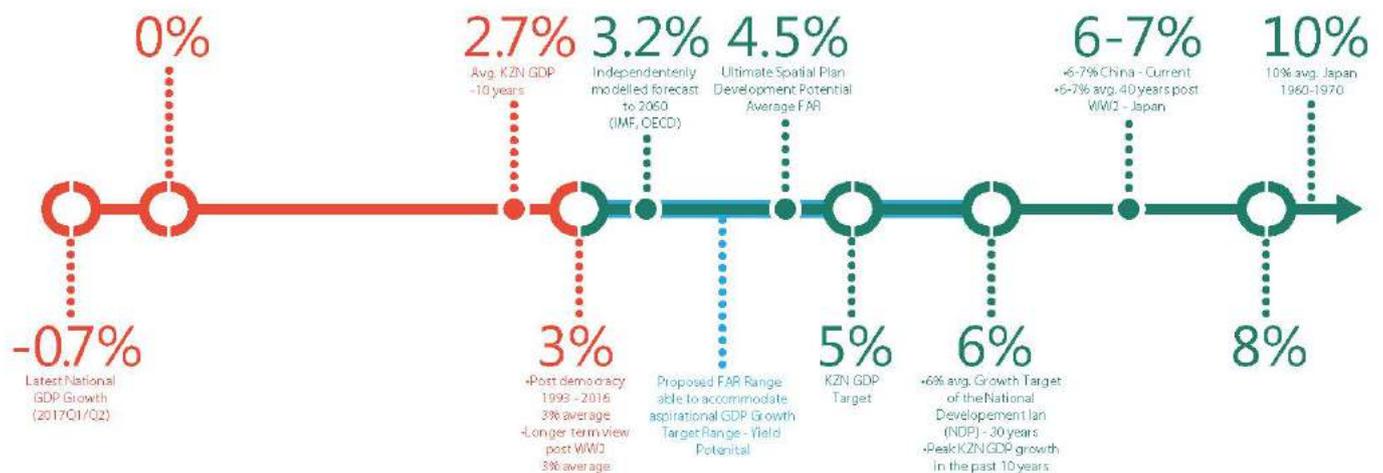
3.2.4 Agricultural land allocation

As discussed earlier agriculture land allocation presented in Table 15 was derived from the amount of high intensity agriculture required to retain the same amount of agricultural workers when land under sugar cane cultivation is taken for business and residential purposes.

Table 15: Agricultural land allocation by cultivation type (ha)

| Dwelling type | 2030 | 2066 |
|--------------------------------|---------------|--------------|
| Sugar Cane | 17,657 | 4,034 |
| Intensive horticulture/flowers | 250 | 2,300 |
| TOTAL | 17,907 | 6,334 |

3.3 Economic growth of 6% p.a.



The 6% growth target of the National Development Plan (NDP) for South Africa for the next 30 years was adopted for a ‘what if’ scenario. This target should be viewed in the context of when the NDP was prepared in an environment of exceptional worldwide economic growth fuelled initially by cheap money, and later by unprecedented stimulus spending on infrastructure by mainly China. Economic growth was further prolonged by what became known as the resources boom from 2008 to around 2013. By 2014, when the demand for resources slowed, the short and medium term economic outlook of emerging economies, like South Africa, which rely heavily on resource exports have weakened substantially.

To put this growth target into perspective, China's current economic growth stands at 6-7%¹⁰, and it has yet to achieve and sustained GDP growth over the 50 year planning period of this study (its rapid rise only started in the early 80s). Furthermore, Japan, who was the model of rapid economic growth since the Second World War until the early 90s when its economy stagnated, could achieve 6-7% only over a 40 year period¹¹. (It achieved a remarkable 10% p.a. growth in the decade 1960-70.) Since then its growth has consistently been well below 2% p.a.

Although it is therefore more realistic to assume that the 6% target would be achieved until 2030, we have nevertheless tested the land use demand for both 2030 and 2066, assuming that a similar land use mix would be accommodated at these points in time. This meant that parameters were adjusted to accommodate the required land demand for 2066, and then applied for 2030 demand estimates. Although many parameters in our model could be changed to accommodate the land demand, we have decided to focus on business and residential FAR, and land reserved for agriculture.

As can be seen from Table 16 land demand would double by 2030, but it would still be well within the available 20,000 ha available under the base case land use intensity parameters. By 2066, however, land demand would far exceed the developable land in the Aerotropolis precinct. To accommodate the existing land uses, we've had to increased densities substantially (see Table 17). Applying these density assumptions to 2030 will see a roughly two thirds reduction in land take, whereas the 2066 could only be accommodated if agriculture is scrapped altogether (one would assume a society achieving such spectacular growth would not really bother with agriculture in the Aerotropolis precinct, however intensive).

The question, which social and land use planning rather than economic, is therefore whether such high densities are desirable or feasible. In addition, other measures could also be considered to reduce land demand at the Aerotropolis, such as lowering ESS and ESC values, in which case the residential component will reduce substantially. From a transport planning perspective this would require greater investment in high capacity transit systems.

Table 16: Land demand (ha) at a growth rate of 6% p.a.

| | Unadjusted | | Adjusted |
|---|--------------|---------------|---------------|
| | 2030 | 2066 | 2066 |
| Office and banking | 128 | 1,770 | 253 |
| Retail and shopping | 209 | 2,889 | 413 |
| Industrial and warehouse | 652 | 9,012 | 9,012 |
| Other non-residential | 134 | 1,855 | 159 |
| Agricultural (high intensity redeveloped) | 250 | 2,300 | 0 |
| Residential | 3,986 | 54,713 | 10,005 |
| TOTAL | 5,359 | 72,540 | 19,841 |

¹⁰ The Economist.

¹¹ Shigeru T. Otsubo. 2007. Post-war Development of the Japanese Economy Development, Japanese/Asian Style.

The development bulk ranges of the Master Plan in relation to GDP growth is reflected in the following diagram.

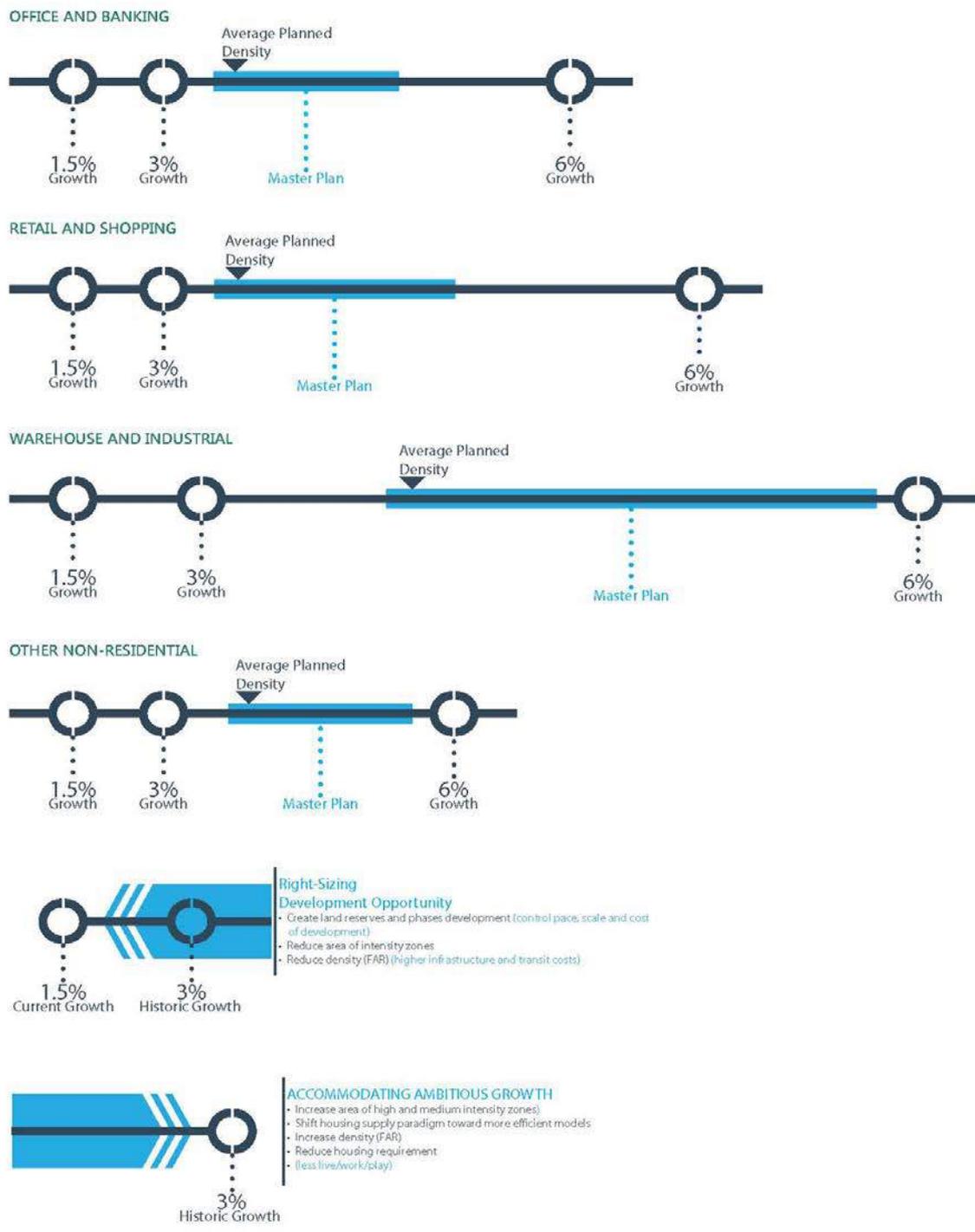


Table 17: Adjusted FAR targets to allow 6% growth to 2066

| | 3% growth baseline | 6% growth adjusted |
|--------------------------------|-----------------------------------|-----------------------------------|
| Office and banking space | 1.00 | 7.00 |
| Shopping space | 1.00 | 7.00 |
| Industrial and warehouse space | 0.60 | 0.60 |
| Other non-residential | 0.60 | 7.00 |
| Multi-dwelling (small units) | 2.00 | 2.50 |
| Multi-dwelling (larger units) | 1.50 | 2.50 |
| Free standing (low cost RDP) | 0.75 | 2.50 |
| Free standing (mid-price) | 0.35 | 2.00 |
| Free standing (high end) | 0.35 | 2.00 |

Annexure B5

Funding & Finance Precedents**Table of Contents**

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1. Statutory Plan Updates**1.1 Background**

The Aerotropolis is situated within a Greenfield corridor with future proposals aimed at transforming the land for future business and residential development. The Aerotropolis should be a mechanism to restructure our historic development patterns that have influenced current spatial plans. The greenfield corridors must be an opportunity to stitch the urban landscape whilst retaining current policy governing environmental conservation, economic development at a local, provincial, and national level, providing socio-economic upliftment, and an improved economy that positions the KZN province as a global role player.

Considering the Aerotropolis from the perspective of social transformation in South Africa, the underlying gap between the targeted IDZ and SEZ and the LED safety net is the need for coupling innovative inside and outside the fence partnerships between existing and emerging platforms to allow the fiscal and socio-technical trickle down to the local economy. According to Kasarda (2012) highly demand driven Airport city expansion and value capture possibilities depend on successful and

democratic local project interaction which require significant time and resources. To achieve the objectives of the Aerotropolis, the concept of wall-to-wall municipalities should come into play. DURAMP straddles three municipal boundaries namely eThekweni, Ndwedwe, and KwaDukuza. Municipalities must actively work together in achieving consensus on the realisation of the Aerotropolis.

The first step in realizing the Durban Aerotropolis Master Plan is to acknowledge that EDTEA has highlighted various goals in realising the Aerotropolis. One of the goals is:

“Strategic Goal 2: Integrated and coordinated spatial planning by all KZN governmental stakeholders at local and provincial levels”

Whilst this is a key objective, the question remains, how do you integrate the Aerotropolis Masterplan within existing council policy and plan processes for it to gain recognition and for it to become an informant (live document) to relevant sector planning processes. This coordination and alignment should, therefore, be given a facilitatory structure considering the importance weighted on DURAMP and its ability to generate new economic, social and residential opportunity.

A key starting point is to understand the influence of an Aerotropolis Masterplan on municipalities within South Africa. Two key municipalities have been researched to provide some guidance on how to position DURAMP within the current planning and policy context.

1.1.1 Ekurhuleni Aerotropolis Gauteng

The Aerotropolis is part of the local municipalities planning. Directives are from the Gauteng Medium Term Strategic Framework and thereafter to the Gauteng Growth, Employment and Development Strategy. Lead initiatives seek to attract investors to buy into each of these initiatives which in turn, are the building blocks of the Aerotropolis. The Ekurhuleni Aerotropolis has the following properties:

- The Aerotropolis is a concept and a vision for the municipality.
- There is no mandate stipulating the local government has to align the planning to the concept of the Aerotropolis.
- The SDF/IDP all have a mandate which requires it to be implemented.
- The Aerotropolis is a high-level plan, however, can be used to guide development within the municipality.
- The Aerotropolis concept is not approved and when it is approved it will not form part of the “suite of plans” it will act as the GDS 2055 as an informant.
- The Aerotropolis concept is not used in day to day planning of the municipality.
- It informed the MSDF, and the IDP and does not form part of the municipal planning policies.

- It's more of an initiative and an investor driver.
- Planning proposals and developments do not have to align with the Ekurhuleni Aerotropolis concept but must just be informed by it.

1.1.2 Cape Town Aerotropolis

The directive for the Aerotropolis within Cape Town is from ACSA.

- As per the Cape Great Metro RSIF (2016), The Aerotropolis can be implemented through the Provincial Strategic Plan Goal 1: Create Opportunities for Growth and jobs; the SIPs, IDC and at the local level through the Municipal IDP's, SDF's and LED's.
- One of the main benefits of developing this land will be to address a key issue in Cape Town relating to their spatial form where many the population live far from the economic employment opportunities. (<http://acceleratecapetown.co.za/Aerotropolis-cape-town/>)
- The Airport has considered applying the Aerotropolis model in guiding its future planning and operations, but the model already overlaps with several corporate policy initiatives driven by the local and provincial authorities. Early indications are that – though informal at this stage – Cape Town International Airport already subscribes to many of the core principles underpinning the Aerotropolis concept and that the airport, its interdependent activities, and places are operating in some kind of integrated network.” (<http://www.engineeringnews.co.za>)

Based on the two precedent above, it is evident that there are two divergent views. Ekurhuleni Municipality views its Aerotropolis Masterplan as an informant in planning rather than a statutory requirement whereas Cape Town who are still planning its Aerotropolis Masterplan shows early signs that it intends to filter this plan in current planning and policy processes

1.2 What does this mean for the Durban Aerotropolis Master Plan (DURAMP)?

The KZN Integrated Aerotropolis Strategy (IAS) was formulated and adopted by KZN Provincial Cabinet in October 2015 and out of this came the Aerotropolis Master Plan. The implementation framework for the Durban Aerotropolis comprises both strategic and tactical inventions needed to pivot the Aerotropolis from plan to implementation. The Aerotropolis Management Unit (AMU) established during this process is the agency mandated to drive the implementation of the Durban Aerotropolis Master Plan, with a mandate to coordinate: inter-alia, planning, approvals, budget prioritisation, and implementation and investor attraction. The Aerotropolis Masterplan straddles three municipalities: Ndwedwe; eThekweni and KwaDukuza as well as the District of iLembe.

As stated within conferences around the definition of the KZN Aerotropolis and its goals include that, the Aerotropolis strategy is to be a tool for planning and advancing urbanisation in the province and building a resilient and sustainable regional economy in South Africa using KZN major airports as drivers. The conception and establishment of Aerotropolis KZN embraces public and private co-

operation and coordination, thereby ensuring both direct and indirect involvement in its expansion and maturity by not only the Provincial Government but also Local Government and the private sector.

The strategy intends to achieve the following:

- The proper governance model.
- Building a robust institutional arrangement for implementation.
- Being forward-looking.
- The commonality of purpose by all role players (working together/joint planning).
- Maximise economic potential through sectoral backward and forward linkages.

Based on the above it is imperative that DURAMP is not considered just as an informant but rather should be factored into local planning frameworks and policies. Whilst the plan is a high-level plan that principally serves as a guiding framework, the objective of the Aerotropolis should be conveyed and carried through in local plans and policies. The Durban Aerotropolis being a greenfield area, is therefore very different from its metro counterparts, i.e. Ekurhuleni and Cape Town and should be considered advantageous to relook and evaluate current plans considering its greenfield nature to ensure that development is in keeping with national, provincial and local imperatives.

2. Funding, Finance Options & Incentives

2.1 Background

As the Aerotropolis development evolves, the need to compete with other projects and investment classes for investment capital increases. Aerotropolis developments tend to be long term in their thinking and planning and thus require a really concerted effort and coordinated planning to ensure that development is cohesive and consistent.

As such, in this fast paced world, it is evident that any outline funding plan needs to have elements that will make it:

- Adaptable to changing conditions;
- Relevant and current even as the environment shifts at a fast pace;
- Affordable and sustainable; and
- Able to attract independent private sector investment to augment initiatives by the public sector development agencies.

In South Africa with its apartheid legacy of unequal development and the concomitant demands on the public purse for social welfare and redress it is even more imperative that attractive models be provided for private sector participation on the Aerotropolis development. Our approach is to therefore

develop a funding framework that is adaptable to circumstances as the Durban Aerotropolis evolves over time. The funding plan presented here contains frameworks for capital raising within the public sector, the private sector engagement process as well providing a framework to guide fund-raising for the implementation agency.

2.2 Lessons from Similar Developments

We have provided as an annexure hereto, summary examples of other Aerotropolis developments and the various funding sources and platforms that have informed approach for DURAMP. It is evident from these examples that a plethora of approaches are available that could inform the DURAMP implementation team.

It is also evident that being creative and tapping into all available sources of funding assists with progressing these types of developments. In certain jurisdictions e.g. Dubai, there is a focused drive from the “Dubai government” to drive the funding and development components and this has made a significant difference in propelling Dubai from being an irrelevant destination some 30 years ago into an international leading airport hub and gateway in the world at present with 2 major airports operating in close proximity in the city. Other key lessons learnt from the research are summarised hereunder:

It is imperative to have strong government support and funding to really successfully drive Aerotropolis developments:

- The Dubai government has invested significant amounts into the airport developments in Dubai and is planning to invest a lot more – from 2013 to 2016, up to \$50 billion had been spent and/or committed.
- A further \$3.5 billion loan facility for infrastructure development has been secured during 2017
- The strong funding commitment from the government has attracted significant private sector investment alongside the government funding.
- This highlights that the RSA government at the various levels of government i.e. national, provincial and municipal will have to harness all possible resources towards this Aerotropolis development as part of developing a conducive environment that the private sector will consider attractive for investment. This could focus on for example infrastructure development in the municipal IDPs – particularly harmonizing of existing infrastructure budgets to focus on those projects that would be most catalytic to the development of the Aerotropolis.

The use of private sector development companies to direct land use development tends to aid in quicker more efficient infrastructure development. The development company can have municipal and

airport participation to ensure effective development that is aligned with the Aerotropolis guiding principles.

Private sector involvement in airport ownership and management is now widespread, although the extent and nature of private sector involvement in airports varies greatly between countries.

- 15% of airports around the world are fully privatised, 18% are in public-private partnership with the remaining 67% in public ownership.
- It is also noteworthy that, the privatised or commercialised airports now account for 50% of global airport passenger traffic
- Among the top 10 airports by passenger traffic, nearly all are partially owned by one or more private entities.
- Locally ACSA did have international investor participation by Aeroporti Di Roma which was bought back in or around 2010

Airport companies procuring listings on stock exchanges to expand the funding pool that is available for airport and Aerotropolis type developments is another option.

- Six of China's airports – Xiamen, Shenzhen, Shanghai Hongqiao, Beijing, Haikou, and Guangzhou – are listed on the stock exchanges of Shanghai, Hong Kong, and Shenzhen
- However there are limits to foreign shareholding, e.g. those listed in the Shanghai Stock Exchange cannot have more than 30% of stocks held by foreign entities in total

A long-term strategic goal for development in the country, leveraging on existing strengths, is often a major catalyst for Aerotropolis type developments.

- New Songdo in South Korea was conceived as a weapon for fighting trade wars. It has been billed as the world's smartest, greenest city – and the most expensive privately financed real estate project in history, at \$35bn
 - Located on reclaimed land in the Yellow Sea, south of Incheon International Airport, New Songdo was designed to cater to foreign multinationals doing business in China
 - Its airport is Asia's sixth busiest in terms of passengers and home to Korean Airlines. Korean Airlines is already the world's largest airfreight company, leveraging the capacity of Incheon airport
- The proximity of Memphis to other established intermodal transportation centres led FedEx in 1973 to choose the airport as its main American point and site for its super hub. As a consequence of the FedEx decision, Memphis has been the world's busiest cargo airport since 1992. Today, FedEx is indirectly responsible for nearly half the city's economy
- The main factors that have led to its success as an Airport City are the following:
 - Expansion in Intermodal infrastructure (PPP funding)
 - Governmental support and agenda on developing Memphis as an Aerotropolis

- These two are definitely themes that the DURAMP implementation team can leverage. Whilst PPPs have had mixed reaction in RSA they are certainly an effective tool for leveraging funding for accelerating development where government's own resources are constrained
- Competitive Estate / warehousing prices
- FedEx super hub
- As a result, some very large companies have chosen the city to locate distribution centers of 400,000 square feet or more. Examples include Nike moving most of its U.S. distribution to a new \$100-million facility in Memphis; Nucor Steel's \$300-million steel manufacturing facility that produces one million tons of automotive-grade steel annually; and Riviana Foods' \$100-million rice manufacturing plant in South Memphis

Quick enactment of enabling legislation to support the Aerotropolis type developments

- In the US, the Aerotropolis Act of 2015 and the Leading and Expediting Aerotropolis Development (LEAD) Act of 2015 worked to speed up the development of Aerotropolis projects to help enhance economic competitiveness and spur job growth in cities like Memphis.

Incentives make it attractive and provide a conducive environment for private sector participation

- The City of Memphis has made contribution to the airport development projects a major priority in its own budgetary allocations
- Recent development projects and grants include \$1 billion in new developments for St. Jude Children's Research Hospital, infrastructure improvements of \$40 million under the City of Memphis' North Gateway Project

Other Funding Sources for Memphis include:

- Federal Funds:
- Community Development Block Grant
- Home Investment Partnership Grant
- Emergency Shelter Grant
- Fair Housing Initiatives Program Grant

State Funds:

- Tennessee Housing Development Agency

It will be important and critical for the adjacent municipalities to also collaborate to establish how they can collectively leverage their IDP spend to optimize development on the Durban Aerotropolis that will catalyse economic development in the surrounding region.

3. Governance and Institutional Framework

3.1 Background

The Dube Trade Port Corporation is a corporation formed in terms of Schedule 3 of the Public Finance Management Act no. 1 of 1999 so incorporated by means of the KwaZulu Natal Dube Tradeport Corporation Act Number 02 of 2010 (“the DTP Act”).

DTP was incorporated for the establishment and management of the Dube Trade Port as well as other duties incumbent upon it in terms of the Act.

The development of the Tradeport or Aerotropolis, as it is also commonly referred to, takes the form of three phases, namely:

1. Strategic planning phase;
2. An implementation phase; and
3. A long-term management and oversight phase.

There are several considerations that will need to be tackled as part of deciding on the final implementation agency. The issues of multiple and necessary stakeholders will need to be harmonized. The issue of the development taking place in multiple jurisdictions will require ongoing cooperation amongst the multiple municipalities. The positive is that there are strong working relationships that have already developed during this planning phase that will be of immense help in the implementation phase.

The challenges raised by the aforesaid geographical situation are two fold, namely:

1. Certain of the duties ascribed to the client in terms of the act overlap with similar duties incumbent upon the municipalities as prescribed in the Local Government: Municipal Structures Act 117 of 1998.
2. Conflicts may arise between the various municipalities inter se.

The only other example of the development of an Aerotropolis in South Africa is that surrounding O.R. Tambo International Airport, which is self-contained within one municipal district area being that of

Ekurhuleni. The Cape Town Aerotropolis has not progressed sufficiently to be considered at this stage.

Various sources of information were reviewed including the Municipal Demarcation Board, a previous opinion on an Institutional Structure obtained by DTP authored by Pegasys and Webber Wentzel in 2014, the Strategic Plan for the TradePort, as well as relevant legislation namely:

1. The DTP Act;
2. Local Government: Municipal Structures Act 117 of 1998;
3. Public Finance Management Act no. 1 of 1999; and
4. The Spatial Planning and Land Use Management Act 16 of 2013.

We also reviewed examples of other Schedule 3 government bodies that are required to govern areas or exert influence over areas that contain land that forms part of more than one municipal area.

3.2 Findings

As an overall context, from our research we established that Schedule 3 institutions that are required to manage areas made up of multiple municipality areas, attend thereto themselves in terms of their internal structures and where a conflict arises with those municipalities, they refer same to the level of government to whom they are responsible for adjudication and/or dispute resolution.

By example, South African National Parks being a Schedule 3 company is tasked with overseeing the protected areas in the Republic. Whilst previously, those areas over which it was the custodian, did not form part of any municipality and were solely under its jurisdiction, with current legislation regarding municipalities having been enacted, there is no area in the Republic that does not form part of a district municipality or metropolitan municipality and hence, the areas covering protected land has to be included in a municipality. Hence, the areas in question are in fact governed and managed by the Schedule 3 company and any conflict arising between it and a municipality is referred to National Government for a solution as South African National Parks falls under the jurisdiction of National Government.

A similar situation is that of the Road Traffic Management Corporation which manage the affairs of the National roads which run through all Municipalities and, when any disputes arise, such disputes are referred to National Government for adjudication and /or resolution.

In the instance of the DTP's situation, as all the Municipalities in question are contained within the area governed by the Kwa-Zulu Natal Provincial Government, any disputes, were the same model to be utilised, would be referred to the KZN Province.

It is also relevant to refer to certain aspects of the Act which bear relevance in deciding on the most appropriate institutional framework, more particularly:

1. In terms of Section 4 of the Act 4(1) (a), it is the duty of client to ensure the management and control of the Dube TradePort. This would therefore cast the duty of overseeing and managing the TradePort on the DTP;
2. Section 4 (1)(b) imposes a duty on the DTP to implement and give effect to the master plan for the Aerotropolis so as to see to the economic growth of the Dube TradePort Region and the province of Kwa-Zulu Natal in general;
3. In terms of section 4 (2)(e), the DTP may enter into agreements for the attainment of its objects and the exercise of its powers and functions;
4. In terms of section 4 (2)(f) of the Act, the DTP may participate in the management, supervision and control of the business operations of an institution having the same or similar object as the corporation;
5. In terms of section 4(i) the DTP is entitled to do any other thing or attend to other matters necessary for the purpose of achieving its object and the requirements of the master plan;
6. In terms of section 4(2)(J2) the DTP may do any other thing or attend to any other matter that the responsible member of the Executive Council considers necessary for the proper implementation of the Act; and
7. In terms of section 32 of the Act and more particularly 32(2) thereof, the board may by special resolution delegate to any staff member of the DTP any power or duty conferred or imposed on the DTP by the Act.

4. Funding Models

4.1 Introduction

Traditionally, there are four different financing models that can be used to fund infrastructure projects. These are:

- Public Finance;
- Corporate Finance (Balance Sheet - claims outside the ring-fenced project structure);
- Project Finance: limited/non-recourse (SPV with ring-fenced cash flow); and,
- Hybrid Structures.

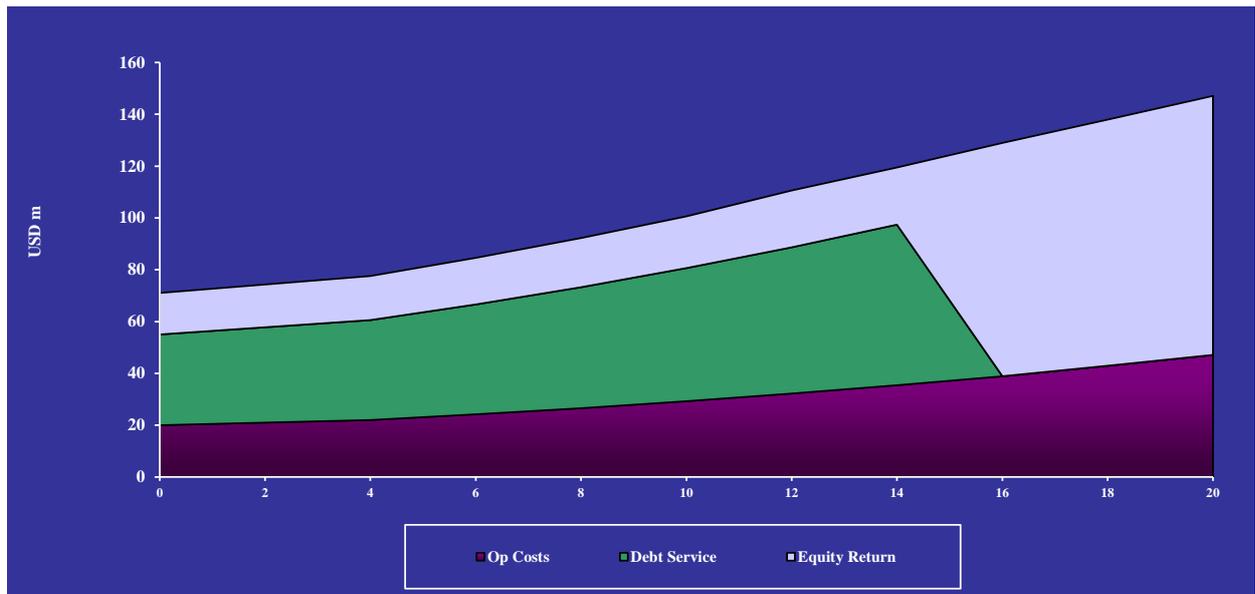
Public funds in the country are stretched and are not adequate to fund all of the country's infrastructure needs. As a result, one of the aims of National, Provincial and Local Governments is to encourage the participation of private sector players in the infrastructure sector in general and in the power sector specifically.

Funders lend to private infrastructure project companies:

- on a **Project Finance** (limited recourse) basis, contingent on the quality of the project's cash flows, which are supported by its security package, or with recourse to a creditworthy equity sponsor company; or
- on a **Corporate Finance** basis, backed by the borrower's multiple revenue sources and strong balance sheet; or
- through use of **hybrid structures**, incorporating elements of the above. An example would be a combination of Public and Corporate Finance where a project joint venture company is co-owned by the Municipality and a Private Party, with both entities providing equity capital.

In determining the bankability of a project and the potential to bring investors on board, it is vital to understand the basis and criteria that funding institutions and project developers use in evaluating the project. Ultimately, the funding institutions and project developers will accept a robust financing model, which typically generates the net cash flows and returns and debt service ratios for a given capital structure.

Typically, project financing structures have a very high level of gearing and the priority in cash flow payment is set out in the chart below, with first priority going to operating costs and then to service the debt and only the balance available to equity providers:



In project financing, lenders are very exposed based on the high gearing, but have to rely completely on the cash flow generated by the project for repayment, as there is little real collateral support because assets are usually special-purpose and immobile. The contractual arrangements that support and ensure those cash flows are a critical part of the equation.

Accordingly, the financial model and risk analysis has to demonstrate that there is a very high probability of repayment from the project's cash flows, as there is limited recourse to sponsor balance sheet and liabilities are capped. In infrastructure financing, private equity investors and lenders are driven by return on investment considerations, which must be adequate to compensate them for the risks they assume by making an investment. Their return requirements are determined by the specific project risks and the type and structure of the financing. Therefore, in order to understand the financing dynamic of regional power projects, it is important to understand financial products and their availability.

4.2 Financial Products and Their Availability

Different types of financial products are available from different types of financial institutions, depending on their mandates. Due to the quantum of funding required for DURAMP projects, promoters typically look to the different local and International Financial Institutions for debt and equity funding. Because these institutions have been set up for different purposes and are financed and structured differently, the types and costs of products on offer will differ, as well as eligibility criteria. From the point of view of these projects, depending on the procurement choice (internal, external or JV), the following are the institution classes, with examples of some of the specific institutions:

- **Development Finance Institutions** – DBSA, AfDB;
- **Commercial Banks** – ABSA, FNB, Nedbank, Standard Bank, etc.;
- **Infrastructure Funds** – Emerging Africa Infrastructure Fund, STANLIB Infrastructure Private Equity Fund, funds managed by African Infrastructure Investment Managers, etc.; and
- **Direct Government Funding** – *Municipal Infrastructure Grant (“MIG”), Subsidies and/or incentives (negotiated depending on the project needs – could be from National Treasury or the DTI)*

Broadly, the products that are available for the structuring of funding packages are as follows:

- **Equity** – direct contribution made by each shareholder
- **Mezzanine debt** – typically offered as supplementary to equity and senior debt funding. It ranks lower than senior debt but higher than equity;
- **Private Sector Loans** – commercially priced loans fully reflecting the underlying political, commercial and financial risks of the project;
- **Public Sector Loans (“PSLs”)** – core business of Development Banks. Mostly direct to government, or to State Owned Entities (“SOEs”) backed by a government guarantee. A country credit rating is normally required for PSLs;
- **Development Credits** – highly concessional loans provided to governments for on lending to specific projects. Project appraisal takes into account wider economic and social impacts of the infrastructure project;
- **ECA funding** – a form of debt funding offered through an Export Credit Agency in one country (the exporting country) to encourage a project developer in another country to purchase and import equipment from the home country of the ECA (the exporting country); and
- **Capital and Operational Grants** – subsidies disbursed with no repayment conditions. Utilised to lower the ultimate tariff users pay for the service.

4.3 Funding Analysis

The funding that is envisaged for these types of projects is obtained from the following categories:

- Equity financing
 - Equity financing for these projects will need to be sourced from either the provincial government, municipalities themselves or from participating private parties depending on the delivery option procured.
 - A preliminary review of the annual financial statements of the participating municipalities indicates that in general these municipalities are incurring operating deficits. It is therefore unlikely that the municipalities would be a strong source of equity funding for these projects.
 - If a “DURAMP Implementation Agency” is identified or established and adequately capitalised, it can act as a project enabler through provision of equity funding for projects based on set parameters.

Once a delivery option has been determined, the TA or Implementation Agency will review the appropriate funding mechanism to be utilised for this project. Where project finance is a mechanism for the funding, it is typically required that as much as 30% of the project be financed through equity.

- Debt financing
 - Debt financing comprises of borrowing from funding institutions. These funding institutions could be development financing institutions (“DFIs”) such as the DBSA and IDC. They could also comprise commercial funding institutions such as the local banks e.g. Absa, FNB, Nedbank and Standard Bank, or insurance companies, which may have an appetite for these types of projects as part of their investment portfolios
 - On projects of this nature debt would typically comprise approximately 60% to 80% of the project. The quantum of debt that funders will be prepared to inject into a project will be determined by the fundamentals of the project, the anticipated economic returns and the risk perceptions of the funders for that specific project.

ANNEXURE - C

AEROTROPOLIS CHARACTER ZONES

Aerotropolis Character Zones:

31 precincts have been identified within the Aerotropolis plan. The following below provides a basic synopsis of each zone and its inherent use and qualities for future development;

| PRECINCT - 01 | | ABERFOYLE | | | | |
|-----------------------------------|--|------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 6km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Has good access and connectivity and located in proximity to the future Western Bypass | | | | | |
| C) SPATIAL PROPERTIES | Characterised by steep topography, proximity to the Tongaat Town Centre and could be the natural extension of the Tongaat Town Centre | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Affordable Housing Precinct with Micro Enterprise Development | | | | | |
| F) DESCRIPTION OF NICHE | Aberfoyle offers the potential to become an Affordable housing precinct to cater for the growing demands for affordable housing within the various income brackets but also has the potential for the creation of incubator/ SMME opportunity to skill the people for future employment opportunities proposed within the Aerotropolis region. | | | | | |

| PRECINCT - 02 | | AMANZIMNYAMA | | | | |
|-----------------------------------|--|---------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 4km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | It is good exposure with the N2 on its eastern boundaries, M43 on its southern boundaries and a future transit spine proposed centrally within the precinct. | | | | | |
| C) SPATIAL PROPERTIES | Characterised as a high-quality area given its proximity to the Core Aerotropolis zone. It is moderately steep with significant ecological systems traversing the precinct. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Head Office Campus+ Education Precinct | | | | | |
| F) DESCRIPTION OF NICHE | Amanzimnyama has the potential to develop into a Head office precinct for a major conglomerate or a grouping/chain of corporate offices as well as could be ideal to transform into an Educational Precinct that will serve the Greater region. Amanzimnyama could be first to pursue and develop a precinct that has a Green Star rating. | | | | | |

| PRECINCT - 03 | | BALLITO & SURROUNDINGS | | | | |
|-----------------------------------|--|-----------------------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 13km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Ballito has good access from the N2 and connectivity. One key constraint is that most of the key developments within Ballito hinge off Ballito drive. | | | | | |
| C) SPATIAL PROPERTIES | There is limited land available for future growth. Currently, available land has already been earmarked for middle to upper market residential accommodation with flagship Lifestyle retail centres and commercial developments already established along the N2 freeway | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Sub-Regional Town Centre | | | | | |
| F) DESCRIPTION OF NICHE | Ballito has been evolving at a rapid rate to the degree it's now established itself as a major Town Centre node within the KwaDukuza Municipality, 15km from the major node, Mhlanga/ New Town Centre Precinct. Its shortcoming is that there is limited future growth potential due to the shortage of land available for future expansion. | | | | | |

| PRECINCT - 04 | | CANELANDS | | | | |
|-----------------------------------|--|------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 4km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Canelands is in a good location with the R102 in proximity and the proposed Western bypass along its boundaries in the future. The proposed continuation of the M65 through to Hazelmere Dam and surroundings will improve and further enhance the connectivity of Canelands. | | | | | |
| C) SPATIAL PROPERTIES | Moderately flat when compared to areas it surrounds and strategically located close to Inyaninga and the existing Canelands Industrial. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Retail and Business Park+ Regional Shopping | | | | | |
| F) DESCRIPTION OF NICHE | Canelands natural site informants i.e. proximity to current and future industry, relatively flat land lends itself to becoming more Retail and Business Park activities. There is also the potential for the establishment of a Regional shopping node along the future Dube West/ Western Bypass route. | | | | | |

| PRECINCT - 05 | | COMPENSATION | | | | |
|-----------------------------------|--|---------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 14km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Compensation has good connectivity to both rail and road. A future Transit spine is proposed to traverse through Compensation. | | | | | |
| C) SPATIAL PROPERTIES | Compensation is relatively flat and has limited environmental constraints. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | New Urban Hub-Technology and Innovation Hub / Creative cluster | | | | | |
| F) DESCRIPTION OF NICHE | With Ballito reaching is development potential, Compensation presents an ideal opportunity in developing a New Urban Hub. Whilst large portions of the precinct will have predominately a logistic focus, there is ample opportunity to develop a Technology/ Innovation Hub and related activities such as Laboratories, in this precinct. New mixed use opportunities can develop along the Transit spine. | | | | | |

| PRECINCT - 06 | | CORNUBIA NORTH | | | | |
|-----------------------------------|---|-----------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 7km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Cornubia North currently is a greenfield site and therefore internal connectivity is poor however future proposals indicate that both Dube west, East including the Transit spine will traverse this site. Future connections will tie it to the Sibaya Precinct via Sibaya Drive. This will make Cornubia North highly connected and accessible. | | | | | |
| C) SPATIAL PROPERTIES | Cornubia North is characterised by steep, undulating topography and has a series of environmentally sensitive areas within its boundaries | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Integrated Human Settlement | | | | | |
| F) DESCRIPTION OF NICHE | Cornubia North is a natural extension of Cornubia South. The area is ideally placed to transition the Integrated Human settlement design that has been created at Cornubia South. Apart from some local mixed nodes and business opportunity along the N2, the area will be ideally suited for residential development. | | | | | |

| PRECINCT - 07 | | CORNUBIA SOUTH | | | | |
|-----------------------------------|--|-----------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 10km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Cornubia South is highly accessible. Currently, new infrastructure is being developed across the 1300ha site. When fully developed, the site will be highly accessible and integrated into a broader region. | | | | | |
| C) SPATIAL PROPERTIES | Cornubia South is characterised by steep, undulating topography and has a series of environmentally sensitive areas which has been considered in the approved Framework | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Integrated Human Settlement | | | | | |
| F) DESCRIPTION OF NICHE | Cornubia South is an approved development that comprises of BNG housing within the various subsidy brackets, Industrial and business developments as well as a Town centre with a planned BRT that will cater for the needs of the people within Cornubia. | | | | | |

| PRECINCT - 08 | | DUBE AGRIZONE | | | | |
|-----------------------------------|---|----------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | The site is highly accessible as it lies within the core Aerotropolis zone and has the R102 and future western bypass along its boundaries. | | | | | |
| C) SPATIAL PROPERTIES | The site currently contains an intensive hydroponic growing system. There are five greenhouses on site including a nursery | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Agri- Industry | | | | | |
| F) DESCRIPTION OF NICHE | Whilst the precinct is already developed, there is the opportunity to develop the site for agri-industrial development. | | | | | |

| PRECINCT - 09 | | DUBE CITY & SUPPORT ZONE 1B & 2 | | | | |
|-----------------------------------|---|--|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | The three study sites are accessed via the M65 however the proposal is for the Transit spine to continue through to Mount Moreland to improve the precinct connectivity. | | | | | |
| C) SPATIAL PROPERTIES | The sites are surrounded by ecological /conservation areas particularly Support Zones 1b and 2. In developing these areas, development sensitive to these interfaces needs to be considered. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Dube City and Creative campus precinct | | | | | |
| F) DESCRIPTION OF NICHE | The precinct in particular Dube City is functioning as a Town Centre with the opportunity for Support Zone 2 to function as a Campus-creative office precinct or and Support Zone 1b as an Eco-Tourism hub but also supporting the extension of the Dube City area. | | | | | |

| PRECINCT - 10 | | DUBE INDUSTRIAL & BUSINESS ESTATE | | | | |
|-----------------------------------|---|--|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 3km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | The site is currently greenfield, however, the future proposals suggest increased connectivity with the surrounding developments. It is proposed Dube West will traverse the site whilst new linkages will connect the precinct in all directions | | | | | |
| C) SPATIAL PROPERTIES | The precinct is surrounded by ecological open space. Its position is advantageous as it is in proximity to Inyaninga as well as to the Dube TradePort. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Advanced Manufacturing Hub | | | | | |
| F) DESCRIPTION OF NICHE | The strategic location of this precinct, combined with its natural topographic features makes this site ideally suited for Manufacturing related operations. | | | | | |

| PRECINCT - 11 | | DUBE TRADEZONE | | | | |
|-----------------------------------|--|-----------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | The Tradezone lies within the core of the Aerotropolis zone. Its positioning is prime and it has already been significantly developed particularly Trade zone 1. Trade zone 2 lies predominantly undeveloped however there is constant interest by investors to develop this area. | | | | | |
| C) SPATIAL PROPERTIES | Ideally positioned- SEZ zone, platformed serviced and flat sites | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Trade zone | | | | | |
| F) DESCRIPTION OF NICHE | The area is pertaining as a Trade zone, therefore, the continuity of this activity is supported and highly desirable in the context of the Aerotropolis. | | | | | |

| PRECINCT - 12 | | DUDLEY PRINGLE | | | | |
|-----------------------------------|---|-----------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 9km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Dudley Pringle lies along R614 and R102. It is not very accessible but this due to it being undeveloped. A future western bypass is planned west of this precinct as well as internal local access connections which will make this area highly accessible and desirable. | | | | | |
| C) SPATIAL PROPERTIES | The precinct has spectacular views of the Dudley Pringle dam and therefore has a huge potential for development to capitalise on the site's unique qualities. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Residential and lifestyle precinct | | | | | |
| F) DESCRIPTION OF NICHE | Given the precincts location and the spectacular views towards the Dudley Pringle Dam, it is ideally suited for residential development and for this area to become a lifestyle precinct within the Greater Aerotropolis region. | | | | | |

| PRECINCT - 13 | | EMONA | | | | |
|-----------------------------------|--|---------------------|----------------------------|--------------------------|-----------------|--------------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 6km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Emona lies in the periphery of the core Airport zone however given it is within a proximity but still inaccessible is a typical situation of most of the precincts in the western extremities of the study area. The future proposals look at correcting this situation with improved linkages into Emona and connections to areas it surrounds. | | | | | |
| C) SPATIAL PROPERTIES | One of the key challenges with connecting Emona is its topography. Spatially the area is characterised by steep and undulating topography. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Residential and Agri-business precinct | | | | | |
| F) DESCRIPTION OF NICHE | The disconnect of Emona to the Core Airport zone is negligible if new connections are going to improve connectivity, therefore, Emona offers the potential for new residential but also Agri-Business opportunity to support the activities of the Aerotropolis. | | | | | |

| PRECINCT - 14 | | FRASER | | | | |
|-----------------------------------|---|---------------------|----------------------------|--------------------------|-----------------|--------------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 6km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Fraser lies north of the Core Aerotropolis Zone and is currently given its greenfield status not very accessible or connected. The future proposals will better connect Fraser to the N2 but also the proposal is to continue the Transit spine through Fraser and onto Compensation. | | | | | |
| C) SPATIAL PROPERTIES | Like most of the land within the broader study area, Fraser is characterised by undulated topography and environmental open space zones. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | High-Density Affordable Residential+ Education Cluster + Creative campus offices | | | | | |
| F) DESCRIPTION OF NICHE | Fraser has the potential to accommodate higher density Affordable residential including an Educational cluster and offices. | | | | | |

| PRECINCT - 15 | | HAZELMERE | | | | |
|-----------------------------------|--|---------------------|----------------------------|--------------------------|-----------------|--------------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 7km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Hazelmere lies west of the Core Aerotropolis Zone. It is not highly accessible with only Vincent Dickenson Road providing a higher order connectivity to the Dam and surrounding areas. | | | | | |
| C) SPATIAL PROPERTIES | The area spatially is disconnected from the rest of the precinct and the Dam is an underutilised resource from both a residential and tourism opportunity | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Hazelmere urban hub and resort residential precinct | | | | | |
| F) DESCRIPTION OF NICHE | Hazelmere offers a real potential of not only developing into a new Urban node for the western areas but developing the Dam and the areas that it surrounds into a resort residential precinct and recreational zone. The precinct and new hub starts to integrate the western zones into the broader Aerotropolis planning. | | | | | |

| PRECINCT - 16 | | INYANINGA | | | | |
|-----------------------------------|---|------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Inyaninga is strategically located within the Core Aerotropolis zone. It is considered as part of the Dube SEZ and plays a major role in the supply of logistics/ Industrial demands for the Aerotropolis development. The area is proposed to have a secured bonded route that will entice investors into this secured zone. The R102 is currently the major spine traversing the precinct however in the future the western bypass and eastern arterial will provide high-level connectivity into the precinct. | | | | | |
| C) SPATIAL PROPERTIES | The area spatially is strategically located and has been earmarked for Industrial and logistics development. The site is relatively flat which has some environmental and servitude constraints. Some of the ecological areas have been considered for development in the planning concepts. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Logistics Gateway | | | | | |
| F) DESCRIPTION OF NICHE | Inyaninga has been described as a Logistics Gateway as it offers a secured bonded route, combined with an Intermodal facility at the doorstep of the Trade port zone. Residential is also planned west of the logistic areas as well as along the R102 in the north. | | | | | |

| PRECINCT - 17 | | ISENEMBE | | | | |
|-----------------------------------|--|-----------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 14km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Isenembe lies the extreme north of the Aerotropolis zone. It is currently not highly accessible although connected via the R102. In the future, the Western Bypass will traverse this precinct. | | | | | |
| C) SPATIAL PROPERTIES | The area is characterised by steep undulating topography and spatially offers plenty of development opportunity. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Agri - Residential | | | | | |
| F) DESCRIPTION OF NICHE | Isenembe offers Agri-Residential opportunity. There is an opportunity considering the need to provide a platform for a self-sufficient agricultural community that can become a productive, thriving community who will enjoy Institutional and Technical support from Government to sustain the Aerotropolis demands. | | | | | |

| PRECINCT - 18 | | KING SHAKA INTERNATIONAL AIRPORT (KSIA) | | | | |
|-----------------------------------|--|--|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located in the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Considered as the "heart" of the Aerotropolis Zone. Established within a Greenfield area and currently enjoys connections to the N2, M65, the recently constructed International Trade Avenue which links with Watson Highway, the KSIA is highly connected. A proposal is to have a multi- functional Transit Spine, possibly running under the Airport and connecting areas both the North and south of the Study area | | | | | |
| C) SPATIAL PROPERTIES | The area within KSIA has engineered platforms, the runway and terminal buildings etc. KSIA is currently developed however there is the possibility of having a second runway and supporting buildings west of the current runway when demand increases. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | International Airport | | | | | |
| F) DESCRIPTION OF NICHE | KSIA has the potential to offer not only offer increased passenger flights/routes both local and International destinations in the future but also higher freight volumes as demand increases when the Aerotropolis starts to unfold. | | | | | |

| PRECINCT - 19 | | LA MERCY EXTENSION | | | | |
|-----------------------------------|--|---------------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 2km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | La Mercy lies south of the n2 and enjoys coastal views. It is highly accessible as the beach road M4 traverses this area. It also is connected via the M43 in the north and there is the future possibility of extending the M65 into this area. | | | | | |
| C) SPATIAL PROPERTIES | A significant portion of this area towards the coast is developed and is predominantly residential. The area has fantastic views of the ocean and presents a tremendous opportunity for development. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | La mercy coastal corridor | | | | | |
| F) DESCRIPTION OF NICHE | La Mercy offers the opportunity to develop mixed residential typologies, medium to the higher intensity that caters for a range of income profiles along the coastal corridor. | | | | | |

| PRECINCT - 20 | | LINDOKUHLE | | | | |
|-----------------------------------|---|-------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located 7km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Lindokuhle is strategical located via the R614. East of the Lindokuhle lies the R102. The future Western bypass lies west of Lindokuhle. | | | | | |
| C) SPATIAL PROPERTIES | The precinct is steep however highly developable. The areas have sensitive ecological spaces and development setbacks, particularly from Syphon Dam. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Integrated Human Settlement | | | | | |
| F) DESCRIPTION OF NICHE | Lindokuhle presents an opportunity for the establishment of an Integrated Human Settlement. Given its proximity to proposed economic activity, it presents a perfect environment for the creation of the "work, live and play" condition. | | | | | |

| PRECINCT - 21 | | MOUNT MORELAND | | | | |
|-----------------------------------|--|-----------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Poorly connected and isolated land precinct. The future intent is to continue the Transit spine through the Mount Moreland precinct and connect this area to all parts of the Aerotropolis region. | | | | | |
| C) SPATIAL PROPERTIES | The precinct is developed. It has an older community that is surrounded by ecological sensitive areas. There is a proposal to rezone this area for a much higher bulk which will change the character use of this area. The status of the rezoning is unclear. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Eco-Tourism Hub | | | | | |
| F) DESCRIPTION OF NICHE | The Aerotropolis planning has recognised that this area is ideally suited as an Eco-Tourism Hub. This will cater for the inherent sensitivities in the area but allow for the area to evolve as new opportunity develops around this precinct. Guest houses, Eco offices, tourism, bed and breakfast establishment are some of the offerings that will characterise this node. | | | | | |

| PRECINCT - 22 | | MOUNT MORELAND SOUTH | | | | |
|-----------------------------------|---|-----------------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 3km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Poorly connected as it is a greenfield zone. There are plans to connect the Transit spine through this and connect Mount Moreland South with the M27 through towards Dube West. | | | | | |
| C) SPATIAL PROPERTIES | The area is characterised by undulating topography with a few hilltops to maximise on views and is flanked on the north by the river and its floodplain. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Creative Campus Office | | | | | |
| F) DESCRIPTION OF NICHE | The precinct is ideal for a Creative campus office environment due to its proximity and the environmental quality places make this zone highly desirable. | | | | | |

| PRECINCT - 23 | | OAKFORD | | | | |
|-----------------------------------|--|----------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 8km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Apart from Oakford Road, the zone is fairly disconnected from the rest of the Aerotropolis areas. The future intent is for this area to be connected to the broader regional system through the creation of new local access linkages. | | | | | |
| C) SPATIAL PROPERTIES | Oakford is extremely steep with undulating topography and has infrastructural challenges. Some areas still utilise septic tanks. The precinct borders the Hazelmere Dam and has good potential to play a significant role in the Aerotropolis Master planning. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Residential and Eco Tourism precinct | | | | | |
| F) DESCRIPTION OF NICHE | The character of Oakford is more residential but also has potential as an Eco-Tourism Precinct. The unique landform offers an opportunity for Tourism led opportunity such as mountain and quad biking, walking trails and connections to the Dam etc. | | | | | |

| PRECINCT - 24 | | SIBAYA | | | | |
|-----------------------------------|--|---------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 7km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Sibaya is highly connected and is strategically located. It is flanked by the N2 freeway in the west, the M4 beach road divides the precinct centrally, its northern boundary is connected to the M27 through towards Umdloti. | | | | | |
| C) SPATIAL PROPERTIES | Sibaya is a precinct in change. It is predominantly a greenfield site and boasts spectacular views of the coast. It is a sought-after destination and currently, Node 1 is being implemented with the construction of Sibaya Boulevard and the release of residential developments and upmarket housing on portions within Node 1. The balance of the precinct is being planned for predominantly residential however, there are precincts within Sibaya that will contain office parks and retail mixed-use nodes particularly on Hilltops of the undulating slopes which characterise this precinct. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Coastal residential precinct | | | | | |
| F) DESCRIPTION OF NICHE | Sibaya is a predominantly a residential precinct that is designed on green principles and sustainable living. It offers a mixed opportunity on the Hilltop areas and the design philosophy is to create NMT connections throughout the development that link to the town of Umdloti and both the forest and ecological spaces. | | | | | |

| PRECINCT - 25 | | TONGAAT & SURROUNDINGS | | | | |
|-----------------------------------|--|-----------------------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 3km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Tongaat is a Mixed use centre mainly structured in a linear form along the R102. There are conflicts around mobility and accessibility within the town centre relating to the dual function of the R102. | | | | | |
| C) SPATIAL PROPERTIES | Tongaat is in a static state and growth is curtailed due to the uncertainty regarding the Aerotropolis and future development in and around the Tongaat Town Centre. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Town Centre | | | | | |
| F) DESCRIPTION OF NICHE | Many Town centres reinvent themselves after new growth has occurred near them. In the case of Tongaat, there is an opportunity to enhance and rejuvenate the Town Centre by enabling new opportunities to develop thus making Tongaat unique in its offering but the same time retaining its character and identity. There is an opportunity to facilitate eastward and southern growth of Town Centre and to integrate with opportunities within the corridor. There is also a need to stimulate economic investment and redevelopment as well as address public transport which is a concern within the town centre. | | | | | |

| PRECINCT - 26 | | UMDLOTI NORTH | | | | |
|-----------------------------------|--|----------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 3.5km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Umdloti North borders the Sibaya development, however, is separated by the M27. Like Sibaya it has the N2 freeway in the west, the M4 beach road divides the precinct centrally. | | | | | |
| C) SPATIAL PROPERTIES | It is characterised by undulating topography with valleys and ridges. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Coastal Tourism | | | | | |
| F) DESCRIPTION OF NICHE | Umdloti North is a natural extension of the Sibaya Development. Its character is more centred around Coastal Tourism which promotes Resort residential, villa apartment style living with some areas identified for mixed use and office park development. | | | | | |

| PRECINCT - 27 | | UMHLANGA & SURROUNDINGS | | | | |
|-----------------------------------|--|------------------------------------|---------------------|-------------------|----------|-------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 14km of the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Umhlanga is a major economic node in the north. It is flanked by the N2 on the west, M41 on the south, M4 at the Village centre. It is highly accessible and connected to future corridor routes. Currently, the N2/ M41 interchange is under construction which will further improve and connect Umhlanga with the surrounding areas such as Cornubia. A New BRT route (C9) are proposed to link Umhlanga to the rest of the IRPTN network. | | | | | |
| C) SPATIAL PROPERTIES | The area is developed and transforming at a rapid rate. The area contains major shopping centres such as Gateway, crescent, also commercial, retail and High Rise residential developments such as the Pearls as well as upmarket residential apartments and freestanding homes. A New luxury hotel such as Radisson Blu is soon to be constructed in the Precinct. The Precinct is also a popular Tourist destination in the North. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Sub-Regional Town Centre | | | | | |
| F) DESCRIPTION OF NICHE | Umhlanga /New Town Centre Precinct is a major sub-regional node in the north. The rapid rate at which Umhlanga is growing, it could become a mega-node in the north. There has been a major exodus of business from the Durban CBD to Umhlanga and with the further investment and increased development growth of this area, it will only continue to grow in GLA and scale over the coming years. | | | | | |

| PRECINCT - 28 | | USHUKELA | | | | |
|-----------------------------------|---|---------------------|----------------------------|--------------------------|-----------------|--------------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Ushukela lies within the Core Aerotropolis zone. The N2 freeway lies along its southern boundary whilst the International Trade Avenue traverses the precinct and connects onto Watson Highway. This gives the precinct good connectivity to the surrounding areas. | | | | | |
| C) SPATIAL PROPERTIES | The area has an approved plan. The area will be engineered to complement the uses proposed. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Head office campus and convention precinct | | | | | |
| F) DESCRIPTION OF NICHE | Ushukela lies adjacent to the Trade zone. Given its good location, its character has been identified as a Head campus to provide supportive office development for the Aerotropolis and a convention precinct. | | | | | |

| PRECINCT - 29 | | VERULAM & SURROUNDINGS | | | | |
|-----------------------------------|--|-----------------------------------|----------------------------|--------------------------|-----------------|--------------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 6km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | There is a need for greater connectivity to the R102 and the regional corridor as well as to address public transport issues within the Town Centre. | | | | | |
| C) SPATIAL PROPERTIES | Verulam is a Mixed-use Centre experiencing processes of urban decline in parts of the Town Centre. There is a need to stimulate economic investment and redevelopment within the Town Centre. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Town Centre | | | | | |
| F) DESCRIPTION OF NICHE | Many Town centres reinvent themselves after new growth has occurred near them. Similarly, to Tongaat, there is an opportunity for Verulam to enhance and rejuvenate the Town Centre by enabling new opportunities to develop thus making it unique in its offering but the same time retaining its character and identity. | | | | | |

| PRECINCT - 30 | | WESTBROOK | | | | |
|-----------------------------------|--|---------------------|----------------------------|--------------------------|-----------------|--------------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 5km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Westbrook is accessible. It has the N2 on the western interface and the M4 on the eastern edge however with the proposals of realigning the M4, Westbrook becomes more accessible and connected to the Greater Aerotropolis area. | | | | | |
| C) SPATIAL PROPERTIES | Westbrook has some positive spatial properties. It is fairly steep and has some irregular terrain, however, depending on the spatial design, the area offers good views to the ocean. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| E) CHARACTER NICHING | Research and Medical Tourism Hub + Coastal residential Precinct | | | | | |
| F) DESCRIPTION OF NICHE | Westbrook can become a Research Medical Precinct and Tourism Hub the portion located along the N2 given its salient character. Along the coast, there is an opportunity to develop mixed residential typologies, medium to the higher intensity that caters for a range of income profiles along the coastal corridor. | | | | | |

| PRECINCT - 31 | | WEWE | | | | |
|-----------------------------------|---|---------------------|----------------------------|--------------------------|-----------------|--------------------|
| A) PROXIMITY TO CORE AIRPORT ZONE | Located within 7km from the Core Aerotropolis zone | | | | | |
| B) ACCESSIBILITY QUALITIES | Wewe is good access and has the R614 traversing it. Its connectivity will improve once the western bypass is constructed in the long term | | | | | |
| C) SPATIAL PROPERTIES | Much of the land at Wewe is significantly flat. Wewe has an approved layout that proposes Industrial, residential and commercial development. | | | | | |
| D) STATUS | EIA APPROVED | EIA PROGRESS | CONCEPTUAL PLANNING | DETAILED PLANNING | APPROVED | N/A UNKNOWN |
| | | | | | | |
| E) CHARACTER NICHING | Infrastructure assembly / manufacturing / logistics | | | | | |
| F) DESCRIPTION OF NICHE | Given Wewe's level terrain, it is ideally niched for Infrastructure assembly, Manufacturing and logistic development that is linked to the Aerotropolis activities and functions. | | | | | |

ANNEXURE - D

STAKEHOLDER ENGAGEMENT LOG

| No. | Stakeholder Name | Organisation | Date of Engagement | Role on the Project | Interest in the Project | Influence on the Project | Action | Frequency/ Method of Engagement | List of Issues |
|-----|--|--|--------------------|---------------------|--|--|---|---|--|
| 1 | Multiple (P:\EDTEA\350622\IPAS_DM_TRANSFER_DRIVE\Project_Access\1201-Inception\Inaugural Workshop\Attendees - DURAMP Workshop 2 December 2015.xlsx) | Multiple | 02-Dec-15 | Stakeholders | Organisation-specific | Organisation-specific | The Inaugural workshop served as a form of confirmation of - and inspiration for - the overall project direction | Broader audience managed strategically as a whole | Contained in annexures of the Aerotropolis Guiding Philosophy Report. Issues have been reframed into guiding philosophies. |
| 2 | Multiple | Multiple | 04-Mar-16 | Stakeholders | Organisation-specific | Organisation-specific | The purpose & objectives for the charrette were to understand the current masterplan and test it against new information/objectives; to begin the iterative process of designing the masterplan; to use the design concept to help focus the status quo assessment and to transcend creative/restrictive boundaries | Broader audience managed strategically as a whole | Contained in Design Charrette 1 Outcomes Document. Spatial design objectives must be centred around an airport city, a live-work-play environment, reliable connectivity and social integration. Gaps in the current plan include the incorporation of agro-processing, the integration of the movement network and connectivity to the west (the study area boundary must be redefined). Key questions include what are the strategic objectives for housing?; what are the strategic objectives for job creation? and how to accommodate affordable housing? |
| 3 | Soonitha Pooran | PRASA | 10-Mar-16 | Stakeholder | Alignment with PRASA Projects | 3 Main Route Scenarios | Monitor developments on high speed rail | As & When Required | Addressed through working Group 3 |
| 4 | Kiran Parthab, Amit Nandkuar, Peet Benade | Transnet Organisation (TNPA, TCC & TFR) | 17-Mar-16 | Wider Stakeholders | Seaport-Airport Synergy | Freight Volumes via Rail | Establish whether sea/air synergy exists & if so include TFR & TNPA as stakeholders in working groups | As & When Required | Lack of seaport-airport synergy; security and delays are an issue as TFR share infra with PRASA |
| 5 | Greg Mullins | eThekwini EPCPD | 29-Mar-16 | Environmental Input | Lies within municipal area where many environmental initiatives are underway, pioneered by eThekwini | Major influence - since there are gazetted off set areas with limited development allowances. A range of other planning layers and wetland frameworks are underway. These will have a direct influence on the spatial plan | Greg to send relevant shapefiles and documents. Continue engagements as the plan develops. | At key project intervals. Face to face engagements. | Note various initiatives and avoidance areas. |
| 6 | Paul Sessions | ETA | 04-Apr-16 | Stakeholder | Integrated Freight and Logistics Strategy (IFLS) & Back of Port Local Area Plan (BOP LAP) | Alignment to the Freight and Logistics Strategy | Take on board research regarding commodity flows, freight volumes etc. | As & When Required | Lack of synergy; incorporate planning (IFLS & BOP LAP) |
| 7 | Lukhanyo Tilana, Justeyn Van Zyl | ACSA | 06-Apr-16 | Stakeholder | KSIA Master Plan Update | Alignment to KSIA Master Plan | Provide ACSA with our plans & obtain their plans | As & When Required | Alignment required |
| 8 | Benson Zenda, Mervin Naik, Niram Ramchunder, Vuyo Nguza, Sthembiso Mthembu and R Munien | COGTA, eThekwini Municipality, ILembe and Human Settlement | 12-Apr-16 | Spatial Data Input | Geodatabase | Geodatabase Management | Status Quo GIS data consolidation Workshop | One-on-one engagement | None |
| 9 | Pat Dorkin, AMU | KZN DOT | 03-Jun-16 | Stakeholder | Transport Planning around THD Land | Movement Network | Confirm the exact movement network/road alignments with the development proposals that are on the table | As & When Required | Economic viability of rail connectivity; refinements to NUDC study; mobility vs. accessibility considerations |
| 10 | IAAP | Smart Durban Reference Group | 07-Jun-16 | Wider Stakeholder | Input to WG4 | Introduce new ideas & concepts that can be adopted | Attend sessions and provide feedback to project team | As & When Required | None |
| 11 | Lumka Sibanyoni, Neville Matjie | TIKZN | 08-Jun-16 | Stakeholder | Funding & Finance Facilitation, Investment Promotion and Project Marketing | Critical to project implementation and gaining development momentum; 1-stop shop to go a long way in facilitating implementation | TIKZN studies; engage with key roleplayers; Aerotropolis Stand at world routes September 2016; exhibitions where DTP, Ithala, TIKZN and DTI are represented; look to host Aero investment conference early next year; link agri hubs to Halaal Hub at DTP and include Utho in next engagement. | As & When Required | Have a list of projects ready early so that when exhibitions and investor conferences come up we can present projects. Concern over DMS rollout & support. |
| 12 | Ndabo Khoza | Tourism KZN | 08-Jun-16 | Stakeholder | Durban Aerotropolis product enhancement - how to enhance global competitiveness? | Tourism Links; Aerotropolis place-marketing & branding strategy | Provide reliable and efficient public transport services and ensure good road conditions (black top surfaces) to allow movement for people between tourist attractions. | As & When Required | There is an enormous tourism potential that is not being fully leveraged e.g., development of world-class resorts, marketing Durban to the international visitors etc. It is necessary to educate the policy makers and councillors. |

| No. | Stakeholder Name | Organisation | Date of Engagement | Role on the Project | Interest in the Project | Influence on the Project | Action | Frequency/ Method of Engagement | List of Issues |
|-----|---|------------------------|--------------------|---------------------|--|--|--|---|--|
| 13 | Various line department heads 1 of 2 | eThekweni Municipality | 10-Jun-16 | Stakeholder | Municipal planning & design will influence the planning & design of the Aerotropolis (and vice versa). | Responsible for spatial and land use planning; bulk infrastructure provision and maintenance and transport masterplanning | Engage with eThekweni Municipality as a block | Continuously | Conflicts in policies/planning within municipality. Lack of flow-through of information within various levels of management. Requested meeting as a block to avoid these issues. Would like to see study areas to understand implications. SDF to be updated in August. Town-planning gap due to various consultants approaching city for different projects. |
| 14 | Various line department heads 2 of 2 | | 13-Jun-16 | | | | | | |
| 15 | Mike Deighton, Kate Ralfe, Rory Wilkinson | THD | 13-Jun-16 | Stakeholder | Land owner | Buy-in is critical to project success | Constantly engage with, align plans, and find resolution on differences where they arise. | Continuously | Keen on biomass and cogen., but there are challenges around legislation and tariff regime; provision of bulk sewer critical to unlocking development; Act 70 of 70 poses limitations on how development takes place and needs to be dealt with strategically; issue of WULA is critical; and there is no such thing as a catalytic project because it doesn't translate into funding or special treatment or fast tracking of plans etc. |
| 16 | Ravi Ronny, Dudley Mbambo, Jason Lowe | SANRAL | 20-Jun-16 | Stakeholder | Planning & maintenance of national roads | Logistics impact for freight movement on national roads. Congestion and implications. | Engage SANRAL in future meetings with ETA and KZNDOT | As & When Required | Malalignment of planning between KZNDOT, SANRAL and ETA; SANRAL operates at national level whereas Aerotropolis operates at provincial level; funding is the biggest challenge; local traffic use National roads for short trips. |
| 17 | Linley Nadasen | EDTEA | 23-Jun-16 | Stakeholder | ICT role out in the municipal regions | Status Quo of existing infrastructure as well as plans for implementation that can be aligned with the masterplan and ensure integration of all municipalities | Obtain information on the latest plans and proposals and incorporate in reports; incorporate ideas into the masterplan | As & When Required | No standard/alignment between stakeholders; promote the use of sharing knowledge and information. |
| 18 | Kevin Meier, Steve Gillham | Umgeni Water | 24-Jun-16 | Stakeholder | Bulk water supplier | Bulk water supplier | Obtain Dept. of Water & Sanitation's Reconciliation Study | As & When Required | Capacity has been built into infrastructure to cater for future demand. However, until that demand is realised, there will be no investment in such upgrades. |
| 19 | Mathabo Mosia, Owen Mungwe, Brynn Burnett, Rachel Liebetrau, Anthony Gould, Zama Dlamini, Mpume Myeni, Clarissa Naicker, Tim Hudson, Hamish Erskine, Pumla Mlondo, Dëshnee Sukdeo and Keith Green | DTP | 27-Jun-16 | Client | Best use of available land (focus on implementation) | Major influence in all aspects | Collaborate as much as possible. | Continuously | Need to take cognisance of previous planning by entities. However, this should not dictate the masterplan. The purpose of the masterplan is to improve and innovate to achieve best outcomes. |
| 20 | Greg Mullins | eThekweni EPCPD | 29-Jun-16 | Environmental Input | Lies within municipal area where many environmental initiatives are underway (pioneered by eThekweni) | Major influence - since there are gazetted offset areas with limited development allowances. A range of other planning layers and wetland frameworks are underway. These will have a direct influence on the spatial plan. | Get entire 100m road reserve shapefile. Keep him abreast of the plan as it takes shape. | At key project intervals. Face to face engagements. | Need to respect offset zone at all costs. Only major road crossing over it can occur in the 100m road reserve, or via in situ upgrades (in existing footprints). |
| 21 | Owen Mungwe, Mathabo Mosia, Mpume Myeni and Tim Hudson | DTP | 30-Jun-16 | Client | Best use of available land. Focus on implementation. | Major influence in all aspects | Collaborate as much as possible. | Continuously | Focus on end-user space; overcome funding challenges; look at affordable housing; manage THD freehold land and DTP leasehold land and address implications for SEZ; develop a common marketing strategy |
| 22 | Kate Ralfe and Rory Wilkinson | THD | 01-Jul-16 | Stakeholder | Land owner | Buy-in is critical to project success | Constantly engage with, align plans, and find resolution on differences where they arise. | Continuously | Captured |
| 23 | Prashunt Lutchman, Ed Bunge | ESKOM | 11-Jul-16 | Stakeholder | Electricity demands; current and future plans and initiatives | Implementation | Collaborate as much as possible. | As & When Required | Status quo (latest information and data) of the existing demand; determining demand, electricity tariffs and the associated costs of stations. |

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|-----|--|---------------------------------|--------------------|-------------------------|---|--|--|---|---|
| 24 | Multiple | Multiple | 14-Jul-16 | Stakeholders | Organisation-specific | Organisation-specific | Discuss the emerging plan and co-create the building blocks of the masterplan. | Broader audience managed strategically as a whole | Contained in Design Charrette 2 Outcomes Document: Mt Moreland – alignment needs work; interrogate the noise contour & engage authorities; increase mixed uses; quantify how much bulk would be required and reconfigure planning to be more focused & efficient; hierarchy and priority/phasing of roads is very important; NMT routes – prioritise pedestrians and bicycles over private vehicles (this should not be an after thought); integrate masterplan with INK area; extend the area west, north & south? Where to draw the line?; western corridor – needs more work and research into its capabilities and nuance; alignment for high-capacity, priority public transport link will be finalised soon (i.e. light rail vs BRT vs high speed); offset area is very important – discuss/negotiate; linkage to PMB needs to be incorporated; firm up on typologies; NB: engagement is critical to get buy in from all role-players & engineering services to be discussed once plan firms up |
| 25 | Andrew Mather | Stormwater & Coastal Management | 18-Jul-16 | Stakeholder | Coastal planning | Coastal planning | Agreement on planning approach to the coast (precautionary) | As & When Required | Costs of piers not viable unless there is a functional element to it. |
| 26 | Mathabo Mosia | DTP | 19-Jul-16 | Stakeholder | DTP Senior Spatial Planner | Development of the masterplan | Assistance with Aerodrome | Continuously | None |
| 27 | Linley Nadasen | EDTEA | 19-Jul-16 | Stakeholder | Smart Infrastructure Presentation | Development of the masterplan | Incorporate into the Masterplan or advise on diversion | As & When Required | Determine existing infrastructure alignment and co-operation between stakeholders and authorities. |
| 28 | Trivi Arjunan, Lethu Dlamini | LDM, COGTA | 26-Jul-16 | Stakeholder | N2 Corridor Study | Request updated information on projects influencing the aerotropolis | Incorporate into the Masterplan or advise on diversion | As & When Required | Inclusion of latest information |
| 29 | John Parkin | eThekwini DSW | 26-Jul-16 | Stakeholder | Information required for status quo and masterplan | Status Quo & Masterplan | Information to be incorporated into reports | As & When Required | Inclusion of latest information |
| 30 | Zeph Nhleko | EDTEA | 05-Aug-16 | DDG EDTEA | Strategic | Strategic | Information will be disseminated via the Client, Mr C. Hamadziripi | Quarterly | None |
| 31 | Felicity Mitchell and Kurt Barichiev | KZN DARD | 15-Aug-16 | Agricultural Land Input | Discuss the departments take on development on agric land in the north coast of KZN | Organisation-specific | Information to be incorporated into reports | As & When Required | None |
| 32 | Emmanuel Letebele, Steve Angelos, Helene Epstein, Shikar Singh, Danny Sewdlar, Justin Radan, J Dworkadass, L Rhowya, N Palayan, M Allopi, C Norton, K Rakubu and Bongeka Luthuli | eThekwini SSPB, LUMS | 17-Aug-16 | Implementing Agents | Formulating an SDF that aligns with the DURAMP proposals | Great influence with respect to implementation | Actively engage in one-on-one sessions | One-on-one engagements prior and post release of deliverables | <p>Create short term opportunities Whilst there is a need to raise general skill levels of the population, we need to create short term opportunities for people to participate; eThekwini as a region, experiences 45ha of industrial land take-up per annum; to resolve issues on act 70 of 70, both the municipality and province need to work together on a strategy to engage national government; only 550,000sqm of development could be supported in DTP due to existing water and traffic constraints; LUMS on DTP development:</p> <ol style="list-style-type: none"> Samsung and industries like Samsung assembly are inappropriate uses including pharmaceuticals as these industries are not "just in time", requiring proximity to the airport, etc. The above undermines the planning originally undertaken for DTP New industrial developments in Weve should be considered. Mount Moreland as a residential area presents a constraint and risk to further development in the vicinity Steve Angelos will coordinate with Province on resolving act 70 of 70 issues. <p>City Planning Commission is busy with the City Development Strategy – the project team should engage with Adrian Peters; city budgeting is going to happen in September 2016, which may be out of sync with the Aerotropolis MP project schedule; the purpose of the engagements with eThekwini Planning is to harmonise efforts and not necessarily aimed at re-drafting all previous plans prepared; an outcome of the master plan is also to better bridge the gap between planning and implementation; is the "Aerotropolis Master Plan" confusing within the context of other statutory plans? Should a name change be considered?; Alignment of launch dates for various programmes is important to ensure different organs of state don't issue contradictory/confusing messages to the public. These include inter-alia:</p> <ol style="list-style-type: none"> March 2017 launch of AMP clashes with SDF Public Comment period. City Development Strategy Launch Date? SIPS etc. <p>The question of how much detail will the Aerotropolis cover i.e. Local Area Plan versus Functional Area Plan came up. – need to confirm with Nathan what our response was but I recall functional area plan.</p> |

| No. | Stakeholder Name | Organisation | Date of Engagement | Role on the Project | Interest in the Project | Influence on the Project | Action | Frequency/ Method of Engagement | List of Issues |
|-----|--|--|--------------------|--|--|--|--|---|--|
| 33 | Steve Angelos, Helene Epstein, Falzel Seedat, Rob Dyer, Greg Mullins, Helene Epstein, Paul Sessions, Takalani Rathiyaya, Theo Naidoo, Neil Larrett, Essop Goga, Hope Joseph, Joyce Hammond, Sibusiso Makhatini, Tindall Kruger and Manoj Rampersad | eThekweni Sectors (Engineering, Human Settlements, Transport, Economic Development etc.) | 24-Aug-16 | Planning & Implementing agents | Strategic planning, approvals, implementation, funding/finance, economic development | Great influence with respect to implementation | Actively engage in one-on-one sessions | One-on-one engagements prior and post release of deliverables | Risk Issue: moving the aerotropolis forward requires role players to champion and drive the Aerotropolis project; confirm eThekweni participation and buy-in; lacking data from other municipalities in the report (Ndwedwe and KwaDukuza); the AMU structure needs to include municipal implementers; in order to make the Aerotropolis plan a statutory plan, SDFs etc. will be reviewed to incorporate new design proposals- this will require a change to sectors plans and implementation strategies and framework plan needs to review the population growth projections. Noise Contours: appropriate land use management (e.g. 2035 55db noise contours does permit certain land uses but not residential); what is the impact of aircraft noise if no new technology; how do we mitigate noise levels? (density/rigidity?); require a new study to map out noise contours. Infrastructure: impact of additional capacity created by the Airport once future targets have been met; phasing and timing of water use license applications and approvals and discuss the mitigation measures needed to achieve the "Live, Work, Play" vision. Economic: lower flight volumes than anticipated due to poor economic conditions; fewer long haul flights than forecast; flight paths different to what was originally proposed, hence noise impacts need to be revisited and revised. Environment: noise and air pollution needs to be factored in the environmental assessment. Misalignment of Plans: high level plans are required to take into account current trends/demands/integration of sectors (e.g. rural to urban migration patterns and implant on housing developments and planning - Cornubia done with no real integration). Freight: 1-hour travel time needs to be relooked at - some areas have a zero impact on the Aerotropolis; the estimate of area a problem in traffic; rail connectivity and air cargo links are an issue (e.g. PRASA - limits due to passenger requirements; TRANSNET - NATCOR consultation); there is no sea cargo and air cargo connections (independent operations, different functionality); moving cargo up the north coast is not practical; Air logistic - light cargo vs. heavy cargo; unlikely to have Toyota as a customer for the aerotropolis; bonded/customs act no longer running into the dry port or bonded area - limits what you can do; is the best investment in the city the "Aerotropolis" or is a "Sea-Port" investment better? Catalyst: air freight is very low; what is the aerotropolis catalyst? Masterplan Outcomes: clarity is required on the product to be delivered at the end of the process. GIS: consistent format |
| 34 | Bongani Gumede | THD | 31-Aug-16 | Landowner & Lead; SSIP | Socio-economic sustainability | Skills upliftments and absorption into economy | Incorporate lessons learnt into proposals | As & When Required | Absorption into economy is as important as skills upliftment. Even though level of education is low, unemployment for those with education is still high. |
| 35 | John McCosh | INR | 22-Sep-16 | Environmental Input | Agriculture within Aerotropolis region | Specialist agric input | Information to be incorporated into reports | As & When Required | Ideas into high yielding and high value crops for Aerotropolis region |
| 36 | Dhevan Govender, Speedy Moodliar, Thembelinle Ndlovu, Nisaar Mahomed, Nicholas Rowse and Neil Meyer | EWS, TIKZN, SMEC | 27-Sep-16 | IAAP | Potential contributor to bulk water supply | Potential for partnership | Keep informed | As & When Required | Long-term plans for pilot plant are dependents on many external factors. |
| 37 | Owen Mungwe, Cosmas Hamadziripi, Pat Dorkin, Lindo Sibiya and Logan Moodley | DTEA, EDTEA, KZNDOT, ETA | 03-Oct-16 | Client & WG Chairs | Buy in a co-ordination amongst WG members | Agents of change | Presentation of Emerging/Concept Masterplan: Update plan based on comments | Continuously | Embed portfolios of change into master plan. Conceptualise Act 70 of 70 (quantify land & yield). Define agri-village/ Consider how heavy industry fits in. Renewable energy targets haven't been met - understand why and apply innovative thinking. Define road hierarchy. Consider Ocean Economy and show energy & water supply mix. |
| 38 | WG, ASC, AIA & DURAMP reps amongst others | AIA | 04-Oct-16 | Skills development, incubation, enterprise development | Project forms part of Aerotropolis Portfolio | Running in parallel with project | Keep informed | As & When Required | Absorption into economy is as important as skills upliftment. Even though level of education is low, unemployment for those with education is still high. |
| 39 | Lindo Sibiya, Nisaar Mahomed, Linda Motsumi, Syd Kelly and Tim MacDonald | EDTEA, TIKZN, Petrospace | 07-Oct-16 | Wider Stakeholder | Potential synergy for renewable energy initiatives | Potential for partnership | Take on board outcomes of research and a status quo assessment into renewables in KZN. | As & When Required | Many renewable energy projects fail to take off due to institutional/administrative issues. This results in a loss of investment and poor confidence in KZN's ability to progress in this arena. |
| 40 | Kate Ralfe and Rory Wilkinson | THD | 10-Oct-16 | Stakeholders | Landowner | Buy-in is critical to project success | Constantly engage with, align plans, and find resolution on differences where they arise. | Continuously | Still at conceptual phase. Detail around implementation is critical. Need to create an enabling regulatory environment. |
| 41 | WG, ASC, AIA & Client reps amongst others (P:\EDTEA\350622\IPAS_DM_TRANSFER_DRIVE\Project_Access\Workshop 14 October 2016\Attendance Register.xlsx) | Multiple | 14-Oct-16 | Stakeholders | Organisation-specific | Organisation-specific | Presentation of Emerging/Concept Masterplan: Circulate documents for comment and take on board in further planning | Broader audience managed strategically as a whole | Issues raised in this section are contained in the Emerging Masterplan Outcomes Document/Comments received from THD, ACSA and the eThekweni Municipality have been documented in the Emerging Masterplan - Outcomes Document with Written Comments from Stakeholders |

| No. | Stakeholder Name | Organisation | Date of Engagement | Role on the Project | Interest in the Project | Influence on the Project | Action | Frequency/ Method of Engagement | List of Issues |
|-----|---|--|--------------------|--|--|--|---|---|---|
| 42 | Greg Mullins and Sabelo Nkosi | eThekweni EPCPD | 07-Nov-16 | Environmental Input | Lies within municipal area where many environmental initiatives are underway (pioneered by eThekweni). | Major influence - since there are gazetted offset areas with limited development allowances. A range of other planning layers and wetland frameworks are underway. These will have a direct influence on the spatial plan. | Agreement on the approach to the environmental component to the masterplan | At key project intervals. Face to face engagements. | None |
| 43 | Linley Nadasen, Chris Whyte, Tim Parle, Mike von Tonder, Prof Bhekisipho Twala, Tony de Sousa, Sharaaf Abdula | Representatives of different ICT sectors | 02-Dec-16 | ICT Input | ICT infrastructure | Specialist input | Information to be incorporated into reports | As & When Required | Inclusion of latest technologies and ideas |
| 44 | Felicity Mitchell, Kurt Barichev, Hlamalani Mongwe, Lisa del Grande, Petrus Mans and Pat Dorkin | DARD | 11-Jan-17 | Agricultural Land Input | Discuss the departments take on development on agric land in the north coast of KZN | Organisation-specific | Information to be incorporated into reports | As & When Required | There is a need to align the different spheres of governments in terms of developing a position on agricultural land, agricultural potential, food security and development application processes. Although SPLUMA application supports Act 70 of 1970 application in that high agricultural potential land should be retained, where possible, there is a potential for conflict. EDTEA, DAFF and local municipalities also need to be aligned in this regard. |
| 45 | Benson Zenda and Mervin Naik | COGTA | 10-Feb-16 | Spatial Data Input | Geodatabase | Geodatabase Management | To provide guide in terms of the GIS requirements for the formulation of the DURAMP geodatabase | One-on-one engagement | None |
| 46 | Benson Zenda, Mervin Naik, Niram Ramchunder, Vuyo Nguza and R Munien | COGTA and eThekweni Municipality, iLembe | 10-Feb-17 | Spatial Data Input | Geodatabase | Geodatabase Management | Webmap and GIS Standards | One-on-one engagement | None |
| 47 | Kate Ralfe | THD | 17-Feb-17 | Stakeholder | Land owner | Buy-in is critical to project success | Constantly engage with, align plans, and find resolution on differences where they arise. | Continuously | DURAMP is fully aligned with THD |
| 48 | ASC | Multiple | 23-Feb-17 | Stakeholder | Organisation-specific | Organisation-specific | Presentation of Updated Masterplan | Broader audience managed strategically as a whole | None |
| 49 | Route Development Committee | Multiple | 28-Feb-17 | Stakeholder | Organisation-specific | Organisation-specific | Presentation of Updated Masterplan | Broader audience managed strategically as a whole | None |
| 50 | Victor Radebe, Gibert Hall, Gideon Treurich, Chantelle Hickley, Jarendra Reddy, Nathan Iyer and Kavita Shah | AMU | 13-Mar-17 | Stakeholder | Alignment | Secretariat | Constantly engage with, align plans, and find resolution on differences where they arise. | Continuously | None |
| 51 | EDTEA MANCO | EDTEA | 14-Mar-17 | Client | Project forms part of Aerotropolis Portfolio | Buy-in is critical to project success | Presentation of Updated Masterplan | As & When Required | None |
| 52 | Multiple WG2&3 | Multiple | 30-Mar-17 | Stakeholders | Project forms part of Aerotropolis Portfolio | Buy-in is critical to project success | Presentation of Updated Masterplan | As & When Required | None |
| 53 | Gibert Hall, Victor Radebe, Thebinkosi Mkize, Mathabo Mosia, Stephen Angelos, Logan Moodley, Pat Dorkin, Kamalen Gounden, Nathan Iyer, Jarendra Reddy and Kavita Shah | AMU, EDTEA, DTPC, ETM-CPO, ETA, KZN DOT, DURAMP Team | 03-Apr-17 | Client, Planning & Implementing Agents | Organisation-specific | Buy-in is critical to project success | Project definition and packaging | Workshop | Confirm alignment with THD & Aurecon Movement Network |

| No. | Stakeholder Name | Organisation | Date of Engagement | Role on the Project | Interest in the Project | Influence on the Project | Action | Frequency/ Method of Engagement | List of Issues |
|-----|--|-----------------------|--------------------|--|---|---------------------------------------|--|---------------------------------|----------------|
| 54 | Provincial Planning Commission | Dept. of Public Works | 04-Apr-17 | Client, Planning & Implementing Agents | Owner | Buy-in is critical to project success | Presentation of Updated Masterplan | As & When Required | None |
| 55 | MEC Briefing | EDTEA | 06-May-17 | Client | Owner | Implementation | Presentation of Updated Masterplan | One-on-one engagement | None |
| 56 | Aerotropolis Investor Conference Planning Workshop | AMU | 18-May-17 | Stakeholders | Project forms part of Aerotropolis Portfolio | Implementation | Ensure alignment | As & When Required | None |
| 57 | ASC | Multiple | 25-May-17 | Stakeholders | Project forms part of Aerotropolis Portfolio | Buy-in is critical to project success | Presentation of Updated Masterplan | As & When Required | None |
| 58 | Logan Moodley | ETA | 24-May-17 | Implementing Agent | Municipal planning & design will influence the planning & design of the Aerotropolis (and vice versa) | Buy-in is critical to project success | Presentation of Updated Masterplan | One-on-one engagement | None |
| 59 | Transformation Workshop | Multiple | 26-May-17 | RET Input | Organisation-specific | Specialist input | Presentation of Updated Masterplan with a focus on RET | Workshop | None |

| No. | Stakeholder Name | Organisation | Date of Engagement | Role on the Project | Interest in the Project | Influence on the Project | Action | Frequency/ Method of Engagement | List of Issues |
|-----|---|---|--------------------|--|---|--|---|---------------------------------|--|
| 60 | WG2&3 | Multiple | 29-May-17 | Stakeholders | Project forms part of Aerotropolis Portfolio | Buy-in is critical to project success | Presentation of Updated Masterplan | As & When Required | None |
| 61 | Cosmas Hamadziripi, Babalwa Tandwa, Thando Dube, Emmanuel Letebele, Kate Ralfe, Njabulo Khuzwayo, Gibert Hall, Stephen Angelos, Pat Dorkin, Jaya Tafadzwa, Jarendra Reddy and Kavita Shah | AMU, EDTEA, DTPC, ETM-CPO, ETA, KZN DOT, THD, DURAMP Team | 05-Jun-17 | Client, Planning & Implementing Agents | Organisation-specific | Buy-in is critical to project success | Lead projects/other projects to be associated with DURAMP | Workshop | 1) Detailed design processes will help firm up on the position; 2) Corridors and road reserves/alignments must be secured now; 3) Confirm the investor attraction criteria |
| 62 | Paul Sessions, Logan Moodley, Manoj Ramperad and Jarendra Reddy | 1-1 Engagement with ETA | 15-Jun-17 | Planning & Implementing agents | Strategic planning, approvals, implementation, funding/finance, economic development | Great influence with respect to implementation | Actively engage in one-on-one sessions | As & When Required | 1) An additional growth scenario will be developed above the one presented that is more realistic, this growth scenario would need to be used to re-evaluate time frames, population, and budget; 2) The connection of this area to the Seaport requires the improvement (or expansion) of large strategic infrastructure elements that fall outside the geographic boundary of the Aerotropolis Master Plan. Some of these are the N2, M4, key interchanges and North Coast Rail Line. A further study(ies) would need to be conducted to determine the improvements (or expansions) to these and determine whether this is a priority in relation to other Seaport infrastructure requirements. These infrastructure limitations should also be noted as not being included in the overall budget; 3) The Public Transport Splits need to be re-assessed to a more realistic share and the subsequent impacts need to then be re-assessed; 4) The ETA was satisfied with DURAMP's clarifications. It was concluded that it will be sufficient provided the text discussing the revised growth is fairly prominent (or possibly noted on a new slide/chapter). The key would be ensuring all stakeholders are aware of what slow growth means for this project, most importantly from an infrastructure provision point of view (if any infrastructure is delayed). |
| 63 | Hope Joseph, Justin Janki, Jarendra Reddy | 1-1 Engagement with eThekweni Water and Sanitation | 19-Jun-17 | Planning & Implementing agents | Strategic planning, approvals, implementation | Great influence with respect to implementation | Actively engage in one-on-one sessions | As & When Required | Industrial waste water should be separated to allow re-use of water |
| 64 | eThekweni Sectors (Engineering, Planning, Human Settlements) | 1-1 Engagement with eThekweni & DURAMP Team | 21-Jun-17 | Planning & Implementing agents | Strategic planning, approvals, implementation | Great influence with respect to implementation | Actively engage in one-on-one sessions | As & When Required | 1) The Aerotropolis Master Plan will inform and be incorporated into the various statutory Municipal plans and is not intended to fit into the hierarchy of plans or replace existing processes.; 2) The transit orientated spine alignment impacts on environmental conservation off-set space. The detailed pre-feasibility and feasibility should find a solution to this. 3) Industrial waste water should be separated to allow re-use of water.; 3) Industrial waste water should be separated to allow re-use of water.; 4) Residential uses with the noise zones present a risk. Despite the noise zones being recently revised, eThekweni Municipality believe those used for RoD should be enforced. It was acknowledged that the plan is a 50 year plan and the noise footprint of the airport will evolve or improve and we cannot ignore the opportunity that may present. |
| 65 | Ndwedwe Council Aerotropolis Workshop | Ndwedwe Municipality | 23-Jun-17 | Stakeholders | Municipal planning & design will influence the planning & design of the Aerotropolis (and vice versa) | Great influence with respect to implementation | Actively engage in one-on-one sessions | As & When Required | 1) What would the youth in the area study to ensure they benefit from the Aerotropolis?; 2) There is no Ndwedwe Town Centre on the presented spatial plan; 3) What is the Public Transport Strategies in Ndwedwe? 4) The slide on the Niche Nodes was not well received in respect to how it was represented. 5) The councillors were not convinced by the WIFI opportunity at Ndwedwe as opposed to other opportunities – physical infrastructure. 6) Issues around: employment creation, school provision, housing was questioned. 7) Timelines- when would Ndwedwe see the development unfold? 8) What is a lead project? What would directly impact Ndwedwe in the immediate to short term. 9) Rates: poor people cannot pay increased rates if the area transforms. 10) Ndwedwe must not be forgotten in this project. It cannot only be about eThekweni- they also want to see benefits for their Municipality. 11) An alternate route from PMB through Ndwedwe and into the KSIA must be considered; 12) Consider iLembe and Ndwedwe IDP; 13) Urmila Bob suggested that it would be useful to identify potential spaces for the AIA. |
| 66 | Aerotropolis Social Accord Meeting with iLembe Chamber | iLembe Chamber | 25-Jul-17 | Stakeholders | Strategic Planning | Great influence with respect to implementation | Actively engage in one-on-one sessions | As & When Required | None |
| 67 | Smart City Presentation | Linley Nadasen (Chair), UKZN, DTP, KZN EDTEA, SANRAL, Human Settlements, PRASA & various municipalities | | ICT Input | ICT infrastructure | Specialist input | KZN IAS - ASC Work Group 4 - Smart Cities, needed to understand the mandate of the sub-group and how the DURAMP could help shape that mandate | As & When Required | A presentation was made by Hatch on the DURAMP within the above context. Hatch, explained that Smart Cities is not a chapter in the master plan, neither is it viewed as a discrete component of DURAMP. Instead it is a collection of principles intricately woven into the entire plan, with elements of 'Smart' evident in the numerous interventions identified within each of the development pillars, viz. Global Connectivity, Smart Mobility, Ecology, etc. The sub-group was please with how the Smart City theme was incorporated into DURAMP. It was clear that the Smart City theme is cross-cutting and touches various Aerotropolis workgroups. Consequently, dealing with Smart City issues requires different participants depending on the specific problem being addressed. The DURAMP identifies principles and gives direction to specific interventions that could be developed into projects by the Smart Cities Sub-workgroup. |

| No. | Stakeholder Name | Organisation | Date of Engagement | Role on the Project | Interest in the Project | Influence on the Project | Action | Frequency/ Method of Engagement | List of Issues |
|-----|--------------------|---|--------------------|--------------------------------|---|--|--|---------------------------------|---|
| 68 | eThekwini Workshop | Nathan Iyer (NI), Jarendra Reddy (JR), Kavita Shah (KS), Cosmas Hamadziripi (CH), Owen Mungwe (OM), Jivan Pardesi (JP), Paul Sessions (PS), Greg Mullins (GM), Steve Angelos (SA), Helene Epstein (HE). | 11-May-18 | Planning & Implementing agents | Strategic planning, approvals, implementation | Great influence with respect to implementation | Actively engage in one-on-one sessions | As & When Required | <ol style="list-style-type: none"> 1. Council Approval: Key Outcomes Required 1.1 Adoption of the amended DURAMP Short Term Plan. Short Term Plan must account for: <ul style="list-style-type: none"> • Approved C8 Corridor • Conservation Area • Noise Contour • Governance Issues 1.2 Noting of the DURAMP Medium & Long Term (Ultimate). 2. DURAMP Team: Amendments Required for DURAMP Short Term 2.1 Update of Governance Issues: Update DTPC Role (reword) 2.2 Poster: Amend Alignment of the TOD Corridor, to align with NUDC Dube East and West alignment and link into DTP. 2.3 Poster: Acknowledge (emphasise) Dube East Conservation area by removing proposed link from Dube East through to Mt. Moreland. 2.4 Poster: Add the 2035 dB Noise Contour 2.5 Poster: Add notes re .development constraints within the noise boundaries, to reflect that the proposed 'High Intensity' land use within the noise contour must not include 'noise sensitive land uses'. 2.6 Poster: Add risk notes re. studies required for further investigation. 2.7 Poster: Add the phasing plans (Year 25 & Year 50). 2.8 Poster: Add a disclaimer that the plan needs to be read in conjunction with the DURAMP Report. 2.9 DURAMP Full Report: Update of infographics. 2.10 DURAMP Executive Summary: Update of infographics. 2.11 Wording: Change Early Years to Short Term; Year 25 to Medium Term & Year 50 to Long Term. 3. Way Forward 3.1 The DURAMP Team is required to circulate the amendments to eThekwini by the 31st of May 2018. 3.2 eThekwini to provide comments (if any) on the updated Aerotropolis Masterplan (Poster & Full Report) by mid June. 3.3 The DURAMP Team is requested to meet with eThekwini post Council adoption/noting re. implementation. 4. Other Comments 4.1 GM: Short Term Plan must acknowledge the current approvals. 4.2 PS: Check that the traffic models align with that of the ETA. 4.3 HE: Poster legend must change as discussed (NB: TOD Corridor, update the PT routes on the connectivity plan, removed the dotted line on the C9 route). Send HE updated shapefiles (NB: shapefiles must exist in different layers). |
| 69 | eThekwini Workshop | Nathan Iyer (NI), Jarendra Reddy (JR), Kavita Shah (KS), Cosmas Hamadziripi (CH), Mathabo Mosia (OM), Paul Sessions (PS), Greg Mullins (GM), Steve Angelos (SA) | 17-Jul-18 | Planning & Implementing agents | Strategic planning, approvals, implementation | Great influence with respect to implementation | Actively engage in one-on-one sessions | As & When Required | <ul style="list-style-type: none"> • Minor amendments would be made to the plan to reflect how the remaining portions of Dube East were reflected (these to be narrowed after the M27 and through Mt. Moreland) • Minor amendments to be made to some of the wording in the Governance section, in terms of DTPC role and responsibilities • The revised plans and reports to be sent to ETM (Steve) electronically • Steve to put on the ftp site for other ETM departments to access • If everyone is comfortable with the amendments then the Plan to be taken to ECOD/Council for approval • SA to discuss with Helene and Emmanuel whether CPO or SSP take this to ECOD |

THE TEAM



The KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) is mandated to oversee the socio-economic transformation in the province. It leads policy and strategic initiatives focused on promoting development and growth in various sectors of the economy.
www.kznedtea.gov.za



Dube TradePort (DTP) Special Economic Zone (SEZ) is a world-class development offering globally integrated logistics and manufacturing infrastructure. The benefits that are offered to businesses operating within the SEZ are geared towards promoting business growth, revenue generation, employment creation, the export of value-added commodities, and the attraction of both foreign and local investment – all enhancing South Africa's manufacturing and export capabilities. Owned by the KwaZulu-Natal Provincial Government, DTP is the province's flagship infrastructural development and priority, forming part of South Africa's National Infrastructure Plan. DTP is strategically located 30km north of Durban.
www.dubetradeport.co.za



Hatch is a global engineering, development, and management consultancy with more than 11,000 staff in 65 offices on six continents. Its Urban Solutions practice helps reshape the world's cities through innovative technical and strategic consulting services, including master planning, real estate strategy, policy advisory, economic feasibility, triple bottom line analysis, and climate and resiliency planning.

Key Projects

Bandar Malaysia Master Plan, Kuala Lumpur, 200 ha
Calgary Green Rail Line Extension, Canada, 40km, 350,000px
Oakland International Boulevard Development Strategy, USA
Cerro Norte Master Plan, Leon, Mexico, 60ha
Berkeley Micro Grid Feasibility Analysis, City of Berkeley, CA, US
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Iyer is an interdisciplinary design practice that seamlessly weaves together planning, urban design and architecture in a purposeful, people-centred approach to place-making. Founded in 1996, Iyer has a diverse range of specialisations, but a single-minded philosophy. Iyer designs spaces by considering how they should be experienced as much as how they should look. The firm has offices in Durban and Johannesburg, and has been the driving force behind the built environment and planning for a number of iconic projects.

Key Projects

Point Waterfront Development, Durban, South Africa
Moses Mabhida Stadium Precinct, Durban, South Africa
Cornubia Development, Durban, South Africa
Sibaya Coastal Precinct, Durban, South Africa
GO!Durban Transit Stations, Durban, South Africa
www.iyer.co.za



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eThekweni Municipality
ILembe District Municipality
Ithala Bank
KwaDukuza Local Municipality
KZN Department of Human Settlements
KZN Department of Transport
KZN Office of the Premier
Msunduzi Local Municipality
National Housing Development Agency
Ndwedwe Local Municipality
South Africa Property Owners Association
Tongaat Hulett Developments
Tourism KZN
Trade and Investment KZN
Department of Public Works
KZN Treasury
PRASA
SANRAL
Durban Tourism
Umgeni Water
Transnet
Durban Chamber of Commerce and Industry
KZN Department of Agriculture and Rural Development

IMAGE CREDITS

| Page | Art | Credit |
|--------|-----------------|------------------------------|
| 10 | Downtown Street | eThekweni Municipality |
| 10 | Highway | eThekweni Municipality |
| 10 | Farming | Dube TradePort |
| 14 | Manufacturing | Dube TradePort |
| 14 | Health | Dube TradePort |
| 14 | Agriculture | Dube TradePort |
| 14 | Electronics | Dube TradePort |
| 73 | Microscope | Maxim Kulikov, Noun Project |
| 73 | Processor | Shastry, Noun Project |
| 73 | Camera | Adrien Coquet, Noun Project |
| 73 | Tractor | Px Icon, Noun Project |
| 73 | Crane | Creative Stall, Noun Project |
| 73 | Aeroplane | Focus, Noun Project |
| 73 | Home | Mahmure Alp, Noun Project |
| 51, 53 | BRT | Go!Durban |
| 161 | BRT Station | Go!Durban |
| 163 | Agriculture | Dube TradePort |
| 169 | Solar Panels | Dube TradePort |
| 171 | Techno-Hub | Dube TradePort |

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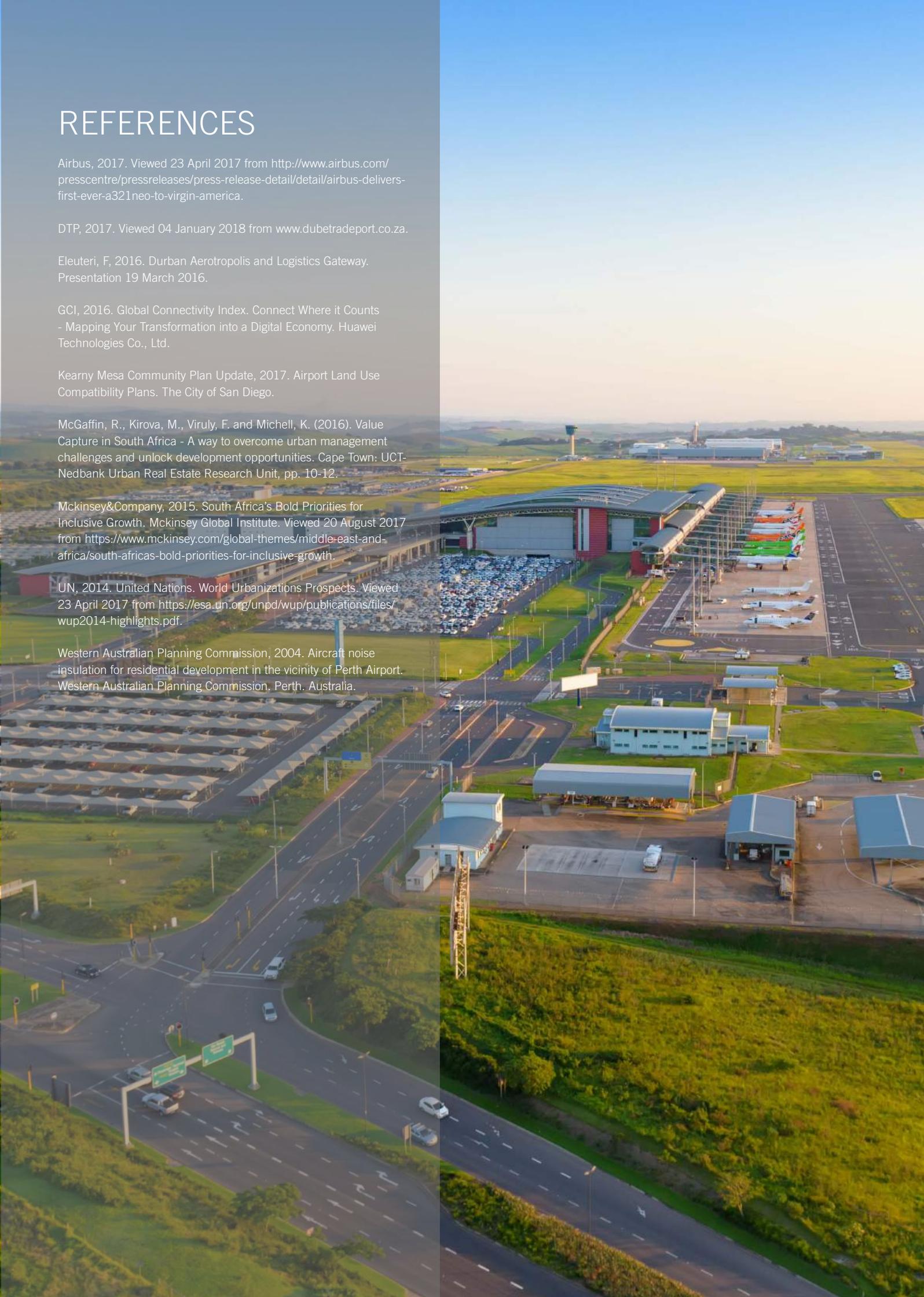
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ABBREVIATIONS

| | | | |
|--------|--|--------|--|
| ACSA | Airports Company of South Africa | SAPOA | South African Property Owners Association |
| AEC | Aerotropolis Executive Committee | SEDA | Small Enterprise Development Agency |
| AIA | Aerotropolis Institute Africa | SEZ | Special Economic Zone |
| AMU | Aerotropolis Management Unit | SIP | Strategic Integrated Project |
| ASC | Aerotropolis Steering Committee | SITA | State Information and Technology Agency |
| B-BBEE | Broad-Based Black Economic Empowerment | SMME | Small Micro Medium Enterprise |
| CBD | Central Business District | SOE | State Operated Enterprise |
| CEO | Chief Executive Officer | SPLUMA | Spatial Planning and Land Use Management Act |
| COGTA | Cooperative Governance and Traditional Affairs | SPV | Special Purpose Vehicle |
| DED | National Department of Economic Development | THD | Tongaat Hulett Developments |
| DM | District Municipality | TIA | Traffic Impact Assessment |
| DOT | Department of Transport | UDL | Urban Development Line |
| DPE | National Department of Public Enterprises | WEF | World Economic Forum |
| DTI | National Department of Trade and Industries | WG | Working Group |
| DTP | Dube TradePort | | |
| DTPC | Dube TradePort Corporation | | |
| DURAMP | Durban Aerotropolis Master Plan | | |
| EDTEA | KZN Department of Economic Development, Tourism and Environmental Affairs | | |
| EIA | Environmental Impact Assessment | | |
| EMA | eThekweni Master Plan | | |
| EPWP | Expanded Public Works Programme of the National Department of Public Works | | |
| ESID | Economic Sector and Infrastructure Development | | |
| FET | Further Education and Training | | |
| GPS | Global Positioning System | | |
| HGV | Heavy Goods Vehicle | | |
| HOD | Head of Department | | |
| IAS | Integrated Aerotropolis Strategy | | |
| IATA | International Air Transport Association | | |
| ICAO | International Civil Aviation Organisation | | |
| ICT | Information Communication Technology | | |
| IDZ | Industrial Development Zone | | |
| IFLS | Integrated Freight and Logistics Strategy | | |
| IOT | Internet of Things | | |
| IPAP | Industrial Policy Action Plan | | |
| IRPTN | Integrated Rapid Public Transport Network | | |
| IUDF | Integrated Urban Development Framework | | |
| KSIA | King Shaka International Airport | | |
| KZN | KwaZulu-Natal | | |
| LAP | Local Area Plan | | |
| LM | Local Municipality | | |
| LOS | Level of Service | | |
| LTPF | Long Term Planning Framework | | |
| Mbps | Mega-bytes per second | | |
| MoU | Memorandum of Understanding | | |
| MTSF | Mid-Term Strategic Framework | | |
| N2 | National Route 2 | | |
| N3 | National Route 3 | | |
| NATMAP | National Transport Master Plan | | |
| NEMA | National Environmental Management Act | | |
| NDOT | National Department of Transport | | |
| NDP | National Development Plan | | |
| NGP | New Growth Path | | |
| NIP | National Infrastructure Plan | | |
| NLTA | National Land Transport Act | | |
| NUDC | Northern Urban Development Corridor | | |
| PGDS | Provincial Growth and Development Strategy | | |
| PGDP | Provincial Growth and Development Plan | | |
| PPP | Public-Private Partnership | | |
| PRASA | Passenger Rail Agency of South Africa | | |
| PSEDS | Provincial Spatial Economic Development Strategy | | |
| PT | Public Transport / Provincial Treasury | | |
| PTAP | Public Transport Action Plan | | |
| RFID | Radio-Frequency Identification | | |
| SAA | South African Airways | | |
| SANRAL | South African National Roads Agency | | |



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