NATIONAL AIRPORTS DEVELOPMENT PLAN

AUGUST 2015
(v25) FINAL
TABLE OF CONTENTS

EXECUTIVE SUMMARY ........................................................................................................... i

PART A: INTRODUCTION ........................................................................................................ 1

1 Purpose .................................................................................................................................. 1

2 Background to the National Airports Development Plan (NADP) ........................................ 1
   2.1 The potential socio-economic contribution of airports ................................................. 1
   2.2 Policy origins of the NADP ............................................................................................ 2

3 Vision for the South African airport network ...................................................................... 3

4 Approach to the development of the NADP ...................................................................... 3

PART B: NADP CONTEXT ........................................................................................................ 4

5 South Africa’s existing airport network ............................................................................. 4
   5.1 Infrastructure and facilities ............................................................................................. 4
      5.1.1 Runway capacity ..................................................................................................... 4
      5.1.2 Other airport infrastructure and facilities ............................................................... 6
      5.1.3 Identified physical capacity constraints and planned developments ..................... 7
      5.1.4 Distribution of airports ............................................................................................ 7
   5.2 Licenced, registered and international airports ............................................................. 9
   5.3 Nature and level of activity ............................................................................................ 9
   5.4 Ownership .................................................................................................................... 15
   5.5 Proximity to the strategic transport network .............................................................. 15
   5.6 Airspace ....................................................................................................................... 16
   5.7 Financial standing and viability .................................................................................... 17

6 Demand forecasts .............................................................................................................. 17
   6.1 Global demand patterns ............................................................................................... 17
   6.2 South African demand patterns ................................................................................... 21
   6.3 Future growth assumptions and projections ............................................................... 24
      6.3.1 Passengers ............................................................................................................ 24
      6.3.2 Freight .................................................................................................................. 27
      6.3.3 Air traffic .............................................................................................................. 28

7 Long term international trends influencing airport planning ............................................ 29

8 Summary of relevant policy context and institutional arrangements ................................. 32

PART C: GAP ASSESSMENT ................................................................................................... 35

9 ASSESSMENT OF GAPS IN TERMS OF POLICY AND INTERNATIONAL TRENDS .... 35
   9.1 Policy gap assessment ................................................................................................. 35
   9.2 International trend gap assessment .............................................................................. 42

10 ASSESSMENT OF GAPS IN THE AIRPORT NETWORK .................................................... 45

PART D: GUIDING PRINCIPLES ............................................................................................ 47

11 Airport network planning ................................................................................................ 47
   11.1 Principles to address capacity constraints in the airport network ............................. 47
11.2 Airport categories for the purposes of airport network planning ........................................ 48
11.3 Framework, criteria and processes for airport licensing, registration and approvals .............. 49
  11.3.1 Process overview for designation of an airport as an international port of entry .......................................................... 50
  11.3.2 Green-field airport pre-approval process overview ................................................................. 52
  11.3.3 Airport licencing process overview ......................................................................................... 53
  11.3.4 Airport registration process overview .................................................................................. 53
11.4 Overview of other airport-related selection processes with implications for the airport network ......................................................................................................................... 54
  11.4.1 National airport designation process overview.................................................................... 54
  11.4.2 Public service airport process overview .............................................................................. 54
11.5 Knowledge management to enable evidence-based airport network planning .................... 54

12 Individual airport planning, design and management within its surroundings ..................... 56
  12.1 Guiding principles for integrated airport planning and design ........................................... 56
  12.2 Volume and nature of forecast demand, including phasing based on planning activity levels .................................................................................................................................................. 57
  12.3 Optimising the economic impact, including contributing to enhanced competitiveness of key sectors in the vicinity through improved movement of people and goods .................................................................................................................................. 58
  12.4 Requirements of key partners, service providers and user groups, including both direct and indirect users ..................................................................................................................................... 58
  12.5 Compliance with relevant regulation and licensing/registration or designation requirements, including both airport-specific and wider regulations .................................................................................................................................. 59
  12.6 Technology trends impacting on facility planning and design, including layout, flow, and systems integration .................................................................................................................. 60
  12.7 Minimising of environmental impacts ...................................................................................... 61
  12.8 Integration with the transport network at the airport and in the vicinity, including public transport, private vehicle access, freight transport, and fuel pipelines .............................................. 62
  12.9 Selecting the appropriate management, operation and funding model .................................. 62
  12.10 Optimising of both aeronautical and non-aeronautical revenues, including integration of the wider precinct .......................................................................................................................... 63
  12.11 Minimising ongoing facilities management and maintenance costs .................................... 65
  12.12 Integrating requirements from financiers .......................................................................... 65

PART E: FIVE-YEAR IMPLEMENTATION PLAN .............................................................................. 66

13 Implementation plan in relation to airport network planning ................................................. 66
  13.1 Integration of airport network planning into transport and spatial planning coordination structures .................................................................................................................................. 66
  13.2 Formalisation of selection processes for international, “regional-international” and national airports, and pre-approval process for green-field airports ................................................................. 67
  13.3 Mechanism to reserve land for key long-term airport requirements ........................................ 67
  13.4 Development of a preferred option to provide for non-scheduled air services, general air services, flying training, adventure aviation and non-commercial aviation within the national airport network .......................................................................................................................... 68
  13.568
  13.6 Development of a knowledge management system and DOT capacity to inform airport network planning .............................................................................................................................. 68

14 Proposed initiatives for the next five years in relation to individual airport planning within its surroundings .................................................................................................................................. 69
APPENDIX 1: ACRONYMS AND GLOSSARY .......................................................... 70

APPENDIX 2: IDENTIFIED AIRPORT CAPACITY CONSTRAINTS AND EXISTING
DEVELOPMENT PLANS .................................................................................. 76

APPENDIX 3: INTERNATIONAL EXPERIENCES AND TRENDS IMPACTING ON AIRPORT
PLANNING AND DEVELOPMENT .................................................................. 82

APPENDIX 4: SOUTH AFRICA’S POLICY, LEGISLATIVE AND REGULATORY CONTEXT
113
EXECUTIVE SUMMARY

The White Paper on National Civil Aviation Policy (NCAP) acknowledges that the present airport infrastructure is an integral part of the South African transport system. This infrastructure contributes to the socio-economic development of the country by facilitating domestic and international tourism and trade. The NCAP also acknowledges that these airports are currently not integrated into a meaningful airport network and that an integrated planning system involving all spheres of government should be introduced.

The National Airports Development Plan (NADP) has been initiated by the NCAP as the plan to address the gaps between the current airport network and the future desired state. It will guide and support both overall network planning and the development of individual airports integrated within their broader spatial and transport contexts, in consultation with key airport stakeholders.

The South African airport network consists of more than 1,500 airports. In order to understand and describe the airport network, a number of airport attributes need to be taken into account. These include airport infrastructure and facilities (both aeronautical and non-aeronautical), licence/registration and designation as an international port of entry, nature and level of activity (including traffic volumes), ownership, proximity to the strategic transport network, as well as airspace.

In terms of infrastructure and capacity, runways are one of the most significant considerations. In South Africa, the majority of runways fall within International Civil Aviation Organisation (ICAO) Codes 1 and 2 (short and narrow runways), typically unpaved (grass or gravel) runways. There are at least 39 Code 3 and 4 runways (longer and wider runways), typically paved. These include airports such as O R Tambo International Airport, Cape Town International Airport, King Shaka International Airport, Upington International Airport, Lanseria International Airport, Kruger Mpumalanga International Airport and Mafikeng Airport. Other capacity considerations include passenger handling capacity, and airspace co-dependencies between airports.

As at March 2015, there are 135 licensed airports, of which 10 are designated as international airports, and 56 voluntarily registered airports.

With regards to ownership of airports, currently there are 9 ACSA, 9 provincial government, 33 military, around 100 municipal (local and district) airports, numerous privately owned licensed airports with the vast majority of the remainder of the airports being private (business, non-profit, individual).

Activities at airports include movement of people, goods and aircraft (including both scheduled and non-scheduled traffic). The purpose of this movement can be commercial, flight training, public good (including medical rescue and emergency services), diplomatic, educational, agricultural, sport and recreation related, and for private access. Other activities at airports include cargo handling; aircraft storage, maintenance and repair, fuelling; retail, food service and hospitality/hotels; conferences and events; and offices. At present, the airport network is estimated to handle over 40 million departing and arriving passengers, and around 470,000 tonnes of freight annually.

In terms of airspace and airport congestion, only three airports are slot coordinated. Congestion is primarily experienced in the vicinity of the Johannesburg Terminal Area (TMA).

In order to achieve the airport network planning and airport planning related policy direction of the NCAP, and to take into account relevant international trends, the NADP has assessed
the policy and trends gaps (PART C), and provides guiding principles (PART D) that cover both airport network planning and individual airport planning.

**Airport network planning** guidance includes the most effective techniques for addressing capacity constraints, the use of airport categories, knowledge management and processes for airport licensing, registration, selection and approval. A more evidence-based and collaborative approach to airport network planning is needed. Existing infrastructure capacity should be optimised to deal with activity levels, including by: a) prioritisating alternative approaches to addressing capacity pressures rather than major infrastructure expansions or green-field investments (such as reviewing aircraft mix, improving airspace management and design, refining infrastructure to speed up throughput); b) proactive identification of capacity gaps; and c) the use of Planning Activity Levels.

Where airports are expected to exceed their ultimate capacity in the next 40 to 60 years, provision should ideally be made to safeguard suitable land for the required additional airport, and the zoning around the area also needs to be aligned to avoid encroachment of incompatible land use. In line with the National Infrastructure Plan’s planning horizon, any major infrastructure projects required within the next 20 years to address the capacity gap should be identified and reviewed every 5 years.

For the next five years, a reactive process to applications for international, “regional-international”, and national airports will be used in application window periods. The DOT will work together with other national departments and agencies to amend or develop the processes for international airports (including the sub-set for “regional-international” airports), licensing, registration green-field airports, and national airports.

Provincial government and local municipalities may want to identify which of the airports in their jurisdictions cannot become commercially viable, but are serving a particular public service and can be justified on a socio-economic basis in order to inform available budget allocations.

The guidance for **individual airport planning** includes good practice for forecasting demand, optimising socio-economic impact, facility design, minimising environmental impacts and integrating requirements from financiers. Balancing these considerations into airport planning and design is complex and requires significant planning capacity. DOT recommends an increased focus on user-experience design and user co-design methodologies. DOT also recommends development of shared technical capacity, knowledge systems and guidelines to support individual small airport planning, as well as finding ways to tap into private sector expertise.

The NADP also presents **initiatives** as part of a five-year (2015-2020) implementation plan (PART E). The following initiatives have been identified to help give effect to the guiding principles over the next five years:

1. Integration of airport network planning into transport and spatial planning coordination structures
2. Formalisation of selection processes for international, “regional-international” and national airports, and pre-approval process for green-field airports
3. Mechanism to reserve land for key long-term airport requirements
4. Development of a preferred option to provide for non-scheduled air services, general air services, flying training, adventure aviation and non-commercial aviation within the national airport network
5. Development of a knowledge management system and DOT capacity to inform airport network planning
6. Development of airport planning technical capacity at a national and provincial government level that can support individual airport planning
7. Development of a detailed guide to support airport development and planning within their surroundings
8. Exploration of potential mechanisms to involve the private sector in airport planning and design
9. Joint identification with relevant entities of the most viable approach to securing funding to support airside safety and security compliance for airports
10. Collaboration to create networking and information sharing platforms for airport designers and planners

DOT will work closely with other airport role players to implement these initiatives.
PART A: INTRODUCTION

1 Purpose

The National Airports Development Plan (NADP) has been initiated by the White Paper on National Civil Aviation Policy (NCAP) as the plan to address the gaps between the current airport network and the future desired state. It will guide and support both overall network planning and the development of individual airports integrated within their broader spatial and transport contexts, in consultation with key airport stakeholders. Operational aspects of airports are dealt with through other mechanisms, including through Civil Aviation Regulations and Technical Standards (CARS and CATS).

2 Background to the National Airports Development Plan (NADP)

2.1 The potential socio-economic contribution of airports

Why prioritise airport development? Airports have been shown to contribute to socio-economic develop in a range of ways, including:

- Improving accessibility for people to geographical areas, whether for personal, essential services, business or tourism reasons
- Allowing for “time critical” in- and outbound freight
- Making a location more attractive for investment by certain sectors, in particular knowledge intensive industries, such as biotechnology, pharmaceuticals, universities, and financial services
- In the case of large airports, also having significant direct impacts on the airport precinct in terms of employment and spend, as well as multiplier effects from employment and spend
- Stimulating infrastructure and property development in the vicinity of the airport
- Contributing to the image of a country
- Ensuring availability of facilities and provision for training, recreational and sport aviation to create pilots and related profession for the future of aviation.

These impacts can be significant. For example:

- Heathrow Airport supports 76,600 direct jobs and 114,000 indirect jobs through concessions and other on-site activity. It is also credited with making the Thames Valley area more attractive as an investment location, and contributing to the unemployment rates in these areas being some of the lowest in the region, because of ease of movements of people and goods quickly to and from the rest of the world.

- Using a custom-designed model to measure the job opportunities created through its capital and operational expenditure, ACSA estimated that between 2008 and 2011, 75,000 job opportunities were created, through the airports themselves, and through new opportunities arising from linked sectors. Of the jobs opportunities created, 23,000 were direct, and 52,000 were indirect, thus implying a total job multiplier of 3.3 times.

---

1 Source: Airport Cooperative Research Programme (2007) Airport Economic Impact Methods and Models
In addition, ACSA forecast that as a result of its future expansion plans, it will create 100,000 jobs to 2017, and 330 000 job opportunities to 2023, adding as much as 0.7% to the South African GDP on an average annual basis. This amounts to about one job created for every R150,000 of Capex and one job for every R110,000 of Opex.5.0% and 5.9% respectively.4

According to Oxford Economics, research conducted in the US suggests that every dollar invested in aerospace yields an extra $1.50 to $3.00 in economic activity5

2.2 Policy origins of the NADP

A National Development Strategy for Airports was first raised in the White Paper on National Policy on Airports and Airspace Management (1997). Further detail and direction is provided in the White Paper on Civil Aviation Policy (NCAP), where the following principles are set out with respect to airport development:

- Airport development should not be considered in isolation, but be integrated into all national, provincial and municipal economic and spatial development initiatives. At the same time, airport development should also meet the social needs and objectives of local communities. There should therefore be synergy between airport development and the development strategies of all spheres of government, with emphasis on the following:
  - The national planning and integration of airports into the broader transport network in respect of modal integration as well as in the context of the total air transport system, should be co-ordinated with the other spheres of government.
  - Airport development and planning should also be incorporated into the planning initiatives of the appropriate sphere of government as an airport may influence provincial and municipal socio-economic development. Aviation knows no borders. There is therefore a possibility of conflict between airport planning initiatives of two neighbouring provinces, where their planning involves two different airports close to each other and which may consequently be detrimental to the system as a whole, from a safety and operational as well as an economic point of view.
  - Planning for airports should furthermore be included in a provincial transport plan which, in turn, should form part of the economic development plan for the province.
  - The socio-economic “value” of an airport in relation to the total system as well as from a more localised point of view, is another consideration when making decisions about seamless transport systems, private investment and the designation of additional, or the reduction of the number of, international airports or the allocation of public funding.
  - Airport development should be planned holistically in accordance with a structured National Airports Development Plan, which would support national, provincial and local community objectives. Such development

---

4 Source: ACSA 2014 Integrated Annual Report pg. 113 on PDF 2014

should complement the airport system, and in some cases may even allow for competition within the system, to the benefit of the user.

The White Paper also states that the Department of Transport (DOT) should develop a National Airports Development Plan which would guide all present and future airport development in consultation with all relevant stakeholders. Macro planning and integration of airports into the broader transport network should be co-ordinated through the National Airports Development Plan.

3 Vision for the South African airport network

The vision for a South African airport network includes that it:

- Has sufficient capacity to handle air traffic, passenger, and freight volumes
- Is integrated into the strategic transport network, spatial development and land use planning
- Is able to balance and meet the needs of airport users
- Is financially sustainable
- Complies with safety, security and environmental regulation, including noise and emissions
- Optimises contribution to socio-economic development and meeting government’s wider objectives, both directly and indirectly through airport precinct development, and thereby helps to position South Africa competitively both on the continent and globally
- Is responsive to changing technologies

4 Approach to the development of the NADP

The development of the NADP has involved extensive research and consultation. Research has included:

- Data gathering on the existing airport network
- Demand forecasting for passengers, freight and air traffic movements
- Understanding of international trends impacting on airports and airport network planning
- Benchmarking on lessons learned from international approaches

Consultations have involved over 120 organisations, including:

- Agencies involved in airports and related aviation
- Local and provincial government
- Airport operators
- Aviation-related industry associations and companies
- Regulators
- Funders, including Development Finance Institutions
- Support entities

Extensive input was also obtained during a national consultative workshop held on 6 March 2015. Following this, written comments were submitted to the Department of Transport which have been considered in preparation of this final NADP document.

In addition to the drafting of the NADP, the approach has included the development of various tools to equip the DOT for evidence-based decision-making and planning.
PART B: NADP CONTEXT

Part B sets out the key issues that inform the NADP. This includes:

- What South Africa already has in terms of airport infrastructure and facilities
- Estimates of the future demand that the airport network will need to serve
- Requirements set out by policy, legislation and regulation
- Institutional roles that will impact on the approach to joint planning and development of airports
- Global trends that are shaping airport infrastructure, facilities, and systems

All of these issues provide the basis for a gap assessment, which is captured in Part C.

5 South Africa’s existing airport network

The section below describes South Africa’s airport network of more than 1,500 airports in terms of airport infrastructure and facilities (both aeronautical and non-aeronautical), licence and international port of entry status, nature and level of activity (including traffic volumes), ownership, proximity to the strategic transport network, and airspace.

5.1 Infrastructure and facilities

5.1.1 Runway capacity

Runway capacity is the most significant consideration when assessing airport capacities for handling various aircraft. This capacity is determined by a range of factors including:

- Runway strength, length, width and surface type, lateral visibility, as well as associated exits, taxiways, apron and parking capacity
- Inter-dependent airspace procedures e.g. runway conflicting orientations, initial approach altitudes and shared TMA
- Aeronautical obstructions and horizontal visibility
- Elevation above mean sea level, reference temperature, surface condition and slope of the runway (which all affect aircraft performance)
- Operational compliance with firefighting, safety and security requirements
- The type and availability of approach and departure navigational aids (radio and visual)
- Other factors include aircraft traffic mix, type of air traffic control service provided and resultant runway occupancy times

The international standard is from an aerodrome to be primarily classified by its ICAO Aerodrome (Runway) Reference Code, to determine the extent of the lateral, longitudinal, and sloping planes of the airspace and ground surfaces surrounding each runway that should be kept free of obstacles. This code comprises two elements:

---

6 Additional physical considerations include apron and parking capacity
7 Annex 14 - The determination of a runway’s reference code is for the identification of the horizontal and vertical parameters of the surfaces associated with that runway, and is not intended to influence the pavement strength - pavement strength being determined by the design aircraft i.e. the largest/heaviest aircraft intended to depart from the aerodrome. The Pavement Classification Number (PCN) should be higher and certainly not less than the Aircraft Classification Number (ACN).
- A number determined by selecting the higher value of declared Take-Off Distance Available (TODA) or Accelerated Stopping Distance Available (ASDA), ranging from 1 (less than 800m) to 4 (more than 1,800m)
- A letter which corresponds to the wingspan or main gear outer-wheel span, whichever is the more demanding, of the largest aircraft likely to be operating at the aerodrome (A representing a wingspan of up to 15m, F a wingspan up to 80m)

The South African commercial aerodromes topographical information, required to determine Runway Longitudinal Slopes, comply with WGS-84, as required by ICAO. Commercial airports now have to submit type terrain charts.

With regard to the ICAO Runway Code, the following is what is currently available:

**Table 1: ICAO Runway Codes**

<table>
<thead>
<tr>
<th>Runway Code</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>107</td>
</tr>
<tr>
<td>2</td>
<td>59</td>
</tr>
<tr>
<td>3</td>
<td>33</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

In the above, only the maximum runway code classification is indicated. The runway code is derived from various information and calculations, which includes the runway length, the runway width and the Pavement Classification Number (PCN).

The majority of runways fall within Codes 1 and 2. As expected, the bulk of these are made up of unlicensed airports which tend to handle light aircraft, while licensed aerodromes feature more strongly in Code 3 and 4 runways. These include aerodromes with the longest runways such as Upington International Airport, Mafikeng Airport, and OR Tambo International Airport, each with runways over 4km. As expected, the 8 military airbases for which details were available, also tend to have long runways, e.g. Makhado military airbase has a runway of over 4km.

In terms of runway surface, construction and strength, ICAO requires that these be reported for runways (and taxiways and aprons) using standard engineering methodology to determine Pavement Classification Numbers (PCN). However, in South Africa, many airports do not currently employ the methodology, test, or report their pavement structures or condition. This is not a necessity for airports which do not accommodate any commercial flights. For airports accommodating commercial flights these are assessed during inspection. For this initial analysis, the reported type of runway surface is therefore used as a rough indicator of initial capacity.

However, as discussed above, the reference air temperature and elevation of a runway are key factors when determining aircraft performance and thus runway capacity. For example, Upington and OR Tambo International require long runways in part because of their high reference air temperatures and high elevation.

ICAO firefighting and rescue capability does not affect runway capacity but does impact on the type of aircraft and scope of operations. There is an unsurprising correlation between the airports with longer runways and firefighting provision to accommodate aircraft Code C and higher. Once the aerodrome license category is determined, the Aerodrome Rescue and Fire Fighting Services (AR&FFS) category is established. This is based upon the criteria contained in ICAO Doc 9137-AN/898 Part 1, Chapter 2 and in ICAO Annex 14, Chapter 9. Since 2005 the AR&FFS category is the same as the license category.
South Africa’s licensed aerodromes are categorised as follows:

Table 2: Licensed airports within ICAO fire fighting and rescue categories

<table>
<thead>
<tr>
<th>Aerodrome category for rescue and fire fighting</th>
<th>Aeroplane over-all length</th>
<th>Maximum fuselage width</th>
<th># licensed aerodromes in SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 m up to but not including 9m</td>
<td>2 m</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>9 m up to but not including 12 m</td>
<td>2 m</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>12 m up to but not including 18 m</td>
<td>3 m</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>18 m up to but not including 24 m</td>
<td>4 m</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>24 m up to but not including 28 m</td>
<td>4 m</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>28 m up to but not including 39 m</td>
<td>5 m</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>39 m up to but not including 49 m</td>
<td>5 m</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>49 m up to but not including 61 m</td>
<td>7 m</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>61 m up to but not including 76 m</td>
<td>7 m</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>76 m up to but not including 90 m</td>
<td>8 m</td>
<td>1</td>
</tr>
</tbody>
</table>

5.1.2 Other airport infrastructure and facilities

Facilities, in addition to runways at airports, range from basic aircraft parking areas to full service passenger terminals. A high level overview of other facilities at civil airports is provided below based on available information.

Figure 1: Other airport infrastructure and facilities at civil airports by licensed vs. unlicensed airports

[Diagram showing the percentage of facilities at licensed vs. unlicensed airports]

In addition to the above physical infrastructure, there are a number of airports with training schools and associated training facilities.
5.1.3 Identified physical capacity constraints and planned developments

A wave of capacity upgrades took place in the build-up to the 2010 FIFA World Cup. Remaining physical capacity constraints have been identified at some airports. There are also various current and planned developments which could impact on future airport infrastructure and facilities, ranging from construction of new airports to upgrades to equipment and facilities, at all sizes and levels of airports. Please see Appendix 2 for examples. See also Section Error! Reference source not found. for airspace considerations.

5.1.4 Distribution of airports

Locations of these airports across South Africa have been assessed in relation to the following:

- Provincial breakdown
- Rural or urban areas, including land use

Provincial breakdown

The table below summarises airports within each province.

Table 3: Provincial Breakdown

<table>
<thead>
<tr>
<th>Province</th>
<th>% of airports</th>
<th>% area</th>
<th>% of population</th>
<th>% GDP(^{10})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limpopo</td>
<td>16%</td>
<td>10%</td>
<td>10.4%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>14%</td>
<td>6%</td>
<td>7.8%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>14%</td>
<td>31%</td>
<td>2.2%</td>
<td>2%</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>11%</td>
<td>15%</td>
<td>12.6%</td>
<td>7.7%</td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>11%</td>
<td>8%</td>
<td>19.8%</td>
<td>16%</td>
</tr>
<tr>
<td>Free State</td>
<td>9%</td>
<td>11%</td>
<td>5.2%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Gauteng</td>
<td>7%</td>
<td>1%</td>
<td>23.9%</td>
<td>33.8%</td>
</tr>
<tr>
<td>North West</td>
<td>7%</td>
<td>9%</td>
<td>6.8%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Western Cape</td>
<td>11%</td>
<td>11%</td>
<td>11.3%</td>
<td>13.7%</td>
</tr>
</tbody>
</table>

Only in Limpopo and Mpumalanga is the provincial share of airports higher than the share of area, population and Gross Domestic Product (GDP). This is likely to be related to the predominance of game reserves, forestry, agriculture and mining in these provinces, as well as their positions on South Africa’s border. A high number of airports in these provinces serve, amongst others, the hospitality industry.

The majority of airports are located close to urban areas (either within urban areas, or within 5km of urban areas), as shown below.

---

\(^{8}\) Drawn from data provided by DOT, the CSIR and the Demarcation Board


### Table 4: Airports near urban areas

<table>
<thead>
<tr>
<th>Total % of airports in and near urban areas</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>16%</td>
</tr>
<tr>
<td>Within 1km of main town</td>
<td>19%</td>
</tr>
<tr>
<td>Within 5km of main town</td>
<td>59%</td>
</tr>
<tr>
<td>Within 1km of other town</td>
<td>68%</td>
</tr>
<tr>
<td>Within 5km of other town</td>
<td>87%</td>
</tr>
</tbody>
</table>
5.2 Licenced, registered and international airports

As at March 2015, South Africa's airport network includes:

- 135 licensed airports, of which 10 are designated as international airports
- 56 voluntarily registered airports
- 33 military airports

The remainder of the airports and airfields in the country are not yet registered.

These airports are distributed as shown in the map below:

*Figure 2: Overview of South Africa’s licensed, international and registered airports*

5.3 Nature and level of activity

Activities at airports include movement of people, goods and aircraft (including both scheduled and non-scheduled traffic). The purpose of this movement can be commercial, flight training, public good, diplomatic, educational, agricultural, sport and recreation related, and for private access. Other activities at airports include cargo handling, aircraft storage, maintenance and repair, fuelling, retail, food service and hospitality/hotels, conferences and events, and offices.

In the South African context, many of the large and medium-scale airports have a wide range of activities, rather than being single-purpose. For example, there are no cargo-only airports.
Over 40 million departing and arriving passengers\(^{11}\) were processed through the South African airport network in 2014. According to data from IATA, this is equivalent to 1.2% of global aviation passenger traffic. Scheduled traffic currently takes place at 20 airports. The OR Tambo - Cape Town route is the 10\(^{th}\) busiest in the world\(^{12}\).

Key characteristics of scheduled activity are as follows:
- **Dominance of domestic traffic:** By far the largest share of the South African aviation market is made up of movements of domestic passengers – approximately 24 million passengers; for example, more than two-thirds of all passengers moving through the ACSA network are on domestic flights (these numbers include both arrivals and departures). There were 10.3 million travellers on international flights in 2014, a 1.9% increase compared to 2013.

**Figure 3: Mix of passengers across the ACSA airports network (2014)\(^{13}\)**

- **High seasonal variance:** The South African airports network experiences relatively high seasonal variance compared to international norms, primarily due to the coincidence of the domestic holiday and international tourist seasons. International passenger flows generally peak in December and January, while domestic flows peak in March, October and December, and both experience troughs in February, May, and June.

---

\(^{11}\) Source: Estimate based on data from ACSA and ATNS

\(^{12}\) Source: Amadeus Air Traffic Travel Intelligence

\(^{13}\) Note that “regional” flights in the data refers only to SACU volumes, and therefore under-represents the regional opportunity as a sub-set of the international opportunity
Heavy concentration of traffic in the network: Approximately 86% of passenger volume is facilitated through the ACSA network. Within the ACSA network, ORTIA, CTIA and KSIA facilitate 91% of the traffic whilst the other airports handle only 9%. Within these main three airports, ORTIA manages 54% of the traffic, CTIA 24%, and KSIA 12%. Transfer activity is concentrated at ORTIA. Within the ACSA network, Port Elizabeth is the only other airport handling more than one million passengers annually. With respect to airports outside of the ACSA network, the majority of passenger volumes are found in Lanseria International Airport, Kruger Mpumalanga International Airport and, to a lesser extent, Polokwane International Airport and Pietermaritzburg Airport.

The direction of passenger movements across the South African domestic market maps closely onto the ACSA airports network to form what is, in effect, a hub and spoke system. The concept of “hub-and-spoke” operations is where aircraft operators based at larger airports (hubs) serve many smaller airports, with links between the airports referred to as “spokes”). The hub airport therefore consolidates passenger and freight traffic from its catchment area as well as flights from smaller airports. The traffic is then conveyed to other hubs and smaller airports in the relevant airport network.

In terms of air traffic movements, data are not readily available on the entire network. Within the ATNS operated network there were just under one million movements in 2014, excluding military flight movements. Non-commercial aviation is a large and important part of airport activity, and contributes significantly to air traffic movements. Based on 2014 data from ATNS, nearly 50% of all aircraft movements in the South African airports network were non-commercial flights. The vast majority of airports in the country interact only with non-commercial sports, recreation and private flights. This type of traffic is significantly less concentrated. Based on the 2014 ATNS data, the “big 3” airports represent less than 13% of total non-commercial movements and ACSA airports as a whole, less than 20%. Adding in training and recreational flights beyond the ATNS network, this type of activity is likely to account for at least two-thirds of all aircraft movements in the country.

In 2014, non-scheduled traffic at ACSA’s airports accounted for an average of 26% of all movements. At ACSA “regional-domestic” airports, non-scheduled traffic accounted for a major share of total traffic, including 34% of all movements at Bram Fischer International Airport, more than 50% at East London- and Kimberley Airports, more than 60% at George Airport and Port Elizabeth International Airport and above 70% at Upington International Airport. Within South Africa’s international airports, CTIA stands out as having a relatively large number of non-scheduled movements (20% in 2014). This may be the result of CTIA having no major airports nearby to accommodate non-scheduled traffic, in comparison to the situation at ORTIA (with Rand Airport, Lanseria International Airport, Wonderboom- and Grand Central Airports all nearby) and KSIA (with Virginia Airport).

Key characteristics of non-scheduled, general air services and non-commercial aviation activities include:

- High variance: Seasonal variation in non-scheduled, general air service and non-commercial traffic is more pronounced than for scheduled passenger traffic. This is driven by the variety of types of flights, with each type being sensitive to a different set of factors, for example seasonality in the case of tourist charters (essentially during the spring and early summer), or the importance of good, stable weather in encouraging recreational aviation.

- Greater dispersion of traffic across the airports network: ACSA’s international airports are much less dominant in non-scheduled traffic than scheduled traffic. The ACSA national network, non-ACSA international airports, and “regional-domestic” airports by
contrast play a considerable role in non-scheduled movements. Medium-sized airports (within the ATNS network) handle more than half of all GA traffic.

- **Importance of “secondary” airports:** Not only does a high share of charter activity take place in secondary airports in major centres (e.g. Lanseria International Airport, Rand Airport, Wonderboom Airport, Grand Central Airport, and Virginia Airport), but these airports also handle very large volumes of training and private aircraft movements. Forty percent of total aircraft movements at Lanseria International Airport are training related flights with a further 40% of traffic comprising charter, corporate and private flying. Sixty five percent of flights at Wonderboom Airport, and more than 85% of flights at Virginia Airport are comprised of training-, private- and public use flights. When these movements are considered, it becomes apparent that these are very busy airports. To put it into perspective, Wonderboom, Rand Airport, Grand Central Airport, and Port Elizabeth each handle more aircraft movements than KSIA. Smaller flying sites and informal fields also provide the facilities for a number of entry level aviation and tourism activities and handle many sport-aviation movements per annum.

Flight training is concentrated in airports that serve as the bases for flight training schools. Similarly, airports that are the base for aeroclubs typically have higher recreational aviation activity. At least 50 airports primarily serve the purpose of business access (including mines). There are an estimated 60 airports that provide access to game lodges and resorts. The smaller unpaved airfields are typically used for agricultural and private access purposes.

A relatively new area of activity within the South African aviation network is Remotely Piloted Aircraft Systems (RPAS) within both military and civilian spheres. Unmanned aircraft may be remotely piloted, fully autonomous or a combination. Current efforts of integrating UAS into civil airspace will exclude fully autonomous unmanned aircraft for the foreseeable future. There is significant interest in the use of RPAS for applications such as monitoring, aerial photography, game management and anti-poaching. The sizes of remotely piloted aircraft vary significantly, and therefore their requirements in terms of take-off and landing infrastructure also vary.

Limited reliable **airfreight** volume data is gathered within the South African airport network. Data compiled from across the ACSA network indicates 2014 cargo volumes totalled 470,000 tons. Since 2006, cargo volumes have grown 2.2% on average per annum. In terms of airfreight value, this is also showing a growth trend. The graph below shows airfreight import and export value estimates based on SARS data for ORTIA, KMIA and CTIA (which represent the vast majority airfreight in South Africa, with ORTIA accounting for over 90% of this value).
Key characteristics of the **airfreight** activity include:

- **Dominance of international traffic:** International freight, which accounted for 83% of all volumes. Of the 70,000+ tons of domestic freight, a very large share appears to be international origin or destination cargo flying on domestic trunk routes to link with international flights (mainly at ORTIA).

- **Heavy concentration at ORTIA:** Airfreight is even more heavily concentrated into ORTIA than is the passenger sector: more than 82% of all freight in the ACSA network goes through ORTIA. For the international segment, ORTIA holds an 89% share, with the majority of remaining volumes at CTIA (and small volumes at KSIA and Upington). Although the domestic market is more dispersed, more than 70% of domestic cargo volumes are still concentrated in the three international hubs.

- **Directional imbalance:** Estimates from the five largest airports handling cargo in the ACSA network indicate the inbound volumes have been running approximately 20% higher than outbound volumes (55% of all volumes are inbound) in recent years. The two main freight hubs – ORTIA and CTIA – experience opposite problems of imbalance. ORTIA shows a strong bias toward imports, with inbound volumes 40-50% higher than outbound volumes; this includes large volumes of electronics and specialist components from Europe, Japan, and the USA. In CTIA, which is the hub for the Western Cape’s agricultural economy, outbound volumes (mainly perishables) are 30-40% higher than inbound volumes.

- **Reliance on passenger belly hold:** It is estimated that between 15% and 25% of South Africa’s airfreight volume is transported via dedicated freighters (versus in the belly hold of passenger flights); this compares to a global average of around 50%. The low share of freighters in the South African market is largely driven by the imbalance of northbound and southbound volumes, the limited scale of volumes to specific outbound destinations, and the existence of a relatively large supply of belly hold capacity, which increases the relative cost competitiveness of this option. The international express mail market has grown rapidly over the last decade and now accounts for 18% of global airfreight volumes.

---

**Figure 4: Airfreight import and export value R bn (2012 to 2014)**

![Airfreight import and export value R bn (2012 to 2014)](image)
volumes (60% within the US); as this sector develops more in the region, a move toward greater use of freighters may result.

Non-aeronautical activity is concentrated in the higher traffic commercial airports, including retail, food service and hospitality/hotels; conferences and events; and offices.

Whether an airport is located in an urban or rural area has implications for the catchment area which the airport serves, both in terms of mix of activities demanded, catchment area size, and level of services demanded. For example, in rural areas people may be more willing to travel further to access an airport. Airports in rural areas tend to serve purposes such as farming, mining or industrial sites, nature reserve/game farm access, or fire-fighting (in forest areas).
5.4 Ownership

The table below captures available information on ownership of airports within South Africa’s network.

Table 5: Ownership of airports

<table>
<thead>
<tr>
<th></th>
<th>Licensed</th>
<th>Unlicensed</th>
<th>Registered</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACSA</td>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Provincial government</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Local government</td>
<td>75</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Military</td>
<td>0</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>46</td>
<td>125</td>
<td>Approx. 50</td>
</tr>
<tr>
<td>Unknown (assumed private)</td>
<td>-</td>
<td>Approx 1,400</td>
<td></td>
</tr>
</tbody>
</table>

5.5 Proximity to the strategic transport network

An assessment of the proximity of airports to South Africa’s strategic road rail and port network and corridors provides an indication of the scope for improved intermodal connections. When looking specifically at proximity to freight corridors and the rail network, a number of airports in the Western Cape, Eastern Cape and KwaZulu-Natal have potential for developing intermodal links, as indicated in the map below.

Figure 5: Airports within 2 km of strategic transport network
In recent years, public transport access to major airports has been improved, including rapid rail (OR Tambo) and IRT bus services (Cape Town). In terms of freight corridor integration, various plans are under development for improved intermodal linkages, including break-bulk, value-add and redistribution centres. The National Transport Master Planning (NATMAP) process with a time horizon of 2050 is also expected to increase inter-modal integrated planning in future.

5.6 Airspace

The National Airspace Master Plan (NAMP) sets outs the current and future approach to airspace management, which incorporates the ICAO Global Air Traffic Management Operational Concept. It provides the strategic view and direction of airspace organization and management within South Africa. The airspace organisation function will provide the strategies, rules and procedures by which the airspace will be structured to accommodate the different types of air activity, traffic volume, differing levels of service and rules of conduct. The organisation, flexible allocation and use of airspace will be based on the principles of access, equity, capacity, efficiency, flexibility and cost-effectiveness. While airspace master-planning takes global interoperability into account, it must ensure that the National ATM System meets the expectations of the ATM Community. This is done through the provision of integrated services and includes the following operational system components:

- Airspace organisation and management: The establishment of airspace structures to accommodate the different types of air activity, volume of traffic and the various levels of service;
- Airport operations: The provision of the necessary ground infrastructure, including lighting, taxiways, runways and runway exits, and precise surface guidance to improve safety and enable the efficient use of an airport's capacity; and
- Demand and capacity balancing: The strategic evaluation of system-wide traffic flows and airport capacities to allow airspace users to determine when, where and how they will operate, while mitigating conflicting needs for airspace and airport capacity.

It is foreseen that aircraft movements at South Africa's major airports will require proper planning in order to meet the needs of the economy and the expected growth in air traffic. Similar to any other transport infrastructure, civil aviation facilities will also experience peak-time traffic and congestion. A formal slot allocation system is applicable to OR Tambo International, King Shaka International and Cape Town International Airports in order to enable coordination of arrival and departure times. There are also some airspace pressures in relation to airports with high volumes of non-scheduled, flying training, general air services, and non-commercial aviation activity.

14 Available at http://www.icao.int/
5.7 Financial standing and viability

The majority of key Provincial and Municipal owned airports are not sustainable without ongoing financial support based on allocations from the fiscus. Airports that have attracted more than one scheduled operator regular charter operations, or a number of flying schools and clubs, are typically closer to being sustainable. Furthermore, some smaller airports are focusing on precinct development to improve viability through increased non-aeronautical revenues.

According to its 2014 Annual Report’s audited financial statements, the ACSA Group achieved profit before taxation of over R2 billion, with non-aeronautical revenue accounting for 36.6% of total revenue.

The financial standing of military airports, which are funded through the budget of the Department of Defence, are difficult to assess as financial information on these airports are not publicly available. Diversion airports are mainly Langebaanweg, Waterkloof and Overberg.

6 Demand forecasts

This section provides an overview of the demand forecasting model, including global and South African demand growth patterns, drivers of underlying demand in South Africa, assumptions informing future growth scenarios, and outputs of the demand model.

6.1 Global demand patterns

Global air traffic demand, including both passenger and cargo traffic, is driven by a range of factors as shown in the table below:

Table 6: Global demand patterns

<table>
<thead>
<tr>
<th>Leisure travel</th>
<th>Business travel</th>
<th>Cargo</th>
</tr>
</thead>
<tbody>
<tr>
<td>• GDP and disposable income</td>
<td>• GDP levels and value added share</td>
<td>• GDP levels and value added share</td>
</tr>
<tr>
<td>• Population growth</td>
<td>• Airfare and dynamic ticket pricing</td>
<td>• Trade levels and growth rates (in particular for international flights)</td>
</tr>
<tr>
<td>• Urbanisation, migration and regional integration</td>
<td>• Trade levels and growth rates (in particular for international flights)</td>
<td>• Trade agreements,</td>
</tr>
<tr>
<td>• Airfares and dynamic ticket pricing</td>
<td>• Distance / time to access air services and alternative transport modes available</td>
<td>• Growth of global production chains and lean inventory strategies</td>
</tr>
<tr>
<td>• Distance / time to access air services and alternative transport modes available</td>
<td>• Exchange rates</td>
<td>• Alternative transport modes available and comparative freight costs and time</td>
</tr>
<tr>
<td>• Exchange rates</td>
<td></td>
<td>• Exchange rates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Value to volume ratio of traded goods and share of traded goods that are time / temperature sensitive</td>
</tr>
</tbody>
</table>

By far the most important for leisure travel are GDP levels and (related to this) disposable income and the air services availability (i.e. the time and cost trade-off involved in accessing and travelling by air versus using an alternative mode of transportation). For business travel, GDP levels and trade play a greater role, as does the exchange rate (through its impact on
the relative cost of exports and imports. Global downturns such as the one currently being experienced are therefore likely to have a significant impact on passenger volumes.

In terms of airfreight, the most fundamental amongst these factors are GDP growth and trade growth. Data from the World Bank indicates an almost perfectly linear correlation between air freight and GDP globally between 1980 and 2000\textsuperscript{15}. It is acknowledged that the development of freight is an excellent early indicator of the direction in which economies are developing. This relationship also holds true in periods of economic downturn, as was the case during 2008, with global air cargo demand falling over 13%\textsuperscript{16}. However, it should be noted that the relationship is much less strong (but still very significant) in Sub-Saharan Africa. Over the long-term, global trade has tended to grow at a rate of about 1.5 to 2 times that of GDP growth, with airfreight growing at about 1.5 times the rate of trade (or more than 2.2 times the rate of GDP growth)\textsuperscript{17}. However, research from IATA\textsuperscript{18} indicates that the impact of trade growth on airfreight has weakened since around 2004, with airfreight volumes sometimes growing at a rate somewhat below that of trade overall. This is partly due to competition from other modes (especially sea freight) as well as the impact of oil prices. Recently, the steady improvement of business confidence since mid-2013 led to a similar rise in worldwide freight ton kilometres, to reach in January 2014 the previous peak of early 2010. Lower oil prices and the strengthening of the cyclical economic upturn, if proven more durable than the “false dawns” of 2011 and 2012, should sustain further growth in the short to medium term. Although shocks (including financial and political) can derail this picture, it is widely believed that the major factors depressing economic growth after the financial crisis of 2008 have diminished substantially.

Global GDP is expected to increase at an annual average rate of 3.2% to 2033, which will directly impact on passenger and air cargo traffic\textsuperscript{19}. This is particularly true for non-OECD markets, which will account for a higher share of GDP growth between now and 2020 than OECD economies; and Asia will increase its share of world GDP from 35% in 2005 to 43% in 2020\textsuperscript{20}. Over the same time period, passenger traffic will increase around 5.0% in revenue passenger-kilometres (RPK) and cargo traffic will increase around 4.7% in revenue tonne-kilometres (RTK) on average annually\textsuperscript{21}. This growth will be driven by deregulation in India, continued high traffic growth rates for domestic China and the China’s emerging international outbound traffic, and the high rates of GDP growth expected in these regions\textsuperscript{22}. Airlines based in the Middle East and Asia, which are expected to grow their air traffic movements by an average of 6.8% and 6.1% respectively, are expected to develop their traffic more rapidly than those based in other regions\textsuperscript{23}. Africa is forecast to outpace both global GDP and air traffic demand with annual increases in GDP around 4.7% and increases in airline passenger traffic of 5.9% per year and cargo traffic of 6.1% per year\textsuperscript{24}.

Population growth will also affect air traffic demand. The United Nations expects global population to increase 35% until 2050, which is slower than in the past, but still significant. Africa, however, will see unprecedented population growth with its population more than...

\textsuperscript{15} R-squared value of 0.968; Source: Senguttuvan, P.S. (2006) “Air cargo: Engine for economic growth and development – A case study of Asian region”, National Urban Freight Conference, 1-3 February 2006, METRANS Transport Centre, School of Policy, Planning, and Development, University of Southern California, Los Angeles, USA.

\textsuperscript{16} Source: Center for Asian-Pacific Aviation (6 January 2009) Asian Air Cargo Markets Shattered by Global Economic Downturn. Available at www.centreforaviation.com

\textsuperscript{17} Source: Kenan Institute Centre for Air Commerce, based on data from the World Bank

\textsuperscript{18} IATA (2007)“IATA Economics briefing: air freight market outlook – September 2007”

\textsuperscript{19} Boeing Current Market Outlook: 2014, pg. 3

\textsuperscript{20} Source: Economist Intelligence Unit Foresight 2020

\textsuperscript{21} Boeing Current Market Outlook: 2014, pg. 3

\textsuperscript{22} Source: Airbus Global Market Forecast: 2007 – 2026

\textsuperscript{23} Source: Airbus Global Market Forecast: 2007 – 2026

\textsuperscript{24} Boeing Current Market Outlook 2014, p. 3
doubling. Africa’s population is expected to achieve 2.2 billion and will account for 50% of world population growth through 2050\textsuperscript{25}.

Increased global integration, through trade, capital and labour markets, and through culture and tourism are driving aviation demand at levels well above the rate of GDP growth. A counter-trend, however, is the development of communications technologies which reduce the need for face-to-face contact (e.g. improved videoconferencing and voice-over IP (VOIP). Greater regional integration and cooperation opens up new travel options for passengers e.g. reduced visa requirements within regions and trade agreements affecting freight movements.

Urbanisation is also expected to continue, with 66.6% of the world’s population living in an urban environment by 2050\textsuperscript{26}. This will positively affect air traffic demand because populations living in urban environment will be concentrated in the middle class due to higher wages in urban centres\textsuperscript{27}.

Almost all long haul traffic is concentrated within a few select cities across the world, often referred to as “Aviation Mega Cities”. Aviation Mega Cities handle over 10,000 long-haul passengers on a daily basis. Currently, there are 42 Aviation Mega Cities, with 94% of long-haul travellers using at least one of these airports each trip; Johannesburg is currently the only one in Africa\textsuperscript{28}. Long-haul traffic is expected to remain concentrated within Aviation Mega Cities, but by 2033 the number of cities is expected to increase to 91 with 99% of long-haul travellers using at least one of these airports each trip\textsuperscript{29}. Out of those 91 cities, six are expected to be in Sub-Saharan Africa, including: Johannesburg, Accra, Addis Ababa, Lagos, Luanda, and Nairobi\textsuperscript{30}.

Concerns about the environmental impacts of air travel, fluctuating fuel prices and security fears are not expected to significantly dampen demand. The aviation industry is actively addressing this through operational improvements. For example, to offset rising fuel prices and carbon emission concerns, airlines have looked for ways to save fuel (e.g., flying at optimum weight, altitude and routes, and better review of weather conditions) and upgrading to more fuel-efficient aircraft\textsuperscript{31}.

A standard measure for assessing passenger demand for air travel is “propensity to fly”. Propensity to fly measures the ratio of passenger movements or arrivals to the overall population of the country or region in question, in order to give a measure of the average flights taken per person per year. Factors affecting propensity to fly may include economic health, demographic changes, aviation market maturity, geographical features, airlines competition, hub status and immigrant population. Cross-country research shows that propensity to fly, measured by the number of one-way trips by residents per capita, increases with GDP per capita and reaches saturation as GDP per capita rises\textsuperscript{32}. This relationship has been used to forecast aviation market growth, and to show that the highest growth over the next 30 years will be in emerging markets, including China, India, Brazil, Indonesia and Turkey.

\textsuperscript{25} Flying on Demand: Global Market Forecast 2014-2033 booklet, Airbus, p. 20
\textsuperscript{26} Flying on Demand: Global Market Forecast 2014-2033 booklet, Airbus, p. 21
\textsuperscript{27} Flying on Demand: Global Market Forecast 2014-2033 booklet, Airbus, p. 21
\textsuperscript{28} Flying on Demand: Global Market Forecast 2014-2033 booklet, Airbus, p.21
\textsuperscript{29} Flying on Demand: Global Market Forecast 2014-2033 booklet, Airbus, p.27
\textsuperscript{30} http://www.theafricancourier.de/business/ghana-airport/
\textsuperscript{31} Flying on Demand: Global Market Forecast 2014-2033 booklet, Airbus, p.16
\textsuperscript{32} Source: PwC, “Propensity to fly in emerging economies: Implications for infrastructure investment”
Figure 6: Relationship between air trips per capital and GDP per capita, 2011

In terms of competition from alternative modes of transport, in some locations passengers have shifted to high speed rail for some “regional-international” routes. In the case of cargo, innovations in ocean shipping technologies, including the development of “fast ship” technology and “atmosphere controlled” sea freight containers threaten the competitiveness of airfreight in certain sectors and markets. Delays involving customs and border controls constrain all forms of trade. To the degree that these constraints are unblocked, trade levels may improve substantially. This can have both positive and negative effects on airfreight, driving some additional demand but also allowing road transport to compete more effectively on some regional routes.

In Europe, traditional scheduled flights account for the majority of IFR air traffic at 55% of total flights (this excludes LCCs). However, from 2008-2013, traditional scheduled flights in Europe decreased 11% and their market share of total flights decreased from 58% to 55%. LCCs, however, increased their share of flights from 20% to 26% over the same time period. Globally, scheduled flights increased 2.7% from 2013 to 37.4 million in 2014; likely due to increases in developing markets such as China, India, Middle East, and Africa.\(^{33}\)

Non-scheduled flights accounted for 5% of total IFR flights in Europe in 2013, down from 6% in 2008.\(^{34}\) Whilst the U.S. and Europe have traditionally been the market for non-scheduled flights, due to the recent economic challenges and recession, non-scheduled flights have been on the decline. However, in India, non-scheduled flights have been increasing steadily due to a growing economy, business need for private flights, increasing corporate revenues, and more high net worth people. Additionally, since most commercial flights only fly between large cities, non-scheduled flights have been playing in the small city space.\(^{35}\)

---

35 Source: https://www.pwc.in/assets/pdfs/industries/general-aviation-070312.pdf
6.2 South African demand patterns

Growth in air transport in South Africa was strong before the 2008 crisis but uneven in recent years. The figure below shows the annual growth in passengers between 2000 and 2014 in comparison to GDP growth during that period. From 2000 to 2007, passenger growth averaged a strong 9.4% annually, or 2.2x GDP growth; however, since 2008, passenger growth has barely matched GDP growth and even turned negative in years of slowing economic growth.

The growth in passenger traffic from 2000 to 2007 was unprecedented, and a substantial acceleration over historical levels, and it was above levels predicted by most in the industry. Linked to that was the growth of the Low Cost Carrier (LCC) sector, which brought fares within reach of more South Africans and stimulated much of the growth in demand. In only a few years, LCCs have grown to take 30-40% of the domestic market.
Table 7: Passenger and GDP growth

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passengers</td>
<td>9.4%</td>
<td>3.3%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>GDP</td>
<td>4.3%</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Ratio Passengers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>growth / GDP growth</td>
<td>2.2</td>
<td>1.7</td>
<td>-0.4</td>
</tr>
</tbody>
</table>

A double-logarithmic regression over the 2000-2014 period shows that passenger growth is related to GDP growth by a ratio of 1.9x, with an R-square of 97% (i.e. there is a very strong correlation).

In terms of freight, average annual growth from 2006 to 2014 for the ACSA network has been 2.2%, on the backdrop of a soft economy. This was in contrast to average annual growth of about 5.2% at ORTIA and CTIA between 2004 and 2007.

The relationship between passengers, freight and air traffic movements is determined by operational factors, i.e. the average size of aircraft (number of seats) and the load factor (measuring capacity utilisation), which when combined, result in an average number of passengers per flight, directly linking total passenger number to traffic movement. For the ACSA network for the 2010-2014 period:

- Scheduled international flights have averaged between 139 and 142 passengers per flight
- Scheduled regional-international flights have averaged between 40 and 47 passengers per flight
- Scheduled domestic flights have averaged between 90 and 97 passengers per flight

Owing to the relative stability of these passenger-per-flight ratios, scheduled commercial air traffic movements tended to track quite closely the passenger growth pattern over the recent few years.

In contrast, non-scheduled flights have reported since 2010 an average number of passengers varying in a range of 1.4 to 2.2 from year to year. While this is explained by key differences between categories, this small and unstable ratio makes it difficult to relate non-scheduled air traffic movements to passenger growth patterns.
In order to get a better picture of how the airport network serves the country today and how it is positioned to do so in the future, it is important to understand the geographical spread of demand for air services across the country. As the spatial spread of demand does not exactly match current traffic movements at airports because of variations in available infrastructure and services, it is referred to here as “underlying demand”. A number of factors influence the relative demand for air travel in different parts of the country. Amongst the most important are:

- **Population size**: This is the most important determinant of overall demand levels.

- **Disposable income**: As discussed with regard to “propensity to fly”, disposable income is a very important factor influencing demand. Data on household expenditures indicates that air travel is almost exclusively limited to households in the top income decile, although this might shift in the long term if affordability of air travel shifted significantly.

- **Geographic Value Add (GVA)**: In addition to indicating the presence of higher disposable incomes, GVA is an indication of the relative degree of economic activity. This not only shapes business travel demand but also demand for airfreight, particularly where GVA is as a result of production of high-value (such as certain minerals) or perishable (such as fruit or fish) goods.

- **Tourism and migration**: Districts with substantial tourism are likely to have demand for air services far above what would be otherwise expected based on population and incomes. In addition, greater demand will exist between districts and provinces where there has been significant migration over the past decade (in particular this is between Gauteng and most provinces and between the Eastern Cape and the Western Cape).

- **Accessibility and alternatives**: Relative demand will also be determined in part by the accessibility of the district by other means of transportation (e.g. road and rail); although it is normally the case that low levels of accessibility coincide with relatively sparsely populated rural areas.

---

**ATNS data are based on flight plans rather than operational data, and may therefore have inaccuracies due to inaccurate or incomplete information on flight plans. Please note, in terms of ATNS categories, “non-scheduled” refers to commercial non-scheduled traffic; “General Aviation” and “other” relate to non-commercial traffic.**
6.3 Future growth assumptions and projections

Building on the historical relationships between economic growth and air traffic, and based on forecasts of South Africa’s real GDP over future years, the key parameters of air traffic have been projected in relation to passenger, freight and ATMs.

6.3.1 Passengers

South African propensity to fly tends to track already above the cross-country regression line, but GDP per capita levels are not forecast to reach, over the next 30 years, the level where saturation has been observed in other countries. Evidence from the sector and from the most recent household survey on income and expenditure indicate that only about 10% of South Africans are flying today; in developed markets like the UK, the figure is around 50%. This suggests there is considerable scope left for new demand to come into the market as income levels rise.

Looking forward, the two biggest considerations regarding the future growth of the aviation sector in South Africa (over and above GDP trends) are the levels of market penetration and the degree to which low cost carriers can continue to grow. Over the medium term, as long as the macro economy supports continued widespread growth in income levels and as long as the economics of the sector do not shift dramatically (e.g. with rising fuel prices), the LCC sector should be able to continue to grow by opening up access to flying to more and more South Africans.

The figures below trace the possible evolution of passenger volumes in the South African market, based on three scenarios in the demand model, with different relationships to GDP growth:

- **Growth at a level slightly above GDP growth**: Over the forecast period, growth in air passenger demand is highly unlikely to fall below this trend line, unless some unexpected, industry-specific event occurs. As such this can be viewed as a relatively pessimistic growth case over the medium and long term.

- **Growth at 1.5x GDP**: This is the base case, implying strong growth but below global averages for the industry in emerging markets, reflecting a more penetrated market situation and more recent unfavourable trends.

- **Growth at 1.9x GDP**: This is in line with the growth experienced in the South African market from 2000 to 2014. Although that pattern of growth was unprecedented, it should not be viewed as overly optimistic in the short to medium term. Over the long term, however, it is most likely to be in the outer bands of expected growth.

---

37 GDP growth forecasts for 2015 through 2017 are based on data from Treasury’s 2014 Medium Term Budget Policy Statement; forecasts for 2015 and from 2017 through 2050 are private providers
Figure 10: Total passenger volume forecast: 2015-2050

Table 8: Passenger growth with different scenarios

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>1.35%</td>
<td>3.08%</td>
<td>3.10%</td>
<td>2.82%</td>
</tr>
<tr>
<td>Base</td>
<td>1.84%</td>
<td>4.21%</td>
<td>4.23%</td>
<td>3.85%</td>
</tr>
<tr>
<td>High</td>
<td>2.33%</td>
<td>5.33%</td>
<td>5.36%</td>
<td>4.87%</td>
</tr>
<tr>
<td>GDP Growth</td>
<td>1.23%</td>
<td>2.80%</td>
<td>2.82%</td>
<td>2.56%</td>
</tr>
</tbody>
</table>

Under the base case scenario, volumes would grow at 4.21% annually over the next three years, but at a 3.85% average annual rate through 2050. International passengers would make up around 16 million of the 62 million total passengers forecast in 2024, and 41 million of the 159 million total passengers forecast in 2050.

The three largest airports will show this growth pattern under the base scenario:
A number of factors will shape the development of demand, and result in risk or uncertainty to these forecasts. Most important is the expectations concerning the GDP growth rate, which reflects recent global and national trends. Other important factors are the developments of air liberalisation in African regional markets (full implementation of the Yamoussoukro Decision) and effectiveness of the implementation of tourism growth strategies.
6.3.2 Freight

Looking forward, the most important factor driving growth in the cargo sector will be GDP and trade growth. Over the long-term, trade has tended to grow at a rate of about 1.5 to 2 times that of GDP growth. However, airfreight is a niche transport mode in volume terms and one which is highly sensitive to factors like price and technology. Factors such as fuel prices and specific actions within key export or import sectors can substantially alter growth expectations.

The figure below traces the development of airfreight volumes (total of inbound and outbound) across the ACSA network based on three alternative growth scenarios in the demand model:

- **Low case** – Growth at 1.5x GDP
- **Base case** – Growth at 1.8x GDP
- **High case** – Growth at 2.1x GDP

The base case scenario implies annual cargo growth of 4.6% and results in a doubling of current cargo volumes by 2030.

**Figure 12: Cargo growth forecast (tonnes 2014-2044)**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>CAGR (2014 – 2044)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low case</td>
<td>3.85%</td>
</tr>
<tr>
<td>Base case</td>
<td>4.61%</td>
</tr>
<tr>
<td>High case</td>
<td>5.38%</td>
</tr>
</tbody>
</table>
6.3.3 Air traffic

Scheduled traffic movements should grow largely in line with the growth of passenger traffic, with perhaps a very slow growth in utilisation levels over the period. In the base scenario, annual scheduled movements would increase from just over 400,000 in 2014, to over 600,000 by 2024 and over 1.2 million by 2044.

Growth in the non-scheduled portion of ATMs is being driven by increased demand for flexibility and convenience on the part of high-end business travellers, as well as strong growth in the tourist sector. The “regional-international” charter market also appears to be growing, driven by growth in the regional mining and construction sectors and growing tourism (especially into Mozambique). However, many smaller regional charter operators are being squeezed by the growth of low cost airlines (which are attracting travellers to drive further to airports, where in the past they might have used charters) and the expanded use of road transport. Outside of charters, significant growth is expected in the market for aviation training. Role players in the industry estimate that this market could grow at 10-15% annually over the next five years.

In the base scenario, non-scheduled movements would increase from 538,000 in 2014 to around 800,000 by 2024 and around 1.6 million by 2044.

Hence, total ATMs, being the sum of scheduled and non-scheduled, is expected to rise from about 950,000 in 2014 to more than 1.4 million by 2024, and 2.8 million by 2044, although these forecasts would be very sensitive to potential changes in the type mix of flights (i.e. affecting the non-scheduled component).

Figure 13: Air traffic movements forecast (2014-2050): base, low, and high case scenarios ('000)
7 Long term international trends influencing airport planning

A summary of some of the key global trends impacting on both airport network planning and airport planning are provided below. For further detail see Appendix 3.

1. **Airports are needing to accommodate new aircraft types for both passenger and freight**
   - Passenger aircraft types are expected to be dominated by single aisles, higher seat counts and often wider wingspans.
   - Large wide-body aircraft (>80 tonnes) will comprise the majority of new freight aircraft deliveries (Boeing).
   - Airports are upgrading their facilities to accommodate ICAO Code E and F spatial requirements.
   - Aircraft parking, turning areas and passenger handling facilities are needing to accommodate multiple new aircraft types with different widths, wingspans, heights, lengths and seat numbers.
   - Some airports have already designed flexible gates that can accommodate one large aircraft or two smaller aircraft.
   - Cargo terminal peak capacities may need to take into account these larger aircraft sizes.

2. **New security technologies are impacting on the required layout of passenger and cargo terminals**
   - For example, on the passenger side full-body scanners, biometric passenger screening, and psycho-physiological screening require additional space.
   - These technologies may also increase the rate of passenger throughput.

3. **Airports are increasingly mainstreaming environmental considerations into their planning and design.** Airports are also seeking carbon-neutral status, and planning and designing facilities accordingly.
   - Pressures on airlines to reduce environmental impacts and fuel usage are in turn placing pressure on airports to increase efficiency of the operating environment, including backup power for aircraft, and planning of layouts to reduce the length of taxi to aircraft parking.
   - Terminal design is increasingly including natural light, efficient lighting and passive heating/cooling.
   - Communication systems are increasingly incorporating reporting and complaints procedures around environmental issues.

4. **For international airports, there is expected to be less separation of domestic and international passengers**
   - As with the previous trend of consolidation of international and domestic check-in desks, this will affect overall passenger terminal layout, including flow between check-in, retail, security, customs, immigration and port health.

---

5. **Airport planning, design and systems are increasingly integrating with other modes of transport**
- Check-in and baggage handling is becoming increasingly streamlined, customized and multi-modal
- Airports are therefore having to design their check-in and baggage handling and associated IT systems to be inter-operable with rail and bus systems
- Systems may also be required to allow for integration of private concierge access from ground transportation/parking to aircraft
- In smaller airports, a plaza is often being developed that enables diagonal movement from terminal to ground transport
- This trend may impact on both airport and wider precinct planning and design, including the integration with public transport

6. **Airports are increasingly being planned and designed based on user experience**
- User experience design would require increased involvement of users in the early stages of the planning and design process, potentially including co-design
- In the case of single-user facilities, there would be close collaboration around planning and design. In the case of multi-use facilities particular methodologies around shared-use planning and design are being applied to take into account combined requirements and peaks and minimising conflicting uses that may create overall inefficiencies in the system
- Increasingly sophisticated flow simulations are allowing more efficient and pleasant layouts and flows to be developed
- At hub airports there is a focus on creating a wide experience for transfer passengers; in addition to retail and food service, this is expected to increasingly include entertainment and relaxation
- There is increased segmentation of consumer and service levels from extremely high end to very inexpensive
- These trends may also have implications for passenger terminal footprint and layout

7. **Aerotropolises and airport cities are increasing due to greater importance on revenue from non-aviation sources and convenience for users**
- Globally, 43.7%\(^{39}\) of total airport income came from non-aeronautical sources in 2012. In Africa, the proportion was a little lower at 32.1%\(^{40}\). The majority of non-aeronautical revenue is from retail sources, car parking, and property and real estate income/rent. Airports will have more of a focus on integrated property development, public transport development, retail, tourism, and hospitality, meeting and training centres
- Airport owners and developers are increasingly working in partnership with other landowners in the vicinity and with local urban planning officials

8. **Low Cost Carriers are increasingly offering long-haul flights and using secondary destination airports**
- Secondary airports in destination markets may need to align the type of facilities offered to Low Cost Carrier requirements e.g. infrastructure and system that allow for high speed turnaround

9. **With the rise of private sector involvement in financing airports, financing is increasingly being integrated into every step of the planning and design process**
- A more iterative planning and design process may be required to respond to commercial viability assessments

\(^{39}\) Based on a survey of 680 airports that represent ~70% passenger traffic
• It is likely that increased emphasis will need to be placed on optimisation of design to maximise returns, including non-aeronautical revenue and airport precinct development

10. **As smaller airports are becoming targets for illegal activities, new strategies to combat them are being implemented**

• As security tightens at major airports with international port of entry designation, criminals are increasingly using light aircraft and targeting secondary and other smaller airports as well as helipads and airstrips for various types of illegal activities, such as transport of drugs, guns, tobacco, protected animal and plant species, as well as human trafficking and undocumented migration.

• Efforts to combat these activities include:
  - Communication to encourage reporting by residents in the vicinity of any suspicious activity
  - Remote and unmanned aircraft system monitoring and surveillance programmes
  - International cooperation to share information and improve risk profiling
  - Following monitoring, action to disrupt illicit activity patterns, e.g. arresting pilots involved in illicit activity, introduction of temporary security or border control presence at airports where incidents have taken place
  - Allocation of budgets to law enforcement and border management agencies to investigate incidents at small airports

11. Activity other than scheduled air transport is being consolidated at particular airports, rather than spread out amongst multiple airports and airfields.

• In many countries, non-commercial, general air service and flying training activity is experiencing pressure at busy commercial airports

• There is also often pressure on smaller airports and airfields with less commercial activity due to budget constraints and competition with other land uses

• Therefore, in some countries, role players such as flying clubs and flying schools are collaborating to consolidate their activity at selected airports to increase their viability, and in some cases jointly fund infrastructure upgrades or maintenance

• However, this requires a critical mass of activity and resources to fund and manage these airports

Part C provides an assessment of the gap between these trends and the current state of the airport network, in order to inform planning for the next 5 years.
8 Summary of relevant policy context and institutional arrangements

The National Civil Aviation Policy (NCAP) has been developed taking into account the Constitution of the Republic of South Africa, National Development Plan and wider policy, legislation and regulation around issues such as security, environment, transport planning, spatial and land use planning, economic and industrial development. The NCAP can therefore serve as the primary reference point for alignment of the NADP, whilst noting that provincial and local policies, strategies, legislation, regulation and by-laws may shape the implementation of the NADP. For information on other relevant policy, legislation and regulation, please see Appendix 4.

Part C provides an assessment of the gap between the relevant NCAP policy principles and the current state of the airport network, in order to inform planning for the next 5 years.

The table below categorises the current roles of various government institutions in relation to airports. These mandates have informed roles and responsibilities identified in Part E of the NADP.

Table 9: Roles of government institutions in relation to airports

<table>
<thead>
<tr>
<th>Entity</th>
<th>Planning</th>
<th>Regulation and oversight</th>
<th>Direct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strategic planning</td>
<td>Technical planning</td>
<td>Licensing</td>
</tr>
<tr>
<td>Office of the President</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Department of Transport</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Air Traffic and Navigation Services (ATNS)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>South African Civil Aviation Authority (SACAA)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Airports Company of South Africa (ACSA) (ACSA Network only)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Department of Trade and Industry</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Department of Environmental Affairs</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

41 In future border management functions will be performed by the planned Border Management Agency
42 Aviation-related in conjunction with DEA
43 Aviation-related in conjunction with DEA
44 Aviation-related in conjunction with DEA
45 Aviation-related in conjunction with DEA
<table>
<thead>
<tr>
<th>Entity</th>
<th>Roles</th>
<th>Planning</th>
<th>Regulation and oversight</th>
<th>Direct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Strategic planning</td>
<td>Technical planning</td>
<td>Licensing</td>
</tr>
<tr>
<td>Department of Public Works</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department of Land Affairs</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South African Police Services</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>State Security Agency</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Department of Agriculture, Forestry and Fisheries</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Department of Health</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Department of Defence Military, Veterans, South African National Defence Force, Air Force</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Department of International Relations and Cooperation</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✘</td>
</tr>
<tr>
<td>Department of Home Affairs</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Department of Co-operative Governance and Traditional Affairs</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✘</td>
</tr>
<tr>
<td>Department of Finance, including:</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>- National Treasury</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- South African Revenue Services, Development Bank of Southern Africa</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincial Departments of Transport, Roads, Public Works</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Provincial Departments of Agriculture (Conservation and Environment)</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Provincial Treasuries</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✘</td>
</tr>
<tr>
<td>Provincial Departments of Economic Development and Tourism</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Local Government</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>
In addition, the following inter-governmental coordination structures are relevant to issues of coordination of airport planning and development:

- Inter-Agency Clearing Forum (IACF)
- National Planning Commission
- Ministerial and DG Clusters, of particular relevance are:
  - Economic, Investment and Employment Cluster
  - Infrastructure Cluster
  - Justice, Crime Prevention and Security Cluster
- MinMECs (forums between line function national ministers and their provincial counterparts) and their associated technical committees
- Border Control Operational Coordinating Committee (BCOCC) - currently chaired by South African Revenue Services, other members include Departments of Home Affairs; State Security; Transport; Public Works; Agriculture, Forestry and Fisheries; Health; Defence and Military Veterans, and South African Police Service
- Government Security Regulator
- National Aviation Security Committee
- National Airspace Committee
- National Committee for Environmental Coordination (chaired by the Department of Water and Environmental Affairs)
- National and provincial Disaster Management Centres (chaired by the Department of Provincial and Local Government)
- National Transport Forum (NTF)

Please see Appendix 4 for further detail on both the policy and institutional context.

---

46 The NTF was established during 2014
 PART C: GAP ASSESSMENT

This section assesses the gaps between the desired state of South Africa’s airport network and policy principles, international trends and current capacity of the airport network. Part E provides a 5 year plan of how to address these gaps.

9 ASSESSMENT OF GAPS IN TERMS OF POLICY AND INTERNATIONAL TRENDS

9.1 Policy gap assessment

The table below assesses the gap between the desired airport network and individual airport planning in terms of both the White Paper on National Civil Aviation Policy (NCAP) principles.

<table>
<thead>
<tr>
<th>NCAP Policy Statement extracts</th>
<th>Assessment of gap between airport-related policy and current state, as at 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIATION SAFETY AND SECURITY OVERSIGHT</td>
<td></td>
</tr>
<tr>
<td>PS.4 The Department of Transport is responsible for the development of national civil aviation security policies. This includes the compilation, revision and development of the National Aviation Security Programme (NASP) which, amongst others, addresses airport security, in compliance with Annex 17 of the Chicago Convention. SACAA will remain responsible to oversee the implementation and compliance with the NASP.</td>
<td>• Twenty (20) airports are currently designated in terms of the Civil Aviation Act of 2009 as part of the secure network and are audited by SACAA for compliance</td>
</tr>
<tr>
<td>INSTITUTIONAL ARRANGEMENTS</td>
<td></td>
</tr>
<tr>
<td>PS.6 Government is committed to ensuring that the Department of Transport is suitably equipped to fulfil its functional responsibilities for civil aviation effectively, efficiently and meaningfully</td>
<td>• Additional information, technology and human systems capacity will be required in the DOT to effectively oversee and support the implementation of the NADP</td>
</tr>
<tr>
<td>CIVIL AVIATION INFRASTRUCTURE – AIRPORTS</td>
<td></td>
</tr>
<tr>
<td>PS.13 The Department of Transport will develop a National Airports Development Plan which would guide all present and future airport development in consultation with all relevant stakeholders. Macro planning and integration of airports into the broader transport network should be coordinated through the National Airports Development Plan.</td>
<td>• Currently overall national network planning is not fully integrated and does not fully take into account multi-modal transport linkages, and is not always evidence-based • DOT does not have the exclusive mandate on national airport network planning, and there are currently limited mechanisms/instruments available to give effect to this • Multiple role players, overlapping jurisdictions and a lack of clear regulatory/procedural instruments have made it challenging to execute joint network planning in the past • Airport users have noted that pre-planning of</td>
</tr>
<tr>
<td>NCAP Policy Statement extracts</td>
<td>Assessment of gap between airport-related policy and current state, as at 2015</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>PS.14</strong> Airport development, expansion and operation should be in line with the Government’s policy on environmental management. The environmental sustainability of airports should be assessed as a prerequisite, whether at strategic planning level or for individual projects, using the appropriate tools.</td>
<td>• At the moment overall network planning does not take into account minimising environmental impacts (environmental consideration is at the level of individual airports. For example, there is limited consideration of shifting airport locations or activity to less sensitive areas) • New airport developments would comply with environmental approval processes, including considering alternative locations • However, many existing airports, in particular smaller and municipally-owned airports may not comply due to limited management capacity, lack of awareness, high compliance costs and funding constraints</td>
</tr>
<tr>
<td><strong>PS 15</strong> Existing and new airports should as far as possible be developed and operated on the basis of financial sustainability and viability guided by the National Airports Development Plan. Where existing publicly owned airports, excluding military airports, are not financially sustainable and viable, and they cannot be socio-economically or otherwise justified, every effort should be made to justify them and make them viable and sustainable. Failing that, alternative uses for such assets should be investigated, and could include using the existing facilities for other purposes.</td>
<td>• The majority of the 100+ municipally- and provincially owned airports are not currently financially sustainable on either an overall or operational basis. In some cases attempts are being made at an individual or provincial level to increase their viability • Green-field airport development plans currently have inconsistent approaches to assessing financial viability • There is as yet no agreed system in place to determine whether airports’ socio-economic contribution merits continued investment • There is currently no specific guidance or support for alternative uses or decommissioning of publicly owned airports; however in terms of the Government Infrastructure Asset Management Act there are wider asset guidelines on life-cycle asset management and due diligence processes exist to decide on concessioning or sale of assets; indications are that these guidelines are not currently being following for municipally-owned airports and that airports are rather being deprioritised in terms of budget allocation, maintenance and management</td>
</tr>
<tr>
<td><strong>PS.16</strong> The “user-pays” principle in respect of services rendered at cost-related levels should be introduced at all airports, where feasible</td>
<td>• The user-pays principle already applies at various airports within South Africa • Small volume activity airports and non-</td>
</tr>
<tr>
<td>NCAP Policy Statement extracts</td>
<td>Assessment of gap between airport-related policy and current state, as at 2015</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>commercial aviation-focused airports are unlikely to be able to support themselves purely on aeronautical charges; some airport owners and operators are therefore exploring increasing non-aeronautical revenue and wider revenue from precinct development. However, it is likely that many smaller and non-commercial aviation focused airports will not be able to fully cover costs on a user-pays basis</td>
<td></td>
</tr>
<tr>
<td>• In the case of airports owned by provincial and local government, revenue may be recorded but may not be ring-fenced due to the nature of budgeting processes</td>
<td></td>
</tr>
<tr>
<td>• In the case of airports providing services such as medical rescue, emergency services and fire-fighting functions, the appropriate “user” that should pay is not currently clarified e.g. line ministry/department, local tax payer, private service provider</td>
<td></td>
</tr>
<tr>
<td>PS.17 Local and international private sector participation in the provision and operation of airport infrastructure should be encouraged in all spheres of government. …</td>
<td></td>
</tr>
<tr>
<td>• There are currently different levels of private involvement in different types of airports, for example:</td>
<td></td>
</tr>
<tr>
<td>o Fully private airports are already in operation, including some large airports and many small airfields which are typically already self-financed by private owners</td>
<td></td>
</tr>
<tr>
<td>o ACSA airports already have some private sector involvement e.g. ground handling and debt financing for some capital upgrades</td>
<td></td>
</tr>
<tr>
<td>o Some municipal and provincial airports have concessioned out the operation of the airport or entered into lease agreements (for parts of airports) with private or non-profit operators such as aeroclubs and flying schools.</td>
<td></td>
</tr>
<tr>
<td>• Widespread use of municipal or provincial PPPs has been constrained by the high cost, administrative burden and political sensitivity</td>
<td></td>
</tr>
<tr>
<td>• Typically, runway infrastructure is difficult to finance privately given the very long return periods (e.g. if over 25 years payback period), with the exception of some specialist infrastructure funds</td>
<td></td>
</tr>
<tr>
<td>• Private funding of airports with lower volumes of activity has been constrained by the low returns, long lead times on return, lack of credit worthiness of many municipalities and lack of borrowing rights of</td>
<td></td>
</tr>
</tbody>
</table>
### NCAP Policy Statement extracts

#### PS.18 National Government should not provide any direct operational funding for any airport.

National Government as responsible owner/shareholder of certain airports must, however, continue to meet its obligations in respect of large scale capital expansion of such airports or development of a new airport when further expansion is not possible to meet market demand, when required.

National Government may consider financial assistance for safety- and security-related airside capital assistance projects at designated provincially and municipally owned airports. Notwithstanding such potential funding, the provinces and the municipalities should remain responsible for prioritising their funding requirements in accordance with their established needs, including aviation infrastructure needs for the facilities these authorities plan, own and operate.

#### PS.19 The use of international donor funds should be in line with national policies and priorities.

In addition, partnerships at new and existing airports between the public and private sectors as well as local and international investors should be encouraged in all spheres of government.

#### PS.20 The current airport licensing system should be reviewed and aligned with the National Airports Development Plan and the National Airspace Master Plan.

All airports should be required to obtain appropriate aerodrome licences or to be registered. To this end, criteria for licensing and registration would be different for different types of airports.

Unlicensed airports that accommodate air services for reward (direct and indirect) should be licensed. In particular, all airports situated within 1nm of the

### Assessment of gap between airport-related policy and current state, as at 2015

- Non-aeronautical aspects are typically more attractive to the private sector given quicker returns and therefore care needs to be taken to not lose focus on aeronautical aspects by the airport operator.

- Development Finance Institutions (DFIs) including the Development Bank of Southern Africa (DBSA) have been approached in some cases for infrastructure upgrades and funding. This includes ACSA, provincially and municipally-owned airports, and privately owned airports.

- At present, budget restriction measures have prevented the development of an airside capital assistance programme.

- Other infrastructure funds, as well as provinces and municipalities, have been focused on infrastructure areas that are considered more “basic needs” and have therefore provided limited funding to airports.

- The European Union IIPSA fund administered by DBSA has received some airport-related applications.

- SACAA has been using a voluntary registration system; as at February 2015 only around 50 airports have registered.

- Some small (in particular farm and private use) airfields and associations have expressed concerns about implications of a mandatory registration process in terms of potential future compliance costs, administrative burden and information sharing obligations.

- Airports providing facilities used for indirect hire and reward that are not currently licensed - e.g. game lodges offering package deal and training centres - are creating
<table>
<thead>
<tr>
<th>NCAP Policy Statement extracts</th>
<th>Assessment of gap between airport-related policy and current state, as at 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>geographical footprint of any Terminal Area (TMA), or within 10nm of the Control Zone (CTR) of an existing licensed airport, must be licenced after all airspace and interdependency aspects, including master planning, have been considered.</td>
<td>liability issues, including in terms of insurance.</td>
</tr>
</tbody>
</table>

**PS.21**
The framework for the designation of international airports (ports of entry) in respect of existing domestic and planned new international (green-field) airports should form an integral part of the National Airports Development Plan and provide for the criteria and requirements for the development and designation of such airports.

The Department of Transport, in consultation with all relevant Organs of State should investigate the feasibility of providing for “regional ports of entry” in order to facilitate small aircraft movements between South Africa and Southern African Development Community States.

- The existing international airport designation (port of entry) guidelines do not have legally binding status, and do not sufficiently deal with considerations for green-field developments
- A key issue that needs to be addressed is the sequencing of approvals for green-field airports that seek international status, in particular to address liabilities and investor risk thresholds
- “Regional-international” airports will require full border control functionality as a port of entry. It is expected these airports would be “non-commercial ports” in respect of customs clearance. Initiatives are currently underway to establish a Border Management Agency (BMA) which could increase efficiencies and reduce costs of border control functions.

**PS 25**
Government should encourage the establishment of consultative fora at licensed airports to facilitate consultations between all stakeholders, including airport licensees, airport operators, aircraft operators, other service providers and the travelling public.

- Consultative forums do not currently exist at all licenced airports; they could potentially address some of challenges identified around coordinating integration of the airport with surrounding areas, and consideration of user needs in airport design and planning

**CIVIL AVIATION INFRASTRUCTURE - Integration of the Airport into its Surroundings**

**PS.27**
Provincial and municipal government should jointly incorporate airports as part of a holistic planning approach to the total transport system and the environment in which the airports are located, and ensure that airports would be included in the formulation of spatial development frameworks in terms of the Spatial Planning and Land Use Management Act, and the Integrated Development Plans (IDPs). In addition, airports should be included in all transport plans prepared in terms of the National Land Transport Act.

- In the past these planning processes focused only on land transport, and therefore planning and information processes and forums may not be equipped to integrate airports
- The intention is to address this gap through the proposed Multi-modal Transport Planning and Co-ordination Act
- Many provincial transport and planning officials are not aware that airports are part of their mandate (despite inclusion of concurrent jurisdictions in Schedule 4 of the Constitution of South Africa)

**PS.28**
Provincial Governments should include airports in their provincial transport
<table>
<thead>
<tr>
<th>NCAP Policy Statement extracts</th>
<th>Assessment of gap between airport-related policy and current state, as at 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>plans and also include the policies and strategies relevant to airport development for all airports in the relevant Provincial Transport Framework and in the provincial development plans. Airport development should be included in the spatial development frameworks. The development of new national and international airports will be subject to National Government’s approval for the demarcation of the particular area for the development of such aerodrome, as guided by the National Airports Development Plan.</td>
<td>• Integration is constrained by poor communication between airport operators and municipalities, as well as the prioritisation of basic service delivery</td>
</tr>
<tr>
<td>PS.30 The licensees/operators of airports should plan and monitor their emergency services, as well as the required bulk municipal services, in consultation with the relevant municipal and provincial governments which are responsible for emergency medical, fire-fighting and disaster management services. The municipalities concerned should ensure that these services are integrated into their own disaster management plans.</td>
<td></td>
</tr>
<tr>
<td>3.7 AIRCRAFT OPERATIONS AND THE ENVIRONMENT</td>
<td></td>
</tr>
<tr>
<td>PS.83 The airport licensee of an airport that is required to calculate and predict aircraft noise contours and/or conduct monitoring of aircraft noise should ensure that appropriate noise abatement procedures and measures are developed and published after approval by SACAA. Aircraft-, airport- and air traffic service unit operators must implement such noise abatement procedures and measures as applicable.</td>
<td>• In practice, relocation or repurposing of areas within the noise contours is contentious/sensitive and can therefore be difficult to implement, but consultative fora have been identified as a potential mechanism to address these issues</td>
</tr>
<tr>
<td>PS.81 Once the noise contours for the airport have been established and the proposed land-uses have been accepted for the different noise zones as determined, the relevant municipality should survey all land-uses within these noise contours and compare them with acceptable land-uses to determine any existing non-compatible or undesirable land-uses. Where buildings and other infrastructure are used for a purpose which is incompatible with certain noise zones, these buildings and infrastructure should be used for a more compatible purpose which</td>
<td>• Responsibilities of the airport developer/operator versus airlines and the municipality may also not be clear and widely understood by the public, e.g. around communication, any compensation for relocation</td>
</tr>
<tr>
<td></td>
<td>• Baseline data on actual land use in the affected area prior to airport development may be difficult to keep current due to sudden changes such as informal settlements</td>
</tr>
<tr>
<td></td>
<td>• Airport Master Planning is a key tool to improve coordinated land use planning</td>
</tr>
<tr>
<td>NCAP Policy Statement extracts</td>
<td>Assessment of gap between airport-related policy and current state, as at 2015</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><em>is permissible in that particular noise zone. However, the practical implications of such a change in the use of buildings and infrastructure must be considered.</em></td>
<td></td>
</tr>
</tbody>
</table>
### 9.2 International trend gap assessment

The table below assesses the gap between the desired airport network and individual airport planning in terms of **international trends**.

**Table 10: International trends gap assessment**

<table>
<thead>
<tr>
<th>Trend themes</th>
<th>Assessment of gaps</th>
</tr>
</thead>
</table>
| 1. Airports are needing to accommodate new aircraft types for both passenger and freight | - Larger volume airports have invested in recent years in upgraded air bridges, aircraft parking etc., and some airports can now accommodate wide-body aircraft (A380 for example) and ICAO Code E  
- Only the O. R. Tambo International Airport currently receives Code F, where all Code F and most Code E stands are dual contact  
- King Shaka International Airport already has 2 Code F stands with dual passenger boarding bridges.  
- The spatial provision for similar dual bridges and Code F stands are on the master plan for Cape Town International Airport and will be developed as and when required by demand |
| 2. New security technologies are impacting on the required layout of passenger and cargo terminals | - This trend is starting to be evident in South African airports with some plans to introduce new technologies, e.g. the integration of full body scanners at ACSA airports and the Department of Home Affairs plans to integrate biometrics into security planning at international airports |
| 3. Airports are increasingly mainstreaming environmental considerations into their design | - This trend is not yet strongly evident in most South African airports  
- One example of incorporation of environmental considerations into airport design is the increase in use of natural light in recent passenger terminal upgrades at Cape Town International, King Shaka International Airports, and Lanseria International Airport pier development |
| 4. There is expected to be less separation of domestic and international passengers using “call to gate” methodology | - South African international airports are starting to follow this trend. All ACSA airports are designed to the principle of single centralised holding areas from where all flights are called |
| 5. Airport design and systems are increasingly integrated with other modes of transport | - Public transport access by train and rapid bus transit is a relatively recent development in South Africa, and only at larger/higher traffic airports, and so integration across modes is still under development (some layout changes were made in the recent wave of ACSA airport upgrades to improve integration)  
- South Africa’s Public Transport Strategy through Integrated Rapid Public Transport Networks (IRPTN) includes in its objectives linking major origins and destinations, including airports, as well |
<table>
<thead>
<tr>
<th>Trend themes</th>
<th>Assessment of gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>as integrated ticketing systems and institutional integration between services</td>
<td>• However, inter-operability of facilities and systems is not yet in place e.g. luggage check-in at Gautrain/rapid bus stations for airports&lt;br&gt;• Smaller airports at the moment have less advanced public transport systems and tend to rely heavily on private vehicles; constrained budgets for public transport upgrades have slowed this integration</td>
</tr>
<tr>
<td>6. Airports are increasingly being designed based on user experience</td>
<td>• Airport users have raised concerns that airport design and upgrade processes have not been highly consultative from early stages, and have often not resulted in optimisation of facilities to address their needs.</td>
</tr>
<tr>
<td>7. The number of aerotropolises and airport cities are increasing due to increased importance on revenue from non-aviation sources and convenience for users</td>
<td>• Numerous feasibility and planning processes are underway for aerotropolises in South Africa, e.g. Dube Tradeport Aerotropolis Region, Ekurhuleni Aerotropolis, Cape Town Airport City</td>
</tr>
<tr>
<td>8. Low Cost Carriers are increasingly offering long-haul flights and using secondary destination airports</td>
<td>• This trend is not yet strongly featured in South Africa, although there have been some developments around use of Lanseria International Airport for domestic low cost carriers, this has not extended to long-haul to date</td>
</tr>
<tr>
<td>9. With the rise of private sector involvement in financing airports, financing is increasingly being integrated into every step of the planning and design process</td>
<td>• The strategic master plans of ACSA airports are subject to financial evaluation to determine the preferred option that provides the most cost effective operation&lt;br&gt;• ACSA’s 10 year plan is subject to intensive scrutiny by both industry and the Economic Regulator prior to funding release&lt;br&gt;• Smaller private airports typically will have phased developments to take into account financing requirements</td>
</tr>
<tr>
<td>10. As smaller airports are becoming targets for illegal activities, new strategies to combat them are being implemented</td>
<td>• Registration of airports is one initiative to improve information availability around smaller airports that may be targeted for illicit activity.&lt;br&gt;• Discussions are also underway within the security and border control agencies as to how to address this issue; however, available resources to monitor activity are likely to be a constraint</td>
</tr>
<tr>
<td>Trend themes</td>
<td>Assessment of gaps</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 11. Non-scheduled, general air service and non-commercial aviation activities are being consolidated at particular airports, rather than spread out amongst multiple airports and airfields. | - South African non-scheduled, general air services and non-commercial aviation activities are experiencing similar pressures at the main commercial airports  
- There has been some consolidation of activity at smaller privately-owned airports (e.g. Grand Central, Port Alfred), and in some cases at municipally-owned airports (e.g. Virginia)  
- However, financial viability of smaller airports remains a concern |
10 ASSESSMENT OF GAPS IN THE AIRPORT NETWORK

South Africa’s airport network as a whole has significant capacity, and many of its airports are currently under-utilised. The section below addressed the identified gaps.

Controlled airspace

Only three airports are slot coordinated, and airspace congestion is primarily experienced in the vicinity of the OR Tambo International Airport Terminal Area. Airspace congestion within and close to the ORTIA TMA is therefore a particular constraint to traffic growth for the Gauteng area. Resolving this will require the optimisation of airspace utilisation and ultimately, additional airport capacity outside of the ORTIA TMA.

Airport infrastructure capacity

The ultimate capacity of most airports in South Africa is unknown. The following airports have estimated ultimate passenger capacity of:

- O. R. Tambo International Airport: 60 million passengers per annum
- Cape Town International Airport: 45 million passengers per annum
- King Shaka International Airport: 45 million passengers per annum
- Lanseria International Airport: 21 million passengers per annum
- Kruger Mpumalanga International Airport: 1.5 million passengers per annum

Taking into account available demand forecasts, planned investments at major airports, and a similar aircraft mix, capacity constraints in terms of both passengers and ATMs can be expected within the 2050 planning period to serve Gauteng, Western Cape, and KZN. Within this period, specific dates where additional capacity will be required may shift based on actual activity levels (see the following section for discussion of the Planning Activity Levels approach).

In addition cargo handling capacity is constrained at ORTIA (where over 80% of cargo volumes are currently concentrated), and plans for a mid-field cargo terminal aim to address this. Cargo capacity at other international airports may help to address this gap depending on international air connectivity at these airports. The scale and nature of cargo are unlikely to support freighter-focused airports and cargo hubs in the short-to medium term.

Airport sustainability and commercial development

Many of South Africa’s smaller airports, in particular provincially and municipally-owned and non-commercial aviation focused airports, are not currently financially self-sustaining. Traffic volumes within the airport network are not likely to be sufficient to enable financial viability of all of these airports based on aeronautical revenue alone. Requirements for noise and emission monitoring at airports will also have cost implications. In addition, competing land uses that are more financially attractive are placing pressure on existing facilities.

The current budget constraints and focus on basic service delivery across all spheres of government will constrain public sector funding of airport projects in the short to medium term.

Further development of non-aeronautical revenue, including the appropriate development of land on and around the airport is therefore likely to be necessary to increase the number of airports within the airport network that can be sustained. Without such development, the long-term capacity of the airport network to serve in particular non-commercial aviation
needs will be reduced. These developments can also support the economic contribution and spatial integration of airports into their surrounding areas.

The spatial context and nature of economic activity and demand in the areas surrounding airports will constrain what type of development will be viable, ranging from small airport precincts though to airport cities and aerotropolises. It is therefore still likely that some airports may need to be mothballed or alternative uses found (taking into account that lost capacity will be difficult to replace), and that aviation activity will need to consolidate into a smaller number of airports.
PART D: GUIDING PRINCIPLES

The section below sets out guiding principles to support decision-making and planning for both the overall airport network and individual airports in their surroundings. In particular, these guiding principles aim to support airport operators and provincial and local government in their airport-related planning.

These guiding principles will be reviewed as part of the NADP review cycle, and refined, if required, to take into account any changes in the airport network context.

11 Airport network planning

In order to give effect to the NCAP principle of macro-planning for airport network and integration into the wider transport network, a more evidence-based and coordinated approach to airport network planning is needed. Given the allocation of roles in relation to airports across the three spheres of government and the private sector, by definition any systems airport network planning in South Africa needs to be collaborative.

11.1 Principles to address capacity constraints in the airport network

Airports reaching their capacity thresholds may relate to a complex range of issues, including ATMs, aircraft mix and runway occupancy time, passenger volumes, passenger and baggage handling systems, environmental restrictions, and capacity of landside transport systems. The importance of these factors may vary between airports. In addition, some capacity constraints are at the airport network level rather than at the level of an individual airport, in particular airspace constraints within a geographical zone.

Existing infrastructure capacity should be optimised to deal with activity levels, including using the following techniques:

- **Prioritise alternative approaches to addressing capacity pressures rather than major infrastructure expansions or green-field investments, e.g.**
  - Review aircraft mix at airports through one or more of the following:
    - differential charging,
    - provision of secondary airports,
    - restrictions on airport access during peak hours, and
    - selection of specific airports for a particular type of air traffic
  - Improve airspace management techniques e.g. redesigned Air Traffic Zones (ATZ), Control Zones (CTR) or Terminal Areas (TMA); designing, validating and implementing Performance Based Navigation (PBN) procedures where beneficial and rendering effective Air Traffic Flow Management (ATFM) services
  - Infrastructure refinements to speed up throughput e.g. high speed taxi-ways (noting that these are more likely to provide short- to medium-term relief rather than permanent relief, depending on traffic growth rates)

- **Proactive identification of capacity gaps** and identification of partners to deliver on these requirements (potentially through a committee with representation from the three spheres of government, ACSA, private operators and key user groups)

- **Promote use of Planning Activity Levels (PAL)** approach working with multi-disciplinary teams to deal with volume uncertainties at network and individual airport level (i.e. customised to each airport’s volume forecasts and capacity – investment
decisions to upgrade capacity are triggered once certain volumes of traffic are reached, taking into account construction lead times)

- This would enable airports to cope more effectively with uncertain growth forecasts in a resource-efficient manner. However, for publicly-owned airports it might create funding challenges as the timings of capital investments would not be fixed within medium-term budget periods, but would need to be flexible dependent on actual volumes.

- **Airspace management** is critical to the airports network’s capacity, and therefore should:
  - Be given serious consideration at the outset of any new airport development or expansion planning.
  - Be optimised in terms of design, technologies and use of systems e.g. Air Traffic Flow Management and performance based navigation.
  - Define minimum aircraft performance criteria and discourage commercial and non-commercial aircraft that do not meet the criteria to enter congested Terminal Areas (TMA) during peak periods through disincentives.

### 11.2 Airport categories for the purposes of airport network planning

In Part B of the NADP, multiple attributes were used to describe the airport network, namely: infrastructure and facilities, activities and purpose, licence/registration status, international airport status, ownership, proximity to the strategic transport network, and airspace congestion. Combining all of these attributes into a single categorisation system is cumbersome and impractical.

The following categories provide one way of thinking about the country’s airport network that takes into account the role of the airports in the network:

**A. International airport** – a designated port of entry that serves intercontinental/long-haul traffic, as well as regional-international and domestic traffic. Such airports are also designated in terms of the Civil Aviation Act, 2009, and are subject to the National Airport Security Programme

  - “Regional-international” airport – a designated point of entry that serves SADC as well as domestic traffic. Whilst this could initially be limited to air services to and from Member States of the Southern African Development Community (SADC) and could be expanded to the rest of Africa in due course (i.e., facilitating access to intra-African air services in line with the Yamoussoukro Decision). This would ease the burden on the currently congested international airports which are used by operators of small aircraft operating from small airports only for purposes of border control, causing serious capacity constraints.

**B. National airport** – an airport that serves scheduled traffic and is designated in terms of the Civil Aviation Act, 2009, and is subject to the National Airport Security Programme

**C. Public service airport** – airports that are socio-economically important and provide facilities for critical emergency services, disaster management and medical rescue, but are not commercially viable

**D. Other licensed airports** – licensed airports in addition to the national networks, including those used for business and indirect hire-and-reward purposes

**E. Registered airports** – airports that are serving non-commercial purposes, such as private flights and sport aviation

In the South African context, cargo requirements are being served by international and national airports (and in future by “regional-international” airports, rather than single purpose
cargo airports. A separate “cargo airport” category is therefore not required at this stage. Whilst at present non-commercial General Aviation is an activity that is taking place at multi-purpose airports – including international and national airports as well as smaller commercial and registered airports – airspace congestion levels at certain international and national airports make it increasing necessary to plan for provision of non-commercial aviation facilities within the airport network.

11.3 Framework, criteria and processes for airport licensing, registration and approvals

Ideally, airport network planning would identify the optimal locations for airports to meet particular needs within the airport network based on all relevant considerations. These considerations would include:

- Existing airports within the catchment area that already have suitable core infrastructure (in particular runway capacity)
- Interconnectivity with the existing and planned transport network for other modes, so as to improve the efficiency of intermodal transport integration, and leverage existing/planned transport investments
- Airspace – manage airports that fall within congested airspace
- Environmental sensitivities – excluding areas that are environmentally sensitive or already experience significant environmental stresses
- Land use – exclusion of airports where there are surrounding land uses that are not compatible and cannot easily be moved
- Socio-economic integration – preference for airport locations that will optimise the socio-economic contribution in terms of passenger movements, freight, destination marketing, public services, job creation potential in the wider precinct, etc.

However, selection of optimal locations would require a proactive process based on high quality data and effective multi-stakeholder coordination. Such a system would provide greater direction and vision in addressing capacity gaps, and could increase efficiency of the network, but would introduce some new risks due to central identification of airport opportunities. This is often not possible within a deregulated airport planning system.

In addition, where airports (in particular those in larger cities where land is a constraint and urbanisation and urban expansion rates are high) are expected to exceed their ultimate capacity in the next 40 to 60 years, provision should ideally be made to safeguard suitable land for the required additional airport, and the zoning around the area also needs to be aligned to avoid encroachment of incompatible land use. In line with the National Infrastructure Plan’s planning horizon, any major infrastructure projects required within the next 20 years to address the capacity gap should be identified and reviewed every 5 years.

At the moment, approvals are a reactive and ad hoc process. The reactive approach has the advantage that the mechanisms already exist to some degree, and it requires minimal risk and resources from central government.

For the next five years, a reactive process to applications for international, “regional-international”, and national airports will be used – but within application window

---

47 For a discussion of these complexities, see Guillaume Burghouwt (2012) Airline Network Development in Europe and its Implications for Airport Planning
periods to enable comparison between applications – and data gathering systems will be put in place to support evaluation of applications.

DOT will work together with other national departments and agencies and in consultation with aviation stakeholders to amend or develop the following processes and publish them as regulations or technical standards in order to give them legal standing:

- Application for international airport status (including sub-set for “regional-international airports”)
- Airport licensing
- Airport registration
- Pre-approval process for green-field airports

Overviews of the above processes are provided in the sections below.

11.3.1 Process overview for designation of an airport as an international port of entry

An application for international status of an airport should be accompanied by a comprehensive feasibility study with specific emphasis on economic and financial viability and sustainability. In particular, an applicant should be able to demonstrate:

- The presence of significant unmet market demand for international air services and its ability to meet such demand;
- Through projections of volumes, to justify the public resources to be committed for rendering services at the port of entry (customs, immigration and other government officials, services and infrastructure);
- That the market demand could not be met by the development and/or improvement of land transport to an existing international airport.
- How the airport will be integrated into the current transport network, including the National Airspace Master Plan.\(^{48}\)
- Proof of zoning and demarcation of the area for the development of a new international aerodrome.\(^{49}\) (Approval (in some form) will have to be obtained from the National Executive (Cabinet) in terms of Schedule 4, Part A of the Constitution of the Republic of South Africa 1996).
- That Governmental support has been obtained from the applicable Local and Provincial Governments for the planned new international airport or application for international status of an existing airport, as applicable.
- Its ability to comply with all relevant regulatory requirements, including:
  - **Aviation Safety:** Civil Aviation Act, 2009 (Act No. 13 of 2009) and Civil Aviation Regulations, 2011;
  - **Aviation Security:** Civil Aviation Act, 2009 (Act No. 13 of 2009), National Aviation Security Plan (NASP), and relevant security regulations;
  - **Border Control and Management:** Requirements of the Border Control Operational Co-ordinating Committee (BCOCC) including but not limited to Customs, Immigration, Health, Agriculture and Border Police (which in future will be dealt with through the Border Management Agency (BMA) once established); and

---

\(^{48}\) Airport development should not be considered in isolation, but be integrated into all national, provincial and municipal economic and spatial development initiatives, and also support broader policy initiatives. There should be synergy between airport development and the national and provincial economic and development strategies. Long-term planning for the location of airports should run in parallel to provincial and regional economic development plans. (National Policy on Airports and Airspace Management, 1997)

\(^{49}\) Regulation 139.02.21 of the Civil Aviation Regulations, 2011
– **Environment**: Requirements of the Department of Environmental Affairs, including a Basic Assessment Report or an Environmental Impact Assessment (EIA) and ROD, as may be applicable to a new or expansion of an existing airport.

The following diagram provides the summary of the criteria to be considered for designation as an international airport (port of entry status):

**Figure 14: Summary of criteria for designation of an airport as an international port of entry**

- **1.** Suitability of location relative to existing international airports
  - Recommendation from NASCOM and approval from DCA for airspace utilisation
  - Zoning and demarcation of the area for international airport development in the case of green-field development (all spheres of Government)

- **2.** Constraints at existing international airports:
  - Infrastructure, airspace, aircraft mix, etc.

- **3.** Demonstrate economic viability:
  - Current and forecast traffic, passenger & cargo volumes
  - Unmet market demand
  - Justifies allocation of public resources for port functions

- **4.** Integration into and synergies with:
  - Economic priorities
  - Spatial plans
  - Inter-modal transport system

- **5.** Aero-political considerations e.g. provincial/regional issues, bilateral air service agreements

- **6.** Environmental impact:
  - Alignment with government environmental policy and legislation

- **7.** Facilities to handle all port of entry services, based on BCCOC guidelines, including:
  - Immigration
  - Customs & Excise
  - Port Health
  - Agricultural inspection
  - Security

- **8.** Compliance with international airport licensing requirements / ICAO airport safety and security requirements; and Designation: Port of entry (Immigration Act and customs/excise airport to Customs and Excise Act)

The Airport Coordinating Committee will continue to consider applications for international airport status and submit recommendations to the Cabinet for consideration.

Consideration will be given to opening of a window period for applications for international status (and potentially for removal of under-utilised allocations) every two years, so that the relative merits of applications can be assessed, rather than on an ad hoc or first-come, first-served basis.
All applications for international airport status from the same region or in close proximity of such region should be:

- Considered as competing applications and processed in compliance with the Promotion of Administrative Justice Act, 2000; and
- Referred to the National Transport Forum (NTF) to ensure integration of transport planning activities within and between the three spheres of government when 2 or more Provinces will be affected.

"Regional-international" airports will be considered as a sub-set of international airports. These airports could initially be limited to air services to and from Member States of the Southern African Development Community (SADC). This could reduce the burden on the currently congested international airports which are used by operators of small aircraft operating from small airports only for purposes of border control, causing serious capacity constraints (including airspace capacity, physical infrastructure) and safety risks. Provision for additional “regional-international” airports could also increase efficiently for business travellers that need to make brief and frequent trips within the region.

Options and possibilities for funding of the cost of border control functions will be considered in consultation with the Border Control Operational Co-ordinating Committee (BCOCC) and once established, the Border Management Agency, in order to address the stated concern about border control capacity constraints should additional airport-based ports of entry be required.

11.3.2 Green-field airport pre-approval process overview

Given the significant existing airport network capacity in South Africa, preference is given to the upgrading of existing airports over development of green-field airports. Major green-field airport development in close proximity to and within the same (or mainly the same) geographic catchment area as an established airport should, therefore, only be considered in exceptional circumstances and where capacity pressures are significant.

All green-field airports that intent to serve traffic for reward (and therefore will need to be licensed) must obtain airspace approval from NASCOM prior to initiating environmental assessment (whether EIA or Basic Assessment). In particular, proposals for airports within 1 nm of the geographical footprint of any Terminal Area (TMA), or within 10nm of the Control Zone (CTR) of an existing licenced airport, must be evaluated in order to determine the potential interference with existing established procedures regarding controlled airspace in accordance with the Civil Aviation Regulations, 2011.

All green-field developments should ideally be planned for areas outside of the CTR of existing airports and preferably outside the TMA. It is noted that airports can co-exist within close proximity; however, the impact on existing established procedures regarding controlled airspace must be considered and could impact on the operations of such airports.

Following airspace approval, green-field commercial airport developments will be required to lodge applications for zoning and demarcation of the area identified for the airport development submitted to the relevant sphere of government.

Completing planning approval and building of a major new green-field or significantly expanded existing airport is likely to take 7 to 10 years under current systems and

50 This will include all airports i.e., airports to be licenced or registered (currently “un-licenced”)
51 Regulation 139.01.1(3)
technologies. As these timeframes are not flexible, but volume forecasts change regularly, a conservative approach to deciding the trigger point to start airport approvals should be taken, based on “high case” scenario forecast volumes or ATMs. Greenfield developments will also need to plan for compatible zoning around the area and monitor developments in the area during planning and construction to avoid encroachment of incompatible land uses.

**Where public money will be directly or indirectly involved in supporting the airport development, National Treasury infrastructure budgeting guidelines will apply:**

- National Treasury’s budgeting guidelines for infrastructure and capital projects need to be followed
- Proponents of new airports will need to demonstrate why existing airport infrastructure does not have sufficient capacity to address demand as effectively;
- Proponents will also need to provide a feasibility assessment and high-level assessment of the relative environmental cost of green-field development vs. expansion of existing facilities;
- Any indirect risks or costs to the public sector will need to be estimated, e.g. landside transport access infrastructure, public transport, waste removal; and
- Both provincial and local government should demonstrate support of the proposal.

**11.3.3 Airport licencing process overview**

Airport licensing requirements are being updated to take into account safety issues and associated liabilities in relation to air services for indirect reward e.g. fly-in packages provided by game lodges and resorts. In future, all airports that accommodate air services for reward (whether indirect or direct) and/or are situated within 1nm of the geographical footprint of any Terminal Area (TMA), or within 10nm of the Control Zone (CTR) of an existing licensed airport, must be licenced.

A suitable “tiered approach” to the application of International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPS) in respect of domestic airport licensing and registration will be developed, based on risk assessment and airport categorisation.

**11.3.4 Airport registration process overview**

Regulations will be published in terms of the Civil Aviation Act that will require registration of all airports in South Africa that are not licensed. The intention of this registration is to increase knowledge about the nature of South Africa’s airport network and to also confirm that basic safety considerations are adhered to. In order to avoid a high administrative burden for small airfields, compliance and information sharing requirements will be kept to a minimum.
11.4 Overview of other airport-related selection processes with implications for the airport network

11.4.1 National airport designation process overview

Schedule 4 of the Constitution of the Republic of South Africa of 2006 (Constitution) deals with “Functional Areas of Concurrent National and Provincial Legislative Competence”. In terms of this Schedule, National Government has exclusive legislative competence regarding international and national airports. The term “national airport” is, however, not defined in the Constitution, or any other legislation.

All international airports as well as domestic airports serving scheduled air transport services must be designated in terms of the Civil Aviation Act, 2009 for security purposes and must operate in accordance with their approved National Aviation (airport) Security Programme. For purposes of the NADP, “national airports” will therefore be defined as “all domestic airports serving scheduled air transport services”.

When an airport is approached by an airline to accommodate scheduled flights, and where the airport does not at that point provide facilities and services for scheduled flights, the airport must apply to SACAA’s aviation security division for designation. The airport will then have to comply with additional security requirements as prescribed. Identification of national airports is therefore a demand-driven process, based on interest from scheduled operators.

11.4.2 Public service airport process overview

Provincially and local municipalities may want to identify which of the airports in their jurisdictions cannot become commercially viable but are serving a particular public service and can be justified on a socio-economic basis. Provincial and local governments may consider prioritising their available airport budget allocations to these types of airports rather than those that are less critical to public services.

11.5 Knowledge management to enable evidence-based airport network planning

Planning for South Africa’s airport network is being adversely affected by the lack of reliable, consistent and up-to-date information on areas such as location, infrastructure, operations, passenger and freight volumes, traffic movements and forecasts. Tracking this information is critical in order to have an “evolvable network plan”. The DOT also has an international obligation to provide statistics to ICAO.

In the South African context, the largest data gaps relate to:

- Aircraft, passenger and freight movements
- General aviation traffic
- Unlicensed and unregistered airport attributes and facilities
- Regularly updated runway capacity and wider infrastructure capacity at airports, including maximum throughput of passengers related to terminal and baggage handling capacity
- Public transport available at airports
- Information required for airport development and decommissioning
- Forecasts of future usage

---

52 Civil Aviation Act, 2009: Section 4(5) read with Section 111.
Service level information
Extent of profitability of airports to guide expansion and decommissioning/alternative use decisions
Measurement of energy usage and emissions of airport infrastructure

Challenges in improving airport network knowledge systems include:

- The large number of role players involved across public and privately-owned airports
- No single institution having a legislative mandate to gather all relevant information
- Gathering, compiling and updating information could require significant resources, both from smaller operators and any central record-keepers, which may outweigh the benefit of information
- Confidentiality of information: challenges for ownership and distribution of information to different departments, at different levels of aggregation, for various uses, and of various airport categories, e.g. confidential nature of landing fee structure at private airports

International and local experience provides the following models for airport knowledge management to address the issues identified:

- Establishment of information sharing forums
- Real-time electronic sharing of information from airlines and operators: using existing industry systems and additional ICT systems to centrally gather non-commercially sensitive information
- Information sharing as part of aerodrome licensing/registration and renewals obligations
- Survey-based approach to data gathering

The Department of Transport is developing a Knowledge Management System on airports which will interface with both DOT's internal GIS (NATMAP) and the South African Civil Aviation Authority's systems. It will also establish a system to collect airport network information, which over time can shift to an integrated system with electronic data exchange with key aviation stakeholders. The amendments to the licensing and registration procedures will also increase data availability.
12 Individual airport planning, design and management within its surroundings

The good practices below have been set out to provide guidance to airport owners, managers and operators in South Africa, in particular smaller airports and provincially and locally-owned airports. They are not prescriptive (except where referring to compliance with existing legislation or regulations), and each airport will need to consider the applicability and suitability of these guidelines based on their capacity and context.

12.1 Guiding principles for integrated airport planning and design

In order to provide for optimal and sustainable airports, planning and design of airports needs to take into account and balance a range of factors, including:

1. Volume and nature of forecast demand, including phasing based on Planning Activity Levels
2. Optimising the economic impact, including contributing to enhanced competitiveness of key sectors in the vicinity through improved movement of people and goods
3. Requirements of key partners and user groups, including both direct and indirect users, potentially including use of co-design methods
4. Compliance with relevant regulation and licensing/registration or designation requirements, including both airport-specific and wider regulations
5. Technology trends impacting on facility design, including layout, flow, and systems integration
6. Minimising of environmental impacts, including carbon footprint, noise, emissions and water use
7. Integration with the transport network at the airport and in the vicinity, including public transport, private vehicle access, freight transport, and fuel pipelines
8. Selecting the appropriate management, operation and funding model
9. Optimising of both aeronautical and non-aeronautical revenues, including integration of the wider precinct
10. Minimising ongoing facilities management and maintenance costs
11. Integrating requirements from financiers

Balancing these considerations into airport design planning is complex and requires significant planning capacity. Larger airports and airports in ACSA network have more resources available to do effective planning and design. DOT nevertheless recommends an increased focus on user-experience design and user co-design methodologies. In the case of the smaller airports, they typically do not have dedicated capacity available to effectively manage all of these considerations and it is unlikely to be viable to develop dedicated capacity in most cases. DOT recommends development of shared technical capacity, knowledge systems and guidelines, including at provincial level, to support individual small airport planning, as well as finding ways to tap into private sector expertise, in particular for provincially and locally owned airports.

The following sections provide additional guidance and information sources on good practice and compliance requirements for each of the above factors.
12.2 Volume and nature of forecast demand, including phasing based on planning activity levels

Key considerations when forecasting demand and aligning airport design to this demand include:

- Determining the catchment area for the airport for different uses/purposes, based on willingness to travel/drive time
- Understanding existing in- and outbound volumes and types of passengers, freight and air traffic movements in the vicinity (including piloted aircraft and RPAS movements)
- Understanding “underlying demand” in the catchment area in terms of people, income and economic activity, based on available data
- Understanding airline and other aviation operator strategies on both airport and aircraft selection
- Developing realistic assumptions about growth rates in the market
- Estimating potential market share of the airport within the catchment area for the different purposes (scheduled passengers, cargo, non-scheduled activity)
- Developing realistic assumptions about ratios of “meet and greet” numbers to traveller numbers
- Developing tested assumptions on the ratio of passengers to baggage handling requirements based on current and future trends
- Based on all of the above, determining “peak design hour” requirements across the airport facilities (balancing accommodating volumes vs. overall efficiency and cost), and forecasting these forward based on growth assumptions and trends
- Translating this demand into requirements for all facilities e.g.
  - Runways, aircraft parking and turning spaces, fuelling
  - Passenger terminal (security screening space, check-in, ground transport and boarding gates)
  - Cargo terminal (cargo handling and storage space, cold store (ethylene and non-ethylene releasing) vs. other)
  - Bulk services, including water, power, waste management, ICT
  - Off-site requirements such as navigational equipment
  - Integrating flexibility to accommodate changing technology trends that may change space ratios

- The Planning Activity Levels approach is a key tool to use demand forecasts to enable more efficient phased development as trigger points are reached that will require expanded capacity. In particular for lower activity airports with a small number of operators, it can also be important to understand different operators’ planned fleet changes and the possible implications for airport development/upgrade requirements. Where capital budgets are constrained, it may be more appropriate to seek agreement with operators whose fleets and scheduling options will require lower capital outlay.

Sources of information:
12.3 Optimising the economic impact, including contributing to enhanced competitiveness of key sectors in the vicinity through improved movement of people and goods

Good practice for enhancing the socio-economic impact of airports includes the following:

- Coordination with local municipalities and chambers of commerce to take into account economic priorities and sectoral activity in the region e.g. through participation in Local Economic Development forums in the region
- Incorporating socio-economic contribution into selection of tenants / concessionaires, e.g. designing tenant policies to encourage participation of local businesses
- Optimising local hiring and skills upgrading of both the direct airport employees and tenants (including selection of tenants based on their socio-economic contribution, local learnership and internship programmes
- Optimising local sourcing by both the airport and tenants
- Airport sponsorship of local socio-economic initiatives
- Active contribution to destination and investment marketing for the region, including through designing/upgrading the airport to contribute to the “sense of place”
- Ongoing measurement and reporting of socio-economic impact of the airport e.g. direct and indirect employment, goods handled, efficiency for businesses in area, tourist revenue supported

Sources of information:

- http://airportsforthefuture.org/
- http://www.futureairport.com/

12.4 Requirements of key partners, service providers and user groups, including both direct and indirect users

Good practice for integration of partner, service provider and user needs into airport design and operation includes:

- Taking into account existing guidelines or specifications from partners and service providers, e.g. Air Traffic Management Service Providers and, in the case of international airports, specifications from state service providers such as Home Affairs, SARS, Agriculture, and Health.
- Following co-design, human-centred and “experience design” methodologies for development and upgrading of airports, including:
  - Ethnographic research with both internal and external stakeholders and users to understand current user experiences and needs e.g. participant observation, interviews, workshops, input on key objectives for each user (e.g. speed, reliability, low energy use, low anxiety)
  - Design of experience blueprints and user archetypes
  - Mapping of potential conflicting uses by different users or user types, in particular during peak periods, and redesign to try to minimise these conflicts or mitigate their impacts on users
  - Design of physical infrastructure, layouts, systems and “soft” infrastructure to realise this experience in reality
o Prototyping, testing, and iteration
- Establishment and regular meetings of consultative forums at airports
- Reflection of this design into Airport Master Plan

These principles would need to be played out differently depending on the size and resources of the airport e.g. hiring an “experience designer” or researcher vs. more informal user experience research by the airport developer or operator.

Some examples of co-design at airports:

12.5 Compliance with relevant regulation and licensing/registration or designation requirements, including both airport-specific and wider regulations

Airports need to comply with both:
- **Airport-specific regulations**: These include safety (Civil Aviation Regulations, ICAO SARPs, Aerodrome Design Manual), security, facilitation, facilities for passengers with special needs, international port of entry requirements
- **Wider regulations** such as: Environment, spatial planning, land use planning, integrated transport planning, facilities for emergency services and disaster management (as well as asset management requirements in the case of publicly owned airports)

Compliance to these various requirements is inter-related. For example, in order to continue complying with civil aviation requirements spatial and land use planning processes needs to take into account preserving both on-site and off-site navigational aids and avoiding interference.

Good practice indicates that airport managers/operators remain informed of the changing requirements of the above, and that compliance is included in performance. This could take the form of a compliance officer (at an individual level for larger airports or shared by groups of smaller airports). Information sharing forums or portals can also assist airports to be aware of their compliance obligations and the more efficient and effective ways of retaining compliance.

Sources of information on compliance requirements:
- **Airport-specific regulation**: SACAA: [http://www.caa.co.za/Pages/Airports/About-Aerodromes-and-Facilities-.aspx](http://www.caa.co.za/Pages/Airports/About-Aerodromes-and-Facilities-.aspx)
- **Wider regulation**:
  - Environment: [www.environment.gov.za](http://www.environment.gov.za)
  - Infrastructure asset management: [www.treasury.gov.za](http://www.treasury.gov.za)
12.6 Technology trends impacting on facility planning and design, including layout, flow, and systems integration

Airports are increasingly trying to “futureproof” the planning, design and upgrading of their airports in order to take into account the lack of certainty of how technology may play out. Good practice includes planning and designing for flexibility, including things such as:

- Planning and designing overall airport and terminal footprints to provide flexibility. For example, in the case of terminals, regular rectangular shapes are considered easier to reconfigure.
- Design of internal elements for flexibility, including careful consideration of placement of rigid vertical elements such as elevators, escalators, mechanism shafts and distribution systems, with the remainder of terminals as modular and movable partitions and elements
- Flexible air bridges
- Modular / flexible runways

Sources of information:

- http://www.airport-technology.com/
- http://www.futuretravelexperience.com/
12.7  Minimising of environmental impacts

Environmental impact areas to take in account include:

- Water (reducing water use, capturing rainwater and managing storm water, improving water quality)
- Air quality improvement (including particle filtration systems, dust control)
- Carbon footprint reduction (including material selection for airport construction and maintenance, reduction of operational carbon use, carbon offset programmes)
- Energy (including reduction of energy use and generation of renewable energy e.g. solar roofing)
- Noise minimisation and noise impact reduction, including restrictions on Category 2 aircraft, land use planning, airport soundproofing, noise walls construction, housing schemes for noise insulation;
- Light emission reduction
- Heat signature reduction (including reducing paved areas, creation of heat sinks etc.)
- Solid waste management and recycling
- Wetland /habitat protection
- Biodiversity and endangered species protection, including planting to support biodiversity (whilst noting the need to minimise bird strikes)
- Hazardous materials / spill management
- Ground transport optimisation
- Heritage and culture support

Good practice to minimise environmental impacts includes the following:

- Integration of environmental impact minimisation into airport design, systems and operation (for airport operator, tenants and users) – designing for efficient operations in many cases also minimised economic impact e.g. reducing taxi distances or waiting periods for aircraft will also reduce energy consumption and emissions
- Establishment of forums with tenants, airport users and wide stakeholders to jointly minimise environmental impacts
- Consideration of both direct and indirect impacts e.g. ground transport to and from the airport
- Measurement of impact on all environmental aspects, and participation in research to identify innovative approaches to environmental improvements
- Clear communication with stakeholders and the public on environmental impact and mitigation processes, and available complaint mechanisms

Sources of information:
- Airports Going Green: [www.airportsgoinggreen.org/](http://www.airportsgoinggreen.org/)
12.8 Integration with the transport network at the airport and in the vicinity, including public transport, private vehicle access, freight transport, and fuel pipelines

Good practice for multi-modal integration includes the following:

- Design of the airport as a multi-modal transport facility, including flow between rail, bus, personal vehicle, bicycle and pedestrian access as appropriate
- Supporting measures to reduce traffic congestion and incentivising use of shared/public transport e.g. attractive public transport pricing, car pooling/commuter rebate programmes for staff and tenants, High-occupancy vehicle (HOV) priority lanes, remote check-in (including luggage) and ride facilities, airport pick-up waiting areas to reduce terminal circling
- Provision for fuel pipelines
- Consultation forums with transport planning and operation stakeholders and users

Sources of information:
- Department of Transport, including National Transport Master Plan (NATMAP) for further detail on multi-modal transport planning and integration

12.9 Selecting the appropriate management, operation and funding model

In particular for publicly-owned airports, selection of the best management model can be key to professional management, maintaining safety compliance, attracting activity, generating revenue and optimising costs.

At present, municipal airports are mostly dealt with in-house by a non-specialist official with other responsibilities. However, other models include outsourcing of all or part of the airport to aeroclubs or airport operators.

In the case of municipally-owned airports, Council has the responsibility to decide on the appropriate management approach. In terms of S78 of the Municipal Systems Act, a clear process is set out to decide how to deliver a service, and to determine whether contracting the service out is net beneficial. This process involves a detailed feasibility and business case.

Management model options include:
- Contracting in airport expertise to manage the airport (this option may be constrained by available budget)
- Collaborating with other airports to contract/bring on expertise
- Establishing a municipal entity to manage a municipal owned airport through Section 84 of the Municipal Finance and Management Act.
- Secondment of private sector expertise
- Allocation of some maintenance responsibilities to significant tenants
- MOUs for operation and maintenance with primary airport users e.g. airlines or charter operations
- Transfer through a tender/concession process to people interested in running it e.g. flying clubs, flying schools

12.10 Optimising of both aeronautical and non-aeronautical revenues, including integration of the wider precinct

The Airports Council International (ACI) 2013 report on Airport Economics\textsuperscript{53}, based on international research across 680 airports, provides a good sense of typical ratios within aeronautical and non-aeronautical revenues, as shown in the graphs below.

Figure 15: Aeronautical revenues

![Aeronautical revenues graph]

Figure 16: Non-aeronautical revenues

![Non-aeronautical revenues graph]

This report also provides a breakdown by region for non-aeronautical revenues, highlighting some differences in the proportions in Africa (a strong emphasis on retail concessions), which might indicate areas that could change in future.

Table 11: Break-down of non-aeronautical revenues by region

<table>
<thead>
<tr>
<th>Region</th>
<th>% Retail concessions</th>
<th>% Food and beverage</th>
<th>% Car parking</th>
<th>% Rental car concession</th>
<th>% Property and real estate income or rent</th>
<th>% Advertising</th>
<th>% Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>42.9%</td>
<td>2.2%</td>
<td>14.6%</td>
<td>4.5%</td>
<td>20.9%</td>
<td>7.4%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>44.5%</td>
<td>3.9%</td>
<td>10.6%</td>
<td>1.8%</td>
<td>23.1%</td>
<td>4.9%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Europe</td>
<td>34.2%</td>
<td>3.9%</td>
<td>14.4%</td>
<td>3.3%</td>
<td>22.5%</td>
<td>2.6%</td>
<td>19.0%</td>
</tr>
<tr>
<td>Latin America-Caribbean</td>
<td>28.9%</td>
<td>6.7%</td>
<td>7.9%</td>
<td>3.1%</td>
<td>19.2%</td>
<td>4.9%</td>
<td>29.4%</td>
</tr>
<tr>
<td>North America</td>
<td>61.2%</td>
<td>3.8%</td>
<td>6.4%</td>
<td>0.8%</td>
<td>9.8%</td>
<td>1.5%</td>
<td>16.5%</td>
</tr>
<tr>
<td>Middle East</td>
<td>7.7%</td>
<td>6.7%</td>
<td>39.1%</td>
<td>16.8%</td>
<td>15.1%</td>
<td>5.8%</td>
<td>8.8%</td>
</tr>
<tr>
<td>World</td>
<td>28.9%</td>
<td>4.8%</td>
<td>20.2%</td>
<td>6.8%</td>
<td>20.1%</td>
<td>4.1%</td>
<td>15.1%</td>
</tr>
</tbody>
</table>

Good practice in terms of optimising airport revenues includes:

- Diversification of revenue streams, including through: ⁵⁴
  - Planning within a wider airport precinct, including ancillary land uses such as agriculture, hospitality, offices, temporary use and special events, development of airport cities and aerotropolises, renewable energy generation
  - Taking note of trends around airport development that are widening the purpose of airports beyond travel, retail and basic food service to include recreation, entertainment, lifestyle, relaxation, meetings (e.g. event and meeting spaces), ICT-intensive services such as training, media and film, museums, unique restaurants, spas, pet care, exercise areas, self-storage and precious metal/ high security storage
- Effective marketing to direct and indirect users, including in partnership with tenants and service delivery partners
- Balancing “user pays” and market-related charges where possible in order to be competitive
- Tracking of revenue by concessionaires and tenants
- Measurement of key revenue and cost metrics e.g. Total Revenue per Passenger / Work Load Unit; Aeronautical Revenue per Passenger / Work Load Unit; Non-Aeronautical Revenue per Passenger; Total Cost per Passenger / Work Load Unit

The approach needs to be customised to the size of the airport and the surrounding economic context e.g. large vs. secondary airport or city, urban vs. rural location.

Sources of information:

12.11 Minimising ongoing facilities management and maintenance costs

Good practice in this area includes:

- Life cycle costing during airport design and upgrading
- Including input by expert airport facility managers into the initial design to ensure it takes into account efficiency of ongoing operations and maintenance
- Consideration of technology trends in design and materials selection to minimise ongoing costs e.g. self-repairing materials

Sources of information:
- South African Facilities Management Association: www.safma.co.za/
- Airport Facilities Council: airp.ifma.org

12.12 Integrating requirements from financiers

Good practice for integration of requirements from potential financiers includes:

- Development of accurate, realistic and justifiable traffic forecasts (passenger, freight, ATMs) and forecasts for related property activity as these are the primary drivers of revenue
- Preparation of detailed financial analysis (often requiring the involvement of specialists), including full cash flow forecasts, NPV and IRR
- The inclusion of a full assessment of broader socio-economic benefits and costs to determine overall economic impact, in particular for funding by Development Finance Institutions (DFIs)
- Assessment of risk profiles and measures to mitigate risk
- Phasing of investments to take into account repayment requirements and returns

Sources of information:
- National Treasury budgeting guidelines for infrastructure and capital projects: www.treasury.gov.za
13 Implementation plan in relation to airport network planning

The following initiatives are proposed for the next 5 years to give effect to the airport network planning guiding principles of the NADP:

1. Integration of airport network planning into transport and spatial planning coordination structures

2. Formalisation of selection processes for international, “regional-international” and national airports, and pre-approval process for green-field airports

3. Mechanism to reserve land for key long-term airport requirements

4. Development of a preferred option to provide for non-scheduled, general air service, and non-commercial aviation within the national airport network

5. Development of a knowledge management system and DOT capacity to inform airport network planning

Details of each of the above initiatives are as follows:

<table>
<thead>
<tr>
<th>13.1 Integration of airport network planning into transport and spatial planning coordination structures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overview of initiative:</strong></td>
</tr>
</tbody>
</table>
| Provide for mechanisms to integrate airport network planning into transport and spatial planning coordination structures, including the development of an Airport Development Coordinating Committee, within the likely context of the proposed Multi-modal Transport Planning and Co-ordination Act and mechanisms to elevate major airport developments affecting two or more Provinces to the National Transport Forum and:

  - Planning of green-field airports that are intended to be national or international airports; and expansion of current international and national airports impacting on more than one Province to be coordinated through the National Transport Forum (NTF).

  - Airport Development Coordinating Committee to include representation from the three spheres of government, representative airport associations, representative airline associations, representative cargo associations, tourism associations and relevant airfreight sector (import and export) associations |
| **Outcomes:** |
| - National Transport Forum considering significant airport developments affecting two or more Provinces, as applicable

- National Airport Development Coordinating Committee established

- Provincial transport and planning coordination structures to include airports |
| **Lead entity and other participants:** |
| **Lead:** DOT

**Other participants:** Provincial and Local transport and planning departments (multi-modal transport integration)

National, provincial and local departments/units responsible for economic development and tourism (input on demand and economic contribution)

Representative airport associations, ACSA, ATNS, SACAA, representative airline associations, representative cargo associations, tourism associations and relevant airfreight sector (import and export) associations |
### 13.2 Formalisation of selection processes for international, “regional-international” and national airports, and pre-approval process for green-field airports

**Overview of initiative:** Development of legislation or formalised procedures addressing applications for international and “regional-international” airports (ports of entry) for Cabinet’s consideration. Formalising the concept of “national airports” and pre-approval of applications for the development of major green-field airports in coordination with relevant stakeholders:
- International and “regional-international” airports through the Airport Coordinating Committee.
- National airports through the Civil Aviation Act, 2009 and the National Aviation Security Programme (NASP)
- Green-field airports through a replacement of the “license of intent” process that can take into account safety, security, socio-economic contribution, local and municipal approval in terms of spatial, land use and economic contribution.

**Outcomes:** Finalised legislation or procedures in effect

**Lead entity and other participants:**
- **Lead:** DOT
- **Other participants:** SACAA, Airport Coordinating Committee, Border Control Operational Coordinating Committee (BCOCC)/Inter-Agency Clearing Forum (IACF)/Border Management Agency (BMA), Representative airport associations, representative airline associations, representative cargo associations, tourism associations and relevant airfreight sector (import and export) associations

### 13.3 Mechanism to reserve land for key long-term airport requirements

**Overview of initiative:** Creation of an intergovernmental mechanism to reserve land for long-term airport requirements in major cities

**Outcomes:** Mechanism agreed and sufficient land reserved in priority areas

**Lead entity and other participants:**
- **Lead:** DOT and COGTA
- **Other participants:** ACSA, ATNS, SACAA, representative airport associations, National Planning Commission, Deeds Office, relevant municipalities
### 13.4 Development of a preferred option to provide for non-scheduled air services, general air services, flying training, adventure aviation and non-commercial aviation within the national airport network

#### Overview of initiative:
- Assessment of workable solutions to providing sufficient airport facilities for non-scheduled air services, general air services, flying training, adventure aviation and non-commercial aviation, in particular in areas experiencing congested airspace, e.g.:
  - Encouraging non-commercial activity outside of peak periods at existing airports
  - Development of second runways at existing busy airports
  - Upgrading/development of other airports outside of the congested airspace
- Determination of possible funding mechanisms for development or upgrading of airports for this purpose (given that direct “user pays” is not likely to be viable in the case of non-commercial aviation)
- Agreement with stakeholders on preferred option

#### Outcomes:
- Preferred option and associated funding mechanism(s) agreed

#### Lead entity and other participants:
- **Lead:** DOT and National Treasury
- **Other participants:** Aviation industry associations, ACSA, provincial and municipal airport operators, Provincial Treasuries, Funding Institutions (e.g. DBSA)

---

### 13.6 Development of a knowledge management system and DOT capacity to inform airport network planning:

#### Overview of initiative:
Building systems (including Excel and GIS and data gathering/interface systems) that address gaps in available information on the airport network, including:
- Airport attributes (aeronautical and non-aeronautical infrastructure facilities, ownership, contact details, license status etc.)
- Volumes of passenger, freight, ATMs and non-aeronautical activity, and associated demand forecasting model
- Ultimate airport capacity (runway, passenger handling, baggage handling, security, cargo handling, airspace)
- Planning activity level thresholds and triggers/"red flag" notifications; and underlying demand (disaggregate population, economic and income)
- Multi-modal transport linkages
- Noise, emission and energy consumption levels (for relevant airports as determined by NCAP/other directives)
- Applications to DFIs for airport infrastructure funding
- Ongoing data gathering and research on latest airport network planning trends and good practice, technology trends, useful publications, toolkits and guides, etc.
- Socio-economic impact of airports and associated model to estimate socio-economic impact

Ensuring DOT has sufficient technical human resources to support airport network planning, including data sourcing and research, data management, stakeholder consultation.

#### Outcomes:
- System in place and fully populated with accurate and current data
- DOT human capacity in place
- System used to inform all network planning decisions of national importance
14 Proposed initiatives for the next five years in relation to individual airport planning within its surroundings

The following initiatives are proposed to give effect to the guiding principles of the NADP:

1. Development of airport planning technical capacity at a national, provincial and local government level that can support individual airport planning e.g. infrastructure planning, aviation trends, translation of demand forecasts and airline strategy into airport planning requirements, practical experience with airport facilities operation and maintenance, airport master planning, design (focus on upgrading), technical services, airspace procedure design, financial modelling, socio-economic cost-benefit analysis, regulatory compliance requirement, land use and spatial planning

2. Development of a detailed guide to support airport development and master planning within their surroundings (including both compliance and good practice aspects), providing checklists and integrated planning tools, minimum requirements for an Airport Master Plan, drawing on local expertise and similar international guides and toolkits customising them to the South African context

3. Exploration of potential mechanisms to involve the private sector in airport planning and design, including concessions models, long-term leases with associated responsibilities for upgrading infrastructure, secondments, technical input from specialist infrastructure private financiers

4. Joint identification with relevant entities of the most viable approach to securing funding to support airside safety and security compliance for airports

5. Collaboration to create networking and information sharing platforms for airport owners, designers and planners, including both private and public airports
APPENDIX 1: ACRONYMS AND GLOSSARY

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA-SA</td>
<td>Airport and Aerodrome Association of South Africa</td>
</tr>
<tr>
<td>AASA</td>
<td>Airlines Association of Southern Africa</td>
</tr>
<tr>
<td>ACAP</td>
<td>Airports Capital Assistance Program</td>
</tr>
<tr>
<td>ACI</td>
<td>Airports Council International</td>
</tr>
<tr>
<td>ACN</td>
<td>Aircraft Classification Number</td>
</tr>
<tr>
<td>ACSA</td>
<td>Airports Company South Africa</td>
</tr>
<tr>
<td>AENA</td>
<td>Aeropuertos Españoles y Navegación Aérea</td>
</tr>
<tr>
<td>AIP</td>
<td>Airports Improvement Program</td>
</tr>
<tr>
<td>AMO</td>
<td>Aircraft Maintenance Organisation</td>
</tr>
<tr>
<td>ANAC</td>
<td>Agência Nacional da Aviação Civil</td>
</tr>
<tr>
<td>ARFF</td>
<td>Airport Rescue and Fire Fighting</td>
</tr>
<tr>
<td>ASDA</td>
<td>Accelerated Stopping Distance Available</td>
</tr>
<tr>
<td>ASLC</td>
<td>Air Services Licensing Council</td>
</tr>
<tr>
<td>ASP</td>
<td>Airport Security Plan</td>
</tr>
<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
</tr>
<tr>
<td>ATFM</td>
<td>Air Traffic Flow Management</td>
</tr>
<tr>
<td>ATM</td>
<td>Air Traffic Movement</td>
</tr>
<tr>
<td>ATNS</td>
<td>Air Traffic and Navigation Service</td>
</tr>
<tr>
<td>ATZ</td>
<td>Air Traffic Zone</td>
</tr>
<tr>
<td>BAA</td>
<td>British Airports Authority (now called Heathrow Airport Holdings)</td>
</tr>
<tr>
<td>BASA</td>
<td>Bilateral Air Services Agreement</td>
</tr>
<tr>
<td>BCOC</td>
<td>Border Control Operational Coordinating Committee</td>
</tr>
<tr>
<td>BEE</td>
<td>Black Economic Empowerment</td>
</tr>
<tr>
<td>BMA</td>
<td>Border Management Agency</td>
</tr>
<tr>
<td>BOOT</td>
<td>Build, Own, Operate, and Transfer</td>
</tr>
<tr>
<td>BRICS</td>
<td>Brazil, Russia, India, China, South Africa</td>
</tr>
<tr>
<td>BRT</td>
<td>Bus Rapid Transit</td>
</tr>
<tr>
<td>CAASA</td>
<td>Commercial Aviation Association of Southern Africa</td>
</tr>
<tr>
<td>CAGR</td>
<td>Compound Annual Growth Rate</td>
</tr>
<tr>
<td>CARS</td>
<td>Civil Aviation Regulations</td>
</tr>
<tr>
<td>CATS</td>
<td>Civil Aviation Technical Standards</td>
</tr>
<tr>
<td>CBA</td>
<td>Cost Benefit Analysis</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>CBC</td>
<td>Capital Budgets Committee</td>
</tr>
<tr>
<td>COGTA</td>
<td>Department of Co-operative Governance and Traditional Affairs</td>
</tr>
<tr>
<td>CPI</td>
<td>Consumer Price Index</td>
</tr>
<tr>
<td>CPPP</td>
<td>Contractual Public-Private Partnership</td>
</tr>
<tr>
<td>CTIA</td>
<td>Cape Town International Airport</td>
</tr>
<tr>
<td>CTR</td>
<td>Control Zone</td>
</tr>
<tr>
<td>DBSA</td>
<td>Development Bank of Southern Africa</td>
</tr>
<tr>
<td>DFI</td>
<td>Development Finance Institution</td>
</tr>
<tr>
<td>DG</td>
<td>Director General</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transport</td>
</tr>
<tr>
<td>DPI</td>
<td>Department for Planning and Infrastructure</td>
</tr>
<tr>
<td>DRC</td>
<td>Democratic Republic of the Congo</td>
</tr>
<tr>
<td>DTI</td>
<td>Department of Trade and Industry</td>
</tr>
<tr>
<td>DVOR</td>
<td>Doppler Very High Frequency Omnidirectional Radio Range</td>
</tr>
<tr>
<td>EDZ</td>
<td>Enterprise Development Zone</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FAA</td>
<td>Federal Aviation Authority</td>
</tr>
<tr>
<td>FBO</td>
<td>Fixed-Base Operator</td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographical Information System</td>
</tr>
<tr>
<td>GVA</td>
<td>Geographic Value Add</td>
</tr>
<tr>
<td>HIAL</td>
<td>Highlands and Islands Airport Limited</td>
</tr>
<tr>
<td>HITRANS</td>
<td>Highlands and Islands Transport Partnership</td>
</tr>
<tr>
<td>HOV</td>
<td>High-occupancy Vehicle</td>
</tr>
<tr>
<td>IACF</td>
<td>Inter-Agency Clearing Forum</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IBSA</td>
<td>India, Brazil, South Africa</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organisation</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and communications technology</td>
</tr>
<tr>
<td>IDP</td>
<td>Integrated Development Plan</td>
</tr>
<tr>
<td>IDZ</td>
<td>Industrial Development Zone</td>
</tr>
<tr>
<td>IEM</td>
<td>Integrated Environmental Management</td>
</tr>
<tr>
<td>IFR</td>
<td>Instrument Flight Rules</td>
</tr>
<tr>
<td>IFRS</td>
<td>International Financial Reporting Standards</td>
</tr>
<tr>
<td>IIPSA</td>
<td>Infrastructure Investment Programme for South Africa</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>IRPTN</td>
<td>Integrated Rapid Public Transport Network</td>
</tr>
<tr>
<td>IPO</td>
<td>Initial Public Offering</td>
</tr>
<tr>
<td>IPP</td>
<td>Internal Rate of Return</td>
</tr>
<tr>
<td>IPPP</td>
<td>Institutional Public-Private Partnerships</td>
</tr>
<tr>
<td>ISRDPI</td>
<td>Integrated Sustainable Rural Development Strategy &amp; Programme</td>
</tr>
<tr>
<td>ITP</td>
<td>Integrated Transport Plan</td>
</tr>
<tr>
<td>KMIA</td>
<td>Kruger Mpumalanga International Airport</td>
</tr>
<tr>
<td>KSIA</td>
<td>King Shaka International Airport</td>
</tr>
<tr>
<td>KZN</td>
<td>Kwazulu-Natal</td>
</tr>
<tr>
<td>LAG</td>
<td>Liquid, Aerosol, and Gel</td>
</tr>
<tr>
<td>LCC</td>
<td>Low Cost Carrier</td>
</tr>
<tr>
<td>LCN</td>
<td>Load Classification Number</td>
</tr>
<tr>
<td>LED</td>
<td>Local Economic Development</td>
</tr>
<tr>
<td>LEED</td>
<td>Leadership in Energy &amp; Environmental Design</td>
</tr>
<tr>
<td>LIA</td>
<td>Lanseria International Airport</td>
</tr>
<tr>
<td>MFMA</td>
<td>Municipal Finance Management Act</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MSA</td>
<td>Municipal Systems Act</td>
</tr>
<tr>
<td>MTEF</td>
<td>Medium-Term Expenditure Framework</td>
</tr>
<tr>
<td>NATMAP</td>
<td>National Transport Master Plan</td>
</tr>
<tr>
<td>NASCOM</td>
<td>National Airspace Committee</td>
</tr>
<tr>
<td>NASP</td>
<td>National Aviation Security Programme</td>
</tr>
<tr>
<td>NCAP</td>
<td>National Civil Aviation Policy</td>
</tr>
<tr>
<td>NDP</td>
<td>National Development Plan</td>
</tr>
<tr>
<td>NPIAS</td>
<td>National Plan of Integrated Airports Systems</td>
</tr>
<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>nm</td>
<td>Nautical mile</td>
</tr>
<tr>
<td>NSDP</td>
<td>National Spatial Development Perspective</td>
</tr>
<tr>
<td>NTF</td>
<td>National Transport Forum</td>
</tr>
<tr>
<td>NTS</td>
<td>National Transport Strategy</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>ONDA</td>
<td>Moroccan Airports Authority</td>
</tr>
<tr>
<td>ORTIA</td>
<td>OR Tambo International Airport</td>
</tr>
<tr>
<td>PAL</td>
<td>Planning Activity Level</td>
</tr>
<tr>
<td>PAN</td>
<td>Plano Aeroviário Nacional</td>
</tr>
<tr>
<td>PBN</td>
<td>Performance Based Navigation</td>
</tr>
<tr>
<td>PCN</td>
<td>Pavement Classification Number</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>PFMA</td>
<td>Public Finance Management Act</td>
</tr>
<tr>
<td>PGDS</td>
<td>Provincial Growth and Development Strategy</td>
</tr>
<tr>
<td>PLZ</td>
<td>Port Elizabeth Airport</td>
</tr>
<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
</tr>
<tr>
<td>RA</td>
<td>Risk Assessment</td>
</tr>
<tr>
<td>RADS</td>
<td>Regional Airports Development Scheme</td>
</tr>
<tr>
<td>RASS</td>
<td>Remote Air Service Scheme</td>
</tr>
<tr>
<td>ROD</td>
<td>Record of Decision (for EIA)</td>
</tr>
<tr>
<td>SACAA</td>
<td>South African Civil Aviation Authority</td>
</tr>
<tr>
<td>SA</td>
<td>South Africa</td>
</tr>
<tr>
<td>SA</td>
<td>Sustainability Assessment</td>
</tr>
<tr>
<td>SAA</td>
<td>South African Airways</td>
</tr>
<tr>
<td>SAAF</td>
<td>South African Air Force</td>
</tr>
<tr>
<td>SACAA</td>
<td>South African Civil Aviation Authority</td>
</tr>
<tr>
<td>SACU</td>
<td>Southern African Customs Union</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern Africa Development Community</td>
</tr>
<tr>
<td>SALGA</td>
<td>South African Local Government Association</td>
</tr>
<tr>
<td>SANDF</td>
<td>South African National Defence Force</td>
</tr>
<tr>
<td>SAPS</td>
<td>South African Police Service</td>
</tr>
<tr>
<td>SARPS</td>
<td>Standards and Recommended Practices</td>
</tr>
<tr>
<td>SARS</td>
<td>South African Revenue Service</td>
</tr>
<tr>
<td>SDF</td>
<td>Spatial Development Framework</td>
</tr>
<tr>
<td>SEZ</td>
<td>Special Economic Zone</td>
</tr>
<tr>
<td>SKA</td>
<td>Square Kilometre Array</td>
</tr>
<tr>
<td>SLA</td>
<td>Service Level Agreement</td>
</tr>
<tr>
<td>SPLUMA</td>
<td>Spatial Planning and Land Use Management Act of 2013</td>
</tr>
<tr>
<td>STAC</td>
<td>Civil Aviation Technical Centre</td>
</tr>
<tr>
<td>TBVC</td>
<td>Transkei, Bophuthatswana, Venda, and Ciskei</td>
</tr>
<tr>
<td>TC</td>
<td>Transport Canada</td>
</tr>
<tr>
<td>TETA</td>
<td>Transport Education Training Authority</td>
</tr>
<tr>
<td>TMA</td>
<td>Terminal Area</td>
</tr>
<tr>
<td>TODA</td>
<td>Take-Off Distance Available</td>
</tr>
<tr>
<td>TSA</td>
<td>Transportation Security Administration</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UNODC</td>
<td>United Nations Office on Drugs and Crime</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
</tr>
<tr>
<td>VOIP</td>
<td>Voice-over IP</td>
</tr>
</tbody>
</table>
Glossary of terms

Table 12: Aerodrome reference code

<table>
<thead>
<tr>
<th>Code number</th>
<th>Aeroplane field length</th>
<th>Code letter</th>
<th>Wing span</th>
<th>Outer main gear wheel span</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Less than 800 m</td>
<td>A</td>
<td>Up to but not including 15 m up to but not including 24 m</td>
<td>Up to but not including 4.5 m</td>
</tr>
<tr>
<td>2</td>
<td>800 m up to but not including 1 200 m</td>
<td>B</td>
<td>15 m up to but not including 24 m</td>
<td>4.5 m up to but not including 6 m</td>
</tr>
<tr>
<td>3</td>
<td>1 200 m up to but not including 1 800 m</td>
<td>C</td>
<td>24 m up to but not including 36 m</td>
<td>6 m up to but not including 9 m</td>
</tr>
<tr>
<td>4</td>
<td>1 800 m and over</td>
<td>D</td>
<td>36 m up to but not including 52 m</td>
<td>9 m up to but not including 14 m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E</td>
<td>52 m up to but not including 65 m</td>
<td>9 m up to but not including 14 m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>65 m up to but not including 80 m</td>
<td>14 m up to but not including 16 m</td>
</tr>
</tbody>
</table>

“Airport” means any demarcated area on land or water or any building which is used or intended to be used, either wholly or in part, for the arrival or departure of an aircraft, and includes any building, installation or equipment within such area which is used or intended to be used in connection with the arrival, departure or movement of an aircraft.

“Airside” means the ‘movement’ area of the airport that is used for take-off and landing of aircraft and the surface movement of aircraft.

“Apron” means the area of an airport intended to accommodate aircraft for the purposes of loading or unloading of passengers, mail of cargo, fuelling, parking or maintenance. (Also known as the “ramp”.)

“Belly freight” means the freight capacity in the cargo holds of a passenger aircraft. Belly freight is limited by the need to accommodate passenger baggage and mail (both of which have priority over freight).

“Cargo” means merchandise carried on a ship, aircraft, train or road vehicle.

“Carrier” means the operator who contracts to provide the transport service which may be by sea, rail, road or air.

55 Outer main gear wheel span is the distance between the outside edges of the main gear wheel.
56 The term airport is used rather than the term “aerodrome” which is used in a generic sense and also applied in legislation and ICAO documentation. The two terms are considered synonymous for the purposes of the NADP.
“Commercial flight” means any aircraft activity for hire or reward or as a point of departure or arrival for any paying passenger or goods. Such payment does not necessarily have to be direct but could be included in tour- or accommodation packages, be called a “club fee”, or any similar arrangement.

“Concession” means a commercial agreement between a government and the private builder, owner or operator of an element of public infrastructure or a business located on public property. Government can fine tune concession terms to establish the protections and incentives necessary to attract investors and to guarantee performance by the concession holder.

“Hub and spoke” principle refers to the principle of grouping and distributing commodity flows and cargoes at a central transhipment point (or hub). A hub and spoke network is a centralised, integrated logistics system designed to keep costs down. Hub and spoke distribution centres receive products from many different origins, consolidate the products, and send them directly to destinations. It is a model used strongly by the airfreight express carriers (or integrators).

“Landside” means that part of the airport which every member of the public can visit, whether a passenger, a person dropping off a passenger or a person meeting an arriving passenger. Similarly, the landside area of the cargo terminal is the area where freight forwarders deliver and receive their outbound or inbound cargo shipments.

“Logistics” means the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption in accordance with customer requirements.

“National” within the context of this Plan refers to applicability countrywide. The National Airports Development Plan is thus applicable to all airports countrywide, and not limited to a specific sphere of government.

“National airport” means a domestic airport designated in terms of the Civil Aviation Act, 2009.

“Regional-domestic airport” means a licensed domestic airport outside of a metropolitan area that serves other cities and major towns.

“Regional-international airport” means a designated port of entry that serves SADC as well as domestic air traffic.
APPENDIX 2: IDENTIFIED AIRPORT CAPACITY CONSTRAINTS AND EXISTING DEVELOPMENT PLANS

The table below provides a summary of airport capacity constraints and current/planned developments identified through the National Transport Master Plan (NATMAP) and NADP research and consultations. Note that this is as at July 2015 and is not an exhaustive list.

Note: See Appendix 1 for explanation of ICAO Aerodrome Reference Codes (to clarify use of terms such as “4E aircraft”).

Table 13: Airport capacity constraints and current/planned developments

<table>
<thead>
<tr>
<th>Province</th>
<th>Airport</th>
<th>Capacity capabilities/constraints identified Current and planned developments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape</td>
<td>Bhisho Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recent upgrade has addressed many previously identified constraints</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New offices and accommodation for flight school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refurbishment of refuelling facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New hangar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refurbishment of runway lights</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refurbishment of control tower</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Potential to develop a cross runway and additional accommodation and offices</td>
</tr>
<tr>
<td></td>
<td>East London Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Load limitations on Code 4E aircraft due to strength and length constraint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Apron services are only provided for up to Code 4C aircraft</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Runway length inadequate to accommodate direct intercontinental flights</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Aircraft parking constraints (5 for parking bays are available for commercial aircraft , 4 for non-commercial)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Freight infrastructure considered inadequate: e.g. ambient and cold storage facilities</td>
</tr>
<tr>
<td></td>
<td>Mthatha Airport</td>
<td>Current developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New runway recently constructed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Terminal building in process of being re-built</td>
</tr>
<tr>
<td></td>
<td>Port Elizabeth International Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Load limitations on 4E aircraft due to strength and length constraint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Capacity of runway system of 40 movements/hr, and cannot handle Boeing 747-400 and the Airbus A340 or direct intercontinental flights.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Potential constraints in aircraft parking spaces on apron (aircraft size and number)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Terminal upgrade</td>
</tr>
<tr>
<td>Free State</td>
<td>Bram Fischer International Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Runway: up to Code 4E aircraft with load limitations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Taxiway system the runways can accommodate up to 60 movements per hour.</td>
</tr>
<tr>
<td>Province</td>
<td>Airport</td>
<td>Capacity capabilities/constraints identified</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Current and planned developments</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Aircraft parking constraints; only 6 parking bays available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Scope for expansion into surrounding land if demand requires it in the longer-term</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Runways can accommodate up to Code F aircraft.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Parking bay capacity constraints</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Airspace needs to be redesigned to achieve this number. This will be done as part of the Performance Based Navigation (PBN) implementation Project. This will also include the review of uncontrolled airspace below the Johannesburg Terminal Area (TMA).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Midfield terminals (including cargo terminals)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Additional fuel storage tanks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Rapid exit taxiways</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Remote apron stands</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Parking at super south</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New RWY07/25 operational with instrument approach capability on both runways</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Completed state of RWY is CAT 4E</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Apron extension operational</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Terminal building extension completed with the Pier development with further phases operational</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Some aircraft parking limitations: 15 C &amp; D-type and 34 B-type aircraft.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lack of public transport.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requirement for rail link.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requirement for a transport link (eg. Gautrain) with OR Tambo International Airport.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Doubling of terminal building</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multi storey parkade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New fire station</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New control tower</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Additional hangars and aircraft maintenance facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Unavailability of land required for expansion poses major constraint: current runway limited to handling Code B aircraft</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lack of airspace to implement instrument procedures. Airspace constrained by Waterkloof and O.R Tambo International.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Limited land available, which restricts the length by which the runway may be extended to 800m. (currently can handle Code A aircraft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air traffic movement capacity constrained due to sharing airspace with O.R Tambo International</td>
</tr>
<tr>
<td>Rand Airport</td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td>Wonderboom Airport</td>
<td></td>
<td>• Main runway currently limited to handling up to Code C</td>
</tr>
<tr>
<td>Province</td>
<td>Airport</td>
<td>Capacity capabilities/constraints identified</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>waZulu-Natal</td>
<td>King Shaka International Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ultimate passenger handling limit of 45 million passengers p.a. – based on KSIA Master Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pietermaritzburg Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Province</td>
<td>Airport</td>
<td>Capacity capabilities/constraints identified</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>------------------------------------------------</td>
</tr>
</tbody>
</table>
|          | Margate Airport | Capacity capabilities/constraints: | Runway length considered a constraint  
Runway capacity up to Code C aircraft  
Limited runway capacity limitation of 20 million passengers p.a. (considered sufficient for demand for next 50 years or much more)  
Capacity currently constrained by terminal building handling capacity of 200 passengers per hour or 1 million passengers p.a.  
No current scheduled flights. |
|          |          | Planned developments: | Upgrade of runway  
Runway lighting  
Alteration and renovation of apron and terminal building |
|          | Mkuze Airport | Planned developments: | Proposed airport terminal, extend to scheduled flights |
|          | Newcastle | Current capacity and constraints | Runway 1400 X 20  
Expansion of runway to 1650 x 30  
Proposals for export-oriented industrial and logistics precinct development and techno hub |
|          | Richards Bay Airport | Capacity capabilities/constraints: | Passenger terminal building constraints capacity (maximum 90 departing passengers/hour)  
Vehicle parking also considered |
|          | Ulundi Airport | Planned developments: | Runway repair and upgrade  
Navigation equipment  
Terminal building additions and alterations  
Apron upgrade  
New fire engines |
| Limpopo  | Polokwane International Airport | Capacity capabilities/constraints: | Runway capacity up to Code C aircraft  
New terminal building will address previous passengers handling constraints  
Limited public vehicle parking (100 bays, planned to expand to 640) is less than runway and passengers terminal capacity (may pose constraint in future if public transport is insufficient) |
|          |          | Planned developments: | Resealing of apron  
Cargo handling facilities (pre-feasibility study stage) |
|          | Eastgate Airport (co-use of military aerodrome - unlicensed) | Capacity capabilities/constraints: | Runway capacity up to Code C aircraft, approximately 11 m passengers p.a.  
Limited passenger terminal capacity (around 550,000 passengers p.a.) and apron capacity.  
SAAF limits the operational hours of the airport |
|          | Kruger Park Gateway Airport | Capacity capabilities/constraints: | Runway capacity up to Code B aircraft  
Apron parking limited to 2 aircraft |
<table>
<thead>
<tr>
<th>Province</th>
<th>Airport</th>
<th>Capacity capabilities/constraints identified Current and planned developments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mpumalanga</td>
<td>Kruger Mpumalanga International Airport</td>
<td>• Terminal building capacity limited to 100 passengers/hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Runway capacity can handle up to Code 4E aircraft</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Limited aircraft parking (total of 13 parking bays), especially when charter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aircraft have to be accommodated for a number of days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No taxiway, therefore the current airspace capacity at the airport is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>limited to 8 movements per hour.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• However, land provides scope for some expansions (e.g. parallel taxiway)</td>
</tr>
<tr>
<td>Northern Cape Province</td>
<td>Upington International Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Aircraft parking is the major limitation to capacity - only 5 apron</td>
</tr>
<tr>
<td></td>
<td></td>
<td>parking bays (with 3 runways, one of which is the longest runway in South</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Africa, runway capacity is not a constraint)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Taxiway system between runways is also a constraint to full operation of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>runway capacity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Airport fire and rescue capacity is adequate for current operations, this</td>
</tr>
<tr>
<td></td>
<td></td>
<td>may need to be upgraded to the suitable category should there be a need to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>handle wide bodied aircraft.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The airport is currently not in a position to remove disabled aircraft.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned developments:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Feasibility assessment to develop cargo handling facilities</td>
</tr>
<tr>
<td>Kimberley Airport</td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Runway capacity strength limits aircraft handling capacity to Code 4E with</td>
</tr>
<tr>
<td></td>
<td></td>
<td>load limitations</td>
</tr>
<tr>
<td>North West Province</td>
<td>Pilanesberg International Airport</td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The airport does not have a taxiway system, and as a result the airport</td>
</tr>
<tr>
<td></td>
<td></td>
<td>runway can handle up to 20 movements per hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• There is only 1 apron parking bay available for commercial aircraft and 21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>remote grass parking spaces.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Passenger handling, although estimated at 250 passengers/ hour for most</td>
</tr>
<tr>
<td></td>
<td></td>
<td>facilities, is limited by manual baggage handling and lack of trolleys.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Very little commercial justification for this airport.</td>
</tr>
<tr>
<td>Mafikeng Airport</td>
<td></td>
<td>Capacity capabilities/constraints:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Does not have a taxiway system therefore the airport runway can only handle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>up to 20 movements per hour, although significant runway capacity (up to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Code E aircraft with significant scope for further expansion)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Limited aircraft parking – 12 commercial aircraft, 10 non-commercial and/or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>small non-scheduled aircraft (the main constraint)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Passenger check-in capacity is less than most other passengers handling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Runway resurfacing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ILS and automated weather station</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current developments:</td>
</tr>
<tr>
<td>Province</td>
<td>Airport</td>
<td>Capacity capabilities/constraints identified</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Western Cape| Cape Town International Airport | - Runway resurfacing  
- ILS and automated weather station  
Planned developments:  
- Potential SEZ  
Capacity capabilities/constraints:  
- Ultimate passenger handling limit of 45 million passengers. p.a. – based on CTIA Master Plan (could be reached by 2045 based on current traffic forecast)  
- Ultimate movements capacity is 80 movements per hour with the addition of second parallel and independent runway (currently 30 ATMs per hour declared capacity)  
- Currently, apron and parking can be limiting on peak hours and slot management and demand shifting strategies may be needed.  
- Land access a constraint to ultimate demand – would require public transport (BRT and rail), still likely to be an N2 capacity constraint.  
Planned developments:  
- Terminal expansion  
- Runway relocation /re-alignment  
- Apron development |
|             | George Airport                 | Capacity capabilities/constraints:  
- Runway capacity up to Code E aircraft  
- ATM capacity declaration of 30 movements per hour, potential extendable to 40/hour.  
- Aircraft parking – currently only 6 aircraft parking bays on the apron |
APPENDIX 3: INTERNATIONAL EXPERIENCES AND TRENDS IMPACTING ON AIRPORT PLANNING AND DEVELOPMENT

The section below captures research that has informed the NADP in terms of both the international trends summarised in Part B and the international experiences that have informed the guiding principles captured in Part D. It is organised around key themes.

1. Airport network planning experiences

A high-level scan of overall approaches to national airport development planning was completed as part of the NADP research. The benchmarked countries all have, at the very least, a national airspace management, airport licensing and regulation system in place. However, they have different approaches to airport development planning, including different levels of centralisation and tools for airport planning, as summarised below:

Table 14: Airport network planning experiences by region
Latin America and the Caribbean

<table>
<thead>
<tr>
<th>Country</th>
<th>Key Institutions</th>
<th>Summary of approach to airport development planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>• Agência Nacional da Aviação Civil (ANAC) National Civil Aviation Agency</td>
<td>• Brazil is in the process of formulating its first National Airports Development Plan (Plano Aeroviário Nacional – PAN). The future National Airport Development Plan will establish the main “macro-needs” and “macro-guidelines” for the country’s airports.</td>
</tr>
<tr>
<td></td>
<td>• Government of Brazil</td>
<td>• Logistics Investment Program was launched in December 2012 that included a Regional Aviation Plan. The plan restructures the regional aviation network and includes 270 regional airports.</td>
</tr>
<tr>
<td></td>
<td>• INFRAERO</td>
<td>• Presently each of the 27 states in Brazil has a State Airports Development Plan (Plano Aeroviário Estadual), and each airport is required to have a Master Plan (Plano Director).</td>
</tr>
<tr>
<td></td>
<td>Airport operator which manages 63 airports, 80 air navigation support units, and 32 cargo terminals</td>
<td>• Development plans as part of the 2014 World Cup and 2016 Olympics to modernise 14 airports</td>
</tr>
<tr>
<td></td>
<td>• INFRAERO Serviços Newly created strategic partner of INFRAERO</td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>• AEROCIVIL Civil aeronautics authority of Colombia</td>
<td>• Colombia’s policy approach is to have 2 separate airport development strategies – one for its main international airport in the capital city of Bogotá (El Dorado International Airport), and another for the rest of the airports in the country.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Updates to El Dorado and additional plans to support development of second airport in Bogotá, El Dorado II Airport as part of 5 year National Development Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Each airport is also required to have a Master Development Plan.</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>• Department of Transport and Regional Services</td>
<td>• Australia does not have a national airports development plan. All of the main airports are leased to private owners and operators are required to have an airport master plan.</td>
</tr>
<tr>
<td>Country</td>
<td>Key Institutions</td>
<td>Summary of approach to airport development planning</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>China</td>
<td>• The General Administration of Civil Aviation of China</td>
<td>• Issues paper – Towards a National Aviation Statement was written in 2008 in order to initiate a discussion about a long-term aviation policy. The response was the National Aviation Policy White Paper, which addressed airport planning and development.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• China’s 12th Five Year Plan for the Development of China’s Civil Aviation Industry 2011 - 2015 is the main policy document outlining planned airport developments and support for remote airports. Provincial governments continue to play a significant role as owners and operators of airports in China. The 12th Plan commits more than $4.25 trillion to development.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A review of competition policy in the wider civil aviation sector is currently underway.</td>
</tr>
<tr>
<td>India</td>
<td>• Airports Authority of India</td>
<td>Combined, India’s National Policy Framework on Airport Infrastructure &amp; 2003 Civil Aviation Policy cover the classification of airports, guidelines for modernisation and upgrading of airport infrastructure, support for lifeline air services, the economic regulation of airports, and the approach to green-field airport developments.</td>
</tr>
<tr>
<td></td>
<td>• Ministry of Civil Aviation</td>
<td>• Ministry of Civil Aviation working on notifying a National Civil Aviation Policy</td>
</tr>
<tr>
<td>Singapore</td>
<td>• Ministry of Transport</td>
<td>• Singapore does not have a national airport development plan, but has a wider aviation policy focusing on the development of Singapore as an aviation hub in the region.</td>
</tr>
<tr>
<td>Africa and Middle East</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>• Kenya Ministry of Transport</td>
<td>• National Airports Systems Plan (NASP) completed and focused on capacity needs for 13 airports.</td>
</tr>
<tr>
<td></td>
<td>• Kenya Airports Authority</td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>• Ministry of Equipment &amp; Transport</td>
<td>• The Moroccan Airports Authority (ONDA) oversees development and operations of 15 airports.</td>
</tr>
<tr>
<td></td>
<td>• Moroccan Airports Authority</td>
<td>• The Strategic Plan 2008-2012 seeks to expand existing and build new airports  3rd Airport Project developed out of this plan and concern updates to Casablanca, Fez, Agadir, Marrakech, and Rabat airports</td>
</tr>
<tr>
<td>Senegal</td>
<td>• National Airports Authority of Senegal</td>
<td>• The government is in the process of privatising all publicly owned airports (both major and secondary) to improve competitiveness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New approach to infrastructure development includes PPPs for airport construction e.g. BOOT model for Leopold Sedar Senghor International Airport.</td>
</tr>
<tr>
<td>North America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>• Transport Canada</td>
<td>• The main airports policy and regulatory framework is the National Airports Policy (NAP) published in 1994. The plan reinforces Canada’s decentralised approach to airport development.</td>
</tr>
</tbody>
</table>
## Summary of approach to airport development planning

<table>
<thead>
<tr>
<th>Country</th>
<th>Key Institutions</th>
<th>Summary of approach to airport development planning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mexico</strong></td>
<td>• DGAC General Directorate of Civil Aeronautics</td>
<td>• Mexico’s National Program for Infrastructure Development 2014-2018 includes airport development planning and provides $279m for 20 airport infrastructure projects. However, this is not a national airport development plan as it covers wider infrastructure planning in the country.</td>
</tr>
</tbody>
</table>
| **United States** | • Federal Aviation Authority Federal Aviation Administration (agency of the US Department of Transport) | • The US has a comprehensive airports development plan known as the National Plan of Integrated Airports Systems (NPIAS) which is updated every two years.  
- The NPIAS:  
  - Identifies almost 3,400 significant airports (public and private), and their roles, which are eligible for AIP grants  
  - Provides information on conditions and performance of the Airport System in six fields: capacity, safety, environment, pavement condition, surface accessibility, and financial performance  
  - Specifies 5-year cost estimates for airport development (currently in the 2015-2019 version)  
- The FAA also administers the Airports Improvement Program (AIP) which provides grants to public agencies and, in some cases, to private owners and entities, for the planning and development of public-use airports that are included in the NPIAS. |                                                                                                                                                                                                                                                                                                                                 |
| **Europe** |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                 |
| **France** | • Civil Aviation Technical Centre Le Service Technique de l'Aviation Civile (STAC) | • Airport development planning is the responsibility of the Civil Aviation Technical Centre (STAC). This covers all areas, including airport pavement development, capacity, the environment, equipment, and buildings.                                                                 |                                                                                                                                                                                                                                                                                                                                 |
| **Germany** | • Federal Ministry of Transport, Building and Housing: Directorate General of Civil Aviation & Air Navigation Services  
  • Civil Aviation Authority | • Germany has a decentralised approach to national airport development planning, with each federal state responsible for its own airport network.                                                                 |                                                                                                                                                                                                                                                                                                                                 |
| **Spain**  | • Aeropuertos Españoles y Navegación Aérea (AENA)                                  | • There is no National Airports Development Plan in Spain, but every airport is required to have a master plan. AENA, Spain’s Airports and Air Navigation Company, operates 47 airports and 2 helipads and conducts this master planning process centrally  |                                                                                                                                                                                                                                                                                                                                 |
| **Scotland** | • Department of Transport                                                         | • Scotland has a largely decentralised approach to airport development planning with independent airport owners and operators responsible for their own development planning.                                                                 |                                                                                                                                                                                                                                                                                                                                 |
The limited number of comprehensive national development plans may be attributable to the process which is underway in many countries of passing airport ownership and management from national governments to sub-national governments (cities, states or provinces) or the private sector. As part of this process, national regulations often delegate the preparation of airports master plans to the private airport owners, local airport authorities or the federal states or provinces.

**Green-field airport guidelines: India**

India has a policy for green-field airports, which outlines development and financing of green-field airports. Some of the guidelines include:
- PPPs are the preferred funding model for infrastructure provision and green-field development
- Green-field airports may have 100% private funding
- Green-field airports may be constructed in response to demand and evidence that existing airports cannot manage the demand – a pre-feasibility report is required
- Green-field airports will not be permitted within 150 aerial km of an existing airport
- Cap on FDI for existing airports is 49%
- Green-field developments may be assisted by government at both capital and operational levels in a number of ways if they are considered to have a sufficient socio-economic contribution, including leasing agreements that include deferred payments or token fees, provision of navigation and safety equipment at cost, and levying of certain fees

### 2. Aircraft types

Passenger aircraft types are expected to be dominated by single aisle, higher seats counts and often wider wingspan. The aircraft fleet of 2033 will be dominated by single aisle passenger aircraft, or 29,500 of the 42,180 aircraft. Africa’s fleet of 2033 will look similar; 1,000 of its total 1,420 aircraft are expected to be single aisle passenger aircraft. Many airlines are now using airplanes with enhanced seat technology that takes up less space, allowing more seats to fit in the same space. Single-aisle planes have also increased their seat count about 20% over the last 20 years, and that trend is expected to continue.

---

57 Source: Current Market Outlook 2014, Boeing, p. 2
58 Source: Current Market Outlook 2014, Boeing, p. 2
59 Source: Current Market Outlook 2014, Boeing, p. 9
In terms of freight airplanes, large wide-body aircraft (>80 tonnes) will comprise the majority of new freight aircraft deliveries by 2033\(^{60}\).

To accommodate larger aircraft designed by Airbus and Boeing, airports are upgrading their facilities to accommodate ICAO Code E spatial requirements\(^{61}\). Also, due to the various types of aircraft used in any one airport, aircraft parking, turning areas and passenger handling facilities need to accommodate multiple new aircraft types with different widths, wingspans, heights, lengths, and seat numbers. Strategies that are being adopted include multiple aerobridges at each gate and larger airfields to accommodate larger aircraft, such as the A380 and Boeing 787. Some airports, such as Delhi International Airport, have already designed flexible gates that can accommodate one large aircraft or two smaller aircraft\(^{62}\). Cargo terminal peak capacities will need to take into account these larger aircraft sizes.

3. Security technologies

Increases in security measures at airports combined with new, bulky technology requires changes in the layout of passenger and cargo terminals and increased space requirements. For example, on the passenger side, full-body scanners, LAGs, biometric passenger screening, detection equipment, and psycho-physiological screening, and priority lanes require additional space within the terminal\(^{63}\).

For international airports, the consolidation of international and domestic check-in desks will ultimately affect terminal layout, including flow between check-in, retail, security, customs, immigration and port health. The “call to gate” methodology holds all passengers in one centralised area, thereby decreasing the amount of required restrooms, seating areas, duplicate retail/food shops. Concourses and piers within the “call to gate” methodology serve only for passengers to access gates when they are ready to board the plane\(^{64}\).

4. Environmental considerations

Environmental considerations are increasingly being mainstreamed into airport planning and design. Terminal design increasingly includes natural light, efficient lighting, and passive heating/cooling. Airports are also seeking carbon-neutral status, and designing facilities accordingly. For example, in the United States, airports seek LEED-certification (U.S. Green Building Council for Leadership in Energy & Environmental Design) and in doing so, they are using recycled/recyclable materials, adding more windows to help with lighting and heating, utilising white/light coloured materials for roofing to help with heating/cooling, and monitoring carbon monoxide to ensure high air quality and ventilation\(^{65}\).

The Hyderabad International Airport in India has taken extensive measures to make the airport environmentally friendly, and was even the first Asian airport to achieve a “silver rating” by LEED for its passenger terminal\(^{66}\). Some of the highlights include:

\(^{60}\) Source: Current Market Outlook 2014, Boeing, p. 31
\(^{66}\) Source: “Sustainability Initiatives – A case study of RGI airport, Hyderabad.” 12/03/2014.
- Developed a green belt around the airport where over 1000 hectares of land have been left undisturbed\(^\text{67}\)
- Installed LED lights, implemented an automated energy system for the building, and optimised air conditioning units based on weather leading to annual electricity savings of 3.397 million kWh\(^\text{68}\)
- Conducts regular greenhouse gas emission inventories and has reduced its scope 1 and 2 emissions
- Treats wastewater and reuses it
- Harvests rainwater
- Recycling of food waste, containers, oil, batteries, etc.
- Promotion of environmental awareness

In Bangkok, Thailand, the design of the Suvarnabhumi Airport took into account environmental considerations, such as how to maximise natural light, decrease energy usage, and increase savings. The design uses clear or low e-coated glass with a translucent triple layer membrane, which helps to manage between inside and outside temperatures, especially heat, and also minimises noise from the aircraft inside the airport. The glass also allows for natural sunlight into the airport, decreasing the need for artificial light during the daytime\(^\text{69}\).

5. Multi-modal system integration

Check-in and baggage handling is becoming increasingly streamlined, customised, and multi-modal. Airports therefore have to design their check-in and baggage handling and associated IT systems to be inter-operable with rail and bus systems. In the future, it is expected that bags will be dropped off using automated machines, rather than at a counter with a conveyer belt, and there will also be a drive through bag drop service within the airport parking lot. Systems may also be required to allow for integration of private concierge access from ground transportation/parking to aircraft. In smaller airports, a plaza is often being developed that enables diagonal movement from terminal to ground transport; some airports like Tauranga, Cairns, King Shaka, and Adelaide have already integrated this concept\(^\text{70}\). Taxis, private cars, and buses can then use “horseshoe cul de sacs” that come off of the main road and also help avoid dangerous situations between pedestrians and vehicles\(^\text{71}\). Other developments may include parking lot systems that guide cars, taxi passenger waiting lounges with pre-payment options, and car servicing within the parking lots\(^\text{72}\). This trend may impact on both airport and wider precinct design, including the integration with public transport.

6. User experience design

User experience design requires increased involvement of users in the early stages of the planning and design process, potentially including co-design. In the case of single-user facilities, there would be close collaboration around design; in the case of multi-use facilities particular methodologies around shared-use design are being applied to take into account


\(^{68}\) Source: "Sustainability Initiatives – A case study of RGI airport, Hyderabad." 12/03/2014.


combined peaks and minimising conflicting uses that may create overall inefficiencies in the system. At hub airports there is a focus on creating a wide experience for transfer passengers; in addition to retail and food service, this is expected to include entertainment and relaxation. Increasingly sophisticated passenger flow simulations are allowing more efficient and pleasant layouts and flows to be developed. Additionally, there is more segmentation of consumer and service levels from extremely high end (e.g., six star service, priority boarding and security, valet, haute couture design shops) to very inexpensive, mirroring the varying customer levels on airlines (e.g., platinum, gold, silver, bronze). Retail, entertainment, and commercial facilities will grow and as security, boarding, and baggage systems become more efficient, passengers will have more time to spend accessing these services. Therefore, airports might become a place to “showcase” products that can be purchased there and delivered directly to their homes. These trends may also have implications for passenger terminal footprint and layout.\(^{73}\)

7. **Non-aeronautical revenue**

Airports continue to try to grow revenue and diversify revenue sources away from aeronautical sources.

Non-aeronautical revenue is of increasing importance to airports. In 2012, 43.7%\(^{74}\) of total airport income internationally came from non-aeronautical sources. In Africa, the proportion was a little lower at 32.1%\(^{75}\).

**Table 15: Global airport income and costs (2012-million USD)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Income</th>
<th>Aeronautical Income</th>
<th>*Non-Aeronautical Income</th>
<th>Total Cost (Operating + Capital Cost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>2,800</td>
<td>1,900</td>
<td>900</td>
<td>1,800</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>31,600</td>
<td>15,800</td>
<td>15,000</td>
<td>24,100</td>
</tr>
<tr>
<td>Europe</td>
<td>44,300</td>
<td>28,100</td>
<td>18,200</td>
<td>39,700</td>
</tr>
<tr>
<td>Latin America-Caribbean</td>
<td>6,500</td>
<td>4,200</td>
<td>2,300</td>
<td>4,500</td>
</tr>
<tr>
<td>North America</td>
<td>25,300</td>
<td>14,300</td>
<td>11,000</td>
<td>22,400</td>
</tr>
<tr>
<td>Middle East</td>
<td>6,500</td>
<td>3,500</td>
<td>3,000</td>
<td>6,200</td>
</tr>
<tr>
<td>World</td>
<td>117,000</td>
<td>65,800</td>
<td>51,200</td>
<td>98,700</td>
</tr>
</tbody>
</table>

*Non-Aeronautical Income includes Non-Operating Income of USD 5.1 billion worldwide

Non-aeronautical income mostly comes from retail sources (28.9%), car parking (20.2%) and property and real estate income/rent (20.1%); surprisingly, food and beverage only account for 4.8% of total non-aeronautical income\(^{76}\). In Africa, the proportions are similar with retail concessions accounting for 42.9% of non-aeronautical revenue followed by property and real estate income/rent (20.9%) and car parking (14.6%)\(^{77}\).

---


\(^{74}\) Based on a survey of 680 airports that represent ~70% passenger traffic


As it is expected that governments will continue to regulate most of the aeronautical revenue generated by airports, airport operators and owners are incentivised to continue exploring innovative ways of enhancing non-aeronautical revenue. In fact, non-aeronautical revenues can account for up to 70% of an airport’s revenues. In particular focusing on commercial revenues from retailing, advertisements, ground transport and property development (including golf courses, hotels, convention centres, malls, office space and entertainment centres) to generate profits. Food, beverage, and retail are ways for airports to differentiate themselves and also help with public perception. Many top airports are adding non-aeronautical revenues to their strategic plans and even their airport and terminal design plans; they are also employing retail revenue development and management systems, branding, and marketing.

Over the next 20 years, airports are expected to implement some of the following initiatives to grow non-aeronautical revenue:

- Integrating shopping centres (including service stations, convenience stores and dry cleaners), industrial parks and golf courses into airports and airport precincts
- Automated retail units (kiosks) with merchandise, food, and beverages that can fit into small spaces, maximising every available opportunity for retail space
- Promotion of retail through airport apps
- Selling excess power back to utilities through co-generation plants
- Operating slot machines
- Selling terminal naming rights and sponsorships to companies
- Offering express spa services
- Providing pet services
- Innovative advertising initiatives (e.g. advertising on air traffic control towers and unpaved airport land)

---

78 Source: Herrmann, Niko and Bob Hazel. The future of airports: Part 1 – five trends that should be on every airport's radar. Oliver Wyman (March 2012).
79 Source: Herrmann, Niko and Bob Hazel. The future of airports: Part 1 – five trends that should be on every airport's radar. Oliver Wyman (March 2012).
8. Aerotropolises and airport cities

With airports focusing more on non-aeronautical revenue sources, airport owners and developers are increasingly working in partnership with other landowners in the vicinity and with local urban planning officials. These trends will lead to the development of aerotropolises and airport cities.

The concept of an Airport City first appeared in the 1970s in the United States of America, referring to the development of industrial and business parks in the vicinity of airports. Nowadays, it has been used to describe the growth of aeronautical and non-aeronautical land developments occurring at modern airports worldwide.

Airport Cities have evolved with different spatial forms predicated on available land and ground transport infrastructure, yet virtually all emerged in response to four basic drivers:

i. Airports need to create new non-aeronautical revenue sources, both to compete and to better serve their traditional aviation functions.

ii. The commercial sector's pursuit of affordable, accessible land.

iii. Increased gateway passengers and cargo traffic generated by airports.

iv. Airports serving as a catalyst and magnet for landside business development.

The most common airside and landside airport city commercial activities include:

- Duty free shops
- Restaurant and specialty retail
- Cultural and entertainment attractions
- Hotels and accommodation
- Banks and currency exchanges
- Business office complexes
- Convention and exhibition centres
- Leisure-recreation and fitness
- Logistics and distribution
- Perishables and cold storage
- Catering and other food services
- Free trade zones and customs free zones
- Golf course
- Factory outlet stores
- Personal and family services such as health and child day care

The Airport City operating model is quite distinct from the more traditional civil engineering and aeronautical systems airport operating model guided by public sector principles. The commercial development role requires different strategies and operational skills sets driven by private sector principles fusing innovative management, finance, marketing and real estate. In the Airport City model, airports must do business the way businesses do business. This requires a major paradigm shift in airport master planning. These plans must be at least as focused on commercial layout and efficiencies as on aeronautical layout and efficiencies. Ideally, the commercial components and aeronautical components would be synergised. Consistent with their growing non-aeronautical roles and functions, airports are altering their operational management. Numerous airports (both public and private sector operated) have established commercial and/or real estate divisions to address development beyond airport boundaries. They include among others Aéroports de Paris, UK airport operators, BAA, Dallas Fort Worth International Airport, Frankfurt Airport, Amsterdam, Schiphol, Singapore Changi and Spain's Ferrivial Group.
An Aerotropolis or the Airport Economic Region, on the other hand, describes the sum of all airport-related developments that appear around an airport. It is an area that centres its economy on the airport, which in turn serves as the community’s economic engine. The airport itself serves as a regional-wide multi-modal transportation and commercial nexus. Strings and clusters of airport-linked business park, information and communications technology complexes, retail outlets, hotels and entertainment centres, industrial parks, logistics park, wholesales merchandise marts and residential developments are forming along airport arteries up to 32 km outwards and economic impact has been measured up to 96 km from major airports.

Reflecting the new economy’s demands for connectivity, speed and agility, the aerotropolis is optimised by corridor and cluster development, wide lane and fast lane movements. In other words, form follows function: Airport expressway links complemented by airport express trains bring cars, taxis, buses, trucks and rail together with air infrastructure at the multi-modal commercial core (the airport city). Aviation-linked business clusters and associated residential developments radiate outwards from the airports city, forming the greater aerotropolis.

Although much aerotropolis development has been spontaneous and haphazard, often spawning congestion and environmental problems, in the future it can be markedly improved through strategic infrastructure and urban planning.

Noise and emission-sensitive commercial and residential developments should be sited outside high-intensity flight paths. Cluster, rather than strip development should be encouraged along airport transportation corridors with sufficient green space between clusters. Place-making and way-finding should be enhanced by thematic architectural features and iconic structures.

There are already several developments around the world, where airports are moving towards becoming airport cities and aerotropolises and other airports have already completed such developments. These airports include: Athens International Airport, Beijing Capital International Airport, Dallas/Fort Worth International Airport, Dayton International Airport, Denver International Airport, Dublin Airport, Frankfurt Airport, Helsinki Airport, Incheon International Airport, Kuala Lumpur International Airport, Memphis International Airport, Pittsburgh International Airport, Taiwan Taoyuan International Airport and Tancredo Neves International Airport.
9. Low Cost Terminals at secondary airports

Currently there are more than 150 low cost carriers (LCCs) in the world, representing 21% of the total global market in terms of seats offered. Over the next 20 years, LCCs are forecast to require a total of 14,272, or 40%, of the world’s new single-aisle aircraft.

Figure 17: ASKs by type of carrier

![Diagram showing ASKs by type of carrier for 2003, 2013, and 2033.](image)

Source: Boeing Current Market Forecast 2014

In 2013, LCCs captured 26% of the world’s total market share measured by annual seats. Whilst in the past LCCs used a single type of airplane, and kept to short-haul routes, many LCCs are now also using different types of airplanes and even expanding to medium and long-haul markets. AirAsia X, Scoot (affiliated with Singapore Airlines), Norwegian Air Shuttle, and Wow Air have all begun to offer medium-long haul routes within Asia and some between Europe and Asia and Europe and the United States. Therefore, secondary airports in destination markets may need to align the type of facilities offered to LCC requirements e.g. infrastructure and systems that allow for high-speed turnaround and different passenger processing facilities.

Some international airports are already accounting for these changes and restructuring their LCC terminals. For example, at Kuala Lumpur International Airport they have recently renovated the KLIA2 terminal, which was built in 2006 as a multi-purpose/hybrid terminal that is efficient and cost-effective for LCCs. The new updates took into account specialised processing facilities developed by AirAsia (AirAsia X is the long-haul LCC of AirAsia) for LCC travellers with multiple tickets that might need to re-check in and collect bags. In the LCC market, many passengers require transfers, so the Malaysia Airports Berhad designed the terminal with the idea that 50% of the passengers would be transfer passengers.

---

10. Airport ownership, operation and funding options

Historical background

With the exception of the United States, most airports around the world were historically owned and managed by federal governments. There was no economic assessment of airport performance, and public ownership was assumed to yield prices close to costs, provide the range of services that users were willing to pay for, and keep costs to a minimum.

However, this ownership and operations policy began to change in the mid-1980s, as governments around the world faced enormous pressures from taxpayers, (or the International Monetary Fund in the case of developing countries) to control (i.e., reduce) government deficits. Considered a mature industry and one which served a more affluent customer base, airports fell to the bottom of their priority list. Since then, governments around the world have made profound changes in how their airport facilities are owned and managed.

The United Kingdom was the first country to adopt a new policy: in 1987, it sold its federal airport system. The newly privatized company immediately began to make major investments, changed operating policies to become more efficient and customer service focused, and aggressively pursued development of non-aviation commercial revenues. Its performance has been very strong, with shares rising fourfold in value in a short period, while it was at the same time leading the world in reducing aeronautical charges.

Since the 1990s, governments across the world have been following suit and privatizing their airports, either as systems or as individual airport companies. With the notable exception of the United States, corporatization, commercialization and privatization of airports have become the worldwide trend, bringing considerable change to airport ownership, governance and institutional settings: there has been a transition from positioning airports solely as public utilities towards firms delivering airside services to airlines and terminal retail, and access services to passengers, plus additional ancillary services.

The motives for ownership and institutional restructuring via commercialization and privatization are diverse, but generally include:

- General rethinking of the role government should play in the economy and in airports, and sometimes, need to generate cash for the National Treasury;
- Easier access to private sector financing and investment to meet the constant need for capital renewal and expansion;
- Improved operational efficiency through private sector involvement, or more generally recognition of the relationship between ownership structure, governance and performance.

Recently, there is increasing involvement of the private sector in the management and the financing of airports, both in developed and emerging markets. Long-term concessions are being given to predominately private companies to oversee operations, as governments prefer less risks and shareholding. This has of late particularly been the case in Central, Eastern, and Southeastern Europe. For example, in Croatia where a 65,000 m² terminal is being constructed at Zagreb airport, private firms were involved for the first time in the country's history.

---

83 Source: www.ppiaf.org/node/762
84 Source: New $450 million airport terminal highlights Croatia’s private sector development. Accessed on 18 March 2015 at
Worldwide, airports industry deal volume reached a peak of 20 deals in the second half of 2013, generating deal value of US$13 billion; while the pipeline remained strong with a host of countries, including Greece, Spain, France, Japan, Brazil, and Ireland, announcing further privatization drives before 2016\(^8\). 

**Airport ownership and governance models**

Current different governance models being used to operate airports are listed below, with their implications for financing discussed below:

**Table 17: Airport ownership and governance models**

<table>
<thead>
<tr>
<th>Government or public ownership models</th>
<th>Operation by Federal Government Department</th>
<th>Greece, Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operation by Government Agency</td>
<td>Spain</td>
</tr>
<tr>
<td></td>
<td>Operation by Municipal and Quasi-municipal Governments</td>
<td>Most U.S. airports</td>
</tr>
<tr>
<td></td>
<td>Operation by Government Corporation</td>
<td>France (Aeroports de Paris), Australia (Federal Airports Corporation), Germany, the Netherlands</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Models with private sector involvement</th>
<th>Private Not-for-profit Corporations</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Joint Government/Private Corporations</td>
<td>Denmark (Copenhagen), Austria (Vienna)</td>
</tr>
<tr>
<td></td>
<td>Private For-profit Corporation</td>
<td>Airports in the UK, Japan, Australia, Brazil, India, etc.</td>
</tr>
<tr>
<td></td>
<td>Variations: Own vs. Lease, Pay-as-you-go vs. prepaid lease, BOT, Other PPP models, Separate operation of terminal, etc.</td>
<td></td>
</tr>
</tbody>
</table>

The decision at the national level as to the organizational format under which airports operate will depend on the situation of the country and will be strongly influenced by government policy, as well as by the experiences of other states. Factors to take into account include:

- the legal, institutional and governance frameworks of the government and system of administration in the country;
- the cost and source of funds required to meet infrastructure needs and to secure the continuity of operation taking into account traffic forecasts and risks;
- market conditions including degrees of competition among airports and users;
- the requirements of the aviation industry; and
- the role and contribution for civil aviation to the country’s economic and social objectives.

---

\(^8\) Source: Bernard Chow and Colin Smith, PwC, «Airport transactions: Airport privatisation elevates deal activity to higher altitudes »

http://www.ifc.org/wps/wcm/connect/region__ext_content/regions/europe+middle+east+and+north+africa/ifc+in+europe+and+central+asia/news/new+airport+terminal+croatia+private+sector+development
Airport financing

Airport financing can be:

- Debt financing: represents a significant part of infrastructure financing worldwide, but its availability and cost of funds to an entity depend on its creditworthiness and rating, which are based on its earning potential, financial strength and liquidity; on the regulatory framework, and on potential government guarantees.

- Equity: implies non-government shareholding in the airport and the ability to offer an adequate risk-return combination to private investors.

Alternative governance structures will have different implications for airport financing in capital markets. However, long term sustainable non-government funding of an airport depends on the ability to generate funds internally. Airport revenues are generally bundled as aeronautical (fees and charges to airlines for runway, apron, terminal-gate use, etc.) and non-aviation (from retail and commercial activity including land leases). Airport generated aeronautical fees are generally limited by economic regulation, to prevent abuse of dominant position and anti-competitive practices.

- Government: when an airport is structurally incapable of generating sufficient funds internally (generally because of size, as it is widely accepted that airport unit cost per passenger declines steadily as size increases) but fulfils an important socio-economic role, government support can take a variety of forms.

Involvement of airlines in airport ownership and operations

When airlines invest in airports, not only are they interested in their investment from the financial returns side, but they are also interested in the functionality of the airport/terminal space. Most times when airlines invest in airports they are also heavily involved in the planning of the space so that it suits their needs. Interestingly, airlines may be the only investor for an airport development project. However, there are others that may prefer to act in a consortium with other airlines. Also, airlines may develop their own subsidiaries for the sole purpose of investing in airports; Thai Airways established Thai Airport Management Co. in 2006 when it declared its interest to manage and potentially own foreign and domestic airports. Some airlines may even use airport development as part of their competitive strategy; Porter Airlines bought its own airport in Lake Ontario so that it could have exclusive use of the airport, but it ran into legal problems when it evicted Air Canada Jazz. Additionally, some airlines may offer a loan for an airport development project; RyanAir is reported to have offered a development loan to Frankfurt Hahn Airport86.

Examples of airlines or major airport tenants owning infrastructure include:

- British Airways LHR Terminal 5
- Lufthansa – FRA Dedicated Terminal
- Air France – CDG Dedicated Terminal
- KLM – AMS Schiphol Development Plan
- airBaltic – Riga Airport dedicated terminal
- Jazeera Airways – Kuwait International Airport dedicated terminal
- Porter Airlines – Purchased an airport at Lake Ontario
- RyanAir – Bremen Airport, Terminal E

Virtually all of the airports in the EU actively involve their carriers (including foreign carriers with established traffic rights), in their airport development planning. An interesting example of an exception to this is the planned US$500m terminal for Istanbul. It was discovered that the Turkish National Carrier had not been involved in any of the initial planning and yet was expected by the Airport Operator to relocate to the new facility. The finance was immediately withdrawn, later reinstated when the Carrier was fully engaged in the process.

Benchmarking of some government airport financing programs

**Airports Capital Assistance Programme (ACAP) – Canada**

The ACAP is a federal finance programme introduced in 1995 to assist airports that play a key role in the accessibility of remote communities. ACAP is open to all Canadian airports (excluding military airports) subject to certain eligibility criteria.

**Eligibility criteria for ACAP**

ACAP can only be used for capital/infrastructural projects that maintain or improve safety levels, protect airport assets or significantly reduce operating costs (e.g. runways, lighting, firefighting equipment, winter friction testing devices, upgrades to terminal buildings). ACAP applies to:

1. Airports not owned or operated by the federal government that meet statutory certification requirements
2. Airports with year-round regularly scheduled passenger flights (min of 1,000 scheduled flights in each of the past 3 years)
3. Airports designated as remote airports in the National Air Policy (this category of airports is exempt from the requirement to receive regularly scheduled services)

Funding provided by Transport Canada ranges from 0% to 100% of capital expenses, depending on the classification of the project by TC in terms of its priority and volumes of scheduled traffic. ACAP does not cover land purchases, feasibility, planning, or zoning studies, or projects already physically initiated or completed.

This multi-stage process to qualify for funding is described below:

<table>
<thead>
<tr>
<th>Description of type of expenditure</th>
<th>Prioritisation (in descending order)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety-related airside projects such as rehabilitation of runways, taxiways, aprons, associated visual aids, aircraft firefighting equipment, related site preparation costs including environmental costs</td>
<td>1st</td>
</tr>
<tr>
<td>Heavy airside mobile equipment (safety-related) such as runway snow blowers, runway snowplows, runway sweepers, spreaders, winter friction testing devices, and heavy airside mobile equipment shelters</td>
<td>2nd</td>
</tr>
<tr>
<td>Air terminal building/grounds safety-related – such as sprinkler systems, asbestos removal, barrier-free access</td>
<td>3rd</td>
</tr>
</tbody>
</table>

87 Source: The National Air Policy defines remote airports, as airports where air services are “the only reliable, year-round transportation link to isolated communities.”
Exclusions – ACAP does not cover the following expenses:

- Land purchases
- Feasibility, planning, or zoning studies
- Projects already physically initiated or completed

ACAP funding sources

ACAP funding is derived from the Canadian government’s Consolidated Revenue Fund, a centralised fiscal reserve (drawn from taxes and other revenues) from which all government services and activities are funded. Transport Canada receives a direct fiscal transfer for ACAP from the Receiver General, the administrator of the Fund. The Receiver General awards the total amount for ACAP to Transport Canada as a lump sum valid over a period of 5 years. From a planning perspective, this approach works well for Transport Canada, as annual fluctuations in expenditure are normal, hence the ability to move the funds around to accommodate demand in each year contributes to the smooth running of the programme. Allocated funds unspent at the end of 5 years are transferred back into the Consolidated Revenue Fund.

Disbursements to airports under ACAP

Currently, approximately 200 Canadian airports are eligible for ACAP. As of 2015, funding is around $38m per year.

There are no regional quotas for ACAP grants – however, the geographical spread of applications for ACAP is taken into account in decision-making.

Key issues/challenges

- **Stakeholder concerns about the minimum passenger service criteria** – it is argued that the minimum level discriminates against smaller airports that rely on chartered flights and that the number of enplaned and deplaned passengers is not an adequate measure for the size of an airport. By setting a minimum level of scheduled services, ACAP is excluding airports that need the capital funds to increase their scheduled passenger service
  - However, there is also recognition that expanding the eligibility criteria to include all registered aerodromes with or without passenger service would increase the number of airports eligible for ACAP from 200 to well over 700, an unsustainable figure

<table>
<thead>
<tr>
<th>Passengers on scheduled commercial flights</th>
<th>% ACAP contribution based on project priority</th>
<th>Priority 1 and 3</th>
<th>Priority 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fewer than 50,000</td>
<td>100%</td>
<td>Same as Priority 1, but when equipment is not completely dedicated to airport use, funding will decrease so that it aligns with airport use. Equipment salvage value will be deducted from equipment cost prior to the contribution formula.</td>
<td></td>
</tr>
<tr>
<td>50,000 – 74,999</td>
<td>95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75,000 – 99,999</td>
<td>90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100,000 – 124,999</td>
<td>85%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125,000 – 149,999</td>
<td>80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150,000 – 174,999</td>
<td>75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>175,000 – 199,999</td>
<td>70%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200,000 – 224,999</td>
<td>65%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>225,000 – 249,999</td>
<td>60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250,000 – 274,999</td>
<td>55%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>275,000 – 299,999</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300,000 – 324,999</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>325,000 – 349,999</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>350,000 – 374,999</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>375,000 – 399,999</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>400,000 – 424,999</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>425,000 – 449,999</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>450,000 – 474,999</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>475,000 – 499,999</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500,000 – 524,999</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>525,000 +</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Perceptions that the decision-making process is regionally and politically biased – this may have occurred as a result of the fact that ACAP did not officially release a full list of recipients in the early days of the programme

- In addition, airport operators and stakeholders indicated that information on the progress of submissions was not shared with applicants and felt they were left guessing as to why certain projects were funded and not others. Stakeholders and operators felt that TC did not clearly inform or provide justifications for funding allocations
- These issues have since been addressed and there is now greater transparency and accountability in the system.

GENERAL POLICY ON SMALL AIRPORTS IN CANADA

Small airports should be eligible under appropriate new or renewed infrastructure programs. For small airports, these programs should:

- Focus on the aviation aspects of an airport’s business, such as runways and navigational aids
- Not be used to support airport operations
- Not duplicate financial support to specific projects from other federal, provincial, territorial or joint airport programs
- Consider competitiveness concerns for other airport(s)
- Exclude federally-owned airports

- Information on public financial support available and provided to airports should be broadly disseminated to help optimize the use of limited public resources
- Future actions should acknowledge that small airports are key infrastructure for many Canadian communities and funding requirements need to be considered in the context of infrastructure priorities
- Airports’ associations, with the assistance of jurisdictions, should develop, document and disseminate small airport best practices, including the consideration of workshops as a vehicle for sharing best practices within and between jurisdictions
- Small airports should participate in the review of aerodrome standards and practices, either directly or through their associations, as a means of permitting jurisdictions to assess the financial impact of airport regulations

Notwithstanding the unique situation of each airport, the following general observations are provided as a basis for discussion and continuous refinement. Characteristics of successful small airports tend to include:

- Early engagement of and support from the local business community as users of the air service. Assured demand and customer loyalty are critical to sustained operations.
- Early engagement of and support from local governments – whether through preferential tax treatment, or other creative approaches of support
  - Local jurisdictions are best placed to support a local airport if it represents a community asset and priority
- Engagement of municipal and/or provincial/territorial governments – this is important in regions where catchment areas overlap among airports
  - Some coordination of plans and assistance may be necessary to ensure a sustainable level of operations for the longer term
- Early and active engagement of and support from a carrier(s)
  - Recognition that carriers are not there to “do any favours” – if there are better commercial opportunities they will leave
- Right-sizing of operations with a view to balancing costs and revenues. This may involve downsizing assets, reducing hours of operation to minimise operating costs, or changing the status of the airport from “certified” to “registered” when prolonged absence of scheduled air services has been observed and is expected for the foreseeable future
- A commercially-based business plan, which has the buy-in of the business community and
local governments
- Local financial support may be for a pilot initiative that has to prove itself within a limited period of time; sustainable operations are driven by the marketplace.

- Recognising that airport operations may take time to build, and a good business plan seeks to “make the most” of the assets available, which may include:
  - Creative land development of excess lands.
  - Related business services such as pilot training.
  - The airport operator providing limited services off site based on personal marketing and opportunity (even internationally).
- Continuous reassessment of circumstances and nurturing of partnerships
  - Some small airports have benefited from the establishment of partnerships with users who have vested interests in the introduction or maintenance of air services at particular airports. Examples of such partnerships are set out below.

### Partnerships to promote viability of small airports

#### Example 1: Creation of a Travel Bank
More than 250 enterprises banded together, under the leadership of the Fredericton Airport Authority and the Chamber of Commerce, to create a $2.5m Travel Bank, a monetary guarantee of a minimum level of spending on airfares.

#### Example 2: Assuming Ground Handling Services for Air Carriers
Bathurst airport offered to assume responsibility for ground handling services on behalf of Air Canada Jazz.
  - The Bathurst Airport Authority has used a public awareness campaign to showcase the importance of the airport.

#### Example 3: Government and Community Support
After losing its international flights from Frankfurt, the Yukon government guaranteed Air Transat the revenue equivalent of 150 passengers per flight (for 20 flights). Yukon agreed to pay the difference in case of a shortfall in passengers, and it invested to help the airport obtain an air start, a container loader and dollies as well as a push back tug. The Yukon tourism industry, municipalities and the German speaking market worked with the Yukon government before the commitment was made.

- There is a need to develop, document and disseminate information on best practices so that small airports can be informed of initiatives adopted at other airports that might provide potential opportunities. This could be done through airports associations, with the help of jurisdictions.
- The Task Force sees the need for all airports, irrespective of size, to generally undertake commercially-based airport planning reflecting best practices.
  - If a small airport does not have adequate resources to undertake the development of a business plan, support could be made available to allow for a plan to be developed.
  - This support can take many forms ranging from the development by airport associations of a “template airport plan” approach to public funding support to develop a plan.
- The Task Force has concluded that, because the root causes of viability concerns vary from one airport to another, there is no “one-size fits-all” solution.
  - Recognizing the changing market dynamics, options for future action must provide flexibility, and must reflect the role of the airport for the community and region, and the role of the airport in the relative context of the country's airport system.

### FEDERAL GOVERNMENT: REMOTE AIR SERVICE SCHEME: AUSTRALIA

Remote and rural aerodromes in Australia have access to funding from the Federal government. In Queensland, Western Australia and the Northern Territory, additional funds may be accessed from the State. The various subsidy schemes provided by the Federal government and the individual States may cover air services deemed essential, and airport development to improve compliance with safety regulation.
Examples of federally funded programmes for small airports include:

### Federal Government Funding

- **Enhanced Aviation Security Package**
  - $35 million allocated
  - Upgrading security at Regional airports

- **Securing Our Regional Skies**
  - $48 Million allocated focuses on 3 measures:
    - $20.7 million Response capacity
    - $15.4 million Capability building
    - $12.9 million: Deterrence

- **Regional and Remote Aerodrome Funding Scheme**
  - $22 million over 4 years
  - Upgrade of airstrip services;
  - Installation of lighting & navigation equipment;
  - Fencing projects
  - Terminals and hangers not included

- **Remote Aerodrome Safety Programme**
  - Repair & upgrade runway surfaces
  - Safety equipment such as runway lighting & navigation aids
  - Infrastructure such as fences.
  - Scheme does not cover works that involve terminals, hangars, buildings

The Remote Air Service Scheme (RASS) is an initiative to increase air services to remote areas by giving air operators, selected through a competitive tender process, direct subsidies for weekly air transport services that carry passengers and goods (e.g. educational materials, medicines, fresh foods and other urgent supplies).

The Scheme is managed by the Regional Services Division of the Department of Infrastructure, Transport, Regional Development and Local Government.

Currently, 6 operators service 257 remote and isolated stations and communities weekly through the RASS. The capacity to admit communities is limited by the Scheme’s budget in any year. To be considered for inclusion on the RASS Scheme, communities must meet certain eligibility criteria including:

- Demonstrate the legitimate need for weekly air service
- The community must be sufficiently remote in terms of surface travel time to a population centre or neighbouring community receiving a weekly transport service.
- Have an aerodrome that meets safety standards

Australia Post, freight, tourist passenger fares) from the agreed maximum subsidy payable under the scheme. Accordingly, there can be an under-spending on RASS compared to the budgeted allocation.

**Key successes**
- More remote and rural communities have access to essential services

**Key challenges**
- State involvement and coordination between Federal government and individual States
- Selection criteria is not strictly adhered to

### WEST AUSTRALIA: REGIONAL AIRPORTS DEVELOPMENT SCHEME (RADS)

The Regional Airports Development Scheme (RADS) was informally introduced in 1995 and formally incepted in 1997. RADS is administered by the West Australian government's Department for Planning and Infrastructure (DPI). The department of Treasury allocated $3.8m to the programme for 2015-2017. For the 2015-2017 cycle, $2.5 million will be given to 25 regional airports and the rest of the funding is pending approval for five other projects. In the past, projects have ranged from $2m to assist with construction of a new terminal to $1,239 to help widen the runway and clear take-off and
approach areas. 2015-2017 grants ranged from $6,294 to prepare an airport asset management plan to $300,000 to raise the level of the airstrip. Types of projects supported include: airport asset management planning, runway development, airside development, grounds development, terminal development, airport master planning, or other aviation infrastructure projects.

Applicants are required to apply before the financial year in which funds are needed. The DPI advertises a six week submission period across the state to applicants who want to improve their infrastructure to improve community access to services or for economic benefit. Applications for airside infrastructure development or the maintenance of aircraft movement areas are accepted. Up to 50% of the total project costs can be covered by RADS.

The demand for RADS is always greater than the funds available, the DPI assesses each project proposal before submitting their recommendations to a consultative committee which includes members of government agencies such as the Department of Treasury and Finance, Department of Industry and Resources, Tourism Western Australia, Western Australian Local government and Regional Development and the Royal Flying Doctor Service.

Applications are assessed according to a number of criteria listed below:

- Level of remoteness / isolation of the area
- If there is a disadvantage accessing other transport, such as rail, sea, or road
- Proximity to major regional airports
- Physical features of the airport and its long-term suitability
- Advice of stakeholders
- Impact on access to medical and educational facilities for the community
- Level of other contributions towards project, such as council contribution

The Committee’s recommendations are submitted to the Minister, who awards the grants to the applicants. Once the grant offers have been accepted, a Funding Agreement (contract) is signed, stipulating the terms and conditions of the grant. The contract indicates that the project must be complete within 24 months of the execution of the contract. Once the project is complete, the applicant is required to provide the DPI with an audit that verifies that the work has been completed at an appropriate standard and to erect a RADS sign obtainable from the department.

The DPI has no on-going role in the management of aerodromes. Local Government Authorities are often the beneficiaries of RADS and thus take full responsibility for the airport. In the other cases, the private owner, aboriginal corporation or another government agency remains responsible for the airport.

Key challenges in the implementation of the scheme

- Acquitting projects, especially for smaller communities who may not have good record-keeping skills and auditing procedures:
- The Minister awards grants, and until recently signed all of the funding agreements (contracts) as well, before works commenced, which can cause delays
- Land ownership issues are also difficult to overcome. To ensure that the applicant does not sell the asset for a profit after the completion of the works, there is a clause that stipulates that the owner shall not part with the land before 2 years (for projects with a grant under $200,000), 5 years (between $200,000 and $500,000) or 8 years (over $500,000). However, given the variety of applicants under this scheme (local government, private entities, pastoral lessees, aboriginal corporations), Certificates of Title to demonstrate ownership of the land before signing the contract are now being sought.

Key successes
- There was investment of over $58m in regional airport infrastructure projects between 1997 – 2008. Since 2008, 184 projects were supported by over $33 million from RADS.

AIRPORTS IMPROVEMENT PROGRAMME – UNITED STATES OF AMERICA

The Airports Improvement Programme (AIP) provides funding for the capital development of airports that make up the national airports system in the US. Projects that are covered by the AIP are those that focus on the following aspects of airport development:
- The enhancement of safety and security
- The rehabilitation of ageing infrastructure
- Expanding airport capacity
- Reducing the impact of aircraft noise

AIP funding is subject to the following conditions and exclusions:
- Eligibility to receive funds under the AIP is contingent upon the type of sponsor and the type of activity for which funds are sought. Examples of the different types of sponsors that are eligible to receive funds include:
  - Planning agencies – e.g. departments of transport, metropolitan planning organisation
  - Public agencies owning airports – e.g. a state, a municipality, a tax-supported organisation
  - Private airport owners/operators – e.g. an individual, a partnership, corporation, etc., that owns a public-use airport used or intended to be used for public purposes that is a reliever airport or an airport that has at least 2,500 passenger movements each year and receives scheduled passenger aircraft service
- Sufficient funds are available for that portion of the project not covered by the AIP United States
- The project will be completed without undue delay
- The project involves more than $25,000 in AIP funds unless, in the judgment of the responsible Airports office, it would be in the best interest of the Government to award a grant of a lesser amount
- Project is depicted on an FAA-approved current airport layout
- Also, the FAA requires all AIP grant recipients to file detailed annual financial reports which are maintained in a publicly-available database
- The AIP cannot be used for an airport’s operational expenses

Introduced in 1982, the AIP is administered by the AIP Branch within the Federal Aviation Authority’s (FAA) Office of Airport Planning and Programming. The overarching policy framework of the AIP is the National Plan of Integrated Airport Systems (NPIAS), which lists development considered necessary to provide a safe, secure, efficient, and integrated airport system. Only airports that are identified in the NPIAS are eligible to receive funding under the AIP; these airports (or portions thereof) are also required to be public-use airports that serve civil aviation. An estimated 3,330 existing airports currently qualify for funding.

AIP grants generally cover 75% of eligible costs for large and medium primary hub airports and 90-95% for small primary, reliever, and “general aviation” airports.

Financing of the AIP

The AIP is funded by the Airport and Airways Trust Fund, established by a 1970 piece of legislation. Over 2012-2015, US$3.35bn for AIP grants was provided by the Trust Fund, and an estimated US$42.5bn in AIP-eligible projects between 2013 - 2017.

---


---
The Trust Fund derives its revenue from user fees and fuel taxes such as passenger ticket taxes, taxes on cargo waybills, and taxes on commercial aviation fuel and “general aviation” gasoline. It can make grants to the AIP on an annual fiscal year basis.

**Key challenges in administering the AIP**

- *Uncertainty about size of future budget for the AIP* – going forward, competing concerns are gaining increasing prominence whilst the budget for aviation programmes does not seem likely to increase proportionately
- *Airports have experienced bureaucratic delays in obtaining discretionary funds*, with long lag periods between the date of application and the date of receipt
- *Ineffective monitoring to ensure status of grants is up-to-date and accurate* – investigative reports have revealed instances of grants being idle beyond the standard time permitted by the FAA (such funds should have been re-allocated upon the expiry date)

---

**Highlands and Islands Airports Ltd (HIAL) – Scotland**

**Introduction and background**

Established in 1986, Highlands and Islands Airports Ltd (HIAL) is a group airport operator owned by the Scottish government and operating as a commercial entity. Public ownership of HIAL is through the Scottish Executive’s Transport Directorate.

HIAL is responsible for airport infrastructure and operations, facilitating lifeline air links and developing scheduled air services in conjunction with airlines. HIAL operates 11 airports in Scotland (Benbecula, Campbeltown, Inverness, Islay, Kirkwall, Stornoway, Sumburgh, Tiree, Wick and Dundee), all of which are categorised as social airports covering the Highlands and Islands area 91. Most of the HIAL airports are ex-RAF (Royal Air Force) airstrips pre-dating the formation of HIAL in 1986. The exception to this is Dundee Airport which opened as a commercial airport in the 1960s, and was transferred from local government to HIAL in 2007 in an effort to improve its performance.

The HIAL airports do not constitute the only airports in the Highlands and Islands (although they are the majority) – local government authorities in the region also operate a small number of airports. The exclusion of these airports from the HIAL network is more for historical reasons rather than a deliberate decision-making process.

**Operations**

All HIAL airports are currently loss-makers and it is the objective of the Scottish government to turn them into profit-generating commercial businesses. Once this has been achieved for some of the airports, one of the key issues the government will have to address is whether profitable airports should be retained within the HIAL network to subsidise other airports, or if only those airports requiring government support should be included in HIAL. No firm policy decisions have yet been made on this issue. At present, there is no cross-subsidisation amongst the airports.

None of the airports in Scotland is subject to price cap regulation as demand for services is relatively limited, and the airports have been able to invest appropriately without undue reliance on airport charges to provide the necessary financing. The level of airport charges is therefore not a cause for

---


91 The Highlands and Islands region has a population of about 500,000 living on an area covering about 39,000km², and is one of the most sparsely populated areas in the EU. 30% of the total population lives on more than 90 islands; overall, 61% of people in the Highlands and Islands live in rural areas or settlements of fewer than 5,000 people. The population is widely dispersed, with settlements and hamlets of different sizes spread out across the islands.
concern in Scotland.

**Funding for HIAL**

HIAL receives aviation and non-aviation income from its operations and the shortfall is made up for by subsidies from the Scottish government – subsidies of £21.7m were received in the 2013/14 financial year\(^2\). In lobbying for government funding, strategic corporate plans for the financial year(s) ahead and performance reports from previous years are used to demonstrate need.

**Competitiveness of airports in the HIAL network**

Competition between the airports is limited due to the shared and public ownership of the airports, and the loss-making nature of the airports’ operations. However, Inverness, the major hub airport in the network, competes with Wick Airport. Externally, Inverness also competes with BAA airports in Aberdeen, Edinburgh, and Glasgow.

**Reporting and accountability**

Standard and statutory reviews and reports are conducted by HIAL as follows:

- Financial performance reports to the HIAL Board on a monthly basis
- Annual report detailing airport accounts, passenger and freight volumes, infrastructure and other investments (all on an airport by airport basis)
- Monthly reports on safety, security, and environmental management
- HIAL corporate plan with a 10-year horizon
- Policy and Financial Management Review to assess whether HIAL is fulfilling its mandate – these tend to take place every 5 years

**Socio-economic impact of HIAL**

Some of the indicators used to evaluate the socio-economic impact of HIAL include GDP and employment trends. Other issues that are taken into account include accessibility to national and international locations (e.g. frequency of flights, direct vs. transit). Across the entire Highlands and Islands region, renewable energy such as wind, wave and tidal are key industries. Most firms are SMEs and there are higher business start-ups rates than in mainland Scotland.

**Some of HIAL’s key successes include:**

- *Consistent growth in passenger numbers and ATMs* – government subsidies to make air travel more affordable and accessible have had a significant impact on the uptake of air services in the Highlands and Islands, particularly in the more isolated locations. Some of the key subsidy programmes are:
  - Air Discount Scheme: Allows residents in selected parts of the Highlands and Islands a 40% discount on air fares to commercial centres and local airports in the region
  - Air Route Development Fund: Aims to increase the number of serviced routes to better link Scotland with the rest of the UK and international destinations
  - General operating subsidies and capital grants: Subsidies are based on the agreed demand for local airport infrastructure, and commitment accounting is used for capital projects spanning several financial years

**Some of HIAL’s key challenges include:**

- *Long term financial sustainability* – HIAL, which relies on aviation income and government subsidies, has been forced to explore non-aviation and non-subsidy income options. Examples include property development on non-operational airport land, e.g. residential and commercial housing at Stornoway Airport, business park at Inverness Airport

---

Key lessons from HIAL:

- **The significant market presence of some airports within a network should be managed carefully** –
  - Inverness Airport plays a dominant role in the HIAL network, accounting for 47.8% of all passengers\(^93\). However, the developmental needs of the other airports in the network are considered on an individual basis and responded to proportionately. As far as possible, efforts are made to distribute traffic throughout the network without placing undue emphasis on Inverness Airport.

- **The successful provision of air services to rural areas is strongly linked to wider integrated transport planning** – HIAL is a member of the Highlands and Islands Transport Partnership (HITRANS), a statutory body whose mandate is to develop a comprehensive solution to public transport challenges in the Highlands and Islands across all modes of transport. There is a high degree of cooperation between HIAL and HITRANS, and HIAL airport developments typically include a road and/or rail access solution agreed to by both parties.

- **Consideration should be given to market augmentation measures as an alternative to service support measures** – HIAL emphasises proactively developing its service offerings and market share. It has a close commercial relationship with airlines based on marketing the benefits of its airports as well as the Highlands and Islands region as a whole.

- **Flexibility in defining the social airport network** – the system allows for airports to be added to the HIAL network or closed if necessary, depending on the socio-economic circumstances.

---

11. Strategies to combat illicit activity at airports

As airports are centres of transport, particularly international transport, they are also central to stopping illegal activities such as drug smuggling and human trafficking.

For instance, human trafficking and the illegal migrant trade favour large international transit areas where there are overwhelming amounts of people as well as small airports that have fewer officials with training in document control. Their techniques include going through an airport’s domestic terminal, bypassing immigration in the international terminal through use of the emergency exit. Within smaller airports, sometimes groups of people will “rush security gates” to overwhelm airport staff. Other techniques include using LCCs, web-check-ins, and any priority or e-ticketing services that require less document checks. Many airports are aware of this and have developed strategies to aid in stopping illegal activities. San Francisco International Airport has implemented a training program that will enable airport staff members to be able to identify cases of human trafficking. Miami International Airport also provides similar training for airport employees to be able to identify victims. In the UK, anti-slavery teams as part of the Border Force under the Home Office have been placed within airports to identify human trafficking victims, collect intelligence related to human trafficking, and disrupt gangs of organised crime. The first airport to utilise the anti-slavery team was Heathrow, and then teams were supposed to extend through to Gatwick and Manchester airports as well. These new teams will also have support from other government agencies to develop specialised trainings.

Drugs are another problem that airports are trying to handle, especially in West Africa, as major cities along the coastline are hubs for drugs from South America before they are shipped into Europe and elsewhere. Cocaine, for example, may cross the Atlantic Ocean in a small Cessna with extra fuel and then be shipped elsewhere from major airports in the region such as Dakar, Accra, or Lagos. For these reasons, the UNODC recently launched a task force to help intercept drugs at the Dakar airport and stop them from being sent elsewhere.

New technologies will also help airports to share information about suspicious passengers and intervene on illegal activities. The proposed pre-screening processes at departing airports will allow for suspicious passengers’ images to be sent to the arrival airport’s border

---


control during flight. Once the flight lands, the few suspicious passengers can be easily found and taken from the mass of passengers for additional screening.

Secondary, regional, and other smaller airports as well as helipads and lone airstrips are increasingly being used for various types of illegal activities, likely because these facilities have less traffic and law enforcement than primary airports, so criminals believe they can arrive and depart undetected. Light aircraft are being used as transport for drugs, guns, and illegal people according to the British National Crime Agency, and these planes are landing in fields or rural airstrips to avoid major airports' security. In the U.S. light aircraft have also been used to transport illegal immigrants from airports at the U.S.-Mexico border to large cities, bypassing many immigration and customs checkpoints. Turkish migrants were flown across the border on a small six-seat plane to small airstrip that had no passport control.

In order to combat these activities at smaller airports, various efforts are being made. For instance, efforts around communication are occurring to encourage reporting by residents in the vicinity of any suspicious activity, such as the U.S. TSA's proposed “Airport Community Watch Program” that involves the airport community and local law enforcement. In Kent, they are monitoring 120 small air bases for illegal and suspicious activities and have asked the community to report any suspicious activities. There are also programmes for remote and unmanned aerial system monitoring and surveillance, as well as closed circuit television monitoring and intrusion detection systems. Following monitoring, action can be taken to disrupt illicit activity patterns, e.g. arresting pilots involved in illicit activity, introduction of temporary security or border control presence at airports where incidents have taken place. Some airports are also allocating parts of their budgets for customs and immigration officers to investigate incidents at small airports.

In addition, there is increased international cooperation to share information and improve risk profiling; the United States Department of Homeland Security has been particularly involved in making agreements with other countries, especially in Europe, to increase coordination and information sharing.

12. Regional airports

There is no agreed definition for the term regional airport although it is clear that large and major hub airports are excluded. Several types of airports might fall into the regional category:

- Small airports serving lightly populated areas

---


• Small, medium–sized or potentially large primary airports serving secondary cities
• Small to medium–sized airports serving a defined international region

The traditional role of a larger regional airport is therefore to provide connectivity of its regional centres with the rest of the world through connection with a main hub airport, but also provide point-to-point connectivity with other regional centres in the country and nearby states as well as sometimes, providing long-haul, point-to-point connection in specific niche markets (e.g. driven by migration and demographics). The regional airports have therefore a very important development and cohesion role for their regions.

Congestion at the main hubs and increasing demand for air transport, both for passengers and freight services has necessitated changes to the overall air systems, with regional airports taking an ever-expanding role. Optimisation of air transportation systems within the framework of the modes of transport plays an important part in the present quest for sustainability.

Apart from connecting the local population with the closest administrative, economic and social centres, these airports are also very important for the local businesses that need highly efficient services, both for transfer of goods and personnel.

Regional airports are therefore likely to function either as origins or destinations depending on the local conditions. This means that the air transport services offered will mainly consist of short-haul operations serving either/or both of:
• Pure point-to-point traffic to other point-to-point airports;
• Spoke traffic providing feed to and from hub airports providing one-stop connections to ultimate destinations (as well as non-stop traffic to the hub as a destination).

Regional airports serve a variety of different market segments and therefore will serve different segments of traffic based on user demand:
• Regional airports often fulfil an important social role in providing connectivity to remote regions;
• Low-cost traffic operating on point-to-point routes;
• Feed into major hubs, usually by network carrier, their regional subsidiaries, alliance or code-sharing partners;
• Charter traffic, both as the origin or destination;
• General or express freight, either as a small hub for carrier or as a spoke to feed into the carrier’s main hub, especially for express carriers;
• High value business traffic.

Regional airports, offering primarily short-haul, one-stop passenger services will be served by narrow-body short-haul aircraft. However, the range of aircraft operated might be quite large including:
• Turbo-props;
• Regional jets;
• Business jets;
• Narrow-body jets;

In addition, wide-body jets might be expected to operate at those airports that support freight, albeit with relatively low frequency.

The siting of new airports involves taking into consideration a variety of problems relating to transportation resources optimisation. Regional airports can be a powerful driving force behind the development of an area and conversely can result in major problems if they are incorrectly sited.
Regional airports cannot be categorised solely on the basis of traffic volumes or hierarchical position within the national airport system, instead they must be categorised on the basis of the role that the airports play within the regional network.

At regional airports only the **basic services** are often required, including:

- Air Traffic Control (ATC) services;
- Fire and rescue services;
- Police;
- Passenger handling services, including check-in and security;
- Facilities management e.g. building maintenance, cleaning and trolley management;
- Aircraft ground handling services (likely to be mainly baggage handling and refuelling);
- Border control;
- Car park;
- Other transport services (bus/coach, taxis and train).

As the airport grows, it needs to ensure provision of **wider services** that are not directly related to aeronautical activities, such as internet access, retail services, banking and currency exchange, food and beverage, car rental services and ultimately extending to the provision of the business lounges and facilities. Depending on the airport’s business model, revenue from these non-aeronautical services can be important for the viability of the airport and as the volume of passengers grows, this revenue stream can become an important enabler for reducing charges and attracting more passengers to the airport.

Most of the other services are provided either by airport operator, airlines or through subcontracted third parties. In the case of third party or subcontracted services, it is important that an airport has Service Level Agreements (SLA) in place that ensures that quality of these services, relative to the requirement, is not compromised. In case of small regional airports, the airport’s operator usually provides most of the other services or subcontracts these services to a minimum number of other providers.

In some cases, the airport’s operator might want to dedicate facilities to a special group of airlines, for example to build a low-cost terminal that serves passengers on low-cost point-to-point services.

The establishment of adequate surface access by private car, taxi, regular coach, metro and/or railway services is another important factor in the successful emergence of an airport. If the airport is connected to the other major transport nodes in the region, it can effectively start to function as a regional transport hub.

The **governance structure** of regional airports across the world is very diverse and varies from region to region and from country to country and from airport to airport. From the ownership perspective there are three main categories: Public ownership, private ownership and public private partnership. There are sub-categories of ownership within these as follows:

- Public ownership:
  - centralised ownership, by a government department, specialised agency or government enterprise of some type;
  - regional or local ownership;
  - combined central-local ownership.
- Private ownership by total divestiture through initial public offering (IPO), trade sale or long term lease.
• Public private partnership, through establishment of a special purpose vehicle or partial divestiture.

The general vision of regional airport operators is that in the future, the **region-to-region routes** will be mostly operated by **low-cost carriers**, even if today low-cost and network carriers coexist on the routes. Network carriers will mostly concentrate on hub operations. Regional airports will support more and more point-to-point flights, which mean the feeder activity will not grow much. This role will increasingly be fulfilled by regional carriers but their activity will be likely focusing on pure business markets and some hub feed for major partners.

Regional airports will provide an important **releaver role** in the future and will benefit from the inability of large major airports to absorb the forecast increase in air transport demand.

The development of regional airports is restricted by a number of limiting factors, including:

• Lack of policy focus on regional airports within regions’ general transport policy and regional development policy.

• Lack of inter-modal connectivity, rail in particular, further undermines the efficiency and potential of regional airports in the world.

• Insufficient passenger throughput to be able to cover the investment into creation of the connections between regional airports and public transport systems in order to facilitate the growth of regional airports.

**13. Concentration of activity other than scheduled air transport**

Besides scheduled passenger airlines, other significant aviation activities can include non-scheduled flights, private flights, flight school lessons, medical evacuations, hot-air balloon flights, helicopter traffic reports, etc. Whilst it used to be that these other activities were spread out amongst various small and regional airports, airstrips, and airfields, in some countries this is becoming less and less of the case. The small, local-owned FBOs (fixed-base operators) are being purchased by large chain FBOs or they are closing/lease running out and being replaced by other small FBOs.**111**

For example, in the United States, there is a clear clustering of “general aviation” activities amongst 50 airports (with “general aviation” in the US defined as all activity other than scheduled air transport services). The 50 airports in the figure below account for 33% of towered “general aviation” operations in the U.S.**112** Additionally the clustering occurs where poor weather is unusual**113**

---


Figure 18: “General aviation” airports clusters in the United States vs. weather (rainfall)


However, the scale of these types of activity in the U.S. must be noted, as it is significantly larger than in most other countries. In 2012, there were 209,034 total active GA aircraft and 9,385 “on demand” aircraft (e.g., air taxi, air tours, air medical) that flew 24,403,000 hours and 3,522,000 hours respectively. The table below demonstrates the differences in scale of GA activity by numbers of GA aircraft in select countries:

In India, there is also a trend towards centralising GA activity at an airport. At Delhi International Airport, plans are being made to set up the first General Aviation facility in India to help centralise all of the growing “general aviation” activities. India’s seen rapid growth in GA activity and it is expected to grow at 10% per year until 2017. Current estimates are that there are 800 small aircraft and 300 helicopters in the GA fleet, but by 2017 India could add 300 business jets, 300 small aircraft, and 250 helicopters.

Financial considerations might also be a reason for the clustering of GA activity. In New Zealand, for example, they have set up an “Aviation Industry Cluster” after realising that the light aircraft industry is too small to achieve growth if everyone works in isolation. Therefore, the Cluster was set up and includes aircraft manufacturers, aircraft maintenance specialists, suppliers, and pilot training organisations. They have already started funding a project so that they could have a GA runway at Hamilton International Airport, to ensure that local aircraft maintenance and pilot training companies could continue to grow.

Source: www.gama.aero/files/GAMA%202013%20Databook-Updated-LowRes.pdf

---


116 Source: https://www.pwc.in/assets/pdfs/industries/general-aviation-070312.pdf

117 Source: http://www.kiwiflyer.co.nz/KiwiFlyer-Issue-7-Guest-Comment.pdf
APPENDIX 4: SOUTH AFRICA’S POLICY, LEGISLATIVE AND REGULATORY CONTEXT

The section below provides a summary of the most relevant aspects of the policy, strategy, regulatory and institutional context within which the NADP is situated, and which it needs to respond to. The policy and strategy framework is separated into wider policy, legislation, and regulation documents and transport-specific policy, legislation, and regulation documents.

This section also summarise how this context plays out at an institutional level, in terms of current roles and processes in relation to airports.

1. Overall policy, legislation and regulation

The overall policy, legislation and regulation documents have been organised into 5 categories which reflect the potential contribution and operation of airports in South Africa:

- Socio-economic priorities
- Spatial development objectives
- International relations and national security objectives
- Sustainability objectives
- Cooperative governance

Socio-economic priorities

South Africa’s overall socio-economic policy framework aims to achieve economic growth, job creation, poverty reduction, removal of obstacles to competitiveness and transformation of participation in the economy to address past imbalances.

The National Development Plan (NDP) is a plan for South Africa to eliminate poverty and reduce inequality by 2030, which includes transport infrastructure developments. These goals can be realised by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capability of the State, and promoting leadership and partnerships throughout society. The NDP’s enabling milestones include, amongst others, the following:

- Establish a competitive base of infrastructure, human resources and regulatory frameworks.
- Establish effective, safe and affordable public transport.
- Play a leading role in continental development, economic integration and human rights.
- Focus trade penetration and diplomatic presence in fast-growing markets (Asia, Brazil and Africa).

Provincial prioritisation through Provincial Growth and Development Strategies (PGDS) and industrial development or micro-economic strategies includes many of the same focus area as have been identified at a national level, with the addition of some sectors, such as trade, services, and leather products. It is significant for airport development planning that the two sectors where airports potentially have the highest contribution to make (namely tourism and agriculture/agri-processing) have been prioritised by all provinces.

118 Executive Summary, National Development Plan – Vision for 2030
In addition, particular airport-related initiatives have been identified in PGDSs and other provincial strategy documents as drivers of socio-economic development. Examples include:

- **Gauteng:** Growth and Development Strategy and Gauteng 25 year Integrated Transport Master Plan, 2013. In addition, the various metropolitan municipalities also developed growth and development strategies, such as the Tshwane Vision 2055 which is aligned with the Gauteng PGDS, with a strong focus on local economic development strategies and initiatives.
- **Mpumalanga:** An industrial park with associated cargo facilities at KMIA has been proposed. In addition, there is an existing Aviation Growth Fund to attract more airlines to KMIA (tourism focus) at the provincial level.
- **Northern Cape:** Planned multimodal Upington Airport Cargo Hub. Key activities that will boost traffic at the airport include the Square Kilometre Array (SKA) telescope, potential manufacturing projects for a fertilizer plant, hoodia extraction facility, and recycled plastic pipes that are being facilitated by the Northern Cape Chamber of Commerce & Industry.
- **KwaZulu-Natal:** The Dube Trade Port, as a mega-project for the province.
- **Limpopo:** There is a proposal to develop Polokwane International Airport into a logistical hub for passenger and freight.
- **North West Province:** NWP PGDS/aviation strategy and will cater to the air transport needs of the Mafikeng Special Economic Zone (SEZ), once established.
- **Eastern Cape:** A Blue SkyWay Aviation Strategy has been developed, which targets in particular the development of Bhisho and Mthatha airports.

In terms of tourism, whilst no long-term target numbers have been set, the 2012 Tourism Growth Strategy targets various market segments, including leisure, business and event-related visitors. Geographical target markets are summarised in the table below.

### Table 19: Geographical tourism target markets

<table>
<thead>
<tr>
<th>Market type</th>
<th>Target markets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Markets and Strategic Hubs</strong></td>
<td>“Core” markets</td>
</tr>
<tr>
<td></td>
<td>• Domestic, Botswana, Kenya, Angola, Nigeria, USA and UK, Australia, India, France, Germany and the Netherlands</td>
</tr>
<tr>
<td><strong>Strategic Hubs</strong></td>
<td>• Egypt, Ethiopia, Ghana, Mauritius, Senegal, Tanzania, UAE, Malaysia, Bahrain, Oman, Qatar, Saudi Arabia and Singapore</td>
</tr>
<tr>
<td><strong>Secondary Markets/Potential Growth Markets</strong></td>
<td>“Tactical” and “Investment” markets</td>
</tr>
<tr>
<td></td>
<td>• DRC, Mozambique, Canada, China (including Hong Kong), New Zealand, Brazil, Belgium, Japan, Italy, Sweden, Lesotho, and Russia</td>
</tr>
<tr>
<td><strong>Tertiary Markets</strong></td>
<td>• Malawi, Namibia, Zambia, Zimbabwe, Argentina, Republic of Korea, Austria, Denmark, Portugal, Spain and Switzerland</td>
</tr>
</tbody>
</table>

The investment and watch-list markets may represent the medium to long-term shape of tourism arrivals to South Africa. The needs of these visitor groups should therefore ideally be considered in airport planning and operations.

---

119 South African Tourism through the National Department of Tourism (2012)
Spatial development objectives

Spatial development objectives exist at numerous levels in South Africa, including both efforts to redistribute activity within the national system, as well as to promote integrated spatial planning within local areas. The Spatial Planning and Land Use Management Act of 2013 (Act No. 16 of 2013) (SPLUMA) specifies the relationship between the spatial planning and the land use management system and other kinds of planning e.g. to address past spatial and regulatory imbalances; promote greater consistency and uniformity in the application procedures and decision-making by authorities responsible for land use decisions and development application.

The Municipal Systems Act requires spatial development frameworks and detailed plans reflecting actual land use and provincial planning ordinances and municipal by-laws must be followed during airport development planning processes.

In addition, the designation of Special Economic Zones and Spatial Development Initiatives has generated a spatial prioritisation of investments.

The following documents identify specific geographical areas as priority development areas:
- Integrated Sustainable Rural Development strategy and programme (ISRDP).
- National Development Plan (NDP)).

The ISRDP focused on development and the complementary measures that support it such as skills development, land reform, community income generation projects, social assistance and safety nets, and rural finance. Subsequently, the NDP indicates that new urban development and infrastructure investments should be focused around corridors of mass transit and around existing and emergent economic nodes. The major concentrations of urban poor should be spatially linked into the mainstream of city life through investments in transport infrastructure and connecting corridors of development.

The Department of Provincial and Local Government's Local Economic Development (LED) Framework and associated Toolkit recognises the unevenness of local economic development (including infrastructure and other assets) across the municipalities in South Africa. The Toolkit identifies government investment in transport and other types of infrastructure as a key enabling factor of local economic development, and sets out guidelines on structures to manage LED, key content areas of LED plans, etc.

Section 26(e) of the Local Government: Municipal Systems Act, No. 32 of 2000 (MSA) requires all municipalities to compile a Spatial Development Framework (SDF) as a core component of Integrated Development Plans (IDP). The SDF reflect detailed land use plans and convergence of economic development, transport planning, disaster management planning etc. The SDF is a framework that seeks to guide, overall spatial distribution of current and desirable land uses within a municipality in order to give effect to the vision, goals and objectives of the municipal IDP. The aims of a Spatial Development Framework are to promote sustainable functional and integrated human settlements, maximise resource efficiency, and enhance regional identity and unique character of a place\(^\text{120}\).

\(^\text{120}\) Spatial Development Guidelines 2011: Dept. of Rural Dev and Land Reform website
In addition, there are various Acts addressing the collection, storage and dissemination of spatial data (including airport infrastructure), including the Statistics Act and the Spatial Data Infrastructure Act.

Airports in close proximity to an area prioritised for development may have a role to play in development of the area, which may also present corresponding opportunities for airport development. Proximity of airports in relation to development corridors, functional urban areas and rural development nodes is summarised as follows:

<table>
<thead>
<tr>
<th>Table 20: Proximity of airports to area prioritised for development</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of airports</td>
</tr>
<tr>
<td>Within 50 km of a development corridor</td>
</tr>
<tr>
<td>Within a functional urban area</td>
</tr>
<tr>
<td>Within a rural development node</td>
</tr>
</tbody>
</table>

International relations and national security objectives

South Africa has an active international agenda targeting a range of issues such as development and peacekeeping on the African continent, strengthening of South-South relations and reform of multilateral economic systems. The country is a key member of the India, Brazil, South Africa (IBSA) and Brazil, Russia, India, China, South Africa (BRICS) fora that seek to deepen trade and political ties among these key nations. On the broader international front, the country has strategic relations with all key countries.

As at April 2015, South Africa has over 100 Embassies and High Commissions abroad, while there are around 150 Embassies or High Commissions with representation in South Africa\(^{121}\).

The documents that reflect South Africa’s national security commitments include:

- Non-proliferation of Weapons of Mass Destruction Act, 1993
- National Strategic Intelligence Act, 2002
- National Key Points Act / National Key Points and Strategic Installations Bill
- Protection of Constitutional Democracy against Terrorism and Related Activities Act, 2004
- National Strategic Intelligence Act, 2002
- Disaster Management Act, 2002

These commitments have implications for certain airports. In particular:

- The National Key Points Act (1998)/National Key Points and Strategic Installations Bill may place security obligations on an airport in terms of security of information, physical premises, information and communication technology systems, personnel, and contingency planning.
- The National Strategic Intelligence Act of 1994 may require cooperation with the SSA, SANDF and SAPS to support them to gather, correlate, evaluate and analyse intelligence to identify potential threats to the security of South Africa or its people.
- Licensed airports need their own disaster management plans, which need to be coordinated with the planning of their local and district municipalities, as well as provincial and national disaster management in the case of larger scale airports. In

\(^{121}\) Source: Department of International Relations and Cooperation (DIRCO)
addition, airport facilities are considered within disaster management planning as infrastructure that can assist in rapid response to disasters.

Environmental objectives

South Africa’s national environmental legislation includes the following:

- Environment Conservation Act (Act No. 73 of 1989)
- The White Paper on Environmental Management Policy for South Africa (July 1997)
- National Environment Management Act (Act No. 107 of 1998)
- National Environment Management: Protected Areas Act (Act No. 57 of 2003)
- National Environment Management: Air Quality (Act No. 39 of 2004)
- National Noise Control Regulations (1992) issued in terms of the Environment Conservation Act

South Africa is also required to meet its relevant international obligations as a signatory to the various environmental agreements. Agreements of particular relevance to airports include:

- Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer (Nairobi).

In terms of this legislation and these agreements, the following environmental issues of particular relevance to airports emerge:

- Airport planning needs to strive for social, economic and environmental sustainability.
  - Airports will need to comply with gazetted air quality standards, as well as with their local municipality’s noise impact assessment requirements and tests. Airports may need to budget for noise contouring research and on-going noise monitoring equipment.

122 A review of the Environmental Impact Assessment (EIA) process and development of an Environmental Impact Management Strategy is being conducted by DEA during 2008 and 2009 to try to rationale the use of EIAs, and potentially where appropriate replace it with other tools such as risk assessment (RA); cost benefit analysis (CBA); and sustainability assessments (SA).
• In the longer term, airports may need to reduce their contribution to greenhouse gases, and potentially enforce the “polluter pays” principle.

Cooperative governance

The foundation for a system of cooperative governance in South Africa across the three spheres of government is set out in the Constitution of the Republic of South Africa, stating that they should cooperate in mutual trust and good faith, including sharing information, consulting on areas of common interest, coordinating action and legislation and avoiding legal proceedings against each other. Section 156 sets out the powers and functions of local government, Schedule 4 sets out functional areas of concurrent national and provincial legislative competence, and Schedule 5 sets out areas of exclusive provincial jurisdiction. The Constitutional Transformation Project of February 2005 responded to the interim Constitution of 1994 and concluded that:

• Civil aviation will remain primarily a national function.
• The national government's interest in the planning and location of airports relates to safety aspects, while provincial governments' interests relate to the impact of airports on other provincial functions.
• The international and national airports referred to in Schedule 6 of the Interim Constitution of 2004 are the airports owned by ACSA.
• All airports not belonging to ACSA, local government or private owners, would become provincial assets.

It must be noted that the Constitutional Transformation Project responded to the interim Constitution of 1994 with a specific focus on assigning responsibility for the administration of assets that have existed in the former “TBVC” (Transkei, Bophuthatswana, Venda and Ciskei) states pre April 1994. ACSA currently owns six of the current ten international airports.

What is important though, is that Schedule 4 of the Constitution of the Republic of South Africa of 2006 deals with “Functional Areas of Concurrent National and Provincial Legislative Competence”. In terms of this Schedule, National Government has exclusive legislative competence regarding international and national airports. This has specific implications for the development of new (green-field) national and international airports as well as applications for international status of existing domestic airports. The need to expand the definition of “national” airports to include all airports serving scheduled air transport services to be considered. This will align the current airports designated in terms of the Civil Aviation Act, 2009, for security purposes, with this concept.

The Intergovernmental Relations Framework Act of 2005 is an effort to clarify roles and improve the operation of cooperative governance in practice, including through establishing intergovernmental forums and providing guidelines on managing joint programmes, effective implementation and dispute resolution.

The Division of Revenue Act stipulates the division of revenue raised nationally between the national, provincial and local spheres of government and specifies several conditional allocations (under Schedules 4-7) that are relevant to airport investments in that they affect potential government funding of road and other public transport infrastructure linking airports to the wider transport network:

• Infrastructure grant to provinces for the construction, maintenance, upgrading and rehabilitation of new and existing infrastructure in roads.
• Gautrain Rapid Rail Link Grant with its east-west line link to OR Tambo International Airport.
• Public Transport Infrastructure and Systems Grant.

National Treasury issued budgeting guidelines for infrastructure and capital projects in 2012. Requests will be appraised by a Capital Budgets Committee (CBC) based on the submission of a project concept note according to following criteria:

• Is funding consistent with the guidelines and departmental strategic plan?
• Does request quantify likely financial, economic, social and environmental impacts?
• Does request define risks and their mitigation?
• Are the proposed funding arrangements appropriate?

The Treasury regulation on Public-Private Partnerships (PPPs) sets out basic definitions and guidance on how a PPP transaction is to be carried out (in terms of application, procurement, contracting, management, amendments and exemptions) and the key criteria for award of PPP agreement (i.e. value for money, affordability and substantial technical, operational and financial risk transfer to the private sector).

The current policy process on the system of provincial and local government raises significant questions about the future relationship between the spheres of government, including roles, funding relationships, the contribution of public-private partnerships, “top-down” vs. “bottom-up” planning and even whether provincial governments should be retained. The outcome of this process could have significant implications for respective roles of spheres of government within airport planning in the long term.

2. Transport-specific policy, legislation and regulation

This section deals with both overall transport documents (which may relate to some extent to airport development planning), as well as those that relate specifically to aviation and airports.

Overall/cross-mode transport policy, legislation and regulation documents

Overall transport sector documents that have implications for airport development include:

• White Paper on National Transport Policy of 1996
• Moving South Africa – Towards a Transport Strategy for 2020
• National Freight Logistics Strategy - 2005
• National Land Transport Act (Act No. 5 of 2009)
• National Land Transport Strategic Framework 2006-2011
• Rural Transport Strategy for South Africa - 2007
• National Department of Transport Environmental Implementation Plan (2008, as amended)
• National Transport Master Planning (NATMAP) process outputs
• Proposed Multi-modal Transport Planning and Co-ordination Act

These documents give priority to developing efficient, cost-effective, integrated and modern systems with good intermodal links that are accessible and meet the needs of user groups. In terms of these documents, the following issues of relevance to airports emerge:
• Transport networks must be supported by the development of integrated transport information systems.
• Corridors of movement have been prioritised as the most effective way to reach the majority of users. Government should continue having an active role in infrastructure development (transport subsidies and grants should continue where these contribute to policy goals), but with greater involvement of the private sector as investors and operators. However, investment in infrastructure should take lifetime cost, economic and social returns, returns to the transport system and returns to customers into account.
• Integrated planning across transport modes should be promoted (National Land Transport Act 2009).
• Key challenges include investment, inclusion of externalities into costs, matching costs to prices, avoiding distortions arising from cross-subsidisation, maintaining a link between revenue and costs and including signalling through price.
• Domestic tourism is seen as a key growth area – there are challenges to align transport strategy with tourism strategies and target segments and ensure that transport does not create bottlenecks.
• Lack of skills is a key constraint to sector development, including logistics skills and technical and administrative skills within government.

Aviation-related policy, legislation and regulation

A wide range of aviation policy, strategy and legislation inform the NADP, including the following:

• Airlift strategy and Implementation Plan of 2006, and Air Transport Strategy of 2015
• Civil Aviation Act (Act No. 13 of 2009)
• International Standards and Recommended Practices: Annex 14, Convention on International Civil Aviation and associated South African Civil Aviation Authority Standards
• Airports Company South Africa Act (Act No. 44 of 1993)
• Air Services Licensing Act (Act No. 115 of 1990)
• International Air Services Act (Act No. 60 of 1993)
• Air Traffic and Navigation Services Company Act (Act No. 45 of 1993)
• South African Civil Aviation Authority Levies Act (Act No. 41 of 1998), Civil Aviation Aircraft Passenger Safety Charge
• National Aviation Security Plan
• Bilateral Air Services Agreements
• Yamoussoukro Declaration for the liberalisation of intra-African air transport services (and associated decision on implementation, referred to as the “Yamoussoukro Decision”)

Other relevant ICAO documents which provide guidance, but which are not mandatory, include:

• Airport Planning Manual
• Aeronautical Information Services Manual
• Aerodrome Design Manual
• Airport Services Manual
• Airport Economics Manual
• Air Traffic Service Manual
The most relevant aspects of these guiding documents are highlighted below.

The White Paper on National Civil Aviation Policy provides the strategic policy framework for the NADP. The White Paper asserts that airport operation and development should be sustainability and viability, especially regarding environmental, economic and financial considerations. In addition it requires that existing and new airport should as far as possible be developed and operated on the basis of financial sustainability and viability in accordance with the National Airports Development Plan. Where existing publicly owned airports, excluding military airports, are not financially sustainable and viable, and they cannot be socio-economically or otherwise justified, every effort should be made to justify them and make them viable and sustainable. Failing that, alternative uses for such assets should be investigated, and could include using the existing facilities for other purposes.

The White Paper further notes that current funding of aviation infrastructure is inadequate. In future, airport development should be funded by adopting an appropriate funding model for different airport scenarios. The principle is that national government should not provide any direct operational funding for any airport it owns, but the consideration of financial assistance for safety/security-related airside capital projects on provincial and municipal airports is recommended. The provinces and the municipalities should remain responsible for prioritising their funding requirements in accordance with their established needs, including aviation infrastructure needs for the facilities these authorities plan, own and operate. Partnerships at new and existing airports, between the public and private sectors as well as local and international investors should be encouraged in all spheres of government. Strategies to promote private-sector involvement in the funding of airport development should be encouraged.

Airport developments need to take into account the minimum requirements set in Annex 14 of the Convention on International Civil Aviation (Chicago Convention) and Standards and Recommended Practices (SARPS), as adopted within South African domestic law. ICAO Annex 14 contains both Standards and Recommended Practices; however, in South Africa’s case both the Standards and Recommended Practices have been adopted for all licensed airports in most cases.

The Civil Aviation Act, 2009, amongst others, governs the location and regulation of airports and related services; including rights of land adjacent to airports and adopts the Convention on International Civil Aviation into South African law. It prescribes the establishment of the National Aviation Security Committee and its composition. The related National Aviation Security Programme (NASP) contains provisions for procedures to promote aviation security in South Africa and applies to, amongst others, aircraft and designated civilian airports. Designated airports are required to meet additional security provisions. These airports are de facto treated as the strategic network and main feeder network and have to develop Aviation Security Programmes.

The ACSA Act sets out the functions of ACSA, including maintenance, management, control and operation of all the aerodromes transferred in terms of Section 6 of this Act. ACSA is required to submit a business plan to the Minister at least three months prior to the commencement of any financial year. Planning is therefore aligned with the financial year and the three-year planning cycles. The Act also requires ACSA to conduct its

123 Currently there are 20 designated airports
124 Section 111 of the Civil Aviation Act, 2009
business in such a manner that the national interest is not jeopardized, and consider implications for the national transport system. Sign-off of airport planning is primarily based on financial statements, and secondarily on service levels.

The Air Service Licensing Act, 1990, establishes the Air Services Licensing Council (ASLC) whose function it is to license and control all domestic air services. The ASLC also monitors domestic air services to ensure continued safety and reliability of air service operators. Air services are also regulated through the International Air Services Act, 1993. This Act established the International Air Services Council who is responsible for the licensing of international air services operated by South Africa air service operators, issuance of foreign operator’s permits to foreign visiting aircraft, and the negotiation of bilateral air services agreements (BASAs). These in turn impact on the nature and volume of traffic to South Africa’s airport network and, in the case of designation of entry points within BASAs, impact on the flow of scheduled international traffic to particular airports within the network. The Airlift Strategy and Airlift Implementation Plan support the opening up of all international access points within the country.

The Civil Aviation Authority (established and mandated by the Civil Aviation Act, 2009, and associated regulations) has a responsibility for regulating and overseeing safety and security at licensed airports. The Civil Aviation Act also sets out a “user-pays” principle for their services, including inspection services to airports.

Airspace management is provided by the Air Traffic and Navigation Services Company (ATNS), as mandated by the Air Traffic and Navigation Services Company Act. However, the SACAA, as the safety regulator, conducts oversight of airspace design and management. The design and management of airspace can have significant implications for the capacity of airports and the airport network as a whole. Aerodrome control and aeronautical information services may be provided at airports subject to approval from SACAA.

The Yamoussoukro Declaration for the liberalisation of intra-African air transport services and the subsequent Decision on the Implementation of the Yamoussoukro Declaration binds South Africa to the full implementation of a liberalised intra-Africa air services framework.