



# TEN YEAR INFRASTRUCTURE PLAN FOR HEALTH FACILITIES

2015 to 2025

FEB 2017

NATIONAL HEALTH SUMMIT

19 & 20 OCTOBER 2018

# Document layout

- Annex A - Burden of Disease
- Annex B - Raw population data StatsSA
- Annex C - Population projections
- Annex D - Hospital & PHC Catchments
- Annex G - New infrastructure OOM IUSS
- Annex H - Minimal Useable Space Design (MUSD)
- Annex I - IDMS Treasury
- Annex J - GIAMA
- Annex O - Books of Maps
- Annex P - Technology lists
- Annex Q - Project Management Information System (PMIS)
- Annex E - 10 yr model data sheet layout
- Annex F - MINIMUM DATA SET All Public & Private Hospitals-Costed 151217
- Annex K - Level 1 Hospital care 62 Top Priorities
- Annex K - Level 1 Public Beds Analysis 161007
- Annex L - Level 2 Public Beds Analysis 161012
- Annex M - Level 3 Public Beds Analysis 161013
- Annex N - PHC infrastructure data and costs
- Annex R - SUMMARY ALL PROJECTS
- Annex S - PHC infrastructure analysis
- Annex T - Stakeholder Communication Plan

- ▶ **PART 1** -Ten Year Infrast Plan v3.0 170215
- ▶ **PART 2** - Results Hospitals 161023
- ▶ **PART 3** - Results PHC 161030
  
- ▶ Exclusions
  - ▶ Specialised hospitals
  - ▶ Office accommodation
  - ▶ Health education facilities
  - ▶ Emergency services stations
  - ▶ Other important health infrastructure

# Modelling method

- ▶ Optimum distribution model
  - ▶ founded on the Constitutional requirement of equitable access as the basic principle
  - ▶ ‘equal access’ polygons around ‘layers’ of facilities (from which similar ‘packages’ or ‘types’ of services are provided)
- ▶ The major components of the model are:
  - ▶ Timeline
  - ▶ Population and epidemiology (Burden of Disease and health care demand)
  - ▶ Health facilities and infrastructure
- ▶ Population projections
- ▶ Catchment mapping method

# What was modelled?

- ▶ actual data that was available plus a set of assumptions where the data was incomplete or absent
- ▶ density maps with ranges around averages and stated norms
- ▶ from the analysed data:
  - ▶ priority sites for improving access
    - ▶ key infrastructure component markers (planning units) - beds and consulting rooms
  - ▶ condition of existing infrastructure
  - ▶ illustrate relative capital (replacement) value
  - ▶ maintenance estimate
  - ▶ refurbishment estimate
  - ▶ technology value estimate

# Norms & objectivity

Just because a facility is overburdened does not mean that it is ideally placed nor the appropriate facility to expand/revitalise

- ▶ gaps are premised on general acute beds per 1000 population
- ▶ 2015 population estimated projections
- ▶ discussion on bed capacity norms
  - ▶ minimum values for the gap analysis, adopted from the National Tertiary Health Service Plan (NTHSP)
    - ▶ 0,66 beds/1000 public sector dependent population for Level 1 beds
    - ▶ 0,33 beds/1000 public sector dependent population for Level 2 beds
    - ▶ 0,13 beds/1000 public sector dependent population for Level 3 beds
  - ▶ (L1 beds - including sub-acute care - need to be about 1,5/1000)

# RESULTS (hospitals)

## ▶ Acute care hospital infrastructure (2015)

- ▶ 813 hospitals (133 387 beds in service) providing acute health care in South Africa
  - ▶ 404 Public sector (101 862 beds [69%])
  - ▶ 409 Private sector (41 297 beds [31%])
- ▶ acute care public sector facilities
  - ▶ 92 050 beds (declared '*useable beds*' 2015) (L1 - 82,39%; L2 - 7,39%; L3 - 10,22%)
  - ▶ replacement value of **R218,4bn** (2015 prices and value) - only 1% of the replacement value of the public hospital assets (less than the 3% recommended in other studies)
  - ▶ annual maintenance requirement **R2,12bn** (2015 prices and value)
  - ▶ requirement for major refurbishments and part/total replacement of existing infrastructure **R14,74bn** (2015 prices and value)
  - ▶ (reduces the real asset replacement value to R203,66bn)

# RESULTS (hospitals cont.)

- ▶ Eastern Cape has the most hospitals (90)
- ▶ KwaZulu Natal the largest number of beds (22 444)
- ▶ 12 hospitals graded as condition 1/5
- ▶ 18 hospitals graded as condition 2/5
  - ▶ (mostly old, small, district hospitals in Eastern Cape and Limpopo, but there are a couple of larger hospitals in very poor condition)

- ▶ Layer 1: Analysis of General Non-Specialist Acute Hospital Facilities
  - ▶ all nine provinces and 31 districts have, or will have, hospitals with **<0,66 L1 beds/1000 public dependent population by 2025**
  - ▶ details are provided of the possible projects for L1 bed capacity improvement (3,636 additional beds at a total capital infrastructure investment of about R9,182bn).
  - ▶ sixteen very substantial projects are proposed and will require significant site planning or alternatively an additional site with a new hospital
  - ▶ five of the biggest projects are in **Gauteng** (rapid population growth and already pressured facilities)

## ▶ Layer 2: General Specialist Care Hospital Facilities

- ▶ includes regional hospitals but also the general specialist managed bed capacity for hospital care in tertiary and central hospitals
  - ▶ 66 public hospitals, in all nine provinces, have almost 6,800 L2 hospital beds
  - ▶ 59 of these hospitals have capacity below the 0,33 L2 beds/1000 dependent population (as proposed in the NTHSP)
  - ▶ over 10,000 additional L2 beds are required to achieve the 0,33 L2 beds/1000 dependent population by 2025
  - ▶ (over 2,800 more are needed in Gauteng alone and over 1,000 more are needed in E Cape, KZN, Limpopo and W Cape)
- ▶ **not necessarily a nett shortage of infrastructure because private hospital and L3 beds are abundant**
  - ▶ if this capacity is considered then only 21 hospitals remain with <0,33 L2 beds/1000 TOTAL population (NB not only dependent population)
  - ▶ implication is that there is infrastructure (and service) capacity that could be more effectively utilised
  - ▶ 6 of the 21 are designated tertiary hospitals and 15 are regional hospitals
- ▶ **Gauteng**, despite the many private hospitals and big tertiary and central hospitals will still have at least 400 L2 beds deficient (compared to this norm) even if the total capacity of all public and private hospitals is available
- ▶ this is half of the country's 'gap' of most vulnerable L2 bed capacity
- ▶ four of the twelve affected hospitals are in major, rapidly growing townships

## ▶ Layer 3: Highly Specialised Care Hospital Facilities

- ▶ 27 public hospitals with L3 beds
  - ▶ 10 Central hospitals
  - ▶ 16 Tertiary hospitals
  - ▶ 1 Regional Hospital (Rahima Moosa Hospital in Gauteng)
  - ▶ (L3 beds are reserved for highly specialised services and their designation is very dependent on the ability to recruit sub-specialist clinical professionals. Merely creating infrastructure is not, on its own, sufficient to attract the critical specialist professionals. Determining the distribution of L3 bed capacity is therefore complex.)
- ▶ On balance, **the public health sector technically has an excess of L3 bed capacity**
  - ▶ will still be an excess of 2,500 L3 beds in 2025 - according to the norm used in the NTSHP of 0,13 L3 beds/1000 dependent population
  - ▶ L3 beds are (or should always be) referral points and there should be no walk-in patients for L3 care
- ▶ The **main challenge for hospitals providing L3 care is the deficiency of L2 bed capacity**

# PHC infrastructure

- ▶ generally **very good access across the country** (30 to 40 locations where access can be improved and where new facilities should be considered)
- ▶ much of the existing infrastructure is in poor condition with as much as **20% requiring replacement** (at a cost of nearly R8bn)
- ▶ categorisation labels of facilities do not reflect the size and use of facilities
  - ▶ no real constant service package or service delivery pattern that is specifically associated with a facility labelled in a particular way
  - ▶ makes infrastructure planning difficult and specifically makes it difficult to ensure that the facilities respond to the service delivery need
  - ▶ policy question regarding how to provide decentralised access to maternity services, especially normal deliveries, in PHC infrastructure
  - ▶ clinics do not network and refer to a health centre (with a maternity unit), supported by a district hospital, there is no discernible pattern of infrastructure
- ▶ **3,868 PHC facilities** (268 labelled CHCs and 3,225 as 'clinic')
  - ▶ data generally inadequate for detailed planning, too poor and too inconsistent to use
- ▶ national annual requirement of at least **R476 million for maintenance of the existing PHC infrastructure**
  - ▶ almost 1/5th of this is required to maintain Eastern Cape facilities (many small facilities, many in poor condition)
- ▶ national **refurbishment and replacement requirement of at least R7,87 bn** for the existing exceptionally poor PHC infrastructure
  - ▶ more than 1/5th of this is required to refurbish or replace Eastern Cape facilities
- ▶ **replacement value of R13,66bn for the equipment in all PHC facilities** in the country (adequate and appropriate technology)

# Choices & priorities

- ▶ modelling of need for the future
- ▶ projected 2025 population - most important denominator for future modelling
- ▶ in practice there are **several potential solutions for each identified gap**
- ▶ choices to be made on where to spend available infrastructure funds **depends on the approach to priorities**
  - ▶ maintain existing or create new capacity
  - ▶ invest in primary health infrastructure or hospital infrastructure
  - ▶ address equitable access to first level hospital care or to develop specialist capacity
  - ▶ choosing between specialised institutional care and home-based care
  - ▶ ‘quality’ - whether building norms are affordable and adequate, weighed up against patient care norms

# Implementation

- ▶ existing approved workplan
- ▶ modelled hospital infrastructure priorities are very different from the existing workplan
- ▶ sums involved in addressing the identified priorities are huge
- ▶ capacity of the authorities for project implementation, monitoring and evaluation
  - ▶ despite the Infrastructure Delivery Management System (IDMS) which is in place
  - ▶ **management capacity in health departments (provincial and national) is poor**
  - ▶ **NDOH needs significant strengthening** to manage the infrastructure programme
    - ▶ (housing and updating of the 10 year infrastructure plan in DBSA server)

# Limitations

## Data

- ▶ Government Immovable Asset Management Act (No 19, 2007)
  - ▶ if properly implemented User Asset Management Plans (U-AMPs) could dramatically improve the source data for infrastructure modelling and planning
  - ▶ work needs to be done to modify the data layout and management to achieve this value
  - ▶ **single, common identifier code for each facility** (and component of that facility) for all management activities associated with a facility
    - ▶ Services, personnel, finance, procurement and infrastructure databases should all use the same code and the same name (with the same spelling). The basic starting point could be to use the BAS codes (which have linked codes to Persal already) and add increasing levels of detailed 'cost centres' in time.
- ▶ Need a **'living data base'** of health infrastructure (under the custodianship of NDOH with the format that can give the following outputs for example:
  - ▶ condition assessments
  - ▶ identification of work that needs to be done
  - ▶ auditing
  - ▶ which moreover can readily be grouped or abstracted from (draw up summaries and cross-correlations)

# Funding models

- ▶ current scenario - never likely to be sufficient
- ▶ **alternatives - must be explored**
  - ▶ infrastructure bonds (Blended Capital: Social Impact Bonds and Project bonds)
  - ▶ enhanced revenue collection
  - ▶ Public Private Partnership (PPP) model
  - ▶ crowdfunding as a donor mechanism

INFRASTRUCTURE	Replacement Value	Annual Maintenance	Refurb/Replace
Hospitals	R218,4bn	R2,12bn	R14,74bn
New Hospital			
Build Value			R23,74bn
Maintain pa		R2,57bn	
Technology Estimate			R4,59bn
PHC	R38,5bn	R476m	R7,87bn
New PHC			
Build Value			R700m
Maintain pa		R64m	
Technology Estimate			R230m
Total Health Service	R256,9bn	***R5,23bn	**R51,87bn

\*\* 20% of existing capital value (+/- R5bn per annum for 10 years)

\*\*\* 2% of capital value

# Recommendations

- ▶ **first call** on the capital budget for hospitals must be for **routine maintenance**
  - ▶ must be taken very seriously
  - ▶ must be a deliberate and sustained improvement in maintenance
  - ▶ budgets need to reflect adequate routine maintenance provisions
- ▶ **second call** on the capital budget for hospitals should be for the urgent redress of the major (and often dangerous) **poor conditions** of the identified hospitals
  - ▶ identified immediate requirement is to address:
    - ▶ 12 hospitals with condition scores of 1/5, estimated at R1,66bn
    - ▶ 18 hospitals with condition scores of 2/5, estimated at R4,87bn
- ▶ **third call** on the capital budget for hospitals is **new capacity**
  - ▶ service delivery policy should dictate the priority between creation of new infrastructure for PHC; L1; L2 and L3 capacity and infrastructure for specialities

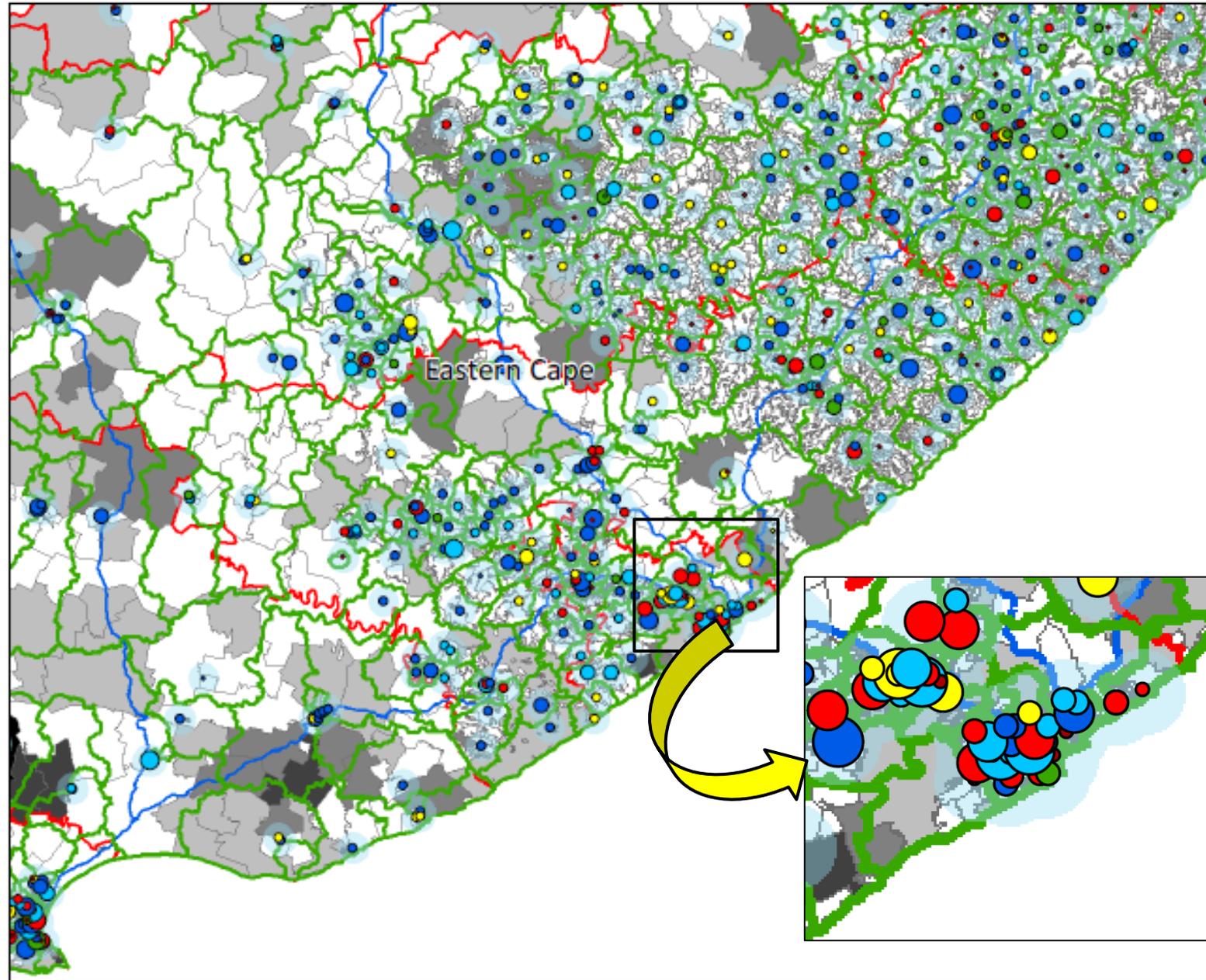
- ▶ all nine provinces have priorities but the **greatest pressure (by far) is in Gauteng**
- ▶ infrastructure for 1,615 existing beds (across levels) needs **refurbishment/overhaul** to deliver the desired environment for care
- ▶ in several (urban) localities the possibility of filling infrastructure capacity gaps through **partnerships with, or purchasing infrastructure from, the private sector** may be possible
- ▶ notwithstanding the possibility of filling infrastructure capacity gaps through reorganisation and through partnerships with the private sector there are many locations where bed capacity is compromised and almost **8,000 additional (new) bed infrastructure is proposed to close the priority gaps identified**
- ▶ this does NOT mean that all gaps will be closed
- ▶ total **budget implication over ten years** is estimated to be in the order of **R30,9bn** (infrastructure and associated health technology), calculated in 2015 prices and Rand value
- ▶ only five priority sites are proposed for **new facilities**
  - ▶ four in Gauteng and one in Western Cape
  - ▶ more may be addressed by engagement with private operators where infrastructure already exists, rather than building new infrastructure

# Questions

- ▶ Why is building of **infrastructure expensive** in the public sector, compared to the private sector?
- ▶ To what degree can **under-utilised capacity within private sector hospitals** and day surgery centres be utilised to reduce the pressure on overloaded public health sector health facilities?
- ▶ How do identify and ensure that health facilities meet the needs of communities in terms of **location, access and provision of health care services** that are appropriate to manage the burden of disease?
- ▶ How do we ensure the provision of adequate, appropriately equipped and located **emergency centres** to deal with the increasing burden of disease resulting from trauma due to interpersonal violence and motor vehicle crashes as well as the increased burden of chronic disease?
- ▶ How do we address the need for dedicated wards for **mental health care users**, separation of female and male patients and appropriate facilities to safely house mental health users with violent behaviour?
- ▶ How do we ensure adequate facilities for **maternity, paediatric and neonatal** patients?
- ▶ How can we ensure proper **maintenance** budget is put in place?
- ▶ How can we engage experts within the build environment to ensure that hospital design is both functional and appropriate for the delivery of quality health care services?
- ▶ How do we ensure the presence of appropriately trained and capacitated staff at facility level to undertake basic and essential maintenance?

# LAYER 4 (All PHC Facilities)

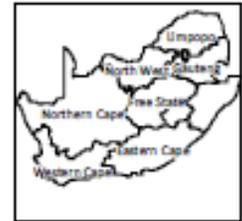
## - DEPENDENT POPULATION - 2025 - Amathole



### CLINICS CALCULATED AREA (m<sup>2</sup>)

- LEGEND**
- CONDITION = 1**
- 0 - 100
  - 101 - 500
  - 501 - 1000
  - 1001 - 4000
  - 4001 - 10040
- CONDITION = 2**
- 0 - 100
  - 101 - 500
  - 501 - 1000
  - 1001 - 4000
  - 4001 - 10040
- CONDITION = 2.999**
- 0 - 100
  - 101 - 500
  - 501 - 1000
  - 1001 - 4000
  - 4001 - 10040
- CONDITION = 3**
- 0 - 100
  - 101 - 500
  - 501 - 1000
  - 1001 - 4000
  - 4001 - 10040
- CONDITION = 4**
- 0 - 100
  - 101 - 500
  - 501 - 1000
  - 1001 - 4000
  - 4001 - 10040
- CONDITION = 5**
- 0 - 100
  - 101 - 500
  - 501 - 1000
  - 1001 - 4000
  - 4001 - 10040

### SA PROVINCE BORDERS

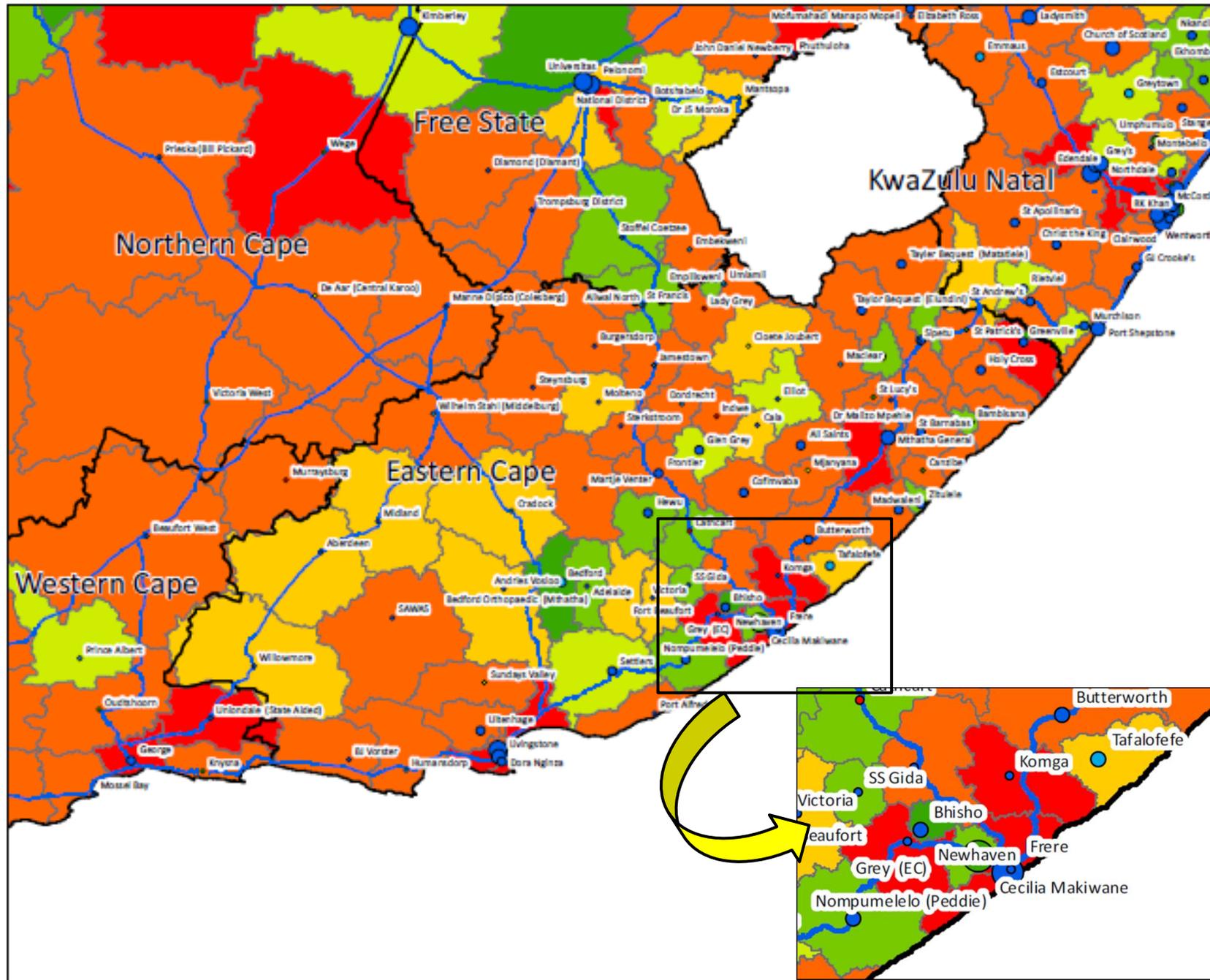


### LEGEND

- PubSecDepend  
Population 2025**
- 0 - 456
  - 457 - 885
  - 886 - 1583
  - 1584 - 3462
  - 3463 - 8961
- District Boundary
  - 5km Buffer
  - HIGHWAY
  - Layer4 Catchment Area
  - SA PROVINCE



# LAYER 1(PUB L1 BED) - DEPENDENT POPULATION - 2025 - Eastern Cape



## HOSPITALS

### TOTAL NO. OF BEDS

#### LEGEND

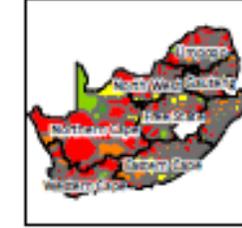
##### Layer 1 Hospitals

- CONDITION = 1**
- 8 - 137
  - 138 - 314
  - 315 - 576
  - 577 - 1160
  - 1161 - 2541
- CONDITION = 2**
- 8 - 137
  - 138 - 314
  - 315 - 576
  - 577 - 1160
  - 1161 - 2541
- CONDITION = 3**
- 8 - 137
  - 138 - 314
  - 315 - 576
  - 577 - 1160
  - 1161 - 2541
- CONDITION = 4**
- 8 - 137
  - 138 - 314
  - 315 - 576
  - 577 - 1160
  - 1161 - 2541
- CONDITION = 5**
- 8 - 137
  - 138 - 314
  - 315 - 576
  - 577 - 1160
  - 1161 - 2541

## SA PROVINCE BORDERS



## SA PROVINCE BORDERS



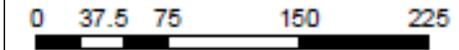
## CATCHMENT AREAS

**LEGEND**

- HIGHWAY
- SA PROVINCE

**Beds per 1000 people Dependent Population 2025**

- 0,00 - 0,66
- 0,67 - 1,50
- 1,51 - 2,00
- 2,01 - 2,50
- 2,51 - 5,00
- 5,01 - 100,00



Kilometers