

The 5th CSIR  
**CONFERENCE**

**IDEAS THAT WORK**

8-9 October 2015 | CSIR ICC



**SA's healthcare estate:  
a lean, green machine?**

Peta de Jager

**CSIR**  
our future through science

CELEBRATING  
**70** Years  
Ideas that work

# The best time to plant a tree is twenty years ago, the second best time is now.

- African Proverb

Service delivery is profoundly affected by the built infrastructure provided to support it

- quality
- cost
- time

Why our own?

- starting point
- unique demand profile
- health service vs. estate management





Fourways Private Hospital - Gauteng

## Private sector

- Market driven
- Must remain viable:
  - imperative to minimise capital cost;
  - Replicates successes;
  - “In-house” capability;
- Agile and responsive

## Khayelitsha Public Hospital – Western Cape



## Public sector

- Complex institutional split between custodial and user departments
- Economic imperative to minimise operating costs:
  - Maintenance averse;
  - Roster-based professional selection;
  - Cumbersome processes.



## Private sector

50% spending  
16% of the population

8.2-million

## Public sector

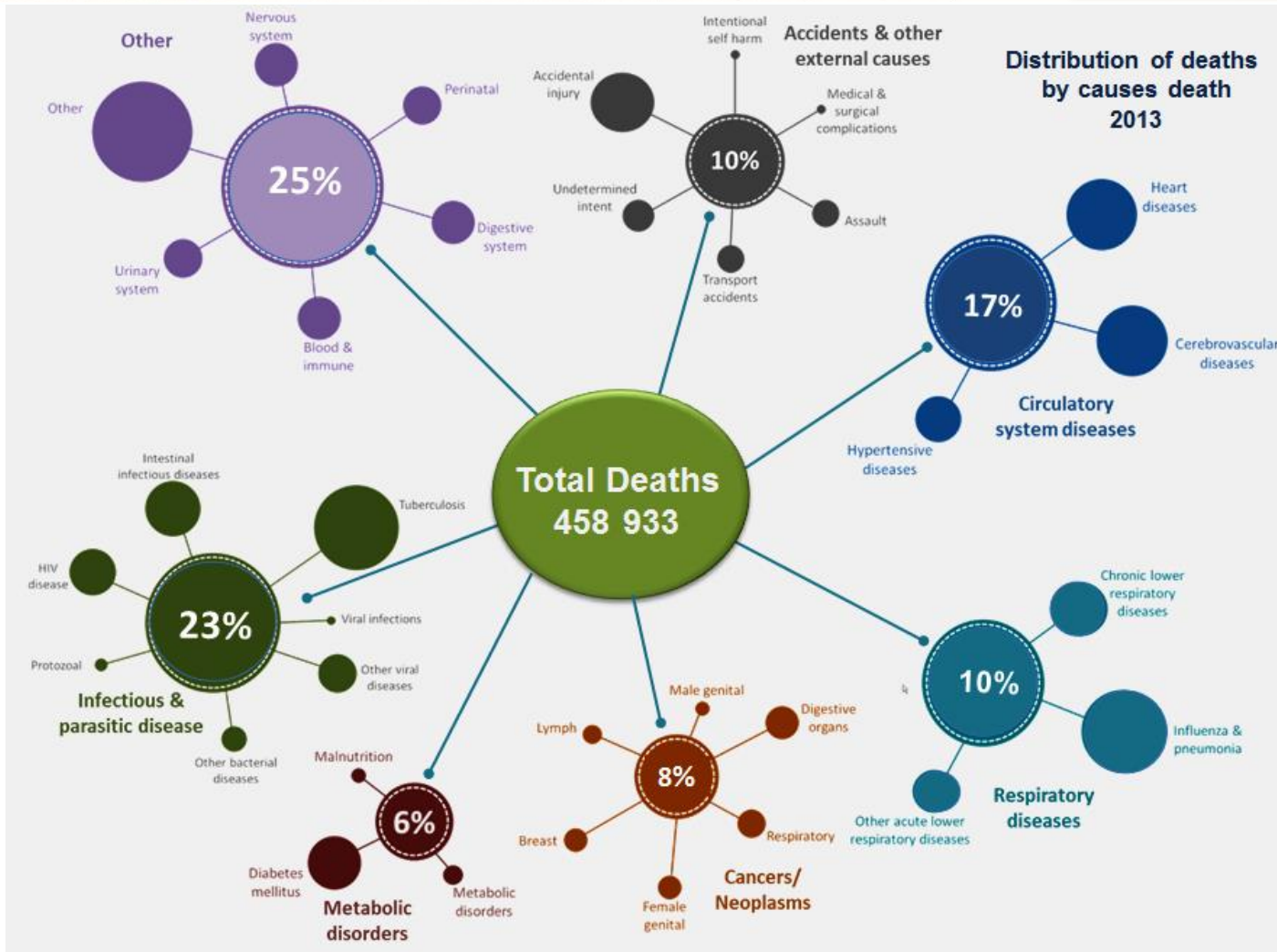
50% spending  
84% of the population

42-million people

## Quadruple burden

- Lifestyle diseases
- Child and maternal mortality
- Violence and trauma
- Infectious diseases

# What South Africans die of





# TB among healthcare workers

Work location	Incidence
Outpatient facilities	4.2 – 11.6
General medical wards	3.9 – 36.6
Inpatient facilities	14.6 – 99.0
Emergency rooms	26.6 – 31.9
Laboratories	42.5 – 135.3

Joshi, R., Reingold A. L., Menzies, D., Pai, M. (2006). Tuberculosis among health-care workers in low- and middle-income countries: a systematic review. *PlosMed* 3(12);e494 (after Dr Paul Jensen)

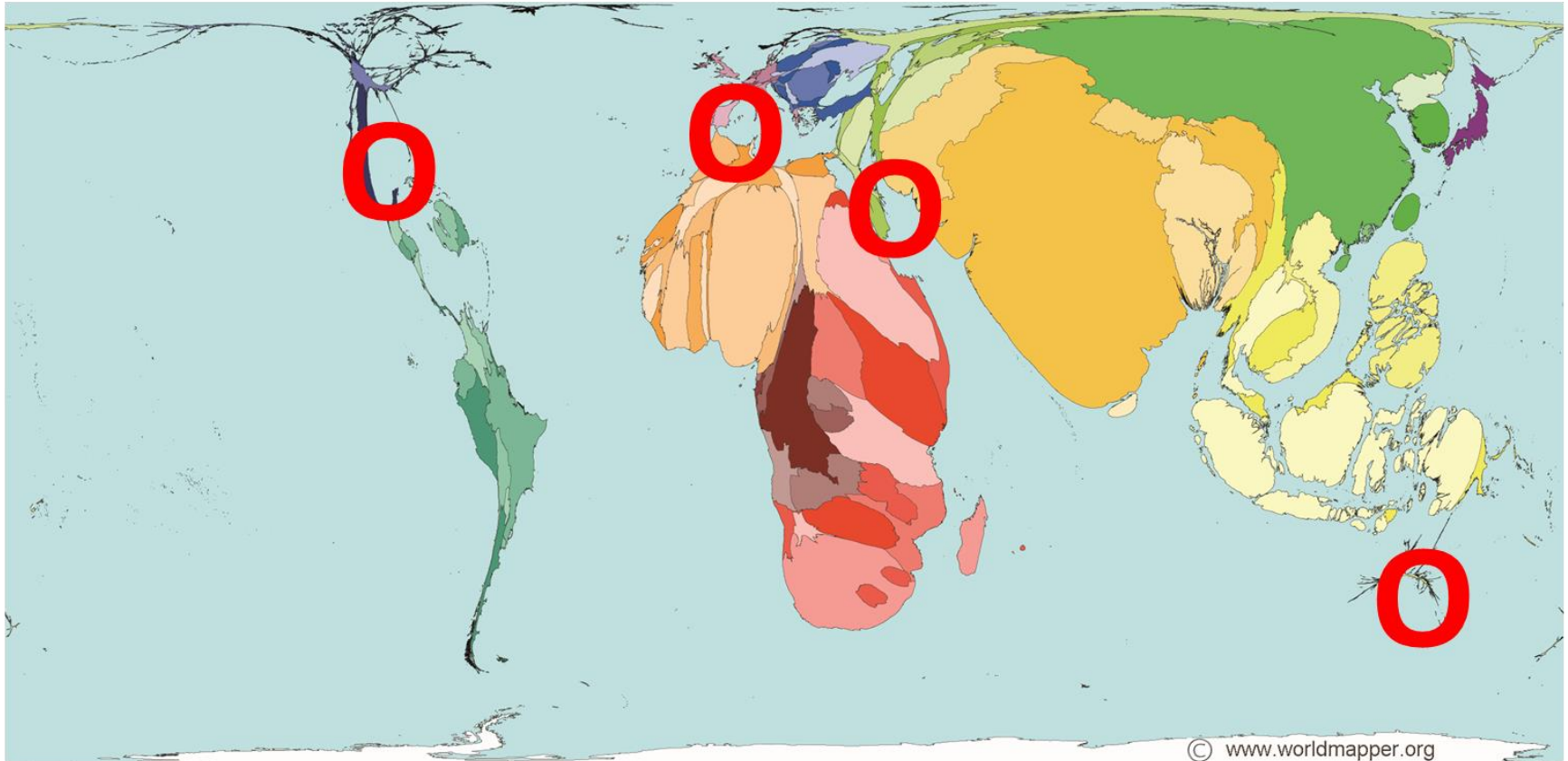
Menzies, D., Joshi, R., Pai, M. (2006). Risk of tuberculosis infection and disease associated with work in healthcare settings. *Int J Tuberc Lung Dis* 11(6): 593-605 (after Dr Paul Jensen)



# Infrastructure design and TB risk



# TB cases vs. international standards



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- Contextually sensitive
- Evidence-based/ current best-practice



# Applicability

- 46 work areas - documents, software tools
- Non-prescriptive approach, mandatory
- Gazette No
  - 37348: R116, 17 February 2014
  - 37790: R512, 30 June 2014
  - 38776: R4141, 8 May 2015
- prospective
- public sector
- Opensource dissemination



# Principles

- First, do no harm.
- Lean.
- Green.
- Legible.

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## IUSS Online

Improving healthcare infrastructure delivery through collaboration

A collaboration between: The CSIR, the National Department of Health and the Development Bank of Southern Africa

IUSS

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### Welcome to

Infrastructure Unit Support  
The Council for Scientific  
Africa's public health

### Publication of Health

The Minister of Health, hereby publish, in terms of the National Health Act, 2003 (Act No. 61 of 2003) the Health Infrastructure Norms and Standards Guidelines in relation to Building Engineering Services, Infrastructure Design for Waste Management in Health Care Facilities and Emergency Centers. The guidelines are for public reference information and for application by Provincial Departments of Health in the planning and implementation of public sector health facilities. The approved guidelines will be applicable to the planning, design and implementation of all new building projects. Any deviations from the voluntary standards should be motivated during the Infrastructure Delivery Management Systems (IDMS) gateway approval process. The guidelines should not be seen as a requirement necessitating the alteration and upgrading of all existing healthcare facilities. Professional service provider instructions should be adapted to require mandatory measurement in locations and according to building elements on all building projects not yet documented for tender purposes. A further process for extracting the essential criteria from the guidelines for inclusion as health regulations will follow. [Read more here.](#)

You will find the gazetted documents under the Norms & Standards menu under the "Gazetted" items.

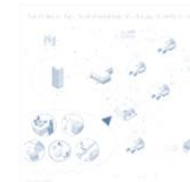
### Norms & standards



Du Noon Clinic, Western Cape  
Public Works & Health

The development of guidelines, norms and standards has been structured into work package sets and 45 work packages including facilities and departments, regulations, engineering services, infection prevention and control, equipment, sustainability and environment, tomorrow's healthcare environments, have been identified. A

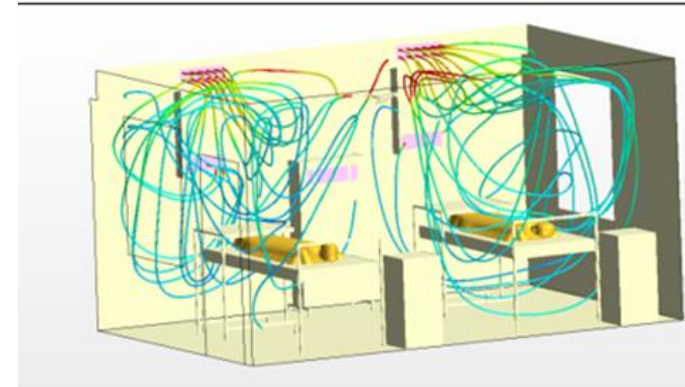
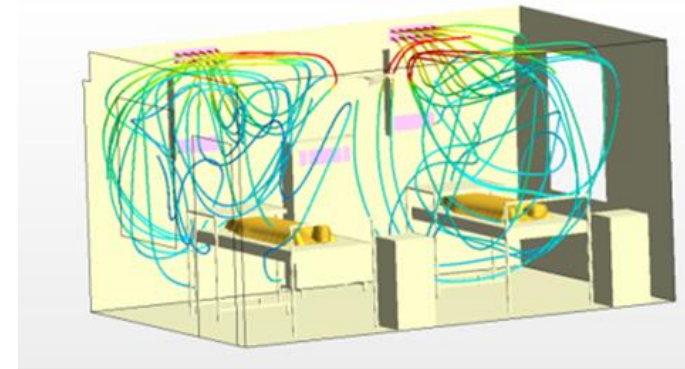
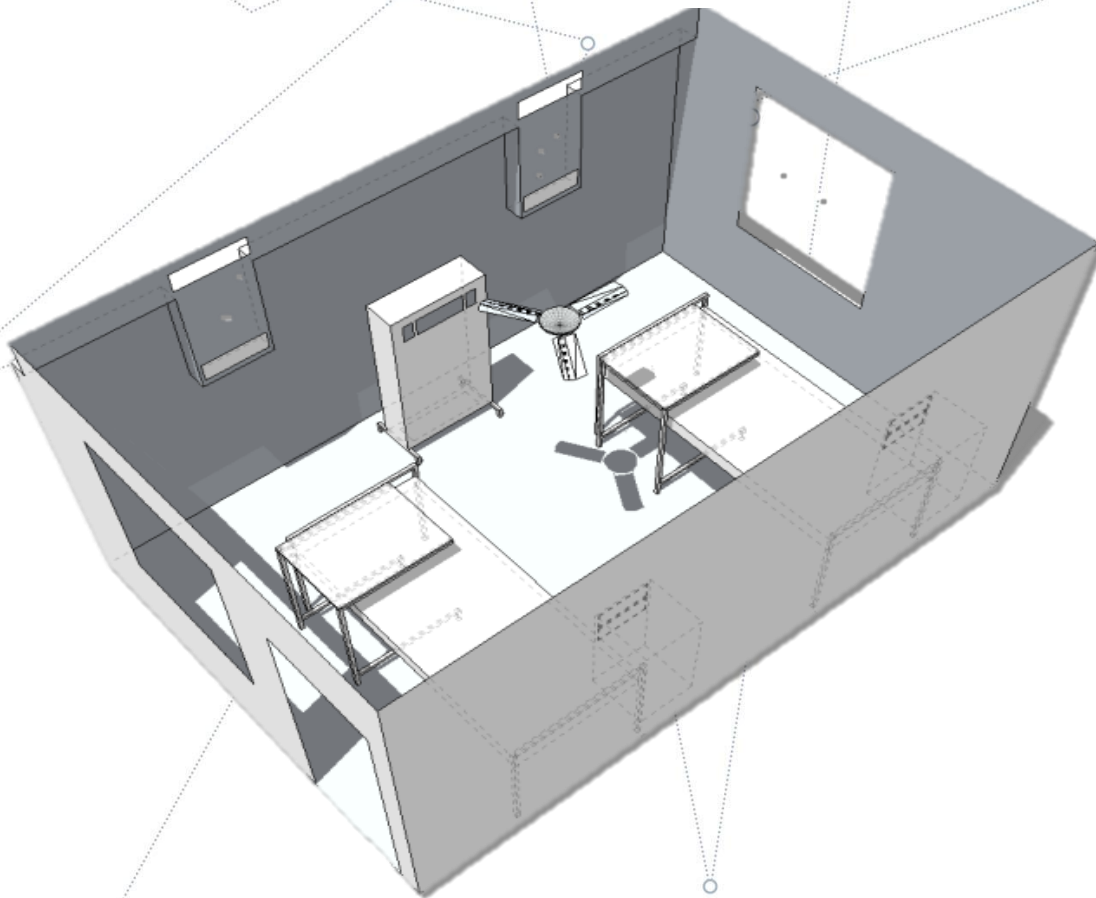
### Project management



Pharmacy supply chain

Customisation and implementation of a Project Management Information System (PMIS) for the NDoH IUSS Project Office has been initiated. The PMIS will consolidate data on all healthcare infrastructure projects in South Africa and identify where support from the PMSU could improve delivery.

# First – do no harm



3D CAD model and CFD studies for two bedroom ward unit at  
Sidney Parsons AIR facility, eMalahleni





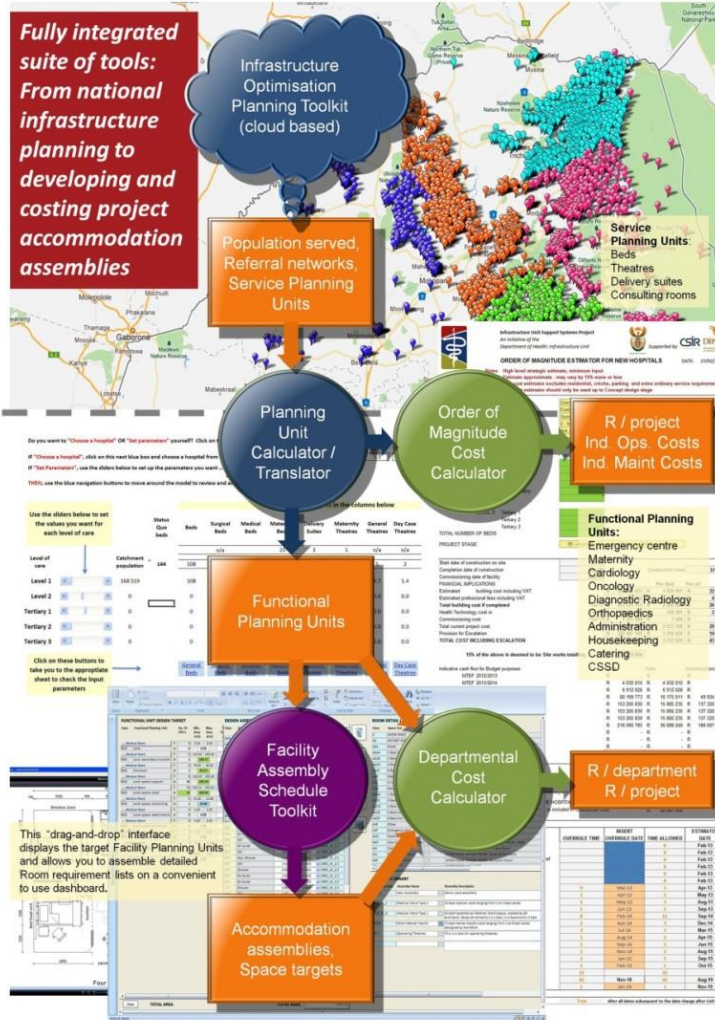
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GUIDELINES, NORMS AND STANDARDS  
Project Planning ← Infrastructure Optimisation

IUSS

# Lean

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## Cost-model tools

Order of magnitude estimators for greenfield & brownfield capital work

- Clinics and hospitals
- Detailed estimators
- Maintenance estimators
- Cash flows
- Operating costs
- Indicative maintenance

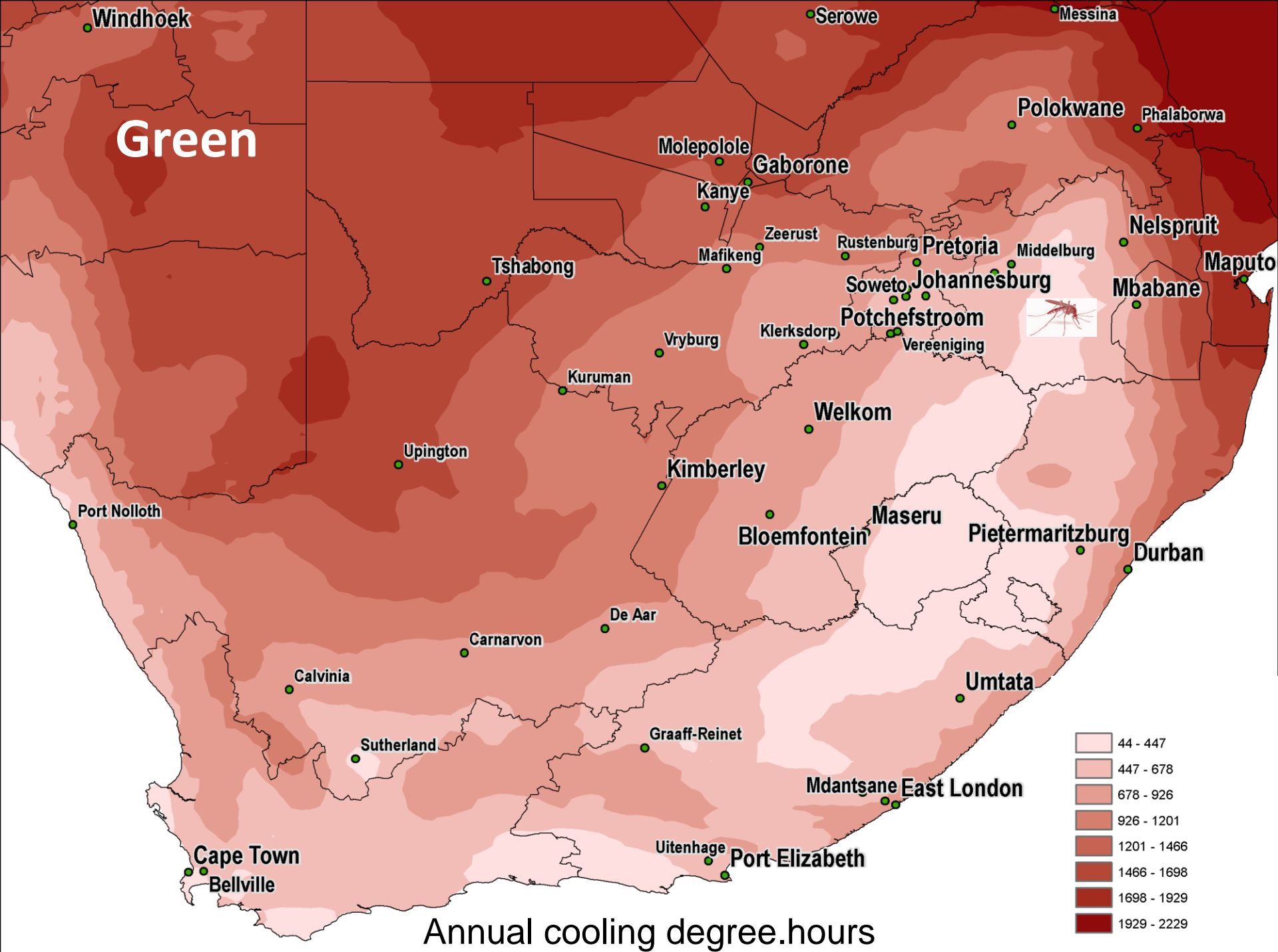


health

Department: Health  
REPUBLIC OF SOUTH AFRICA





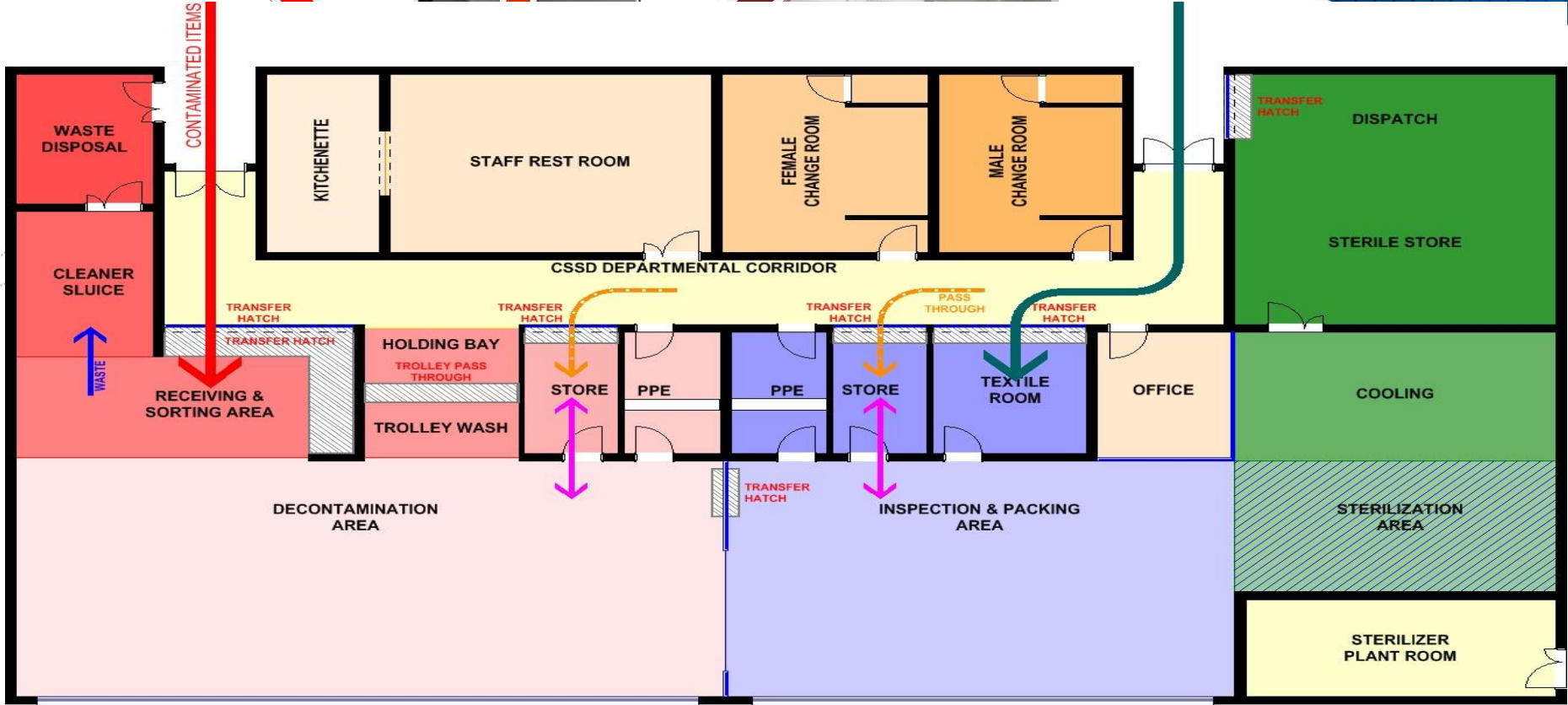




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-  CONTAMINATED ARTICLES
-  DELIVERIES TO STORES
-  TEXTILE DELIVERIES FROM LAUNDRY
-  WASTE FROM WASH AREA
-  MATERIAL FLOW IN WORK AREAS



South Africa's oldest hospital:  
**Somerset Hospital. Circa 1890**



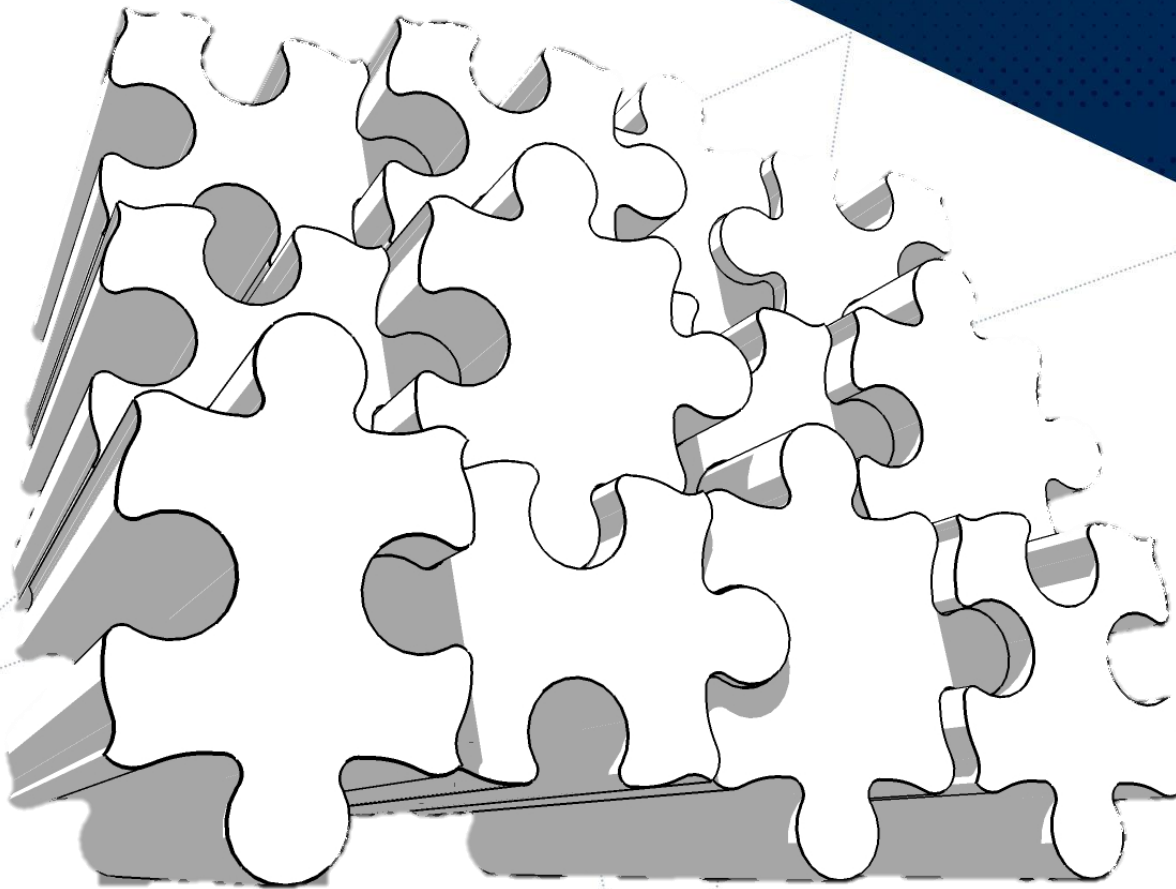
Photo: Etienne du Plessis



SA has 47 051 hospital beds (public)

- 0.9 beds to 1000 people in the public sector
- 1.6 beds per 1000 population incl. private
- Brazil - 2.3 beds per 1000
- China - 4.2 beds per 1000
- India - 0.9 per 1000





- The right thing
- in the right place
- at the right time?

- Timely, integrated strategic planning
- Invest in resources, capacity, health and infrastructure
- Research – collecting and using information

“Seize opportunity by the beard,  
for it is bald behind”



- African Proverb