

The NATIONAL BUILDING REGULATIONS

: Act 103 of 1977

Part 1 of 2

To provide for the promotion of uniformity in the law relating to the erection of buildings in the area of jurisdiction of Local Authorities by prescribing building standards

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National Regulator for Compulsory Specifications

History - timelines and events affecting The National Building Regulations

Legislative Land Events in South Africa

1913 – Promulgation of the Native Land Act 36 of 1913.

1936 – Promulgation of Native Development and Trust Land Act 1936.

1948 - Policy of apartheid (separateness) adopted when National Party (NP) takes power.

1950 - Population classified by race. Group Areas Act no 41 of 1950.

1952 - The Pass Laws Act requires blacks to carry identification booklets at all times.

1953 - The Separate Amenities Act establishes separate public facilities for whites and non-whites; the Bantu Education Act does the same to schools.

1955 - The ANC's Freedom Charter of 1955 set the goal of sharing land.

1960s - International pressure against N.P.government begins, South Africa excluded from Olympic Games.

1970s – Numerous families forcibly resettled in black 'homelands'.

1976 – Numerous students killed in clashes between protesters and security forces which starts in Soweto.

1977 - Steve Biko is arrested and dies of head injuries in police custody.

1985 - As civil unrest increases and labour strikes threaten the economy.

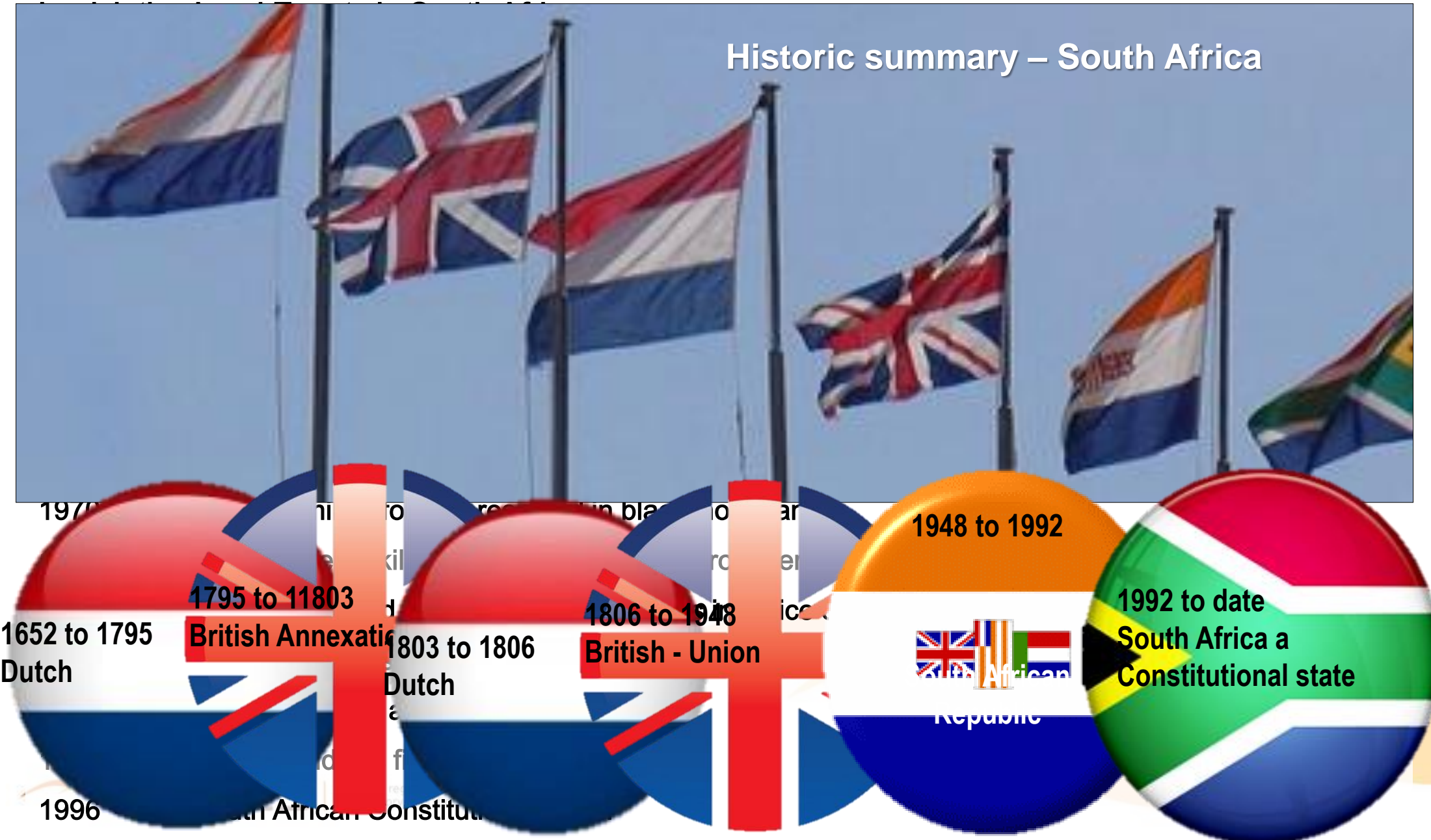
1992 – FW de Klerk repeals all apartheid legislation.

1994 - South Africa holds its first democratic election.

1996 – The South African Constitution is born.

History - timelines and events affecting The National Building Regulations

Historic summary – South Africa



History - timelines and events affecting The National Building Regulations



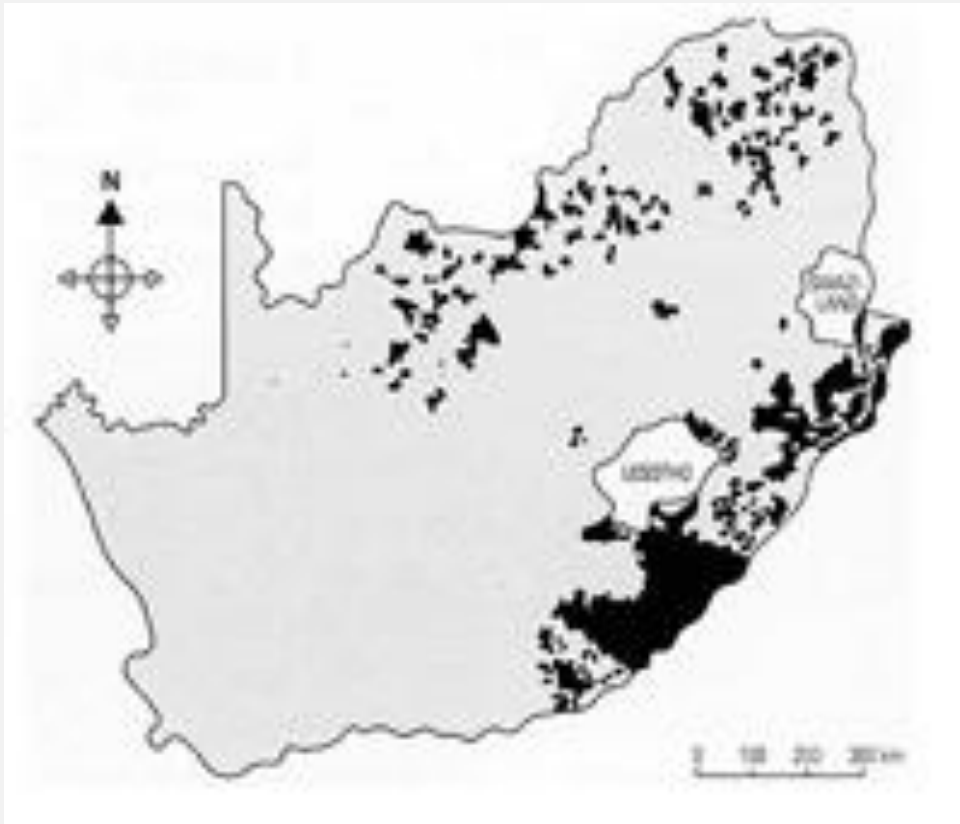
Anglo Boer War of 1899-1902



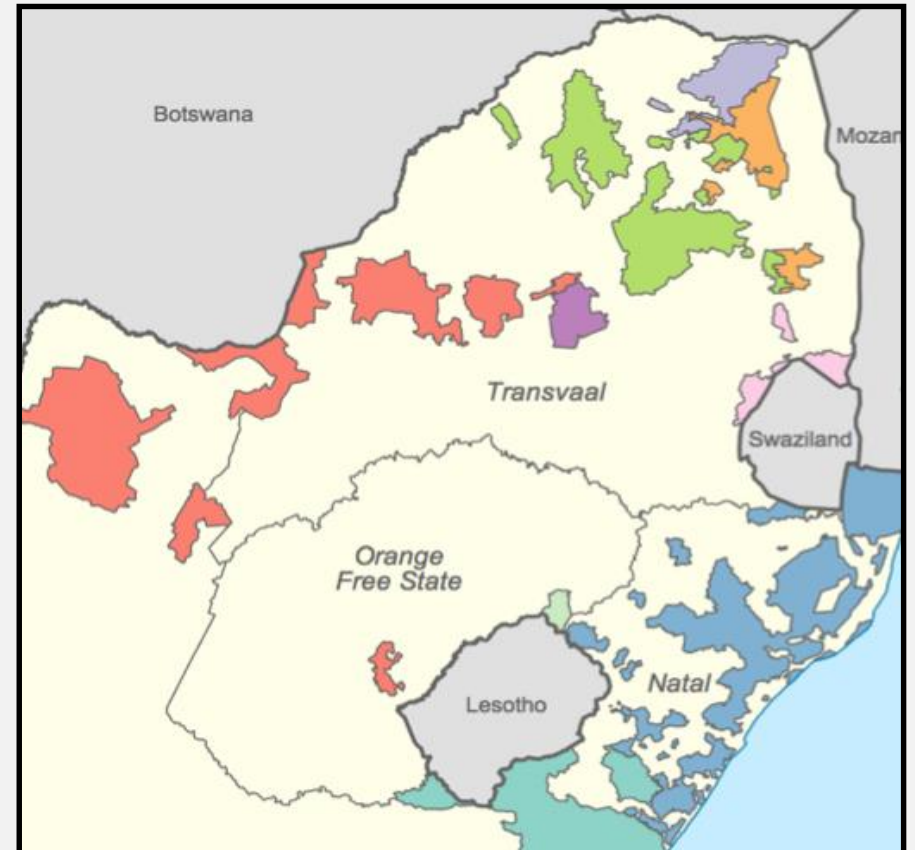
1913 - Union Buildings constructed in Arcadia.

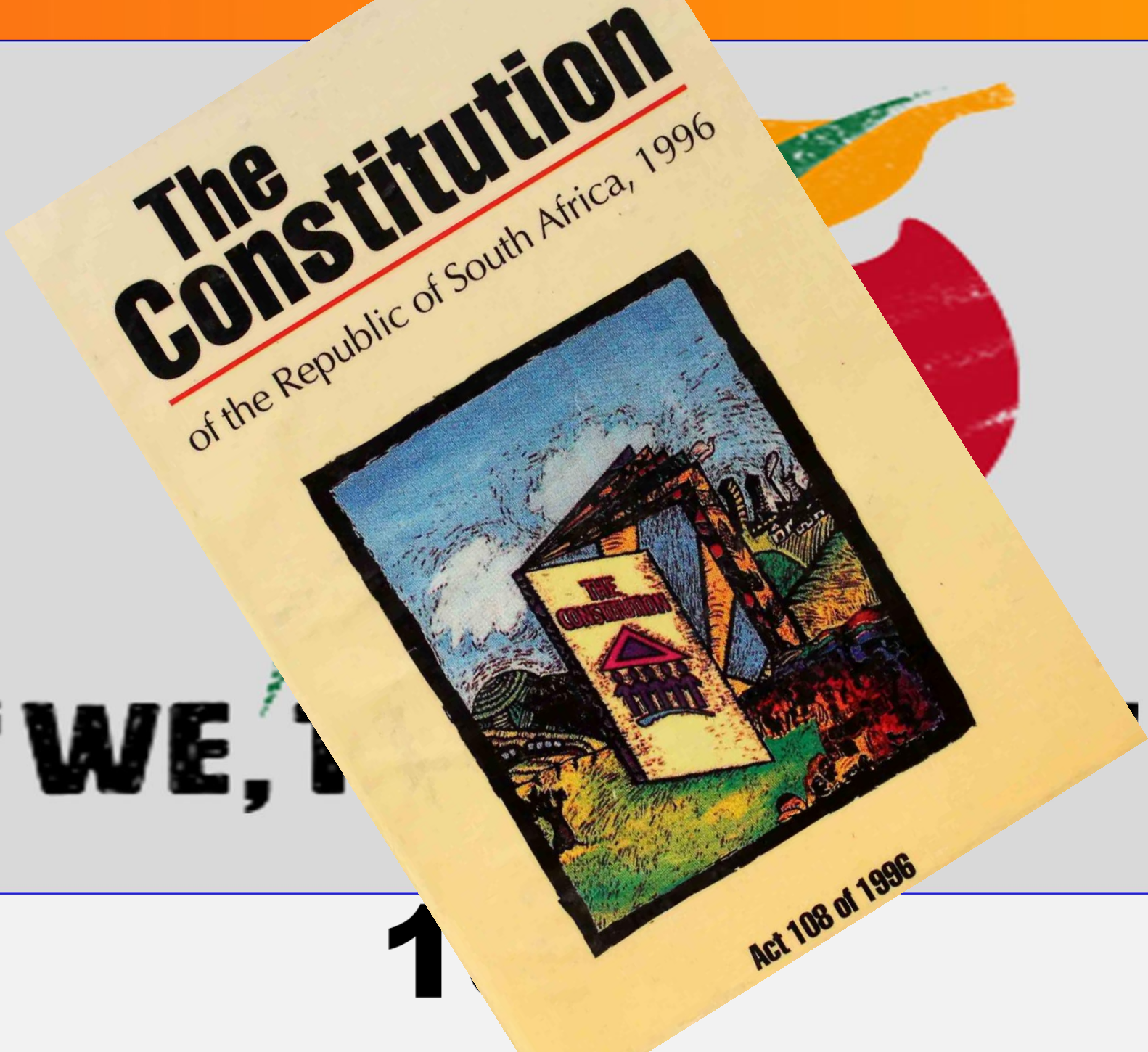
History - timelines and events affecting The National Building Regulations

The Natives Land Act of 1913



The Group Areas Act of 1950



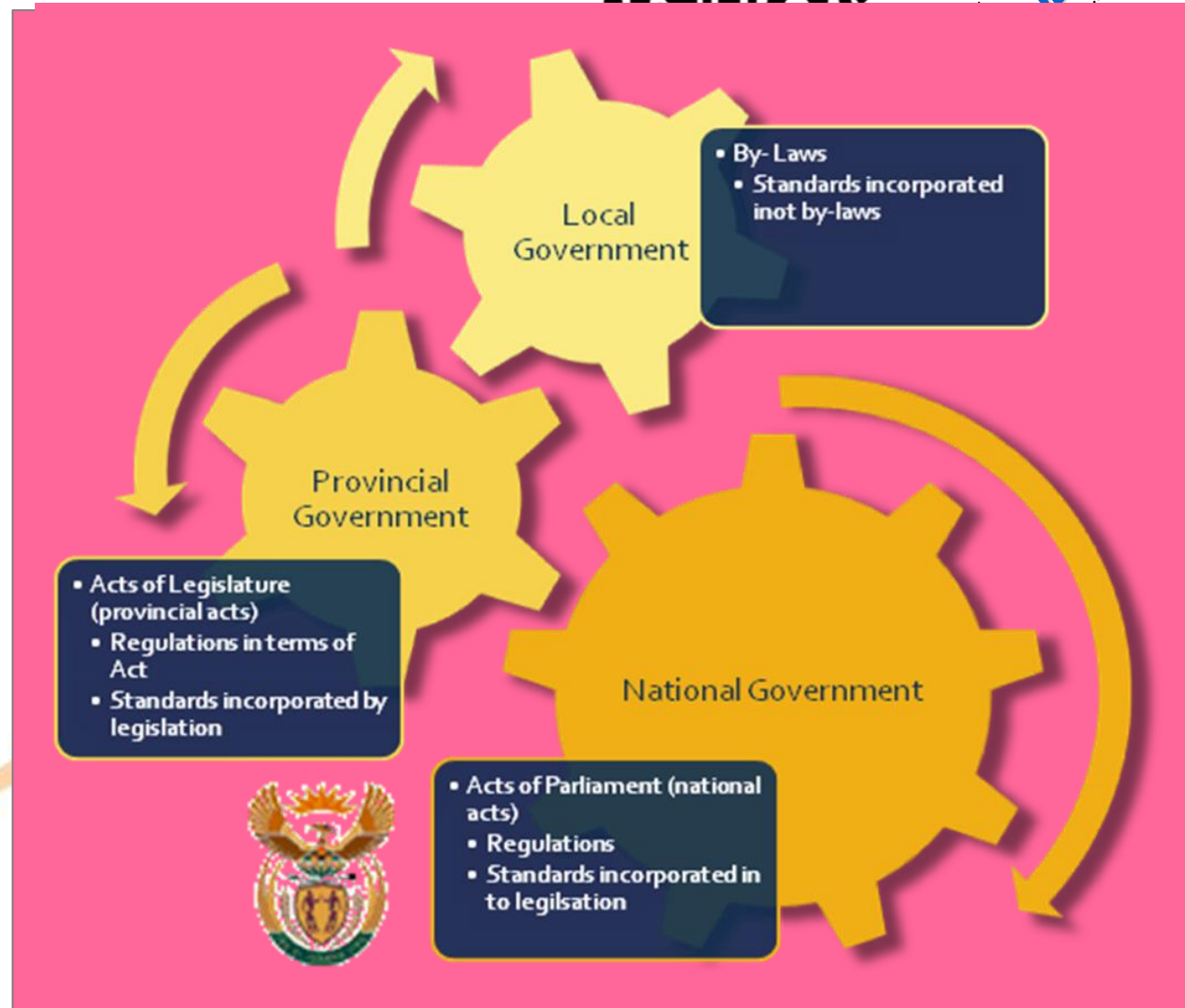
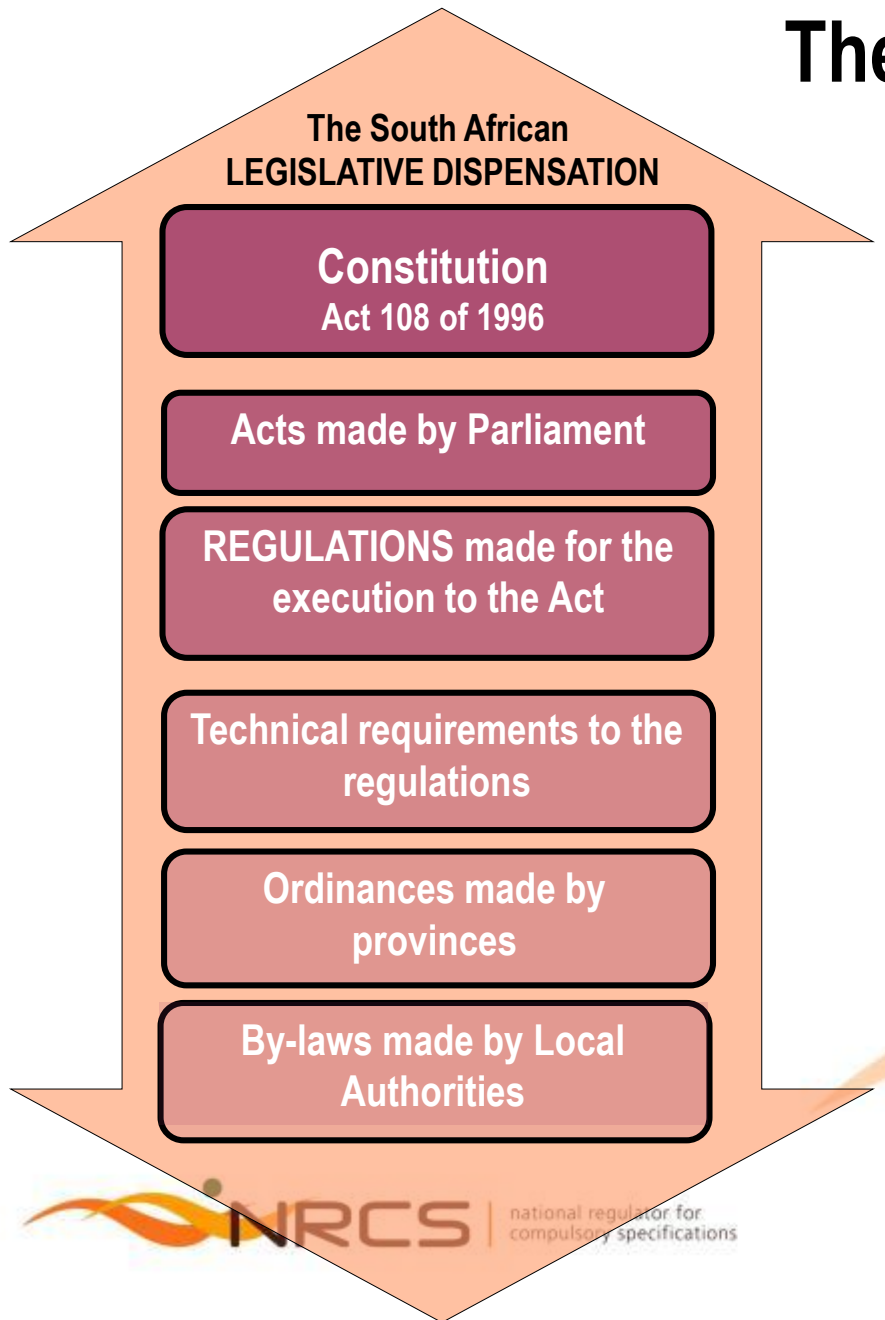


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South Africa a Constitutional Democracy

The structure of the government



South Africa a Constitutional Democracy

The structure of the government



The South African
LEGISLATIVE DISPENSATION

Constitution
Act 108 of 1996

Acts made by Parliament

REGULATIONS made for the
execution to the Act

Technical requirements to the
regulations

Ordinances made by
provinces

By-laws made by Local
Authorities



The National Building Regulations and the TOWN PLANNING AND TOWNSHIPS ORDINANCE as well as Local Authority Processes

Constitution

156. Powers and functions of municipalities

A municipality has executive authority in respect of, and has the right to administer –

- (a) the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5; and
- (b) any other matter assigned to it by national or provincial legislation.

A municipality may make and administer by-laws for the effective administration of the matters which it has the right to administer.

- (3) Subject to section 151(4), a by-law that conflicts with national or provincial legislation is invalid.

If there is a conflict between a bylaw and national or provincial legislation that is inoperative because of a conflict referred to in section 149, the by-law must be regarded as valid for as long as that legislation is inoperative.

Constitution

146. Conflicts between national, provincial legislation and Local Government By-laws

National legislation that applies uniformly with regard to the country as a whole prevails over provincial legislation and Local Government By-laws if any of the following conditions is met:

- (a) The national legislation deals with a matter that cannot be regulated effectively by legislation enacted by the respective provinces individually.
- (b) The national legislation deals with a matter that, to be dealt with effectively, requires uniformity across the nation, and the national legislation provides that uniformity by establishing –
 - (i) norms and standards;
 - (ii) frameworks; or
 - (iii) national policies.

TOWN PLANNING AND TOWNSHIPS ORDINANCE

155 (6)(a) A metropolitan municipality shall have executive authority over those powers, functions and duties with all matters relating to Building Regulations & Municipal Planning.

The Building Regulations apply uniform standards on a Macro level.

Town planning schemes are area specific and enforce town planning requirements on the Micro level.

The National Building Regulations is the end legislation and hence makes the final determination in terms of all Building approvals. Because of this; the inclusion into the NBR of the responsibility to satisfy “any other applicable” legislation.

Timelines and important changes affecting The National Building Regulations

Peri-Urban



Graaff-Reinet

Municipality prior 2006

The municipal area comprised of, the area known Town extent comprising of the developed and area where the buildings ended before exiting the physical town. The town's buildings were subject to the Towns Building By-Laws.

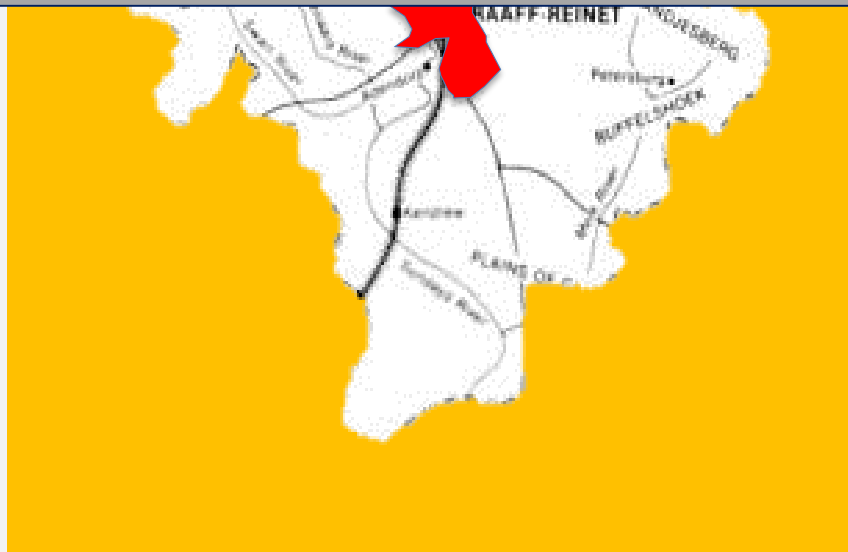
The areas outside of town was classified as being Peri-Urban and was not under the control of the building By-laws

Timelines and important changes affecting The National Building Regulations

Local Government: Municipal Structures Act, (Act 117 Of 1998)

Regulation of effects of establishment of municipality on existing municipalities

14. (1) The establishment of a municipality in terms of section 12 in the area of an existing municipality supersedes the existing municipality in that area, and the new municipality becomes its successor in law with regard to that area.



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prior 2006

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Timelines and important changes affecting The National Building Regulations

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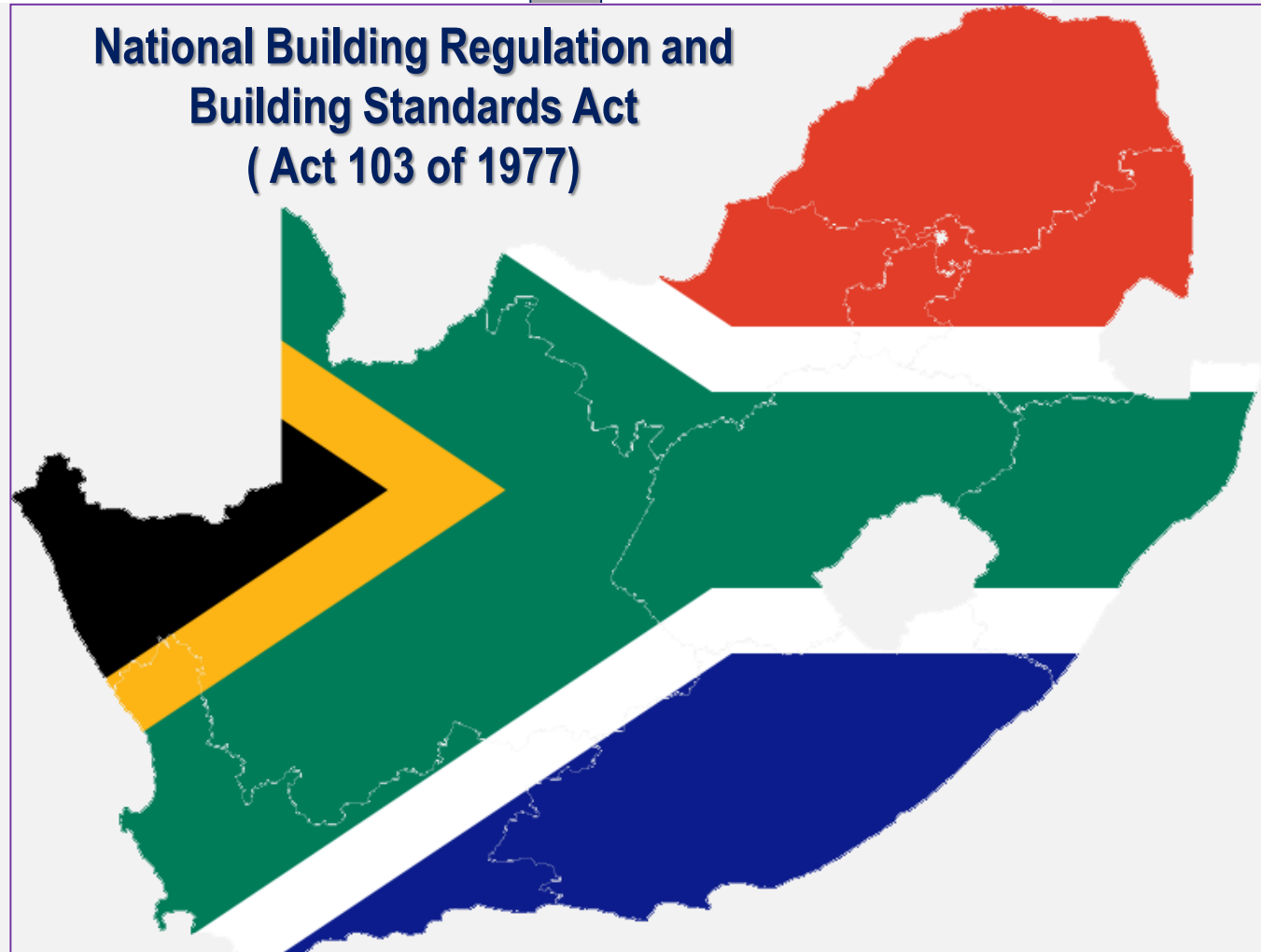
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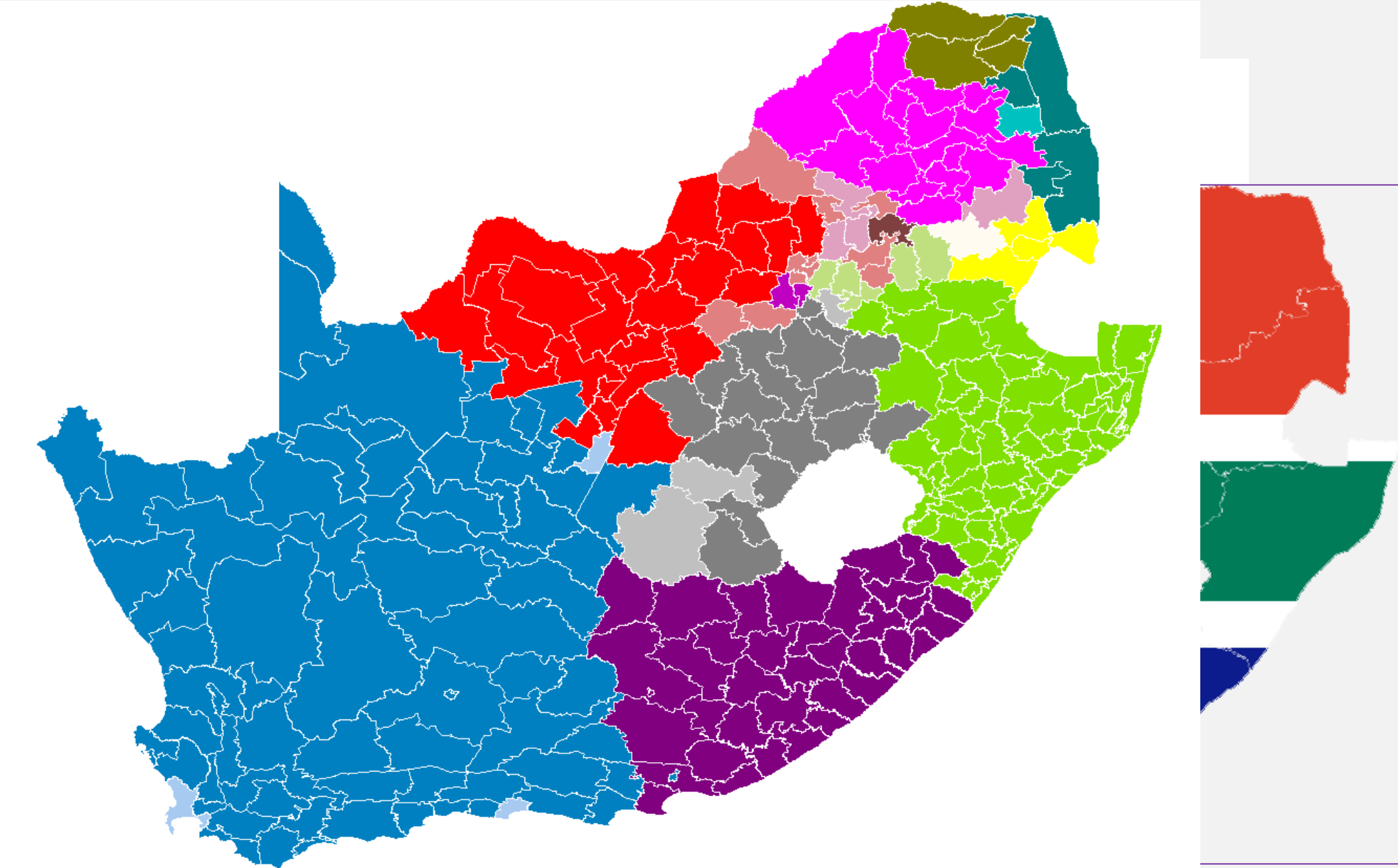


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prior 2006

National Building Regulation and Building Standards Act (Act 103 of 1977)



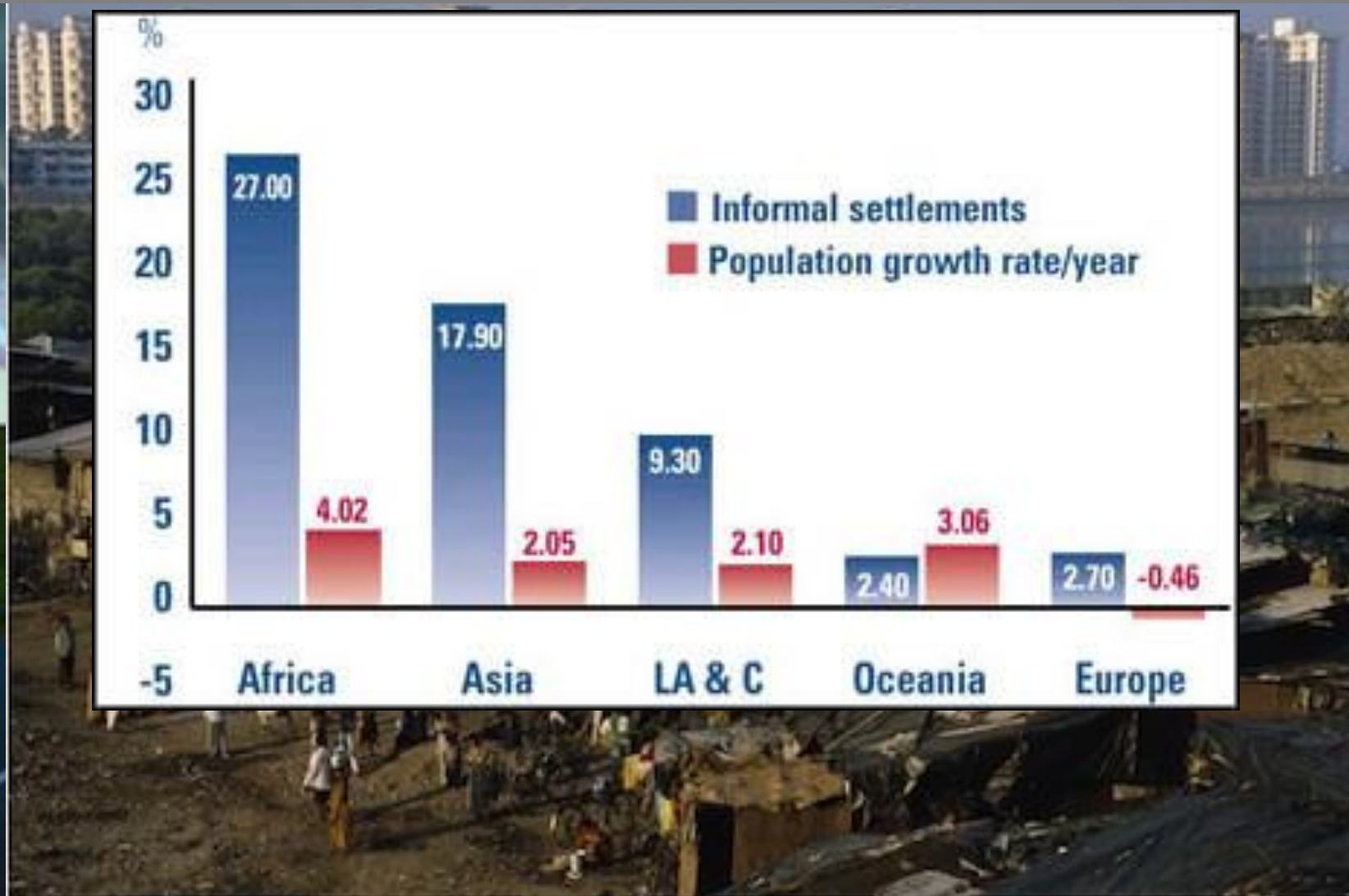
Timelines and important changes affecting The National Building Regulations



National Building Regulations - RISKS AND CHALLENGES Now and beyond

The growth of the population outperforms the provision of housing with an estimated 249 025 units per year.

The inability to provide formal housing, stimulate the rapid increase of “INFORMAL HOUSING”



National housing shortage

National Building Regulations - RISKS AND CHALLENGES Now and beyond

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**Current National
Building Legislation**



**How do I Comply with
the Building Regulations?**

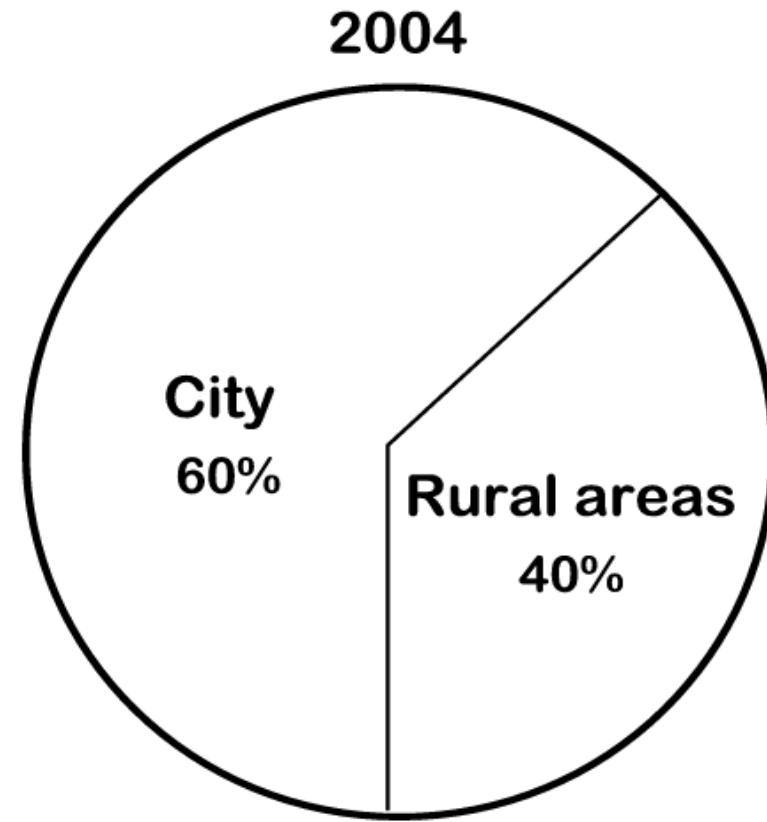
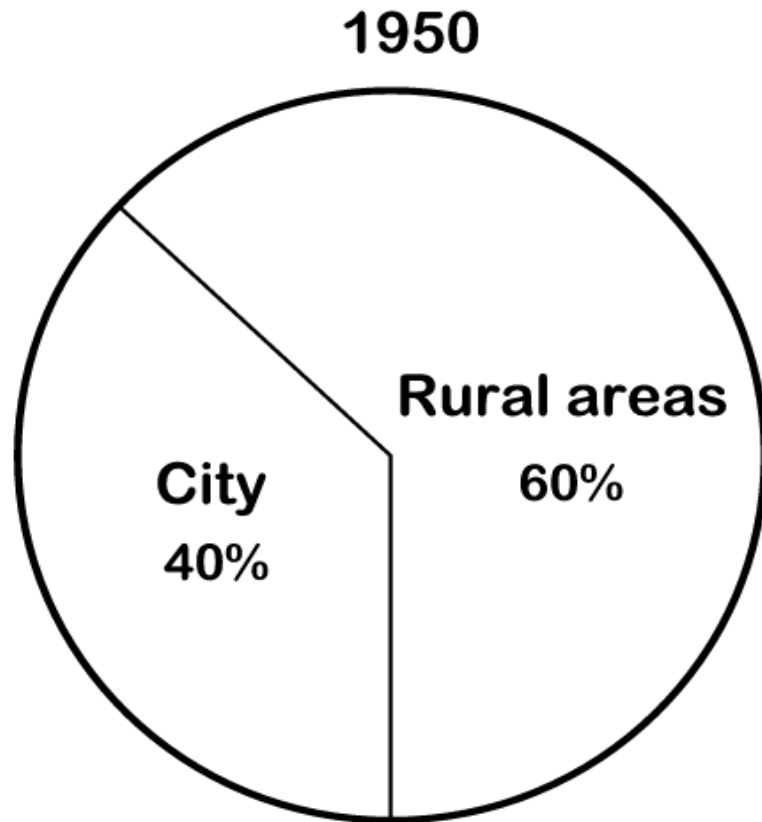
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National Building Regulations - RISKS AND CHALLENGES Now and beyond

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Building Block for Formal Enforcement




Building Block for INFORMAL Development and Enforcement



**NOT
NBR
compliant**



GOVERNMENT DEPARTMENTS in CONSTRUCTION REGULATORY DASHBOARD all guided by NBR



public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA



SACAP
ECSCA



cidb
development through partnership




GRÉMENT
SOUTH AFRICA
innovative construction product assessments



the dti
Department:
Trade and Industry
REPUBLIC OF SOUTH AFRICA



NRCS | national regulator for compulsory specifications



BUILDING BENCHMARK
CODE = NBR
for CONSTRUCTION



SABS
APPROVED



National Building Regulation and Building Standards Act




human settlements
Department:
Human Settlements
REPUBLIC OF SOUTH AFRICA



NHBRC
REGISTRATION COUNCIL



Focus on Quality



basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA



ASIDI
Accelerated Schools Infrastructure Delivery Initiative

The Education Infrastructure Grant (EIG), the Equitable Share (ES) grant, and the Accelerated Schools Infrastructure Delivery Initiative (Asidi)

NBR is the overarching legislation that binds all other building activities



science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA




CSIR
our future through science



water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA



GOVERNMENT DEPARTMENTS in CONSTRUCTION REGULATORY DASHBOARD all guided by NBR



public works
Department:
Public Works
REPUBLIC OF SOUTH AFRICA



SACAP
ECSCA



cidb
development through partnership




AGREMENT
SOUTH AFRICA
innovative construction product assessments



the dti
Department:
Trade and Industry
REPUBLIC OF SOUTH AFRICA



NRCS | national regulator for compulsory specifications



BUILDING BENCHMARK
CODE = NBR
for CONSTRUCTION



SABS
APPROVED



**Cooperative Governance
Traditional Affairs**



SALGA
South African Local Government Association
South African Local Government Association is a listed public entity. Salga represents local government on numerous intergovernmental forums



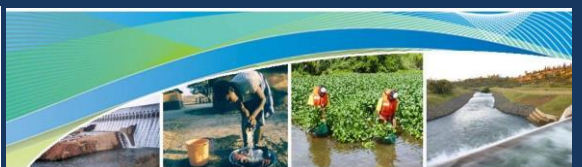
science & technology
Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



CSIR
our future through science



water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA



NBR | **BUILDING BENCHMARK**
CODE = NBR
for CONSTRUCTION





The Building, Construction and Property Industry is a large system of some R3 Trillion which is interconnected with a multitude of local and global influences affecting its development.

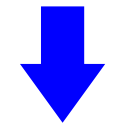
It is the second largest employer in the South African economy. This does not include the employment of professionals such as: architectural, quantity surveying and engineering.

Investment in Building and Construction over the next 3 years will be some R1,25 Trillion . . .

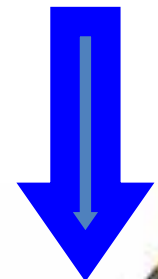
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The legislators



The regulators

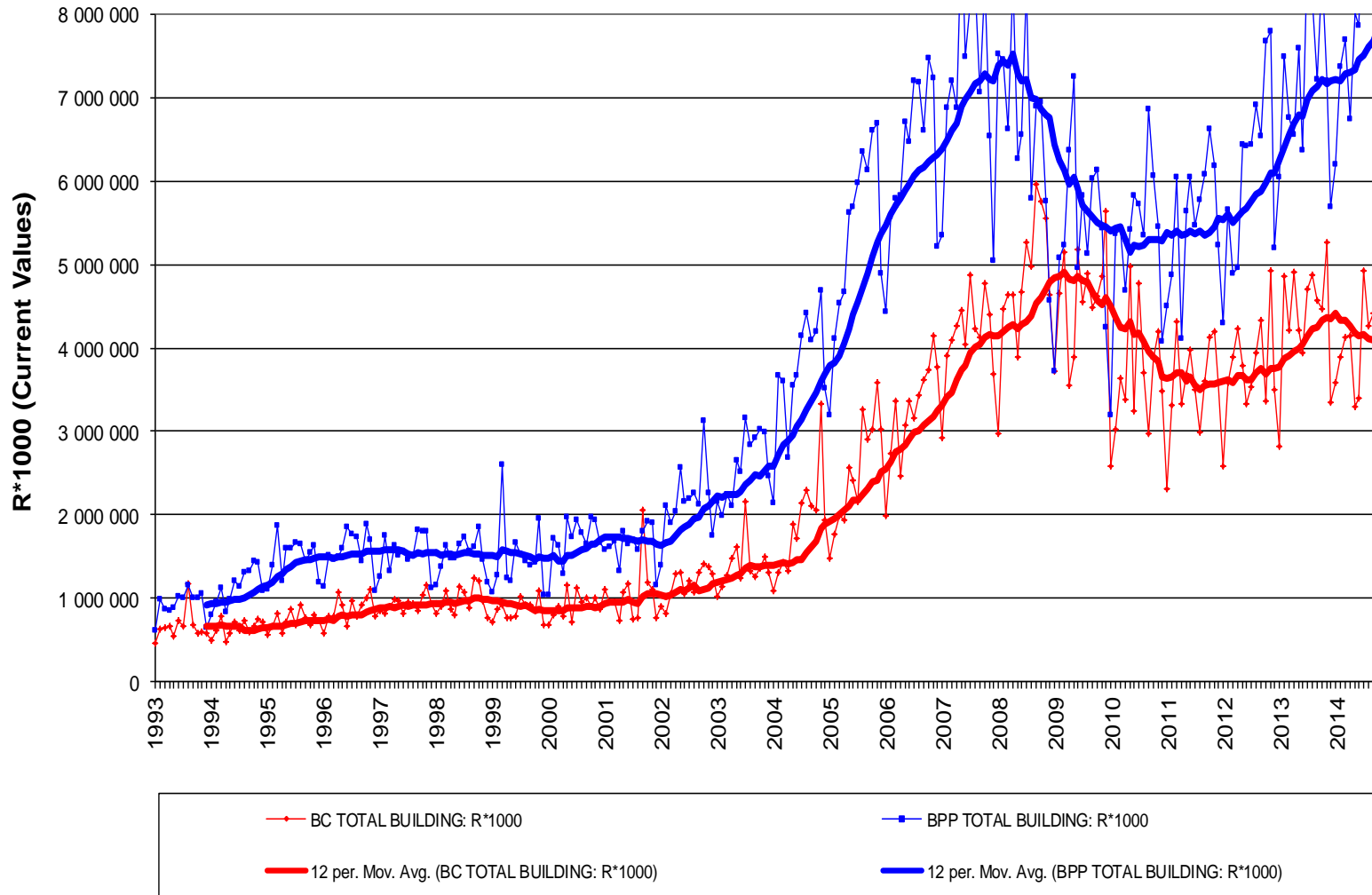


The Industry

BUILDING & CONSTRUCTION INDUSTRY – Investment



BPP & BC Total Building: 1993-2014 by month: R*1000 (Current Values) © BMI-BRSCU
 (Source: StatsSA; BMI-BRSCU: BC Total RSA by Month and Type of Building 1993-2008: TOTAL BLDNG BC&BPP R)

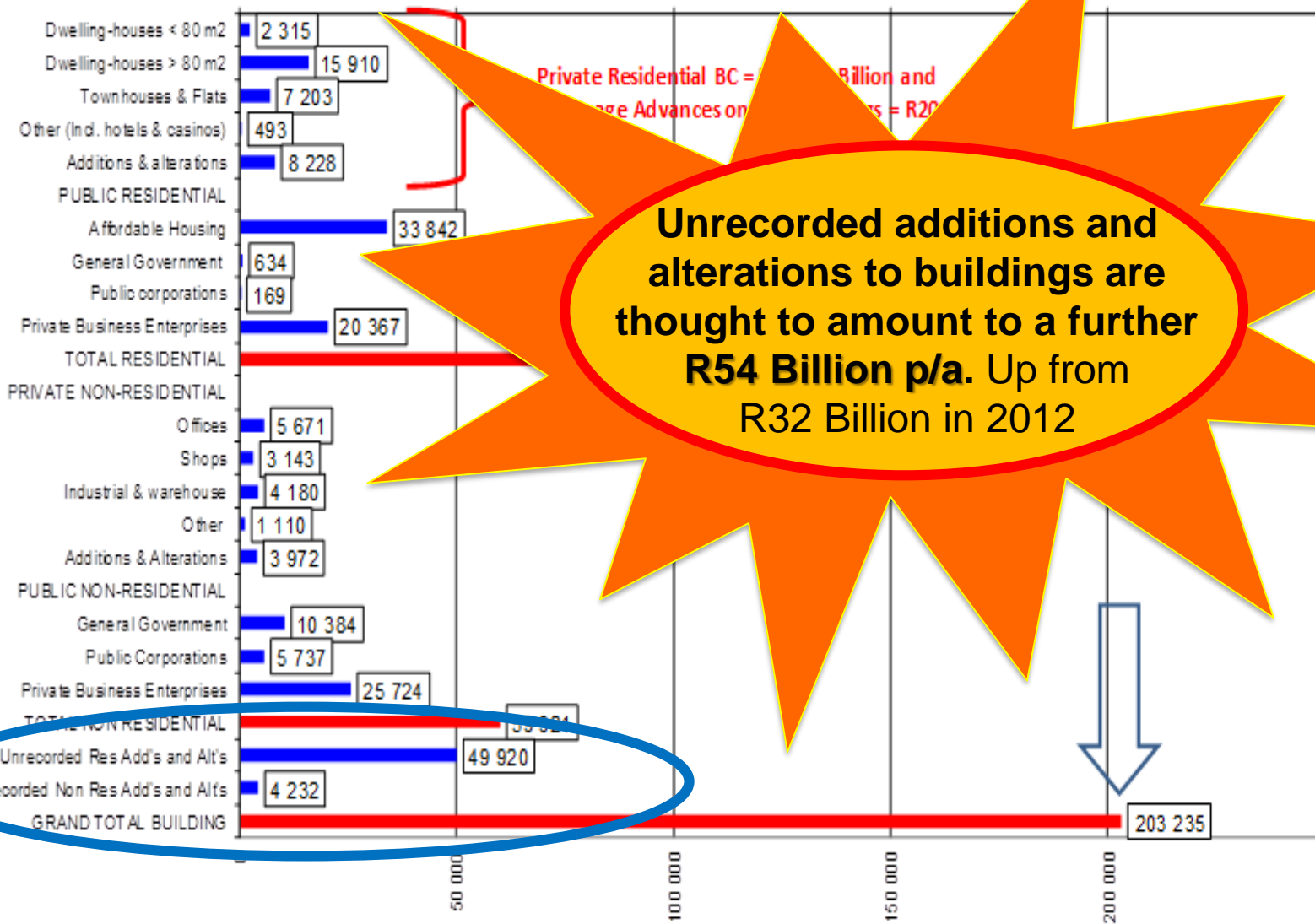


BUILDING & CONSTRUCTION INDUSTRY – Investment

INVESTMENT IN BUILDING BY SECTOR AND BY SEGMENT: 2013: R MILLION

(TOTAL = R203 235 MILLION)

(Source: SARB, StatsSA, MFA, BMI-BRSCU Workings)



Unrecorded additions and alterations to buildings are thought to amount to a further R54 Billion p/a. Up from R32 Billion in 2012

CURRENT REALITY OF INVESTMENT IN BUILDING

BY SECTOR AND SEGMENT: 2013 (R MILLION)





THE CODE OF HAMMURABI

– THE EARLIEST DISCOVERED LEGAL SYSTEM (BABYLONIAN DYNASTY 2000 – 323 BC)

If a builder build a house for someone, and does not construct it properly, and the house, which he built, fall and kill its owner; then that builder shall be put to death. If it kills the son of the owner, the son of that builder shall be put to death. If it ruin goods, he shall make compensation for all that has been ruined, and inasmuch as he did not construct properly this house which he built and it fell, he shall re-erect the house from his own means.

NATIONAL BUILDING REGULATIONS AND BUILDING STANDARDS ACT 103 OF 1977



To provide for the promotion of uniformity in the law relating to the erection of buildings in the area of jurisdiction of Local Authorities for the prescribing of building standards; and for matters connected therewith

1. **uniformity in the law**

(Practitioners and Regulators)

2. **erection of buildings**

(Building Industry - Construction)

3. **jurisdiction of Local Authorities**

(Building Control Officer as Regulator)

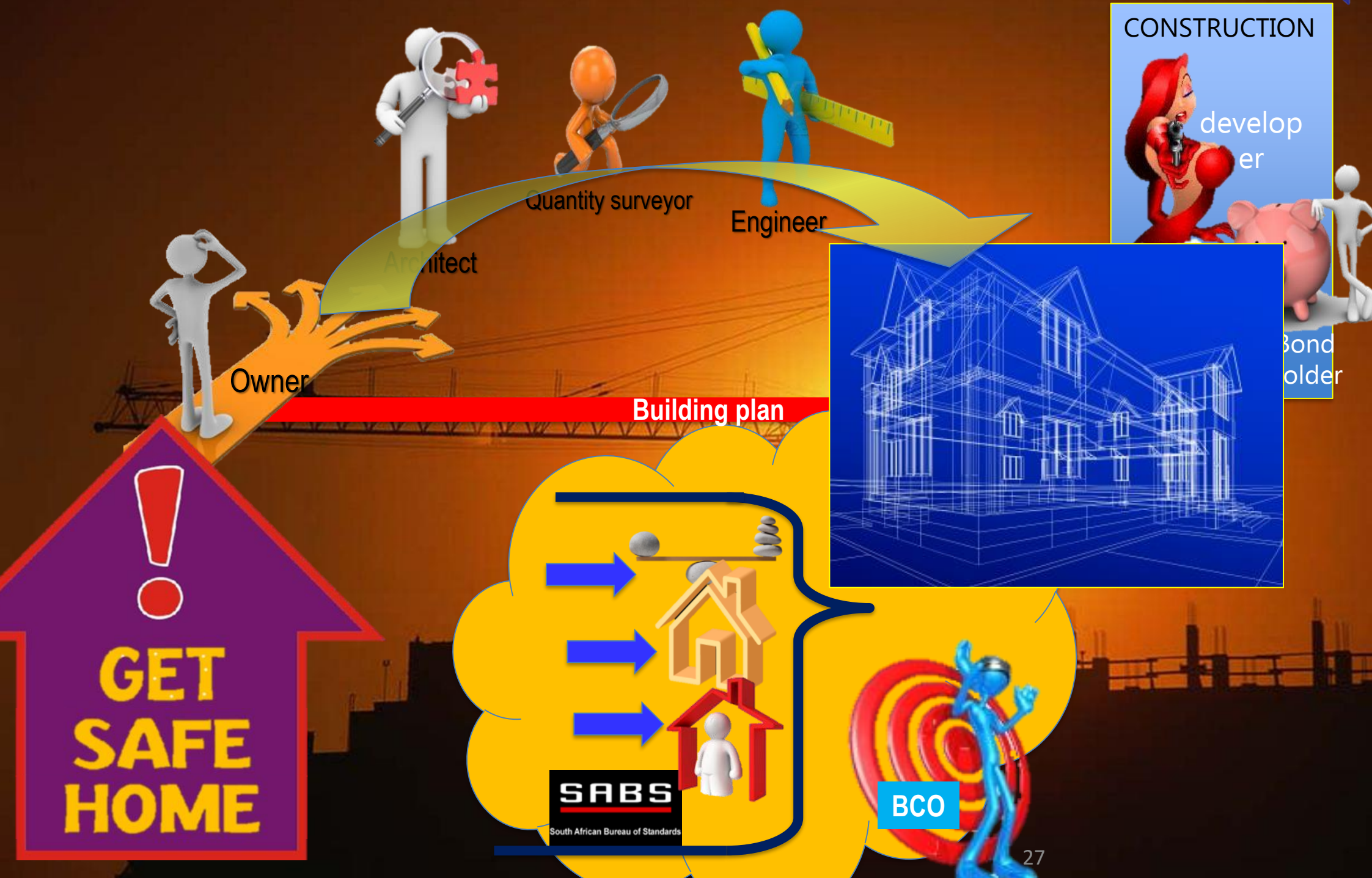
4. **Prescribing Building Standards**



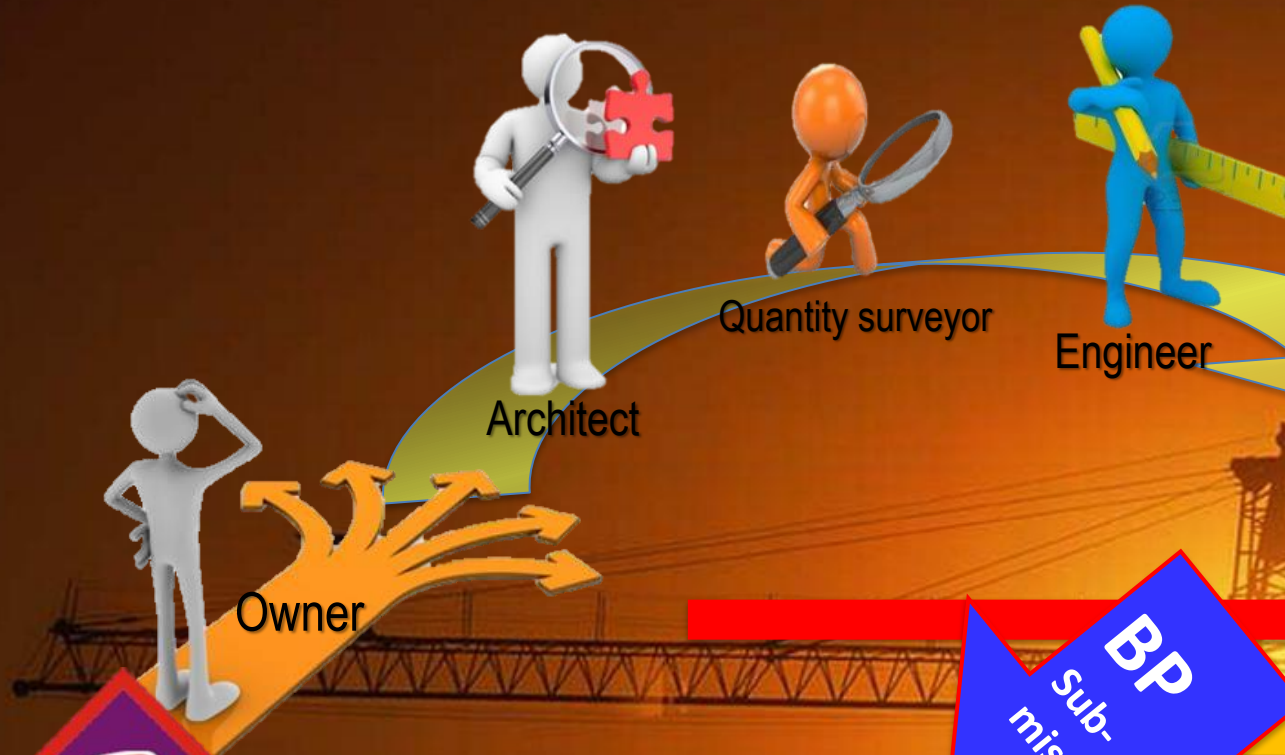
The Act desires to achieve the following 4 main goals;

1. Provide uniformity in the building environment through this act. The aim of this act is therefore that all buildings within SA will be constructed similarly and by using the same yardstick to measure the buildings in terms of health, safety and structural stability.
2. The act aims to govern all buildings and the processes we employ to construct our buildings.
3. The Act will be enforced by the Local Authorities (LA) within our country. The act therefore makes special provision to appoint competent minimum qualified BCO's within the LA sphere of Government.
4. The Act requires a set of South African National Standards (SANS 10400) to advise on possible solutions to the functional requirements set within the Regulations.

National Building Regulations : touching all building owners throughout South Africa



National Building Regulations : touching all building owners throughout South Africa



CONSTRUCTION

develop



and
Leder
HOME BUILDERS
BRC
REGISTRATION COUNCIL



Building Plan
Submission to Local
Authority

**SAFE
HOME**

Local Authority
applies the
legislation:
**National
Building
Regulations**



SABCO
South African Bureau of

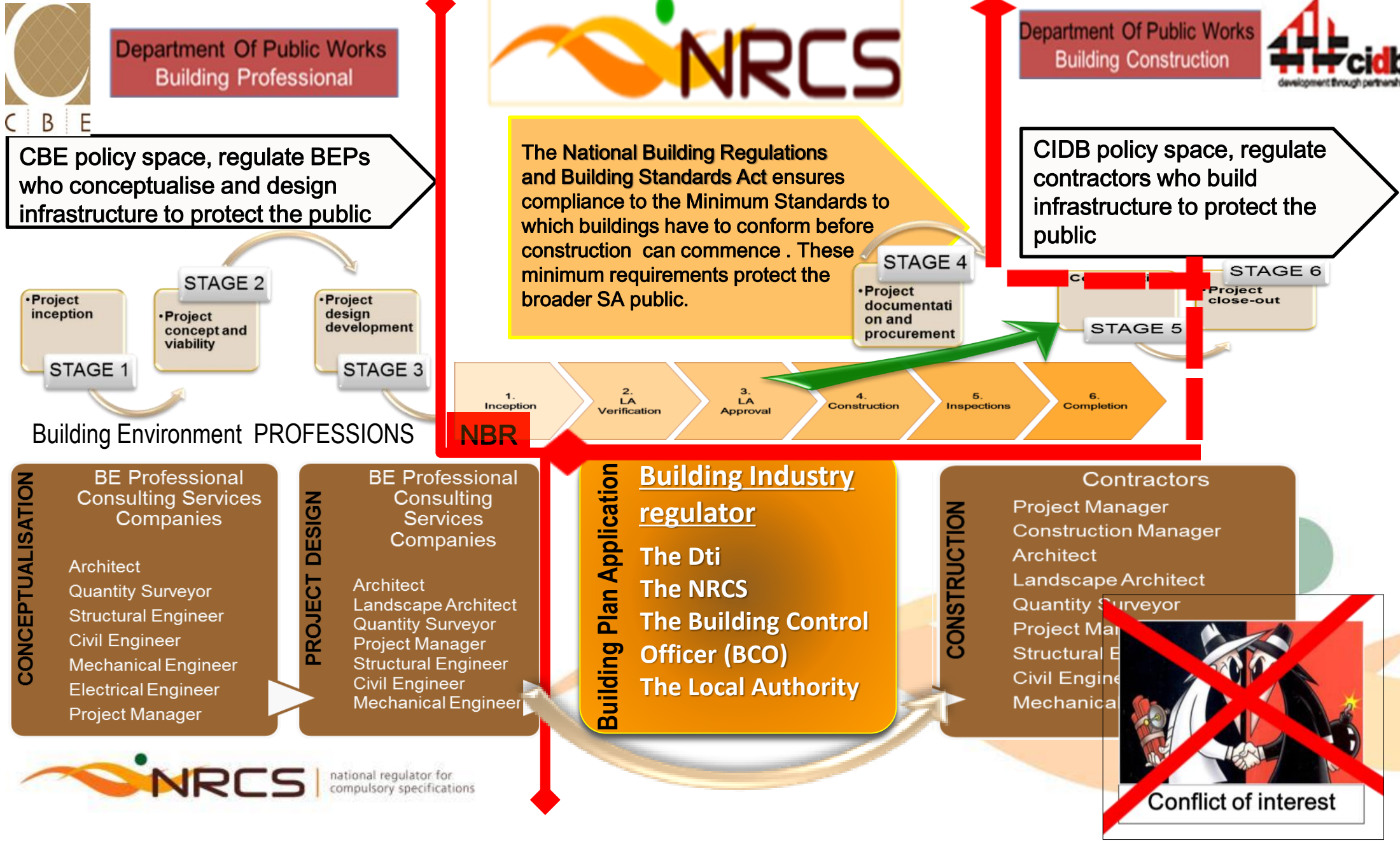
**National
Building
Regulations**

**BUILDING PLAN
APPROVAL**
Allows for
construction to
commence

National Building Regulations Building Procedures and Processes

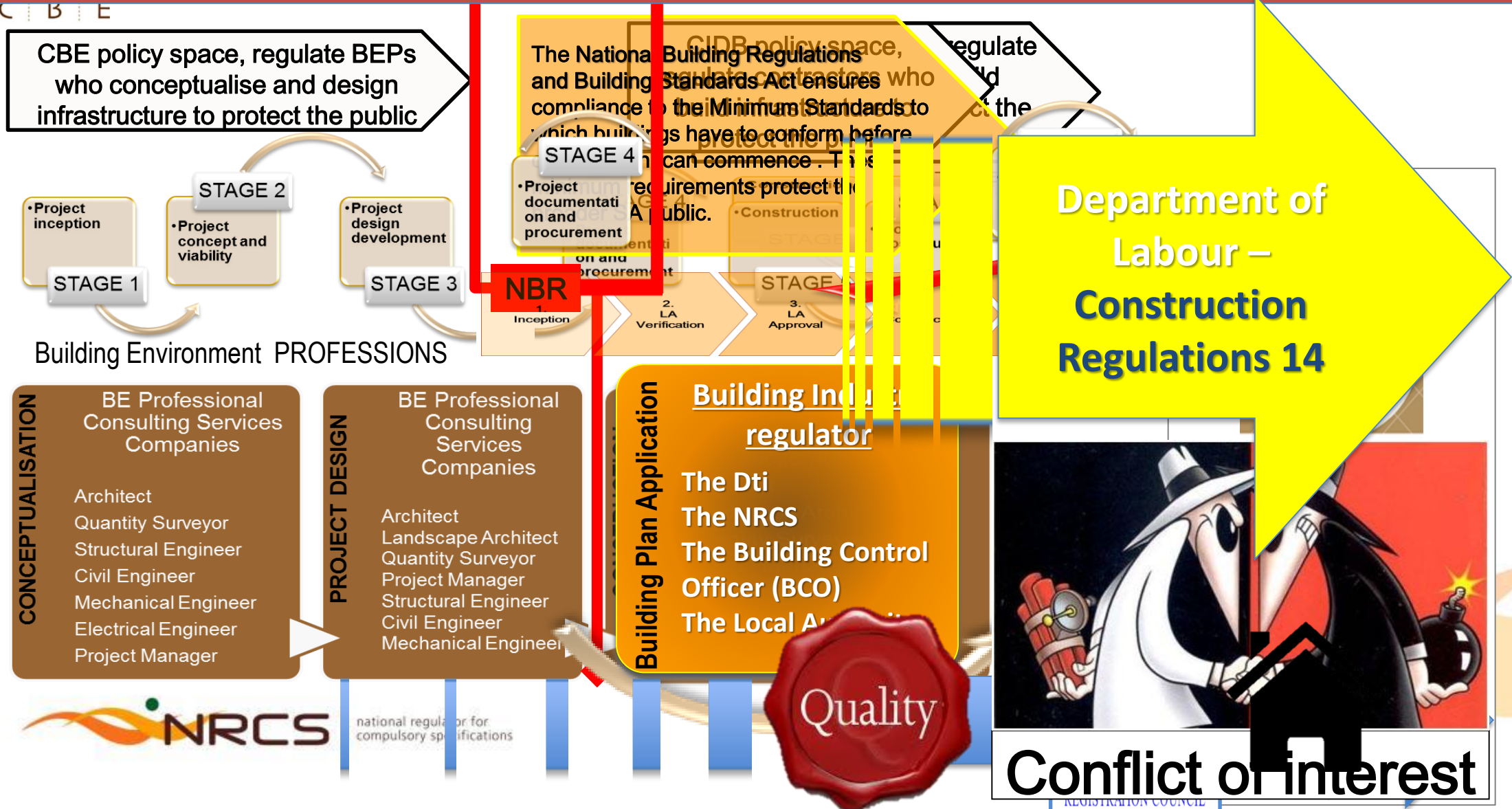


KEY Building Environment DESIGN PROFESSIONS AND THE STAGES OF THE CONSTRUCTION PROCESS





Department of Public Works



CBE policy space, regulate BEPs who conceptualise and design infrastructure to protect the public

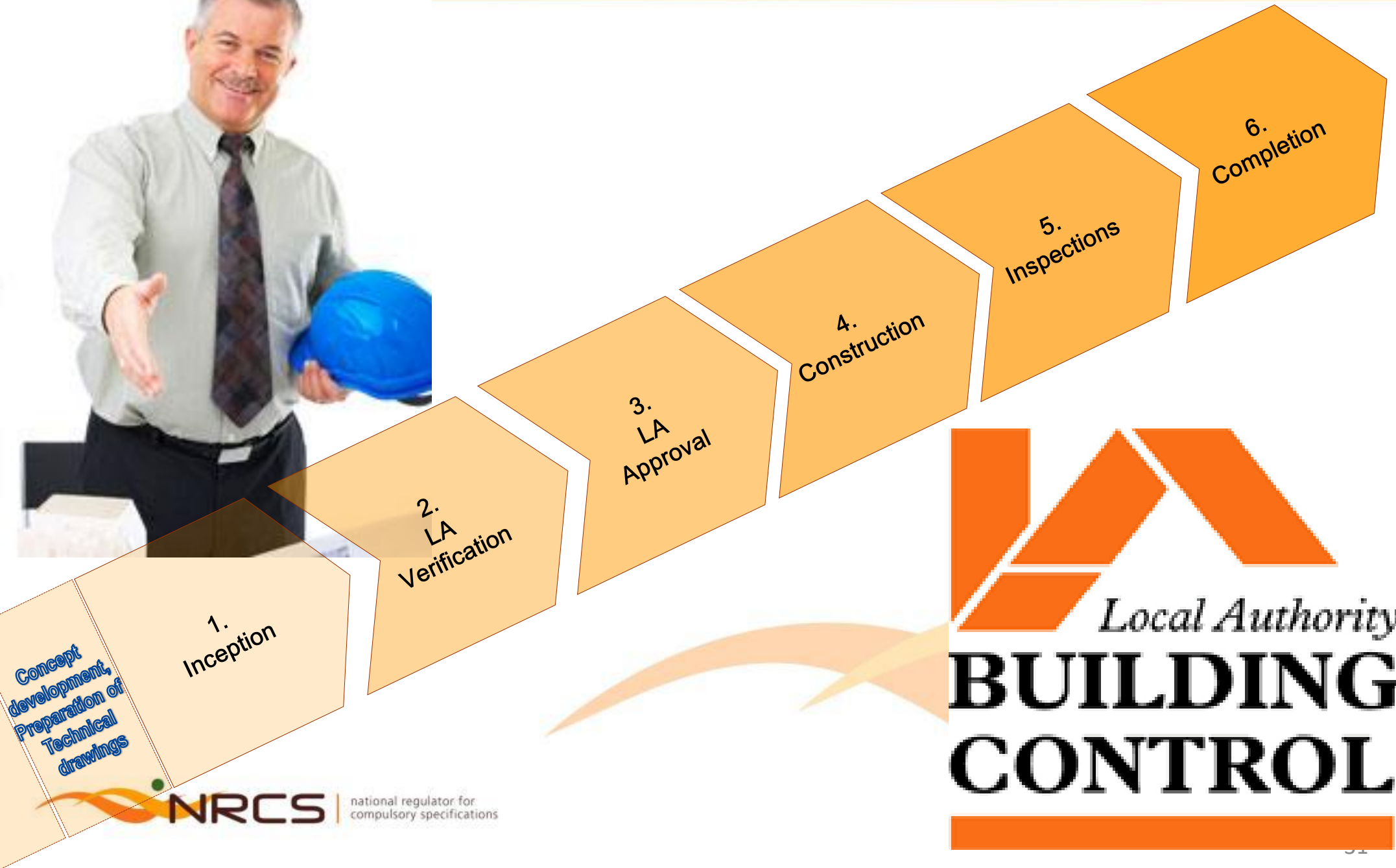
The National Building Regulations and Building Standards Act ensures compliance to the Minimum Standards to which buildings have to conform before they can commence. These requirements protect the public.

Department of Labour – Construction Regulations 14



Conflict of interest

National Building Regulations Building Procedures and Processes



National Building Regulations Building Procedures and Processes

National Building Regulations and Building Standards Act 103 of 1977

Section 4 of the Act:

Approval by Local Authorities of Applications in Respect of Erection of Buildings

- (1) **No person shall without the prior approval** in writing of the local authority in question, **erect any building** in respect of which plans and specifications are to be drawn and submitted in terms of this Act.
- (2) Any application for approval referred to in subsection (1) shall be in writing on a form made available for that purpose by the local authority in question.
- (3) Any application referred to in subsection (2) shall-
 - (a) contain the name and address of the applicant and, if the applicant is not the owner of the land on which the building in question is to be erected, of the owner of such land;
 - (b) be accompanied by such plans, specifications, documents and information as may be required by or under this Act, and by such particulars as may be required by the local authority in question for the carrying out of the objects and purposes of this Act.
- (4) **Any person erecting any building in contravention of the provisions of subsection (1) shall be guilty of an offence** and liable on conviction to a fine not exceeding R100 for each day on which he was engaged in so erecting such building

National Building Regulations Building Procedures and Processes



Concept development, Preparation of Technical drawings

1. Inception





The Act; and the Regulations are



the Rules of the “Building Game”

National Building Regulations and Standards Act



NATIONAL BUILDING REGULATIONS Act 103 of 1977

REGULATIONS

PARTS A to W VIEWED AS CHAPTERS

PART A ADMINISTRATION

- A1 Application
- A2 Plans And Particulars To Be Furnished
- A3 Preliminary Plans And Enquiries
- A4 Local Authority May Require Additional Documents And Information
- A5 Application Forms And Materials, Scales And Sizes Of Plans
- A6 Site Plans
- A7 Layout Drawing
- A8 Plumbing Installation Drawings And Particulars
- A9 Fire Protection Plan
- A10 Symbols On Fire Protection Plan
- A11 Pointing Out Of Boundary Beacons
- A12 Street Levels

- A13 Building Materials
 - A14 Construction
 - A15 Maintenance And
 - A16 Qualifications Of A
 - A17 Certificate Of Ident
Officer
 - A18 Control Of Plumbe
 - A19 Appointment Of Pe
Design, Inspection And
 - A20 Classification And
 - A21 Population
 - A22 Notice Of Intention
or Demolition of A Buil
Inspection
 - A23 Temporary Building
 - A24 Standardization Of
 - A25 General Enforceme
- | | |
|---|-----------------------------|
| A | Administration |
| B | Structural Design |
| C | Dimensions |
| D | Public Safety |
| E | Demolition Work |
| F | Site Operations |
| G | Excavations |
| H | Foundations |
| J | Floors |
| K | Walls |
| L | Roofs |
| M | Stairways |
| N | Glazing |
| O | Lighting / Ventilation |
| P | Drainage |
| Q | Alternate Sanitary Disposal |
| R | Storm water Disposal |
| S | Facilities for Disabled |
| T | Fire Protection |
| U | Refuse Disposal |
| V | Space Heating |
| W | Fire Installation |
| X | Sustainable Building |
| | Repeal - Regulations |

How do we satisfy the ENERGY EFFICIENT BUILDING requirements in the National Building Regulations?



National Building Legislation

National Building Regulations and Building Standards Act

The **ACT**[®]



11



A “regulation” is “compulsory” which is the, “thou shall”, or the LAW that has to be obeyed at all cost but a “**rule**” is NOT compulsory and therefore it is called the “**deem-to-satisfy**” rules.



National Building Legislation

National Building Regulations and Building Standards Act

The **ACT**

The

REGULATIONS

LAW

A “regulation” is “compulsory” which is the, “thou shall”, or the LAW that has to be obeyed at all cost but a “**rule**” is NOT compulsory and therefore it is called the “**deem-to-satisfy**” rules.

Nation National Building R

To facilitate the use of the NBR's the NBR's are supported by a set of deemed-to-satisfy rules: The SANS 10400 suite of documents called; *the Application of National Building Regulations*.

The AC

These deemed-to-satisfy provisions describe design and construction methods, materials and technical solutions, which if applied, will ensure that the building so designed and constructed will satisfy the functional requirements of the regulations.

Rule

The
"Deemed to Satisfy"
The REGULATION
Rules

A "regulation" is "compulsory" which is the, "thou shall", or the LAW that has to be obeyed at all cost but a "rule" is NOT compulsory and therefore it is called the "deem-to-satisfy" rules.

National Building Legislation

National Building Regulations and Building Standards Act

The **ACT**[®]



The **REGULATIONS**



The **“Deemed to Satisfy”**
The **REGULATION**
Rules



NATIONAL BUILDING REGULATIONS AND BUILDING STANDARDS ACT NO. 103 OF 1977

- 1 Definitions
- 2 Application of Act
- 3 Duties of Draftsmen of Plans, Specifications, Documents and Diagrams
- 4 Approval by Local Authorities of Applications in Respect of Erection of Buildings
- 5 Appointment of Building Control Officer by Local Authority
- 6 Functions of Building Control Officers
- 7 Approval by Local Authorities in Respect of Erection of Buildings
- 8 Power of Court in Respect of Approval by Local Authority
- 9 Erection of Buildings in Certain Circumstances Subject to Prohibition or Conditions
- 10 Appeal Against Decision of Local Authority
- 11 Erection of Buildings Subject to Time Limit
- 12 Demolition or Alteration of Certain Buildings
- 13 Exemption of Buildings from National Building Regulations and Authorization for Erection Thereof
- 14 Certificates of Occupancy in Respect of Buildings
- 15 Entry by Building Control Officers and Certain Other Persons of Certain Buildings and Land
- 16 Report on Adequacy of Certain Measures and on Certain Building Projects
- 17 National Building Regulations and Directives
- 18 Deviation and Exemption From National Building Regulations
- 19 Prohibition on Use of Certain Methods or Materials
- 20 Regulations
- 21 Order in Respect of Erection and Demolition of Buildings
- 22 Power of Local Authorities Relating to Rates, Taxes, Fees and Other Moneys
- 23 Exemption from Liability
- 24 General Penalty Clause
- 25 Presumption
- 26 Payment of Certain Moneys to Local Authorities
- 27 Powers of Minister in Respect of Certain Local Authorities
- 28 Delegations of Powers
- 29 Repeal of Laws
- 30 Repeal of Section 14bis of Act 33 of 1962, as inserted by section 4 of Act 72 of 1964
- 31 Short Title and Commencement

The Act contains 28 sections

This Act shall be called the National Building Regulations and Building Standards Act, 1977, and shall come into operation on a date fixed by the State President by proclamation in the Gazette.

The 23 National Building Regulations

comprising of 103 sub-regulations

PART AZ COMING IN OPERATION, DEFINITIONS AND STANDARDS

- AZ1 Coming In Operation
- AZ2 Definitions
- AZ3 Standards
- AZ4 Complying with the requirements of the NBR
- AZ5 Repeal of regulations

PART A ADMINISTRATION

- A1 Application
- A2 Plans And Particulars To Be Furnished
- A3 Preliminary Plans And Enquiries
- A4 Local Authority May Require Additional Plans
- A5 Application Forms And Material
- A6 Site Plans
- A7 Layout Drawing
- A8 Plumbing Installation Drawings
- A9 Fire Protection Plan
- A10 Symbols On Fire Protection Plans
- A11 Pointing Out Of Boundary Bearings
- A12 Street Levels
- A13 Building Materials And Tests
- A14 Construction
- A15 Maintenance And Operation
- A16 Qualifications Of A Building Contractor
- A17 Certificate Of Identity Of A Building
- A18 Control Of Plumbers And Plumbing Work
- A19 Appointment Of Persons Responsible For Design, Inspection And Assessment Duties
- A20 Classification And Designation
- A21 Population
- A22 Notice Of Intention To Commence Erection Or Demolition Of A Building And Notices Of Inspection
- A23 Temporary Buildings
- A24 Standardization Of Interpretation
- A25 General Enforcement

PART B STRUCTURAL DESIGN

- B1 Design Requirements

PART C DIMENSIONS

- C1 Rooms And Buildings

PART D PUBLIC SAFETY

- D1 Change In Level
- D2 Pedestrian Entrances To Parking Areas In Buildings
- D3 Ramps
- D4 Swimming Pools And Swimming Baths

PART E ELECTRICAL INSTALLATIONS

- E1 General Requirements

PART F SPECIAL REQUIREMENTS

- F1 Buildings
- F2 Buildings
- F3 Buildings
- F4 Buildings
- F5 Buildings
- F6 Buildings
- F7 Cutting Into, Laying Open And Demolishing Certain Work
- F8 Waste Material On Site
- F9 Cleaning Of Site
- F10 Builder's Shed
- F11 Sanitary Facilities

PART G EXCAVATIONS

- G1 General Stability Requirement
- G2 Deemed-To-Satisfy Requirement

PART H FOUNDATIONS

- H1 General Requirements

PART J FLOORS

- J1 General Requirements

PART K WALLS

- K1 Structural Strength And Stability
- K2 Water Penetration
- K3 Roof Fixing
- K4 Behavior In Fire
- K5 Deemed-To-Satisfy Requirements

PART L ROOFS

- L1 General Requirements
- L2 Fire Resistance And Combustibility

PART M ROOFING

- M1 General Requirements

PART N ROOFING

- N1 General Requirements

PART O ROOFING

- O1 General Requirements

PART P ROOFING

- P1 General Requirements

PART Q ROOFING

- Q1 General Requirements

PART R ROOFING

- R1 General Requirements

PART S ROOFING

- S1 General Requirements

PART T ROOFING

- T1 General Requirements

PART U ROOFING

- U1 General Requirements

PART V ROOFING

- V1 General Requirements

PART W ROOFING

- W1 General Requirements

PART X ROOFING

- X1 General Requirements

PART Y ROOFING

- Y1 General Requirements

PART Z ROOFING

- Z1 General Requirements

PART Q NON-WATER-BORNE MEANS OF SANITARY DISPOSAL

- Q1 Means Of Disposal
- Q2 Permission
- Q3 Construction, Siting And Access

PART R STORMWATER DISPOSAL

- R1 Stormwater Disposal Requirement
- R2 Saving

PART S FACILITIES FOR PERSONS WITH DISABILITIES

- S1 Application
- S2 Facilities To Be Provided
- S3 Deemed-To-Satisfy Requirements

PART T FIRE PROTECTION

- T1 General Requirements
- T2 Offences

PART U REFUSE DISPOSAL

- U1 Provision Of Areas
- U2 Access To Areas
- U3 Refuse Chutes

PART V SPACE HEATING

- V1 Design, Construction And Installation

PART W WATER

- W1 Fire Installations
- W2 Supply Of Water
- W3 Design Of Fire Installations
- W4 Deemed-To-Satisfy Requirements

Part X: Environmental sustainability REGULATION XA: Energy usage in buildings

- XA1 Use of Energy in buildings
- XA2 Hot water heating requirement
- XA3 Deemed-To-Satisfy Requirements

South Africa's National Building Regulations were originally produced as a set of functional guidelines for anybody building any type of structure. They were not intended to be prescriptive in terms of what people should build, but they do stipulate important "dos" and "don'ts" – many of which are in fact mandatory.

The S.A. National Standards 10400



The 23 National Building Regulations

PART AZ COMING IN OPERATION, DEFINITIONS AND STANDARDS

- AZ1 Coming In Operation
- AZ2 Definitions
- AZ3 Standards
- AZ4 Complying with the requirements of the NBR
- AZ5 Repeal of regulations

PART A ADMINISTRATION

- A1 Application
- A2 Plans And Particulars To Be Furnished
- A3 Preliminary Plans And Enquiries
- A4 Local Authority May Require Additional Documents
- A5 Application Forms And Materials, Scales, Sizes Of Plans
- A6 Site Plans
- A7 Layout Drawing
- A8 Plumbing Installation Drawings And Particulars
- A9 Fire Protection Plan
- A10 Symbols On Fire Protection Plan
- A11 Pointing Out Of Boundary Beacons
- A12 Street Levels
- A13 Building Materials And Tests
- A14 Construction
- A15 Maintenance And Operation
- A16 Qualifications Of A Building Control Officer
- A17 Certificate Of Identity Of A Building Control Officer
- A18 Control Of Plumbers And Plumbing Work
- A19 Appointment Of Persons Responsible For Design, Inspection And Assessment Duties
- A20 Classification And Designation
- A21 Population
- A22 Notice Of Intention To Commence Erection Or Demolition Of A Building And Notices Of Inspection
- A23 Temporary Buildings
- A24 Standardization Of Interpretation
- A25 General Enforcement

PART B STRUCTURAL DESIGN

- B1 Design Requirement

PART C DIMENSIONS

- C1 Rooms And Buildings

PART D PUBLIC SAFETY

- D1 Change In Level
- D2 Pedestrian Entrances To Parking Areas In Buildings
- D3 Ramps
- D4 Swimming Pools And Swimming Baths
- D5 Deemed-To-Satisfy Requirements

PART E DEMOLITION WORK

- E1 Demolition Of A Building
- E2 Safeguarding Of Basements
- E3 Prohibition Of Dangerous Methods
- E4 General Penalty

PART F SITE OPERATIONS

- F1 Protection Of The Public
- F2 Damage To Local Authorities Property
- F3 Geotechnical Site And Environmental Conditions
- F4 Preparation Of Site
- F5 Soil Poisoning
- F6 Control Of Unreasonable Levels Of Dust And Noise
- F7 Cutting Into, Laying Open And Demolishing Certain Work
- F8 Waste Material On Site
- F9 Cleaning Of Site
- F10 Builder's Shed
- F11 Sanitary Facilities

PART G EXCAVATIONS

- G1 General Stability Requirement
- G2 Deemed-To-Satisfy Requirement

PART H FOUNDATIONS

- H1 General Requirements

PART J FLOORS

- J1 General Requirements

PART K WALLS

- K1 Structural Strength And Stability
- K2 Water Penetration
- K3 Roof Fixing
- K4 Behavior In Fire
- K5 Deemed-To-Satisfy Requirements

PART L ROOFS

- L1 General Requirements
- L2 Fire Resistance And Combustibility
- L3 Deemed-To-Satisfy Requirements

PART M STAIRWAYS

- M1 General Requirements
- M2 Fire Requirement
- M3 Deemed-To-Satisfy Requirements

PART N GLAZING

- N1 Type And Fixing Of Glazing

PART O LIGHTING AND VENTILATION

- O1 Lighting And Ventilation Requirements
- O2 Special Provisions Of Natural Lighting
- O3 Approval Of Artificial Ventilation Systems
- O4 Design Of Artificial Ventilation Systems
- O5 Artificial Ventilation Plant
- O6 Testing Of Artificial Ventilation Systems
- O7 Fire Requirements

PART P DRAINAGE

- P1 Compulsory Drainage Of Buildings
- P2 Design Of Drainage Installations
- P3 Control Of Objectionable Discharge
- P4 Industrial Effluent
- P5 Disconnections
- P6 Unauthorised Drainage Work
- P7 Inspection And Testing Of Drainage Installations

PART Q NON-WATER-BORNE MEANS OF SANITARY DISPOSAL

- Q1 Means Of Disposal
- Q2 Permission
- Q3 Construction, Siting And Access

PART R STORMWATER DISPOSAL

- R1 Stormwater Disposal Requirement
- R2 Saving

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Part X: Environmental sustainability

REGULATION XA: Energy usage in buildings

- XA1 Use of Energy in buildings
- XA2 Hot water heating requirement
- XA3 Deemed-To-Satisfy Requirements

National Legislation

National Building Regulations and Building Standards Act



Part of National Building Regulations

B: Structural Design
C: Dimensions
D: Public Safety
F: Site Operations
G: Excavations
H: Foundations
J: Floors
K: Walls
L: Roofs
M: Stairways
N: Glazing
O: Lighting and Ventilation
P: Drainage
Q: Non-water-borne Means of Sanitary Disposal
R: Stormwater Disposal
S: Facilities for Persons with Disabilities
T: Fire Protection
V: Space Heating
W: Fire Installation
X: Sustainable Buildings

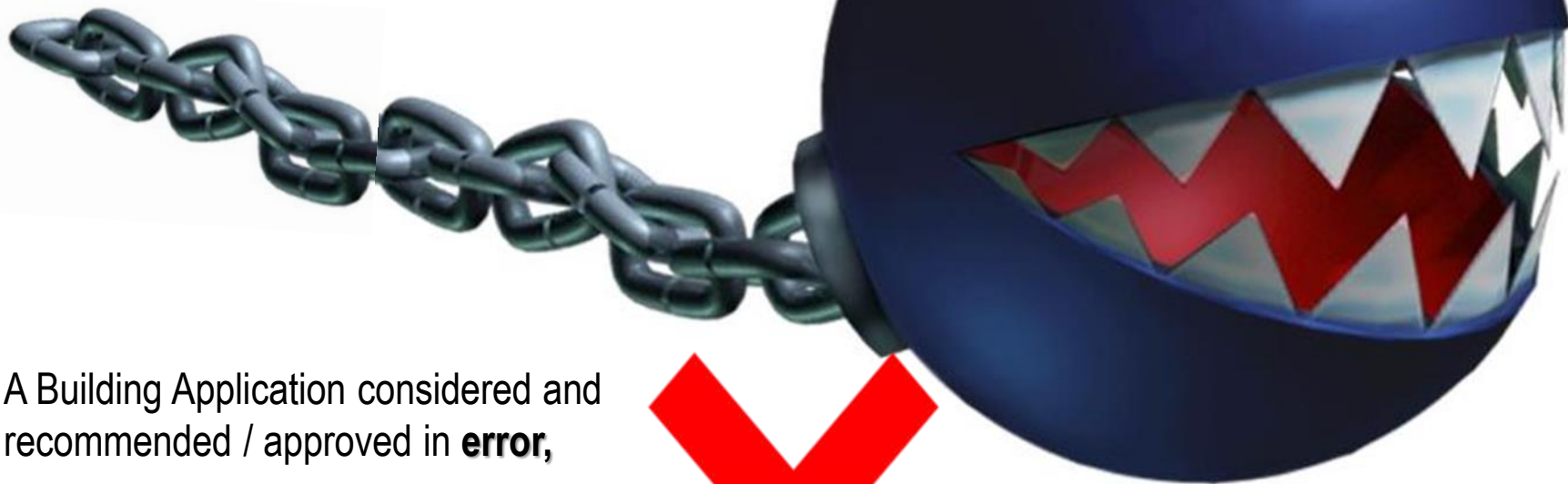
Location of deemed-to-satisfy requirements

SANS 10400-B, *Structural design*
SANS 10400-C, *Dimensions*
SANS 10400-D, *Public safety*
SANS 10400-F, *Site operations*
SANS 10400-G, *Excavations*
SANS 10400-H, *Foundations*
SANS 10400-J, *Floors*
SANS 10400-K, *Walls*
SANS 10400-L, *Roofs*
SANS 10400-M, *Stairways*
SANS 10400-N, *Glazing*
SANS 10400-O, *Lighting and ventilation*
SANS 10400- P, *Drainage*
SANS 10400-Q, *Non-water-borne means of sanitary disposal*
SANS 10400-R, *Stormwater disposal*
SANS 10400-S, *Facilities for persons with disabilities.*
SANS 10400-T, *Fire protection*
SANS 10400-V, *Space heating*
SANS 10400-W, *Fire installation*
SANS 10400-X, *Sustainable Buildings*

National Building Regulations and Building Standards Act

The National Building Regulations and the Local Authority Spheres of Government

The National Building Regulations is Considered “**end legislation**”; therefore the inclusion to the accounting authority to consider “any other applicable” legislation before an approval is granted.



A Building Application considered and recommended / approved in **error**,
cannot be retracted nor amended.

Only a High Court order can overturn or amend such decision of the LA.



The National Building Regulations and the Local Authority Spheres of Government

The REVIEW BOARD provides an
INTERNAL REMEDY

That assists in the interpretation
of the technical intricacies within
the built environment.

The Review Boards finding is not an
instruction to the Local Authority or
the Applicant but can be used as
SPECIALIST INTERPRETATION that
advise the High Court in assisting the
courts decision when such dispute is
brought to the High Court for hearing.



The National Building Regulations and the Local Authority Spheres of Government

The REVIEW BOARD provides an

INTERNAL

That assist

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advise t

courts decision when such dispute is

brought to the High Court for hearing.

Review Board Sanction

Regulation 13 (4) of the Review Board Regulations provides the following sanctions to be used:

(4) The Board may:

- a) dismiss the appeal and confirm the refusal or any conditional approval of the Local Authority, or
- b) Uphold the appeal in whole or in part and
- c) Order the local Authority to pay the successful appellant an amount equivalent to the amount paid by the applicant in terms of regulation 9(3) or any part of such amount.
(currently R114.00)





CLOSE CALL.

Eljean Williams, 29, from Atlantis
outside her collapsed RDP home

PICTURE: MANDLA MNYAKAMA



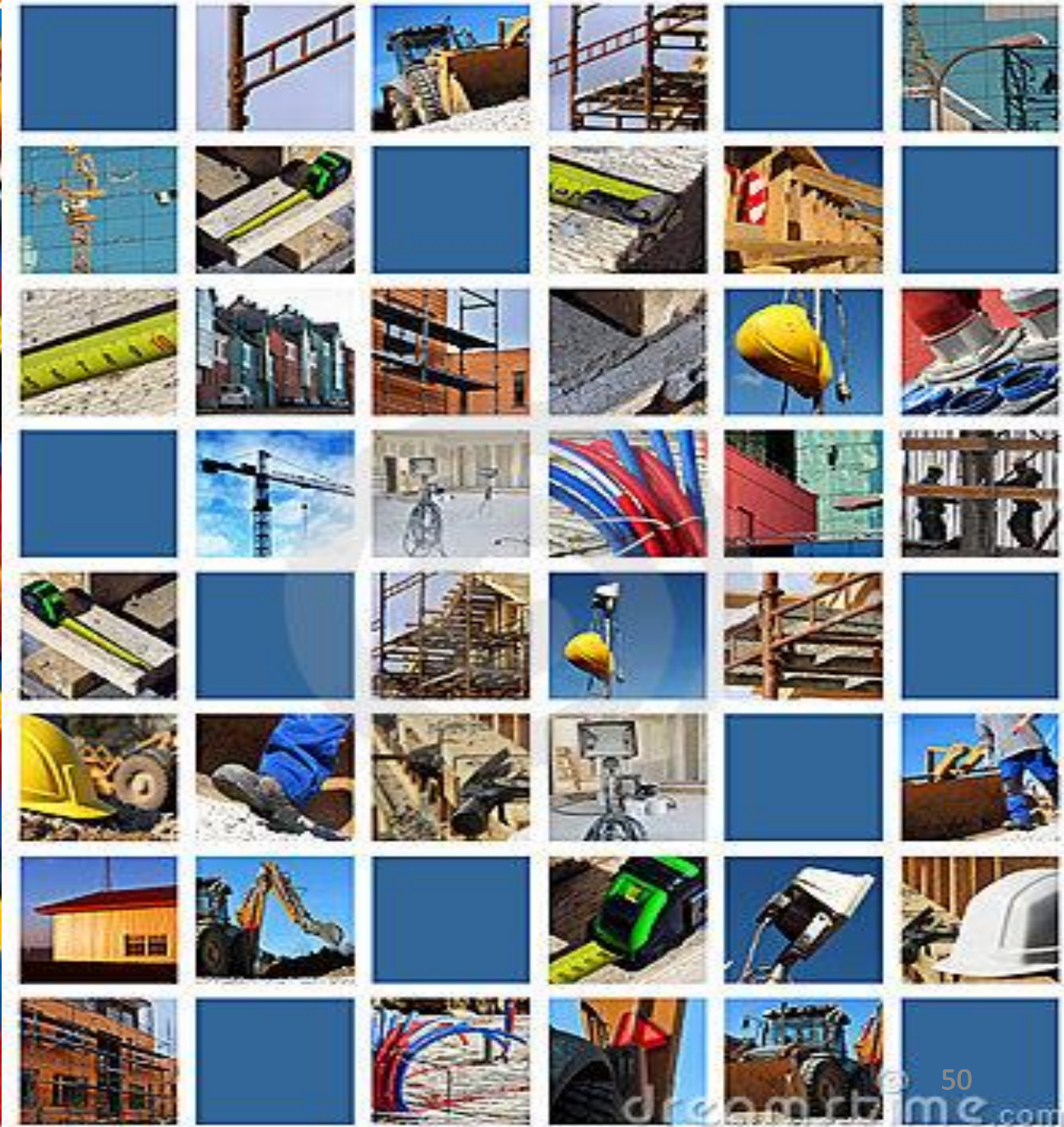
Demanding good quality: Reporter Agiza Hlongwane
inspects what remained of the low-cost house that was
reduced to rubble by angry residents of Illovo township in
KwaZulu-Natal. *Photo: Bongive Gumede, Sunday Tribune*

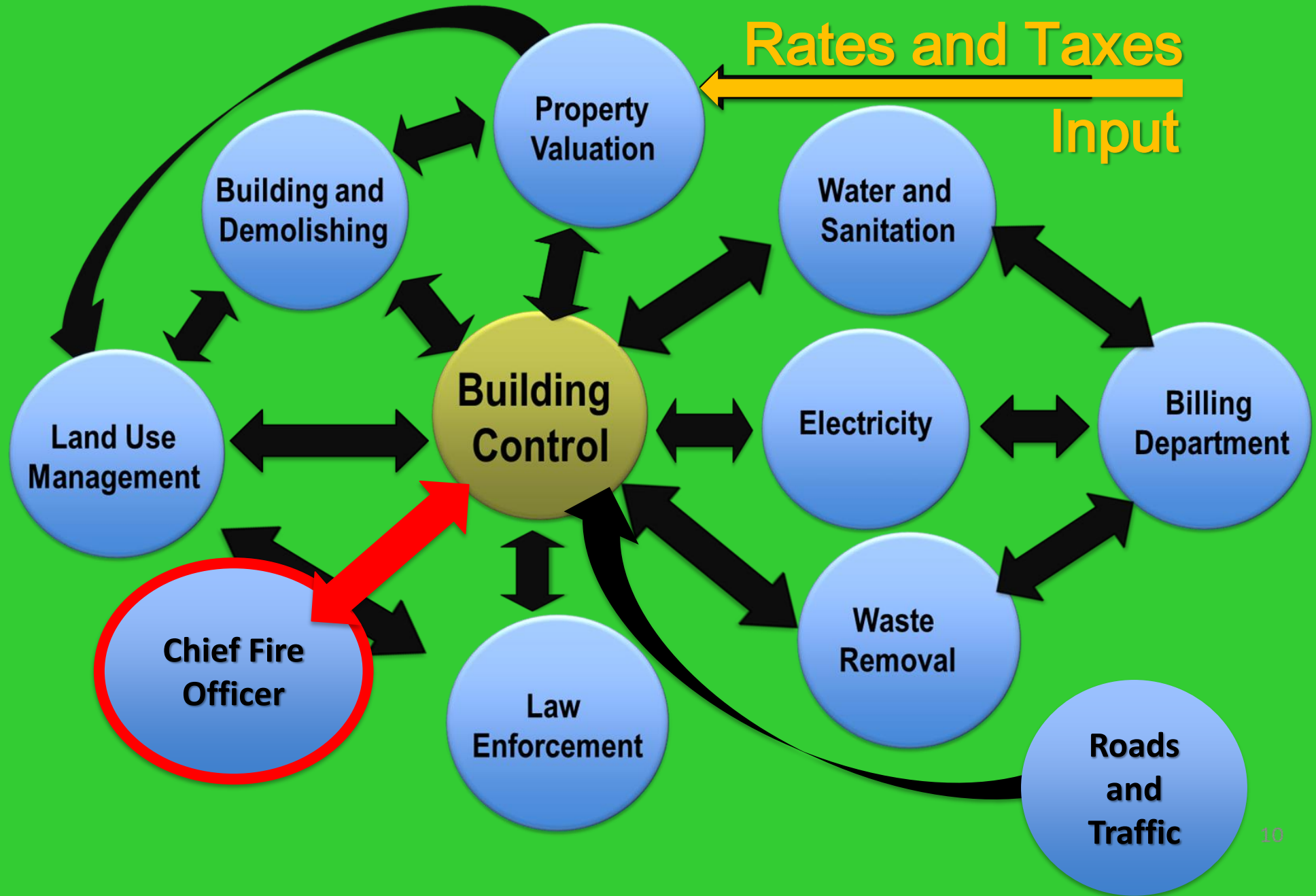
Building Control: Industry watchdog

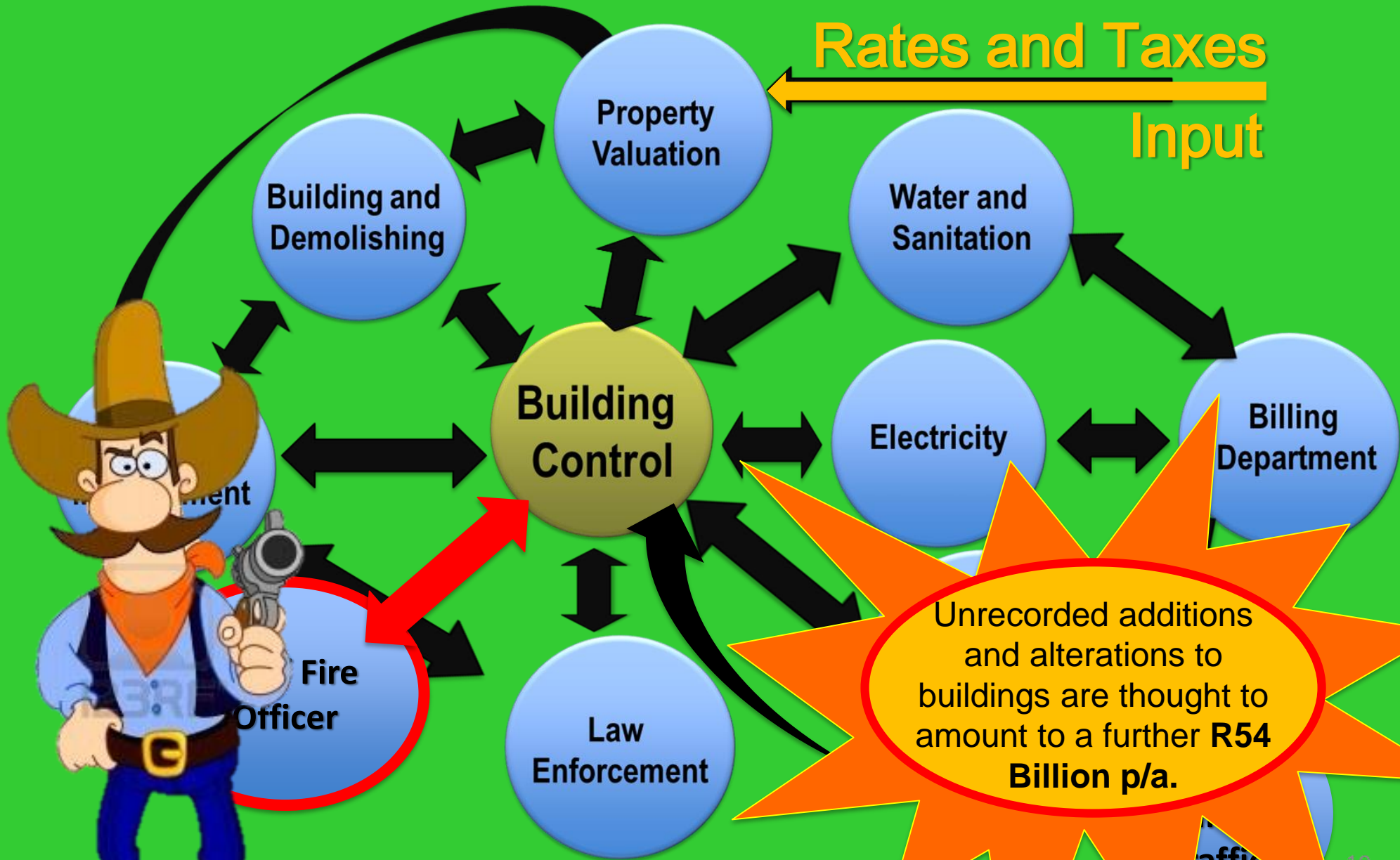


**Protecting: Health, Safety
and Building
stability**

Building Control: Industry watchdog







The Local Authority - Home of Building Regulators: BCO



South Africa is divided into **nine provinces**,
which are further subdivided into **52 districts**,
Eight metropolitan and 46 district municipalities

List of metropolitan municipalities

- Buffalo City Metropolitan Municipality ([East London](#))
- City of Cape Town Metropolitan Municipality ([Cape Town](#))
- Ekurhuleni Metropolitan Municipality ([East Rand](#))
- eThekweni Metropolitan Municipality ([Durban](#))
- City of Johannesburg Metropolitan Municipality ([Johannesburg](#))
- Mangaung Metropolitan Municipality ([Bloemfontein](#))
- Nelson Mandela Bay Metropolitan Municipality ([Port Elizabeth](#))
- City of Tshwane Metropolitan Municipality ([Pretoria](#))

Local Municipalities: 210

Total BCO offices 216

**This equates to 283 regulatory offices
dispersed throughout South Africa**



SALGA reports 283 Municipal Entities

The Building Control Officer: Determining his qualification in terms of population of the area governed.

REGULATION A16: QUALIFICATIONS OF A BUILDING CONTROL OFFICER

The **minimum qualification** of any building control officer appointed in terms of section 5 of the Act **shall** be of a standard equivalent to a

senior certificate plus **three years tertiary education (diploma)**, at an accredited educational institution, in one of the following **building disciplines**:

- | | |
|-----------------------------|----------------------------|
| (a) civil engineering; | (e) building science; |
| (b) structural engineering; | (f) building surveying; or |
| (c) architecture; | (g) quantity surveying |
| (d) building management; | |



The Building Control Officer: Determining his qualification in terms of population of the area governed.



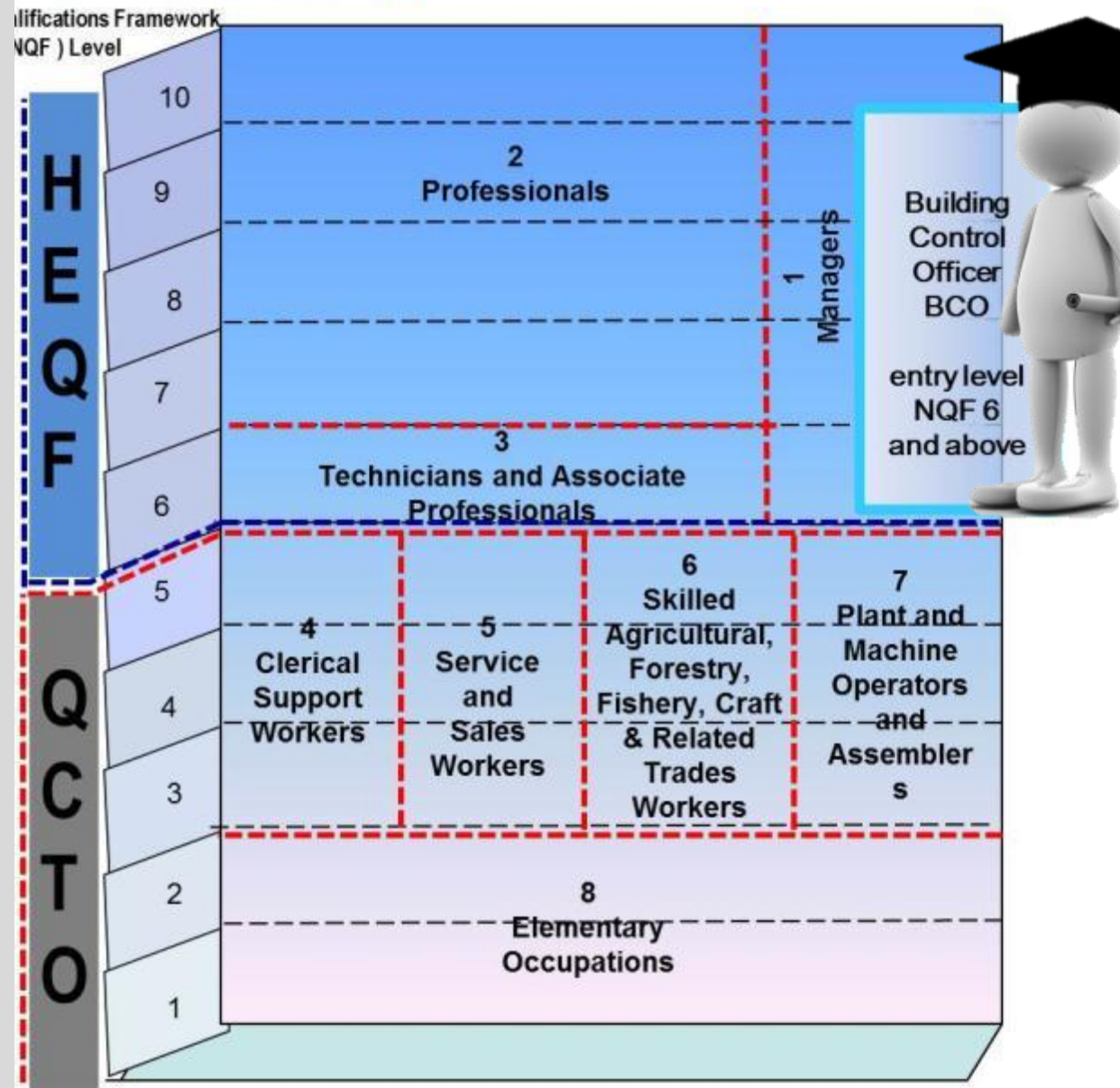
**ARGUING WITH AN
INSPECTOR IS LIKE WRESTLING
WITH A PIG IN THE MUD.**

**.. AFTER A
WHILE YOU REALIZE
THE PIG ENJOYS IT!**



NEQF LEVELS

- NQF level 10 - Doctoral Degree
- NQF level 9 - Master's Degree - Architect
- NQF level 8 - Postgraduate Diploma
- NQF level 8 - Bachelor Honours Degree
- NQF level 8 - Bachelor's Degree (4 years)
- NQF level 7 - Bachelor's Degree (3 years)
- NQF level 7 - Advanced Diploma
- NQF level 6 – Diploma (BCO)
- NQF level 6 - Advanced Certificate
- NQF level 5 - Higher Certificate
- NQF level 4 – NSC + NC (V)
- NQF level 3 – NSC - Matric



Two separate powers and competencies of Local Government's Development Control

BUILDING

National legislation

National Building Regulations

The NBR is a National Act which regulates technical standards throughout the whole of the Republic of South Africa. The intention of the legislator is clearly to put forward a uniform set of rules and standards which must be applied on a national level. The National Building Regulations deals with *"the promotion of uniformity in the law relating to the erection of buildings in the areas of jurisdiction of local authorities"*

The provisions to regulate the industry is made up of the components of a building;

Administration, Structural Design, Dimensions, Public Safety, Demolition Work, Site Operations, Excavations, Foundations, Floors, Walls, Roofs, Stairways, Glazing, Lighting & Ventilation, Drainage, Alternate Sanitary Disposal, Storm water Disposal, Facilities for Disabled, Fire Protection, Refuse Disposal, Space Heating, Fire Installation, Sustainable Building.

PLANNING

Provincial Ordinance

Town planning and Townships Ordinance

Local Authority to draw up a Town Planning scheme for the purpose of providing:

Coordinated and harmonious development of the area to which it relates in such a way as will most effectively tend to promote the health, safety, good order, amenity, convenience and general welfare of such area as well as efficiently and economy in the process of such development.

The scheme clauses may contain provisions;

- Max number buildings may be erected on a stand
- Max area of any erf upon which buildings may be erected.
- Open spaces around buildings including parking.
- Position of Buildings on erf irt. Boundary and street.
- Character, height, coverage, harmony, design or external appearance.
- Prohibition or control of the erection of buildings within an area which is subject to flooding
- The floor area of buildings
- The ration between the area of the erf and upon which a building is to be erected and the area of the building.

Two separate powers and competencies of Local Government's Development Control

BUILDING

National legislation



Sustainable Building.

PLANNING

Provincial Ordinance



building.

Two separate powers and competencies of Local Government's Development Control

BUILDING

National legislation



Sustainable Building.

PLANNING

Provincial Ordinance



•
•
w
building.

Complying with the requirements of the National Building Regulations

Regulation AZ 4



Complying with the requirements of the National Building Regulations

Regulation AZ 4

LEVEL 1
Objective

LEVEL 2
Functional statement

LEVEL 3
Performance requirement

LEVEL 4
Performance based Compliance methods:
-testing
-assessment
-application of well established engineering principles

LEVEL 5
Deemed-to-satisfy rules

Regulation AZ 4

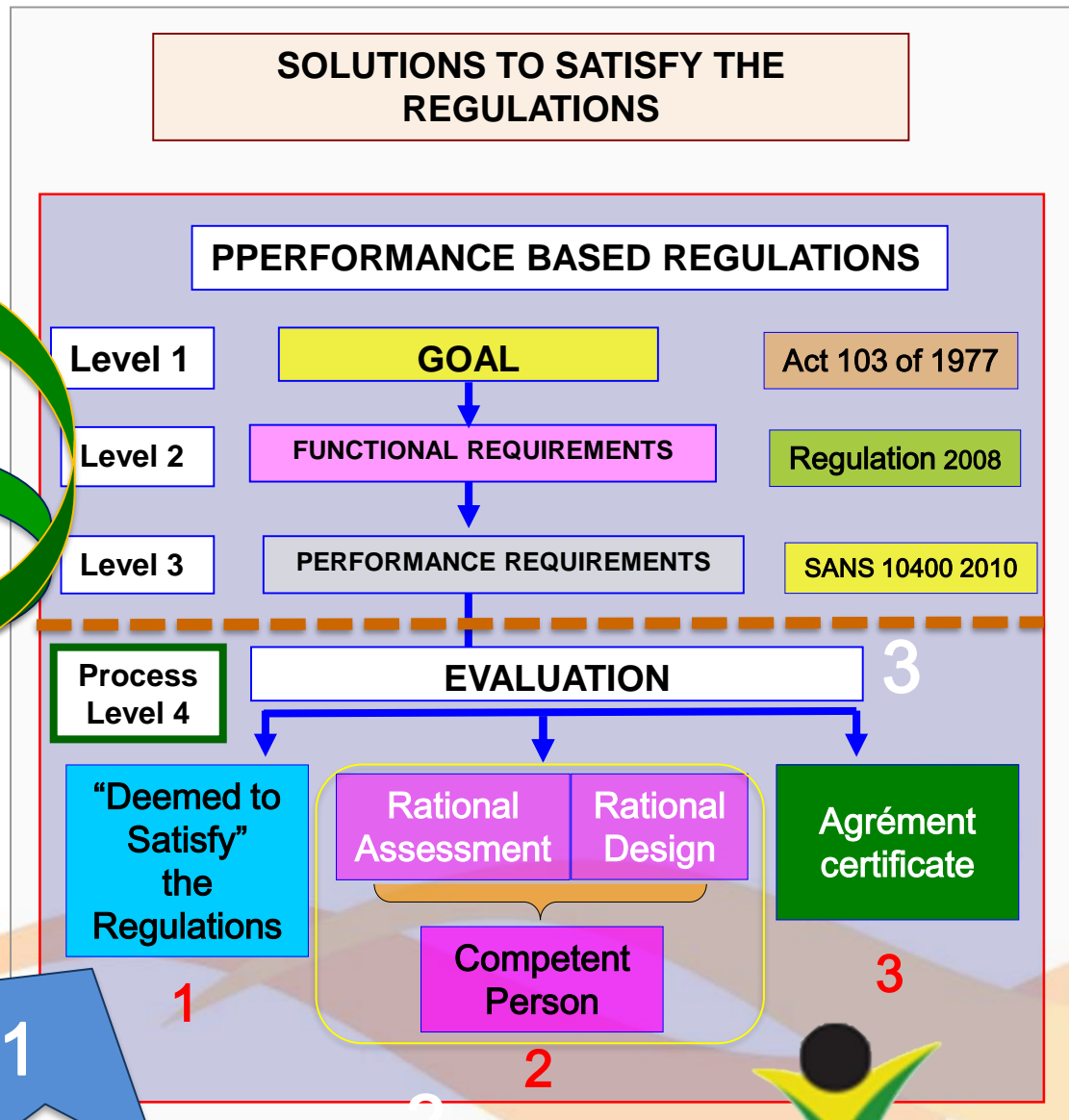
The requirements of the National Building Regulations shall be complied with by:

1(a) adherence to the requirements of all the prescriptive regulations; and

1(b) satisfaction of all functional regulations by:

(i) adopting building solutions that comply with the requirements of the relevant part of SANS 10400 or

(ii) reliably demonstrating, or predicting with certainty, to the satisfaction of the appropriate local authority, that an adopted building solution has an equivalent or superior performance to a solution that complies with the requirements of the relevant part of SANS 10400.



Complying with the requirements of the National Building Regulations

Regulation AZ 4



Complying with the requirements of the National Building Regulations

Regulation AZ 4

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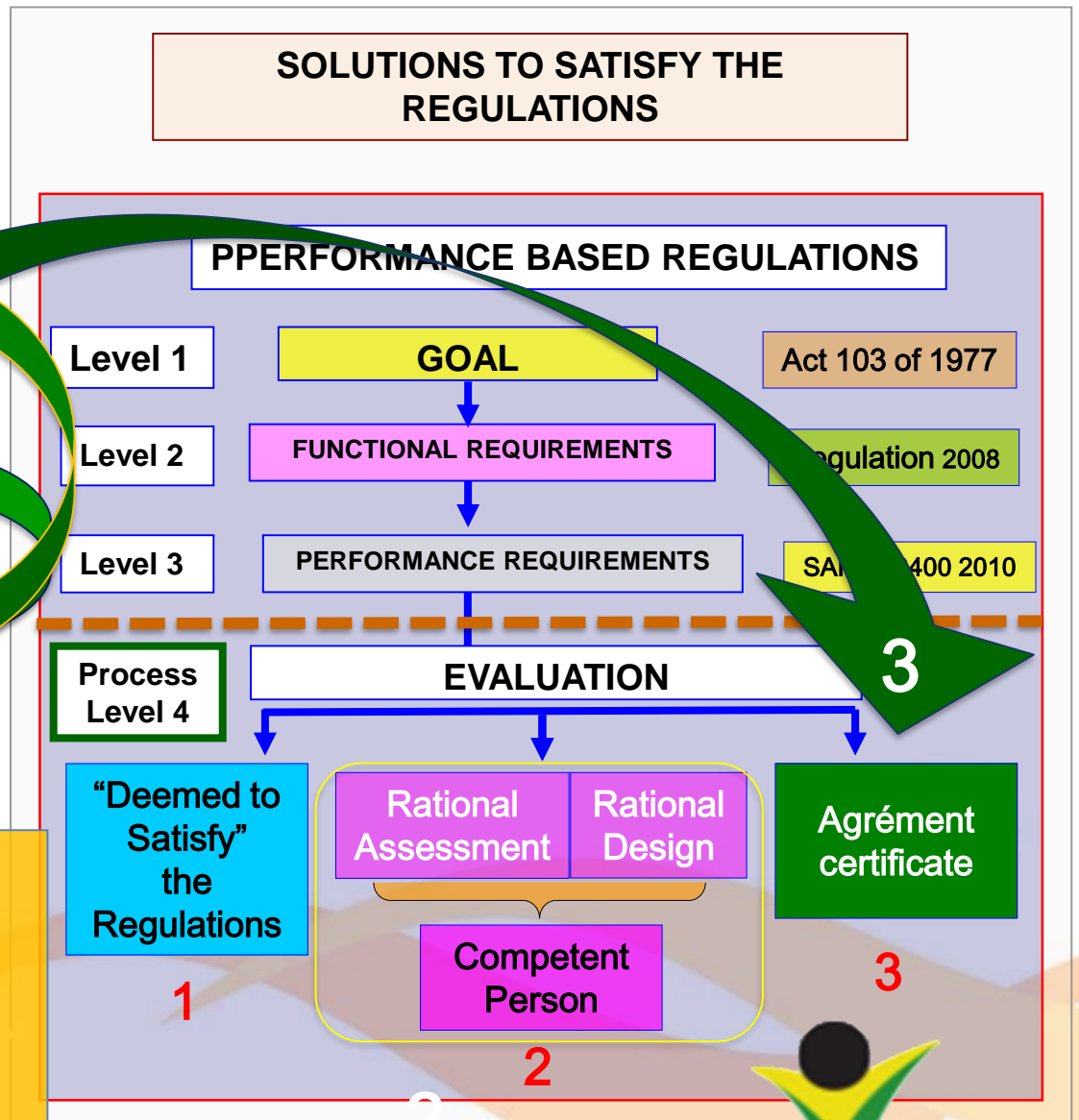
Regulation AZ 4

The requirements of the National Building Regulations shall be complied with by:

1(a) adhering to the requirements of all the prescriptive regulations; and

1(b) satisfying all functional regulations by:

"Agrément certificate" means a certificate that confirms fitness-for-purpose of a non-standardized product, material or component or the acceptability of the related non-standardized design and the conditions pertaining thereto (or both) issued by the Board of Agrément South Africa;



Complying with the requirements of the National Building Regulations

Regulation AZ 4



Complying with the requirements of the National Building Regulations

Regulation AZ 4

LEVEL 1
Objective

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Performance based Compliance methods:
-testing
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Regulation AZ 4

The requirements of the National Building Regulations shall be complied with by:

- 1(a) adhering to the requirements of all the prescriptive regulations; and
- 1(b) satisfying all functional regulations by:
 - (i) adopting building solutions that comply with

"rational design"

means any design by a competent person involving a process of reasoning and calculation and which may include a design based on a standard or other suitable document;

Regulation A19

APPOINTMENT OF PERSONS RESPONSIBLE FOR DESIGN, INSPECTION AND ASSESSMENT DUTIES

Where a rational design or rational assessment, is required:

The **"competent person"** is to prove to the Local Authority that he is competent to perform such rational design.

The competent person has to demonstrate in form 2 that he/she is;

- registered,
- qualified by virtue of his education,
- training,
- experience and
- contextual knowledge

to make a determination regarding the performance of a building

"competent person"

means a person who is qualified by virtue of his **education, training, experience and contextual knowledge** to make a determination regarding the performance of a building or part thereof **in relation to a functional regulation** or to undertake such duties as may be assigned to him in terms of these regulations;

Complying with the requirements of the National Building Regulations

Regulation AZ 4



Complying with the requirements of the National Building Regulations

Regulation AZ 4

LEVEL 1
Objective

LEVEL 2
Functional statement

LEVEL 3
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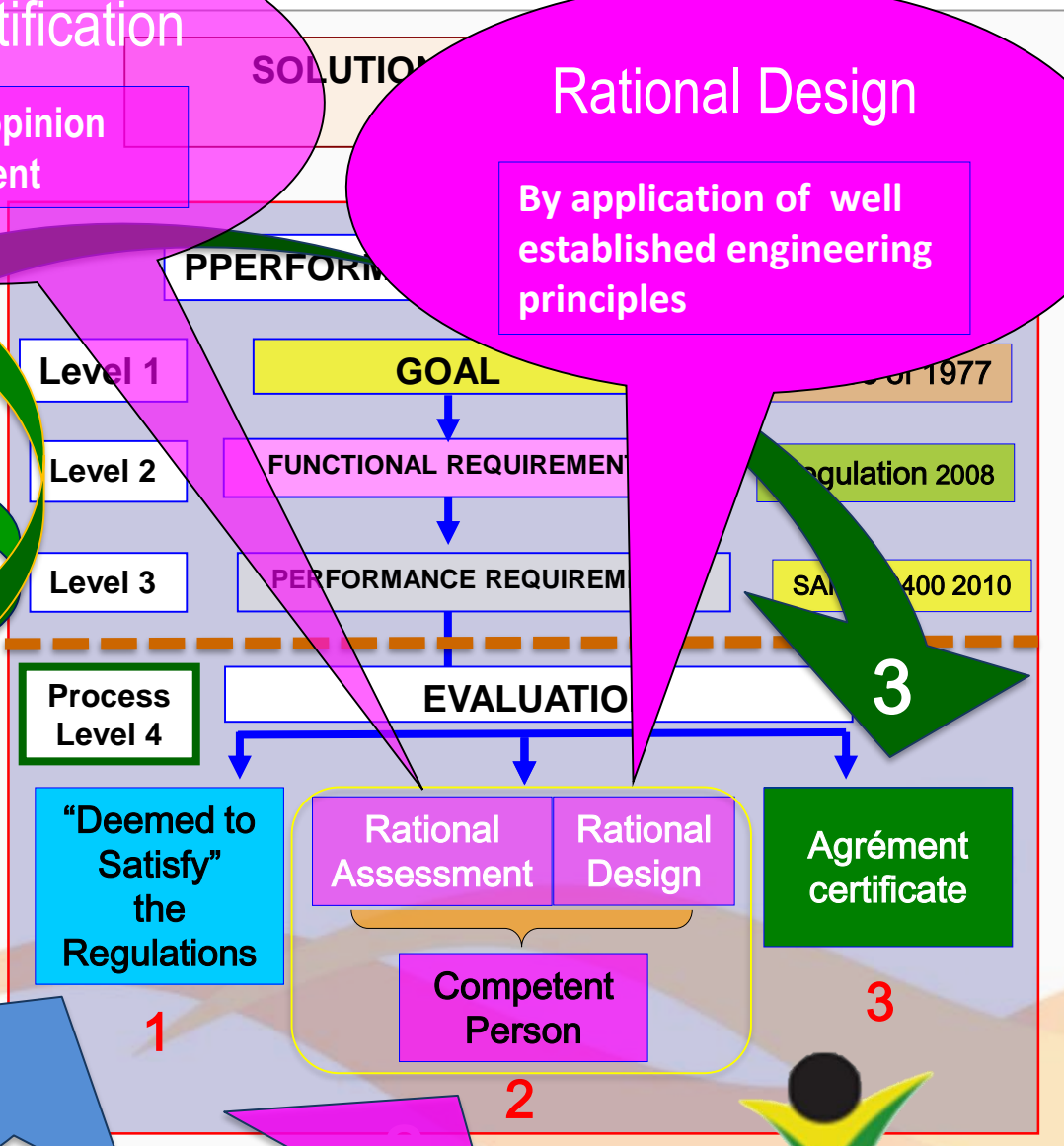
- 1(a) adhere to the requirements of all the prescriptive regulations; and
- 1(b) satisfy all functional regulations by:
 - (i) adopting building solutions that comply with the requirements of the relevant part of SANS 10400 or
 - (ii) reliably demonstrating, or predicting with certainty, to the satisfaction of the appropriate local authority, that an adopted building solution has an equivalent or superior performance to a solution that complies with the requirements of the relevant part of SANS 10400.

Peer certification

By expert opinion and judgment

Rational Design

By application of well established engineering principles



Complying with the requirements of the National Building Regulations

Regulation AZ 4



Complying with the requirements of the National Building Regulations

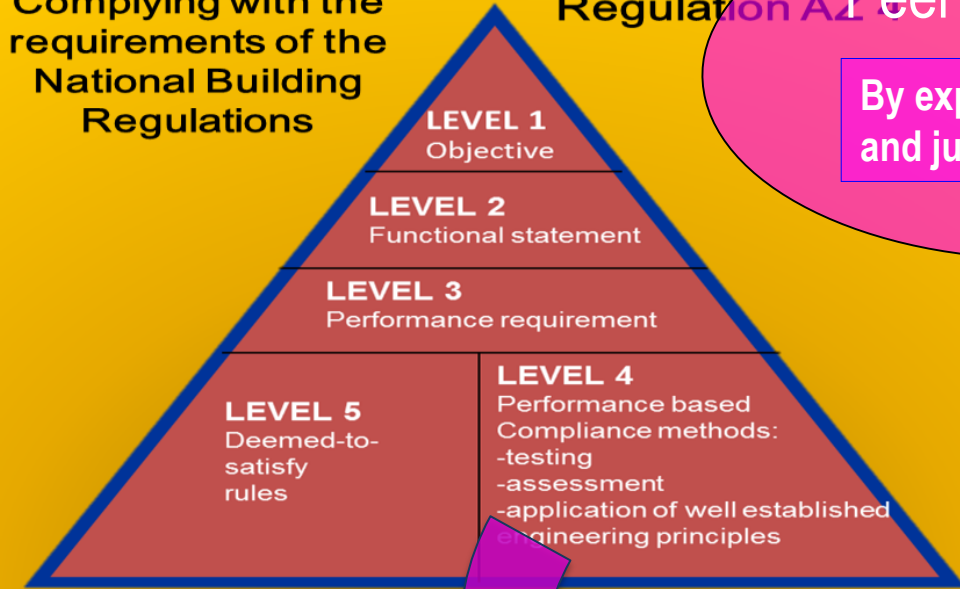
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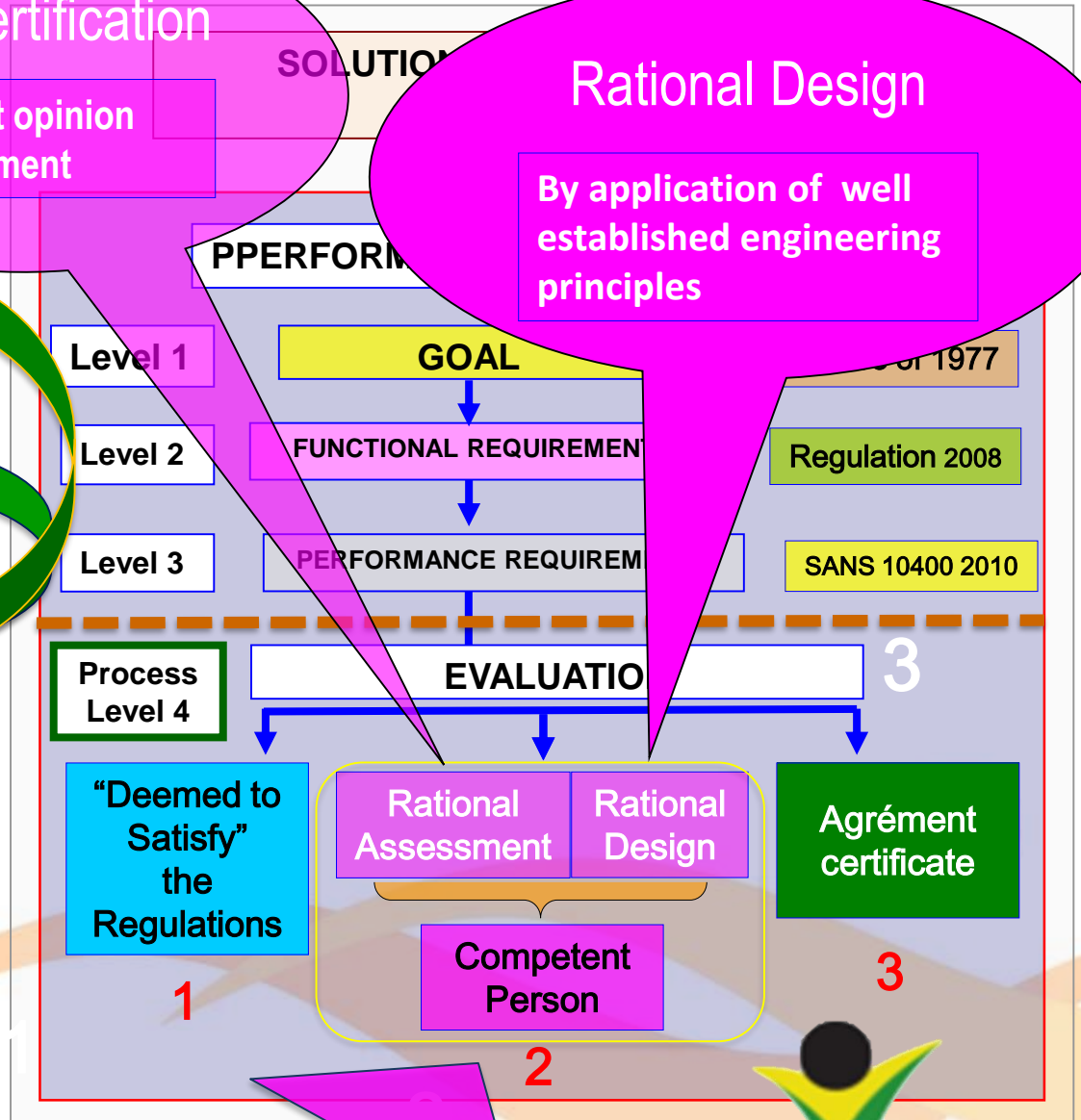
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means any design by a competent person involving a process of reasoning and calculation and which may include a design based on a standard or other suitable document;





“DEEMED TO SATISFY”

Energy Efficiency in buildings to be achieved by satisfying the requirements of the Regulations by:

Option 1: Minimum requirements set in Standard SANS 10400XA or otherwise described as: “DEEMED TO SATISFY” requirement

Option 2: RATIONAL DESIGN

This alternative requires a “competent person” to design a solution in relation to requirement appropriate testing and service experience involving a process of reasoning and calculation and which may include a design based on a standard or other suitable document;

Option 3: AGRÉMENT: “Fit for purpose” Certification

This alternative allows for the comparison of the building / element design performance with that of “Fit for Purpose” criteria thru testing by Agrément SA.





“RATIONAL DESIGN”

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“FIT FOR PURPOSE”



A time to ask those questions not yet answered

Q&A

You have

Questions

We have

Answers

Contact details

Rudolf Opperman

National Regulator Compulsory Specifications

Technical Advisor: Architecture and National Building Regulations

e-mail: oppermrw@nrccs.org.za



The NATIONAL BUILDING REGULATIONS

: Act 103 of 1977

Part 2 of 2

To provide for the promotion of uniformity in the law relating to the erection of buildings in the area of jurisdiction of Local Authorities by prescribing building standards

New Energy Regulations to be introduced soon.....





Bangladesh Garment Factory Building Collapse

24 April 2013 unauthorised building in Shil-Phata area



June 2015
Bangladesh: Owner of the
Garment factory RANA
PLAZA;
Sohel Rana to face murder
charges over 2013 building
collapse that killed 1129
people.

Bangladesh Garment Factory Building Collapse Toll Reaches 1129

April 24 2013

The fugitive owner of an illegally constructed building that collapsed and killed at least 1129 and injured even more, was captured by commandos as he tried to flee into India. District relief officials reported 96 people were hospitalized with serious injuries. Officials said the storey complex had been built on a soft ground without the correct permits. The owner reportedly constructed it without permission from local authorities and assured the owners of the factories that there was no problem. Officials involved with the case include deputy Municipal Commissioner Deepak Chavan and Assistant Municipal Commissioner Shayam Thorbole. They were among 22 persons arrested for the collapse of the unauthorised building in Shil-Phata area.

Experts attributed the incidents of building collapse in the country to the lack of proper coordination and inspection by the government bodies.

Tongaat Shopping Centre Collapse



Orlando Power Station Collapse

Power Park, SOWETO



Meyersdal Eco Estate Structural Failure

Alberton, EKURHULENI

Seven people were killed and 11 others injured when the building caved in at the Meyersdal Eco Estate.

At least 26 construction workers were on site when a concrete slab under construction collapsed at a house in the Meyersdal Eco Estate on 18 August 2014.



Is
Liberty
seducing
Justice?



Is Liberty



NATIONAL BUILDING REGULATIONS: New Energy Regulations to be introduced soon.....



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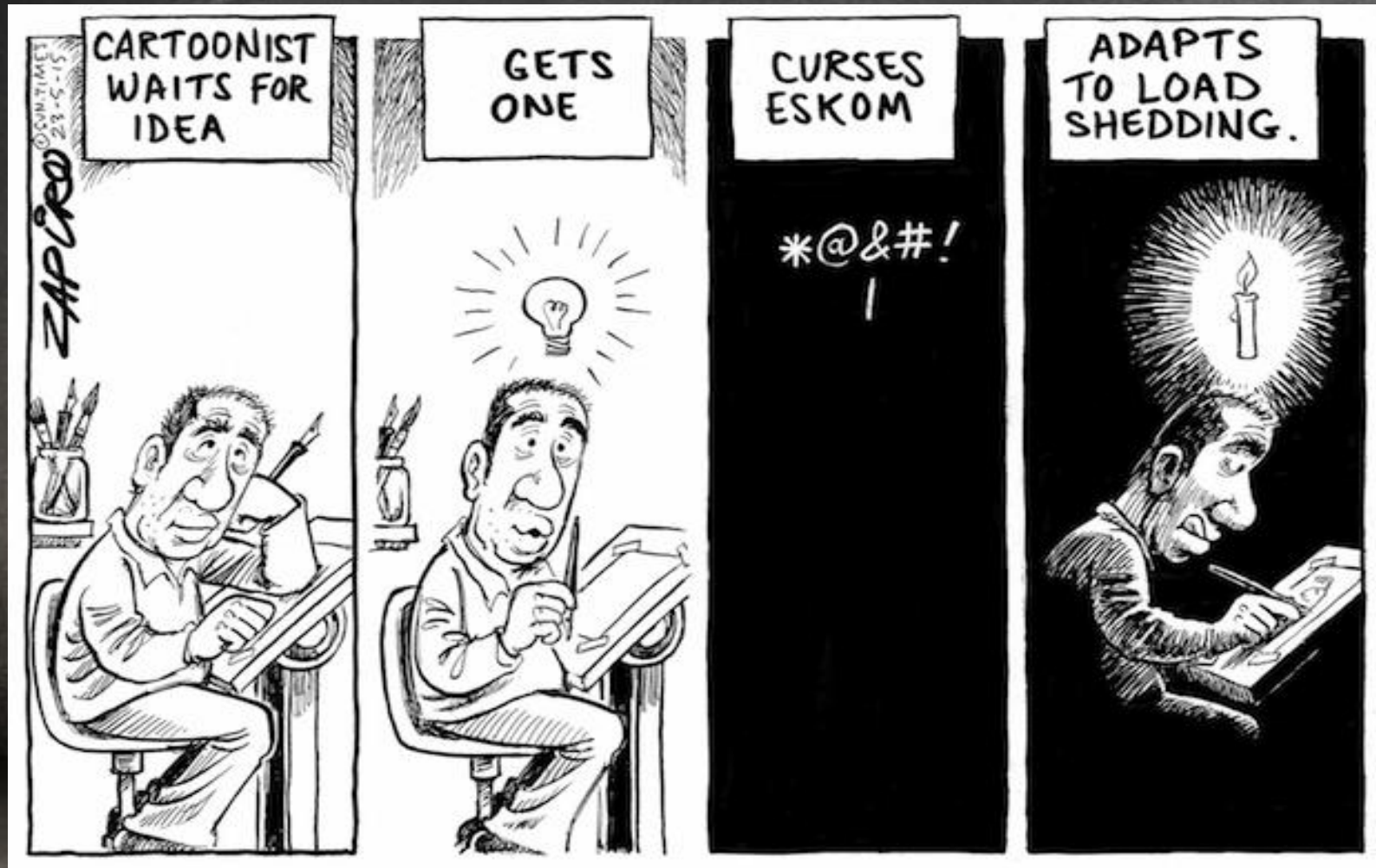
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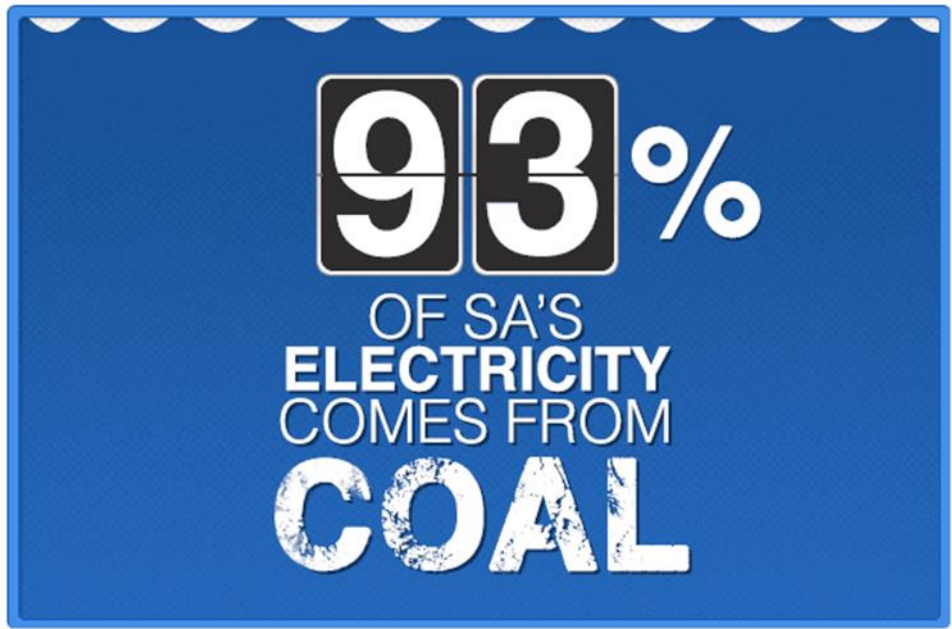
Sustainability/sustainable

Embodied

S
ental

HOW TO SURVIVE LOAD SHEDDING





“South Africa hold the number eleven spot on the top twenty greenhouse gas... responsible for 42...’s emissions, the least... nation in Africa.”

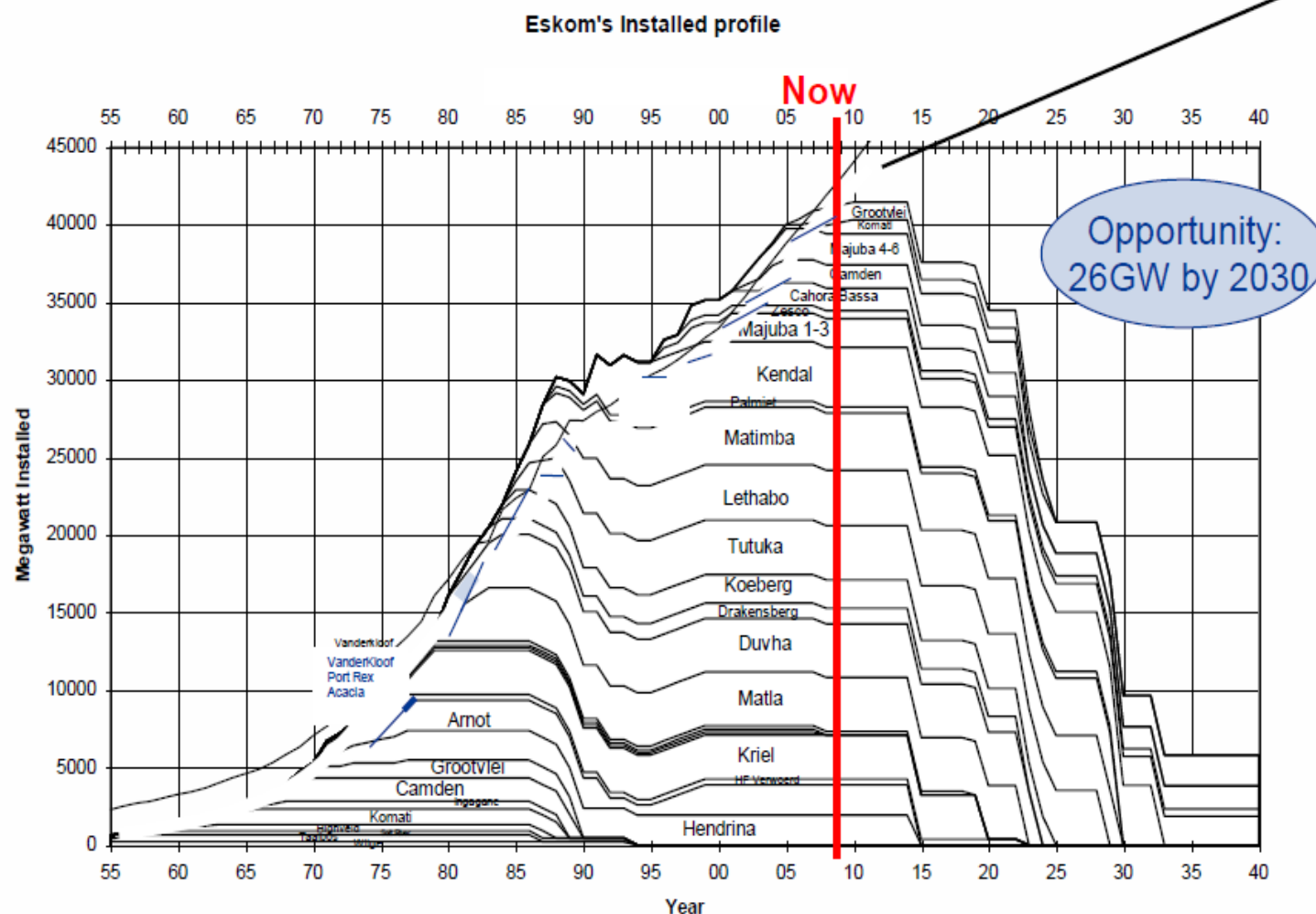
...ca, the former SA minister of... Richards Bay... Pietermaritzburg... Durban

SOUTH AFRICA

Development of Energy – saving Construction: South Africa



Existing Plant Requires Replacement between 2025 and 2050



Most stations at mid life refurbishment point.



the number eleven
enty greenhouse gas
sponsible for 42
emissions, the least
tion in Africa.”

he former SA minister of

Richards Bay
Pietermaritzburg
Durban

ICA

Development of Energy – saving Construction: South Africa



Ex

Energy Efficiency



3

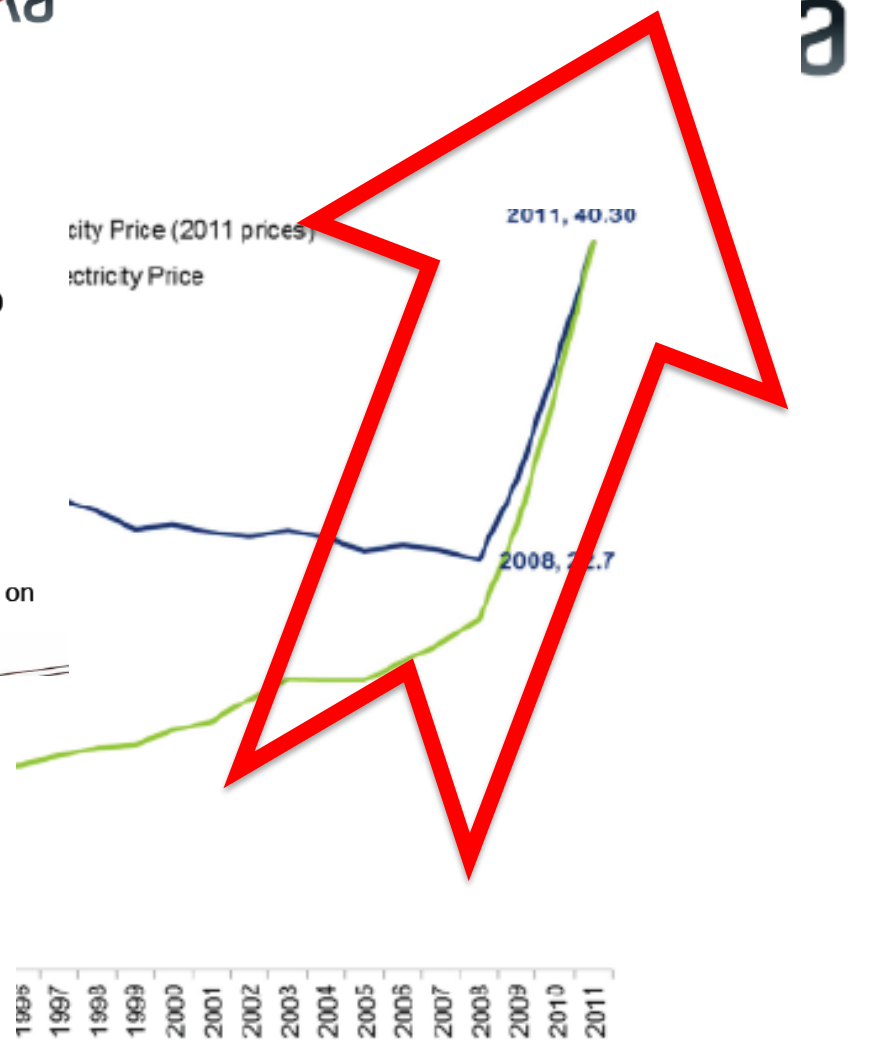
- Why is saving energy important in SA?
- Our energy resources – coal, electricity, gas, and liquid fuels – are not limitless, so it's up to all of us to become energy wise. That means you; your family, your friends and every other South African must start using energy efficiently.

• SANS 204

IEA estimates \$1 spent on energy efficiency save \$2 on generation!
(Source: WEO2006)

Megawatt Installed

	50 W Halogen (230 V)	7 W CFL (230 V)	1 W LED (230 V)
Energy consumed In 4 hours (kJ) (kWh)	720 0.2	101 0.03	14 0.004
Cost (SA cents)	8	1	0.16
Coal required (grams)	65	9	1.3
CO2 produced (grams)	194	27	3.88
Expected life (hours)	2000	8000	25000



Increases on Various Sectors of the South African Economy
isting research

Most



**National Building Regulations
Part XA: Energy usage in buildings**

Part X; Sustainable Buildings

XA1 Buildings shall be designed and constructed so that buildings

XA2 B

XA3 T

**INTRODUCTION OF
REGULATION:
SUSTAINABILITY IN BUILDINGS**

- b) has an **orientation, shading, services and building envelope in accordance with SANS 10400-XA**; or
- c) has a theoretical energy usage performance determined by a **competent person** using **certified thermal calculation software**, less than or equal to that of a reference building in accordance with SANS 10400-XA.



National Building Regulations Part X; Sustainable Buildings Part XA: Energy usage in buildings

- XA1 Buildings shall be designed and constructed so that buildings
- are capable of **using energy efficiently** while fulfilling user needs in relation to **vertical transport**, if any, **thermal comfort, lighting and hot water**; or
 - have **features and services** which **facilitate the efficient use of energy** appropriate to their **function and use, internal environment and geographical location**, and
- XA2 Buildings shall have at least **50 % by volume** of their annual average **hot water heating** requirement **provided by** means **other than electrical resistance heating** including but not limited to **solar heating, heat pumps, heat recovery** from other systems or processes and renewable combustible fuel.
- XA3 The requirements of sub-regulations XA1 shall be deemed to be satisfied when such building is designed and constructed in accordance with the following requirements:
- is the subject of a **rational design by a competent person** which demonstrates that the energy usage of such building is in accordance with SANS 10400-XA, or
 - has an **orientation, shading, services and building envelope in accordance with SANS 10400-XA**; or
 - has a theoretical energy usage performance determined by a **competent person** using **certified thermal calculation software**, less than or equal to that of a reference building in accordance with SANS 10400-XA.

Environmental Sustainable Buildings within the Standards – SANS 10400 XA
Efficient Energy use in buildings: “Deemed to satisfy” (solution option 1)



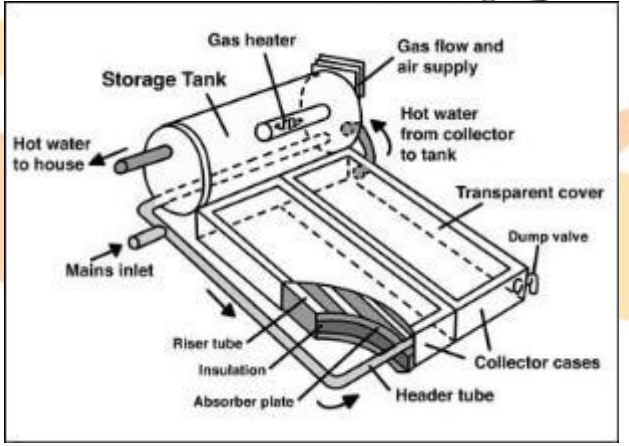
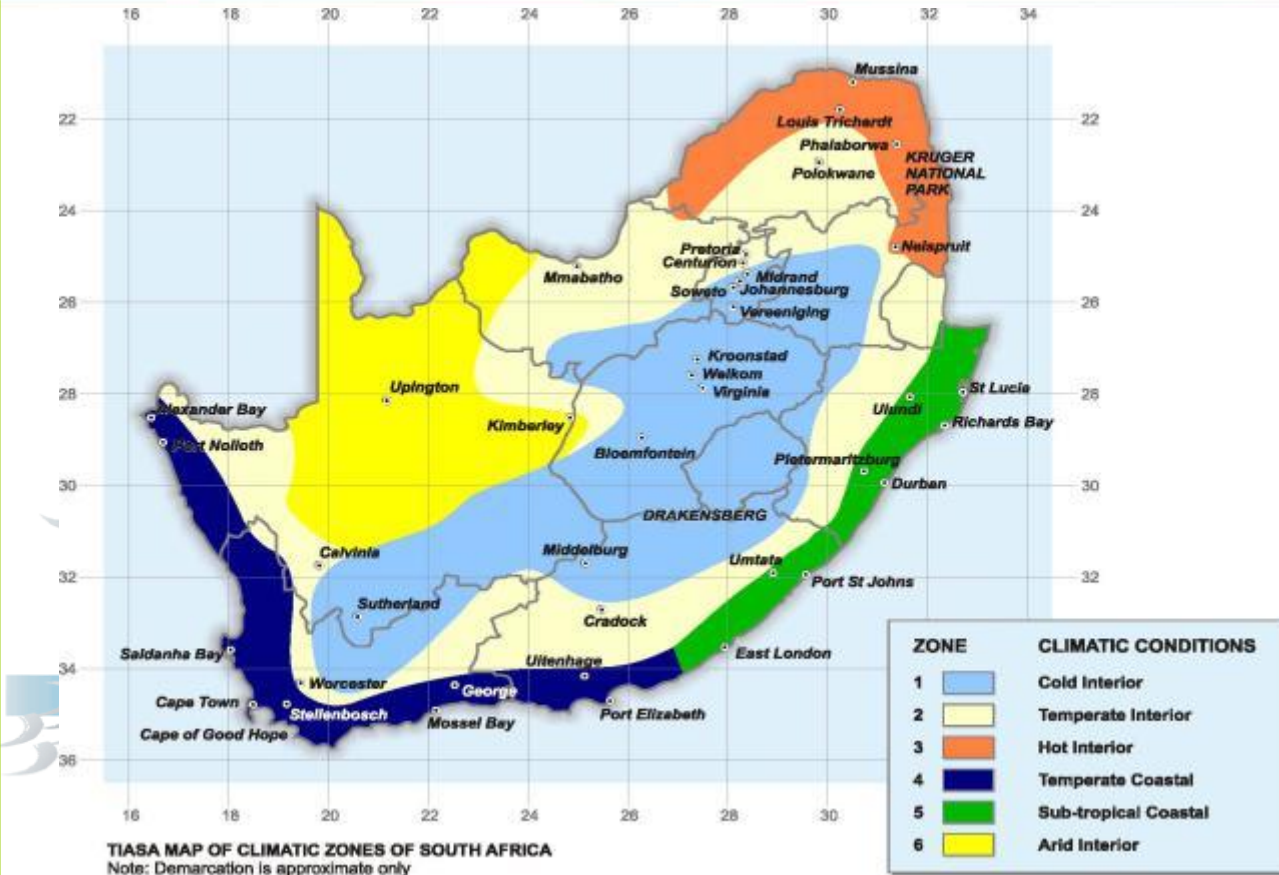
Environmental Sustainable Buildings within the Standards – SANS 10400 XA

Efficient Energy use in buildings: “Deemed to satisfy” (solution option 1)

ENERGY EFFICIENCY IN BUILDINGS
 to be achieved by satisfying compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY” requirements.

For:

1. Orientation of building; North vs South
2. Shading of windows and north face; Max 15% of GFA window openings allowed
3. Roof and ceiling insulation;
4. Wall performance prescribed;
5. Floor insulation; where underfloor heating is installed
6. Heating of water. Use of alternatives to electric resistance heating for water such as solar collectors and heat pumps.





Occupation classification

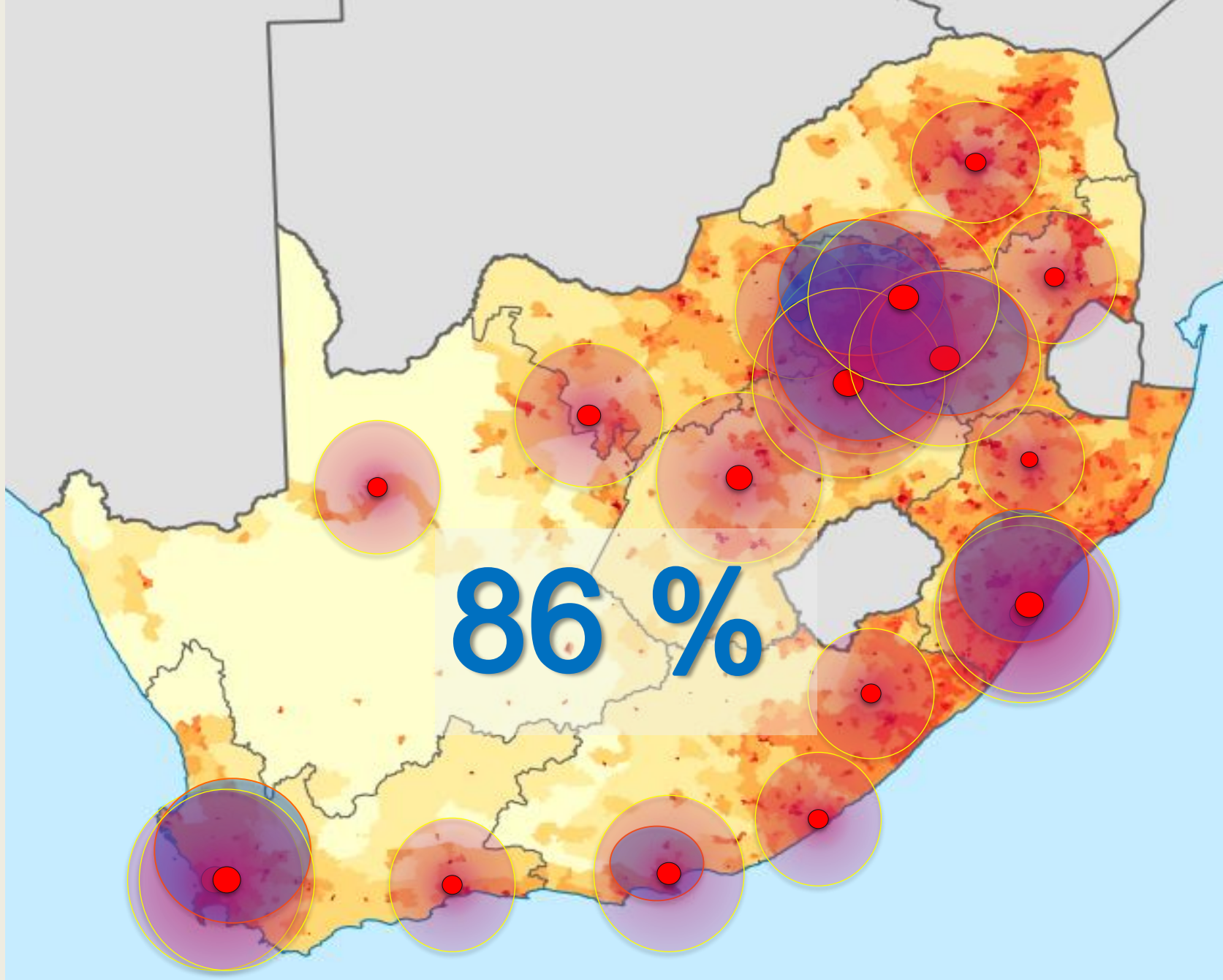
A1	Entertainment and public assembly
A2	Theatrical and indoor sport
A3	Places of instruction
A4	Worship
A5	Outdoor sport
B1	High risk commercial service
B2	Moderate risk commercial service
B3	Low risk commercial service
C1	Exhibition hall
C2	Museum
D1	High risk industrial
D2	Moderate risk industrial
D3	Low risk industrial
D4	Plant room

E1	Place of detention
E2	Hospital
E3	Other institutional (residential)
E4	Health care
F1	Large shop
F2	Small shop
F3	Wholesalers' store
G1	Offices
H1	Hotel
H2	Dormitory
H3	Domestic residence
H4	Dwelling house
H5	Hospitality
J1	High risk storage
J2	Moderate risk storage
J3	Low risk storage
J4	Parking garage

SWISS initiative to empower the Building Industry

South Africa Demographics Profile 2013

urban population: 62% of total population



Centers identified as areas for exposure 2013

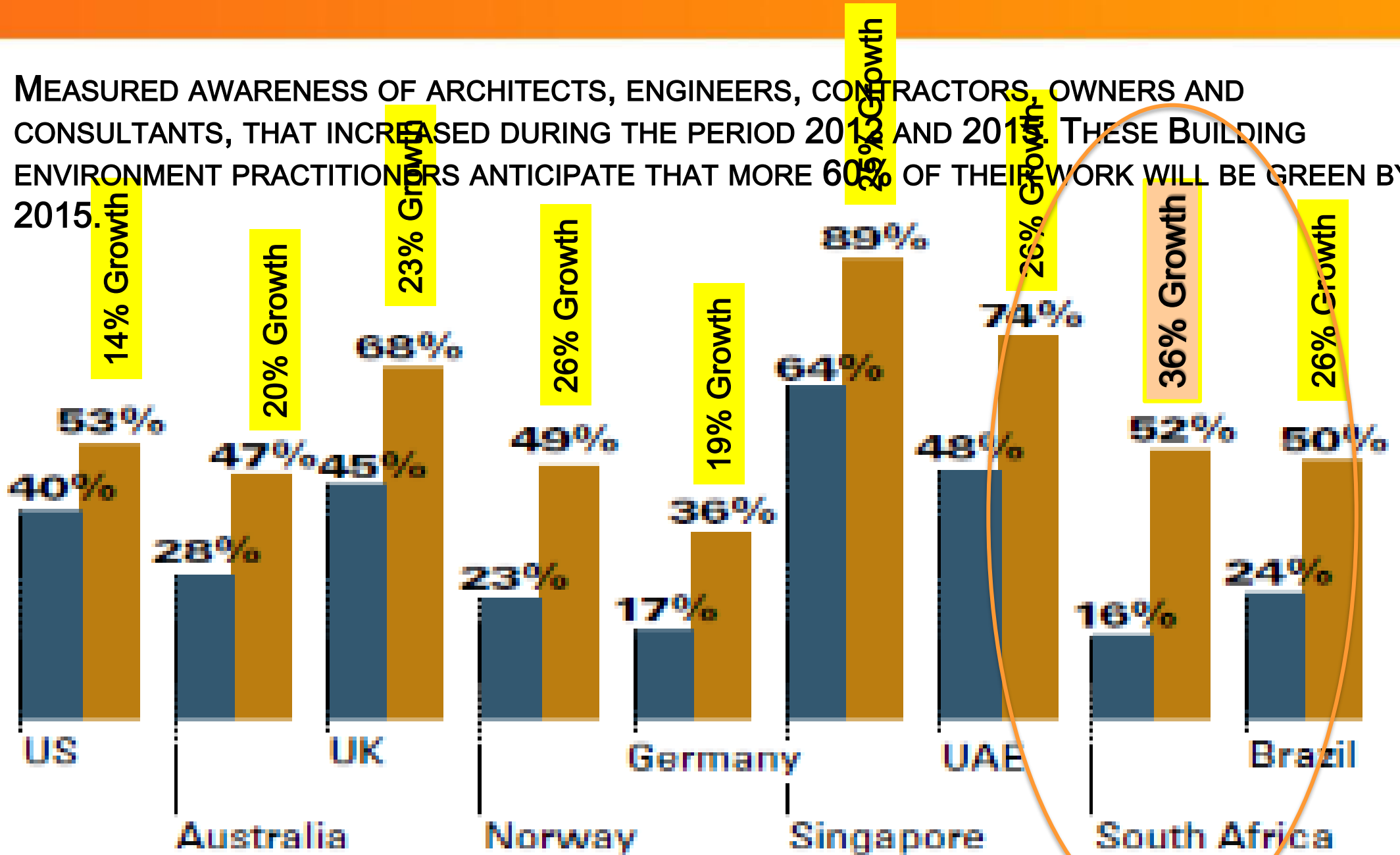
Recognized main building activities within South Africa

SWISS initiative to empower the Building Industry

03-04 APRIL 2012	Swiss government - SDC/NRCS/SAIAT	SOL PLAATJE	9
11 APRIL 2012.	The Dti/NRCS/SABS	RUSTENBURG	15
12-13 APRIL 2012	Swiss government - SDC/NRCS/SAIAT	RUSTENBURG	15
18 APRIL 2012.	The Dti/NRCS/SABS	POLOKWANE	10
19-20 APRIL 2012	Swiss government - SDC/NRCS/SAIAT	POLOKWANE	20
18 APRIL 2012.	SABS (SAIAT)	KING SABATA DALINYEBO	0
19-20 APRIL 2012	Swiss government - SDC/NRCS/SAIAT	KING SABATA DALINYEBO	0
09 MAY 2012.	The dti SAIAT-NRCS	MBOMBELA	55
10-11 MAY 2012	Swiss government - SDC/NRCS/SAIAT	MBOMBELA	21
16 MAY 2012.	The Dti/NRCS/SABS	EKURHULENI	173
17-18 MAY 2012	Swiss government - SDC/NRCS/SAIAT	EKURHULENI	66
23 MAY 2012.	The Dti/NRCS/SABS	TSWANE	166
24-25 MAY 2012	Swiss government - SDC/NRCS/SAIAT	TSWANE	65
04 JUNE 2012.	The Dti/NRCS/SABS	ETHIKWINI	302
05-06 JUNE 2012	Swiss government - SDC/NRCS/SAIAT	ETHIKWINI	177
13-14 JUNE 2012	Swiss government - SDC/NRCS/SAIAT	JOHANNESBURG	95
20 JUNE 2012.	The Dti/NRCS/SABS	CAPE TOWN	342
21-22 JUNE 2012	Swiss government - SDC/NRCS/SAIAT	CAPE TOWN	82
25 JUNE 2012.	The Dti/NRCS/SABS	NELSON MANDELA BAY	102
26-27 JUNE 2012	Swiss government - SDC/NRCS/SAIAT	NELSON MANDELA BAY	61
02 JULY 2012.	The Dti/NRCS/SABS	MANGAUNG	73
03-04 JULY 2012	Swiss government - SDC/NRCS/SAIAT	MANGAUNG	38
09 JULY 2012.	The Dti/NRCS/SABS	BUFFALO CITY	70
10-11 JULY 2012	Swiss government - SDC/NRCS/SAIAT	BUFFALO CITY	26
19-20 JULY 2012	Swiss government - SDC/NRCS/SAIAT	ETHIKWINI	78
26-27 JULY 2012	Swiss government - SDC/NRCS/SAIAT	CAPE TOWN	72
30 JULY 2012.	The Dti/NRCS/SABS	GEORGE	187
31 JULY-01 AUGUST 2012	Swiss government - SDC/NRCS/SAIAT	GEORGE	28
24 AUGUST 2012.	The Dti/NRCS/SABS	JOHANNESBURG	300
Total Building practitioners and councilors exposed to legislation:			1840
Total Building Control Officers trained to ensure they are skilled to ensure the effective implementation of the new legislation:			825

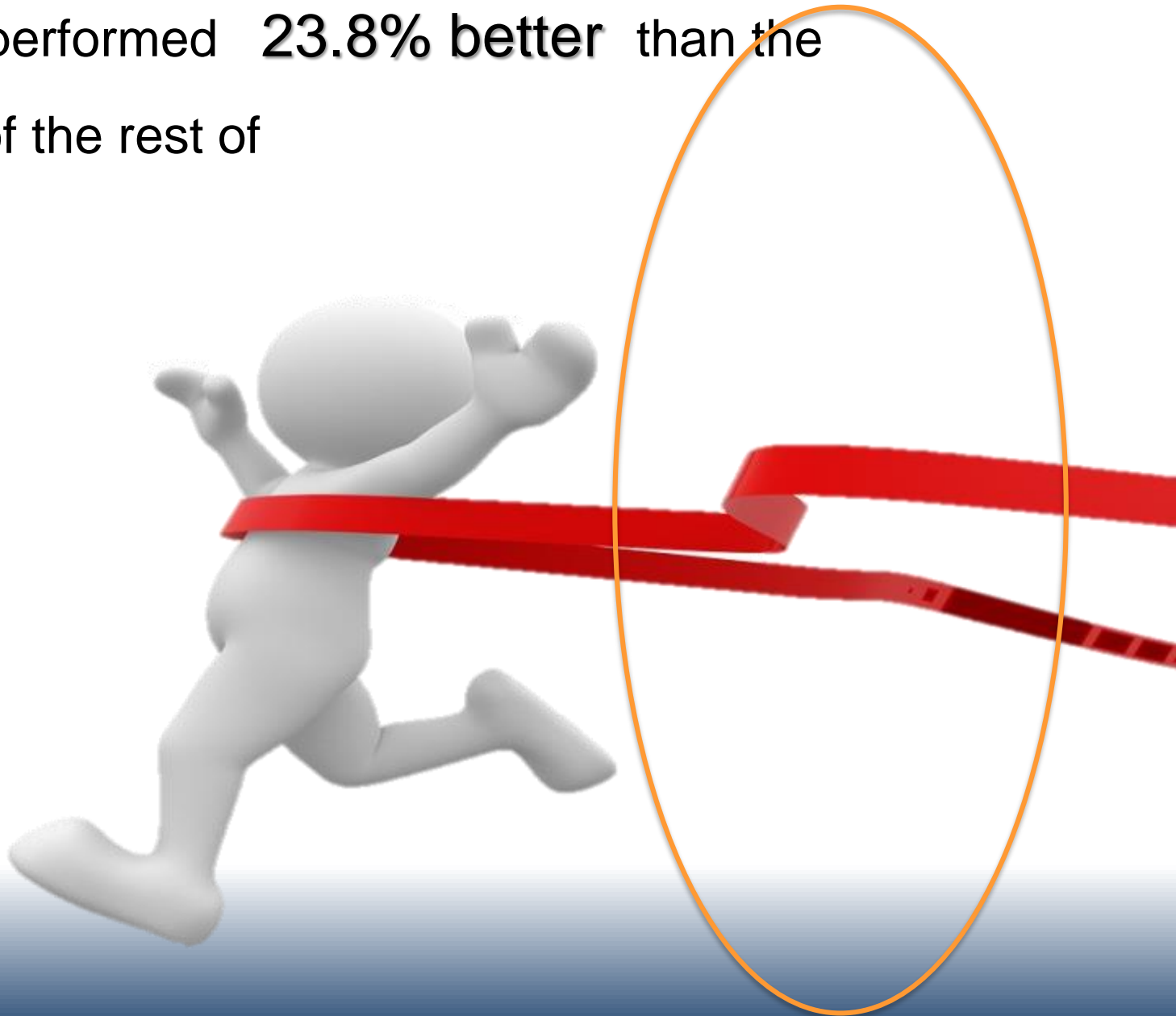
South Africa shows massive increase in Energy efficiency in Buildings

MEASURED AWARENESS OF ARCHITECTS, ENGINEERS, CONTRACTORS, OWNERS AND CONSULTANTS, THAT INCREASED DURING THE PERIOD 2011 AND 2013. THESE BUILDING ENVIRONMENT PRACTITIONERS ANTICIPATE THAT MORE 60% OF THEIR WORK WILL BE GREEN BY 2015.



South Africa shows massive increase in Energy efficiency in Buildings

South Africa therefore performed **23.8% better** than the average performance of the rest of the world, in this period 2012 to 2015.



Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy “ rules provided in; SANS 10400-XA: 2017



The Energy Efficient implementation in terms of SANS 10400 Part XA has achieved its INCEPTION GOAL.

The impact of introducing the regulation of the energy requirements in buildings - now needs to move to the next level of understanding and implementation.

Building Regulation: Part XA; Efficient Energy use in Buildings: 2017

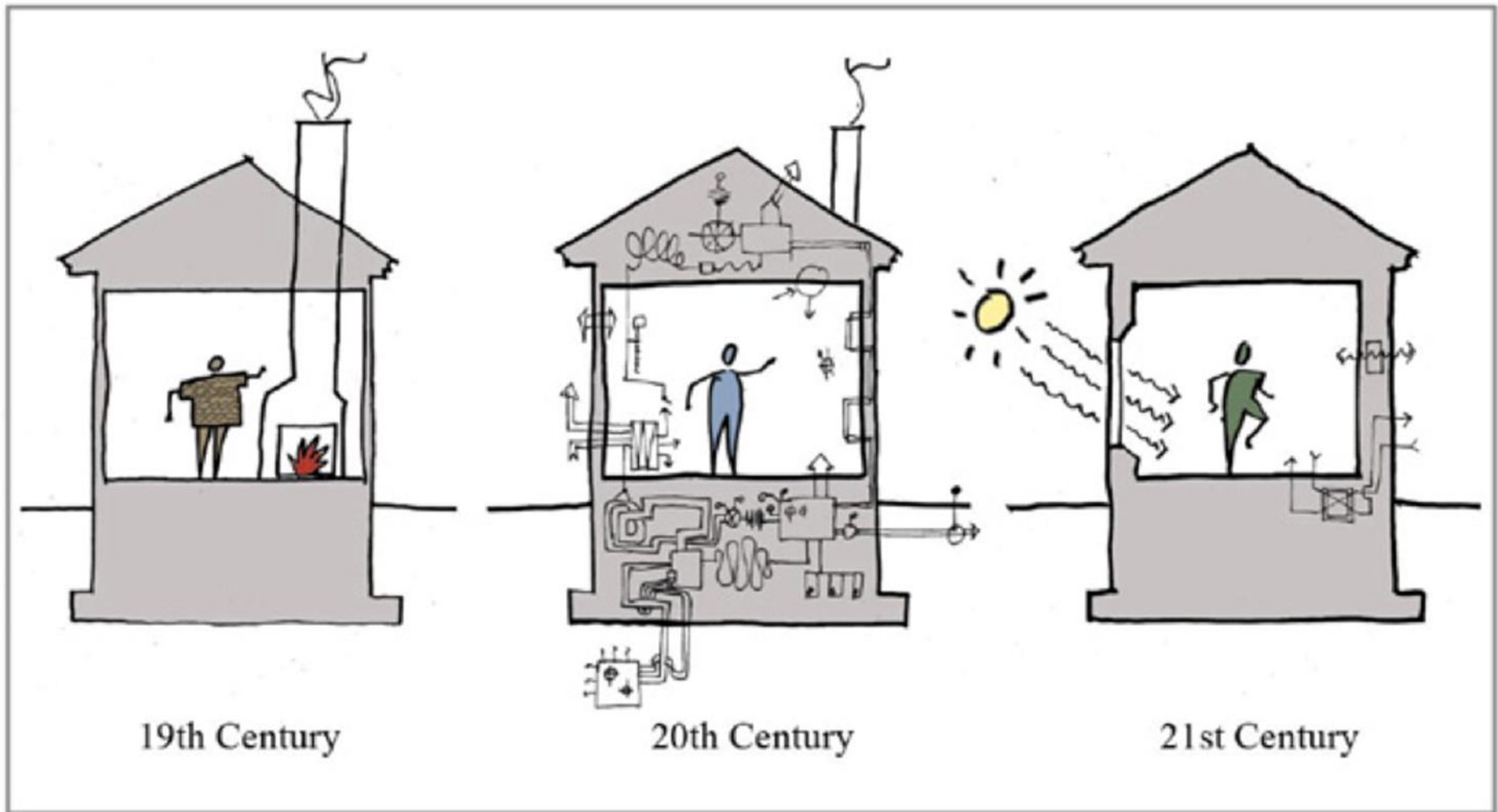


image source: Albert, Righter and Tittmann Architects

What is Environmental Design?

“the modern architect has produced the most flagrantly uneconomic and uncomfortable buildings...which can be inhabited only with the aid of the most expensive devices of heating and refrigeration. The irrationality of this system of construction is visible today in every city from New York to San Francisco: glass sheathed buildings without any contact with fresh air, sunlight, or view.” Lewis Mumford.



RADICAL STEPS!

#1 - *start* by UNPLUGGING the building

Then...

#2 – heat only with the sun

#3 – cool only with the wind and shade

#4 – light only with daylight

USE the ARCHITECTURE first, and mechanical systems only to supplement what you cannot otherwise provide.

#5 – USE RENEWABLE CLEAN ENERGY BEFORE HOOKING UP TO NATURAL GAS, OIL OR THE REGULAR ELECTRICAL GRID (with all of its nastiness – including CO₂)

National Development Plan

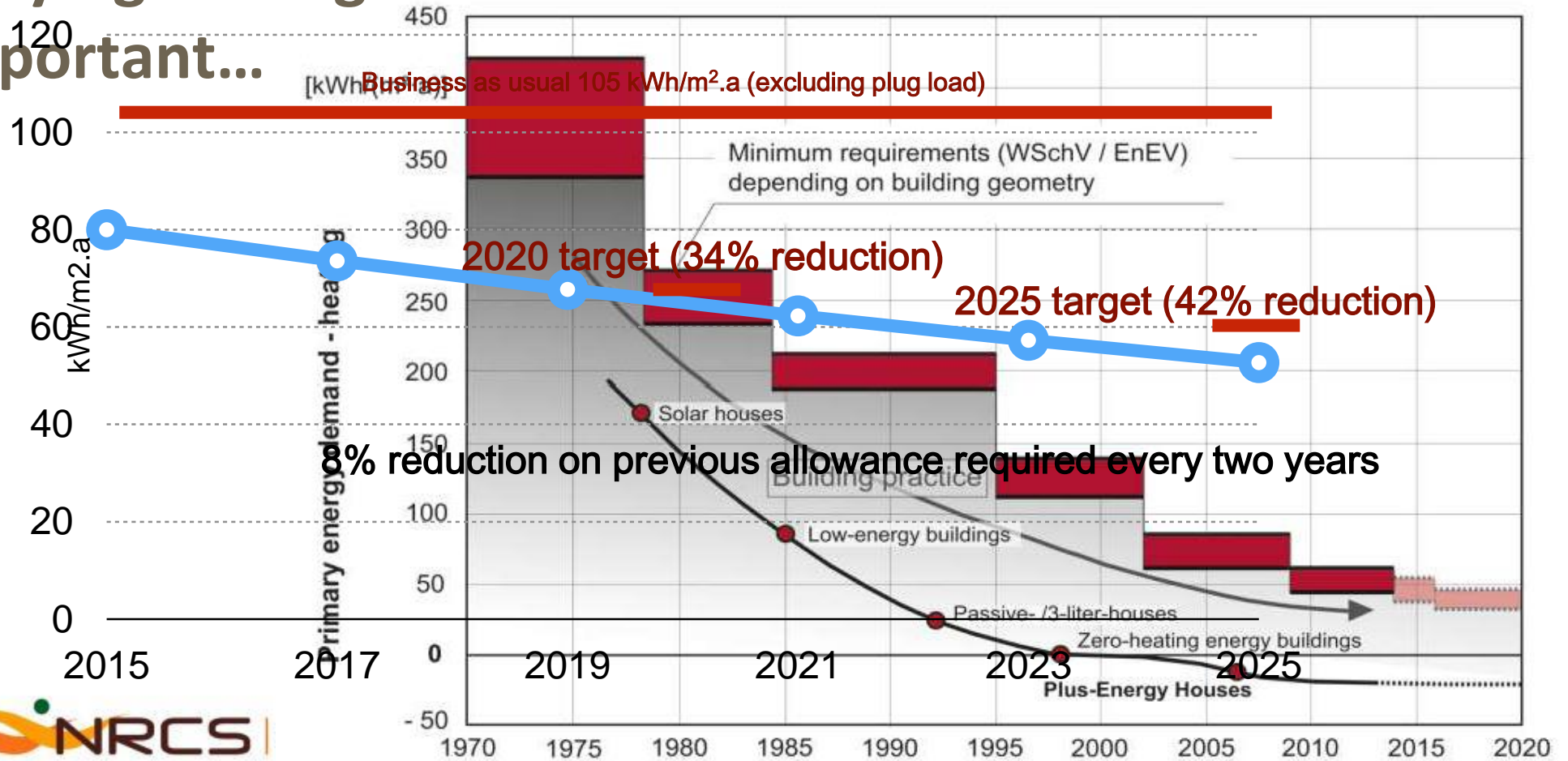
“Progressively strengthen the energy-efficiency criteria set out in the South African

National Standard to achieve a zero-carbon building standard by 2030” (page 292).

Why we have to do something in SA until 2030 to comply with our promises at COP 17

Why tightening is so important...

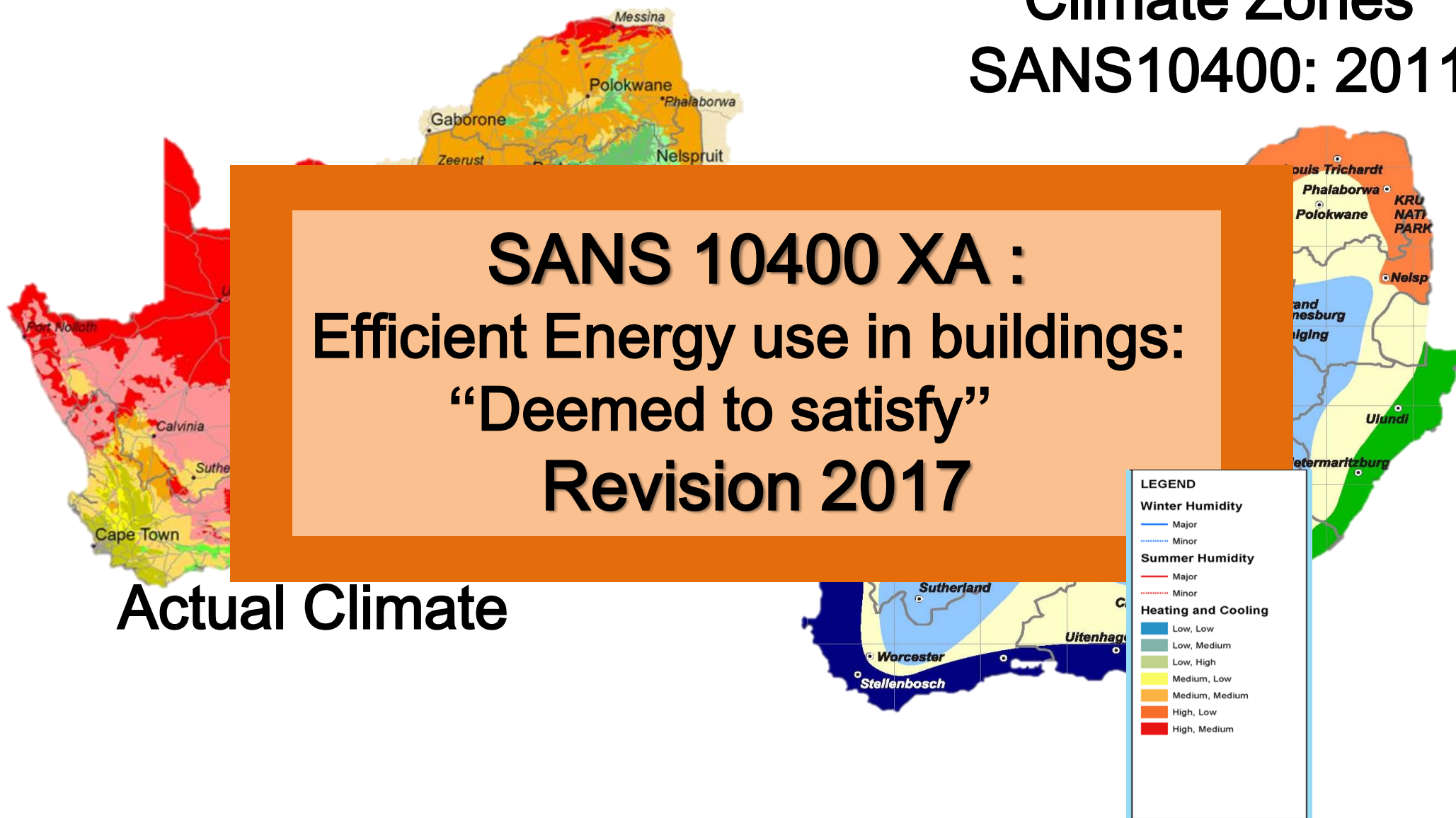
New proposed figures for offices



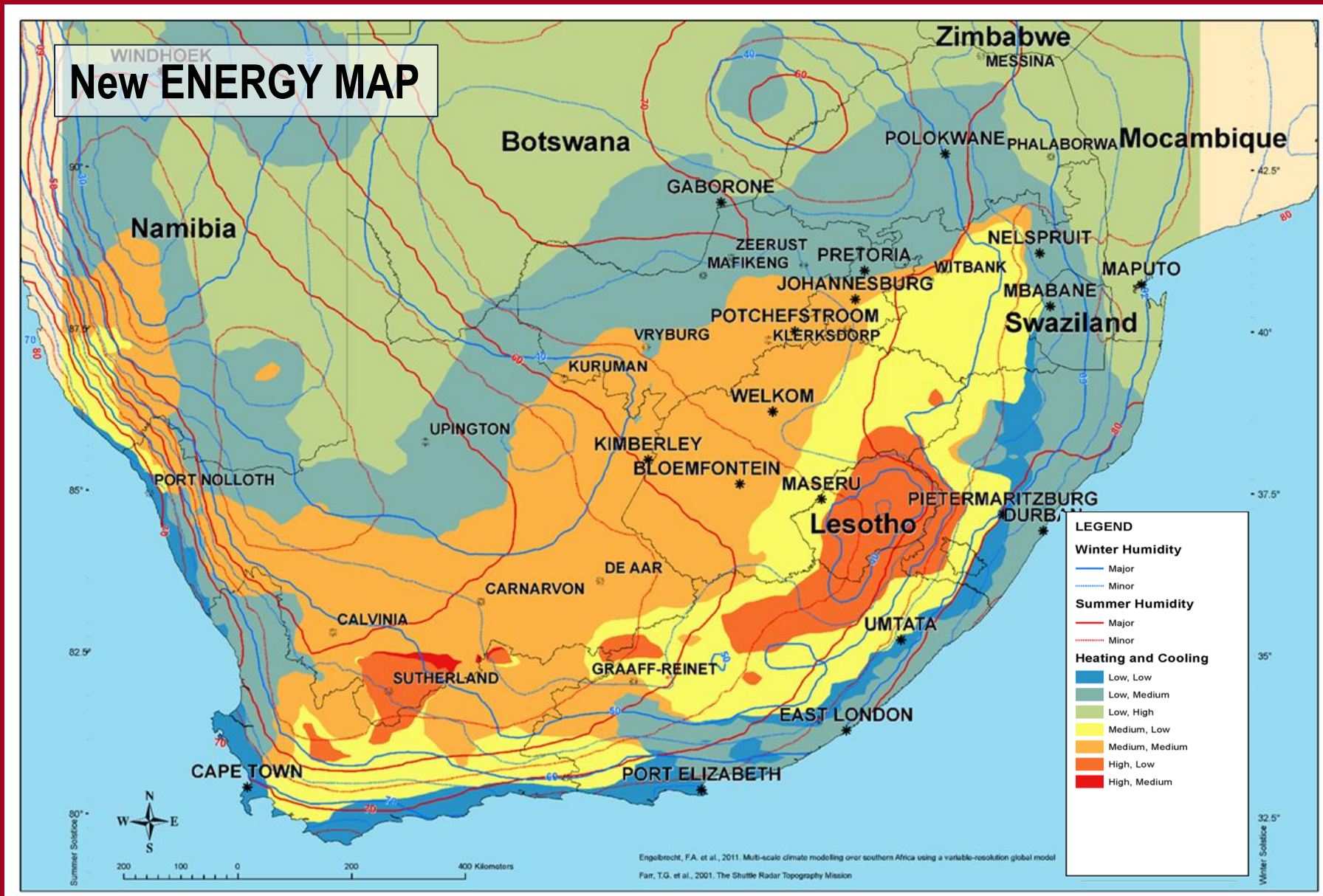
Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy” rules provided in; SANS 10400-XA: 2017

Climate Zones SANS10400: 2011

**SANS 10400 XA :
Efficient Energy use in buildings:
“Deemed to satisfy”
Revision 2017**



Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy “ rules provided in; SANS 10400-XA: 2017



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CSIR Built Environment

Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”

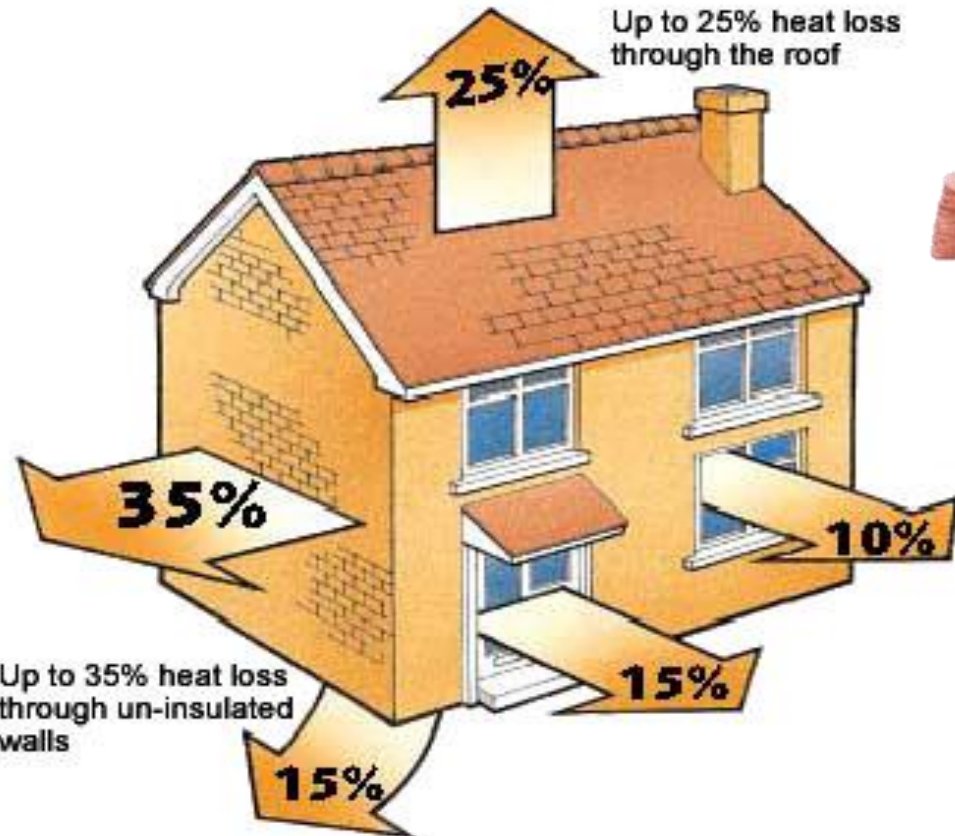
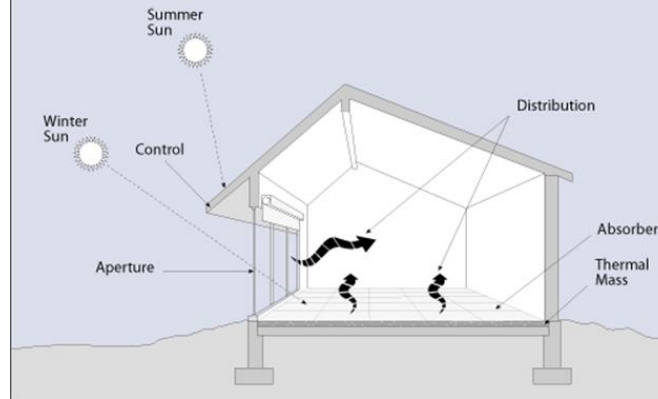


ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: **“DEEMED TO SATISFY”** requirements.

For:

- Orientation of building;
- Shading of windows and north face;
- Roof and ceiling insulation;
- Wall performance prescribed;
- Floor insulation; where underfloor heating is installed
- Electrical lighting regulated.
- Heating of water. Use of alternatives to electric resistance heating for water such as solar collectors and heat pumps.

Five Elements of Passive Solar Design



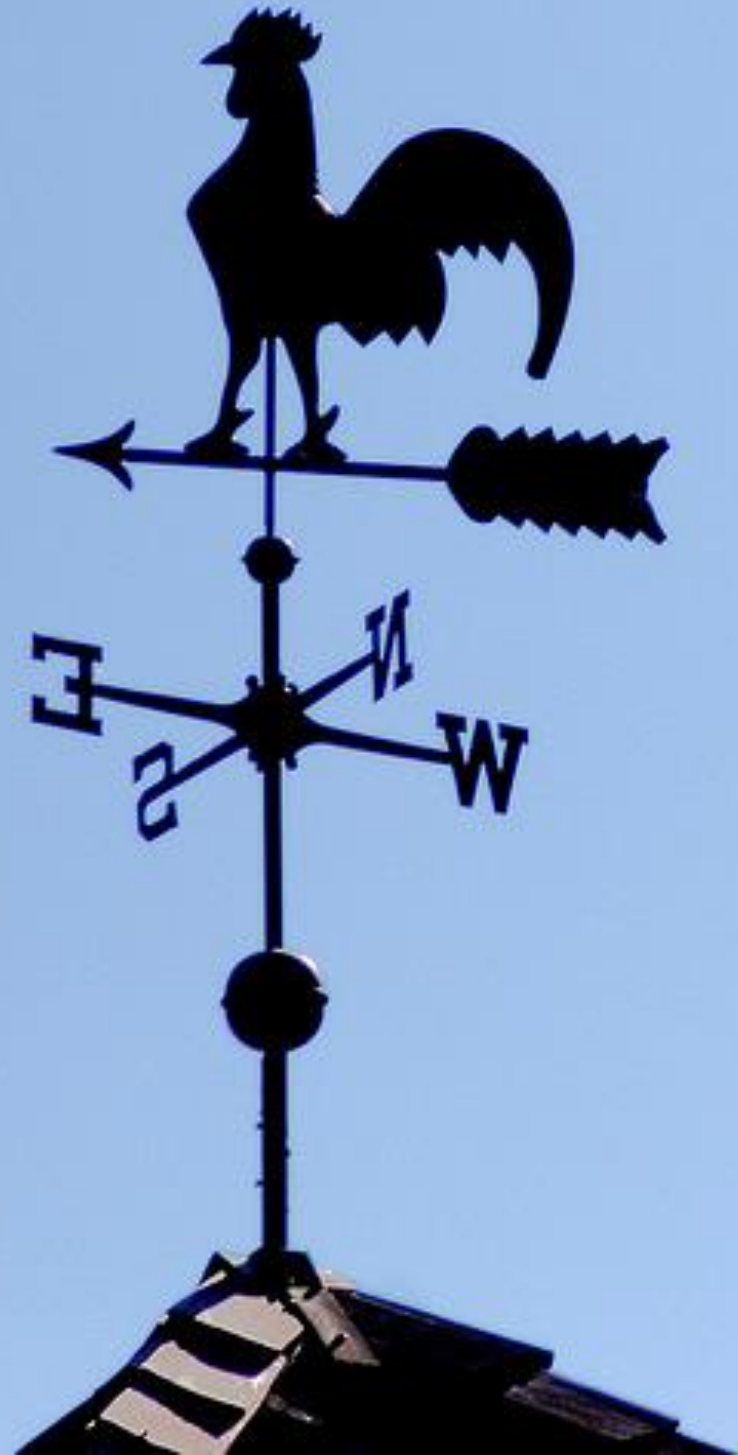
Environmental Sustainability SANS 10400 XA Efficient Energy

ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY” requirements.

1

For:

Orientation of building



Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”

ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY”

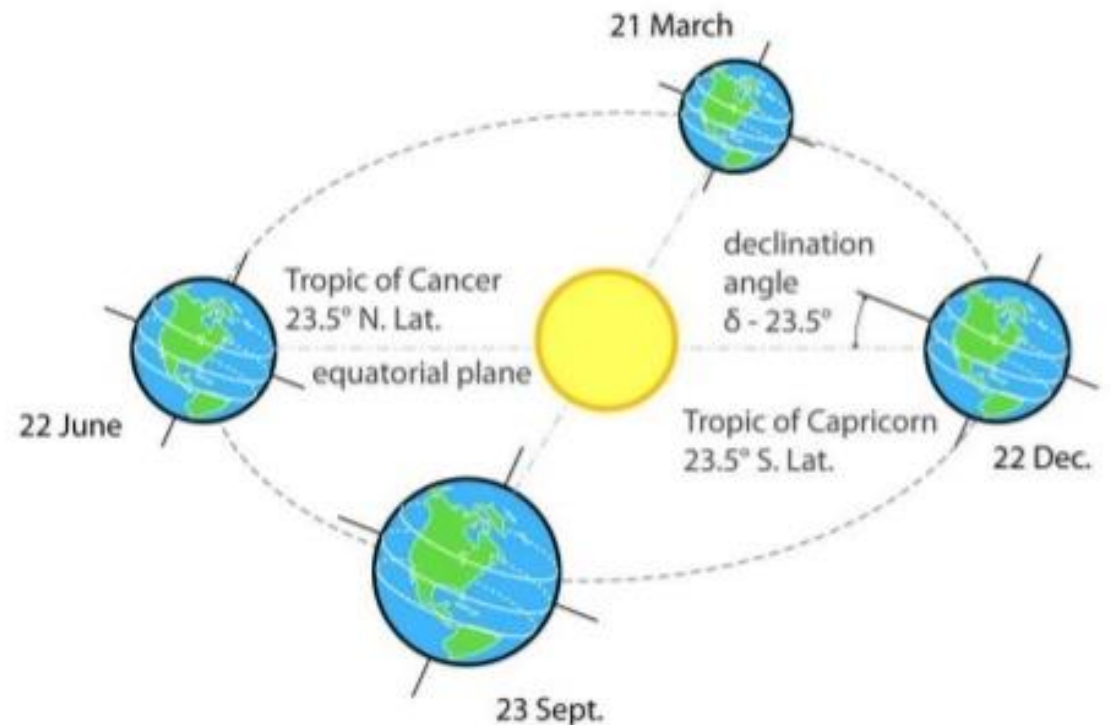
2

- Orientation of building;
- Shading of windows and Northern face of the building**

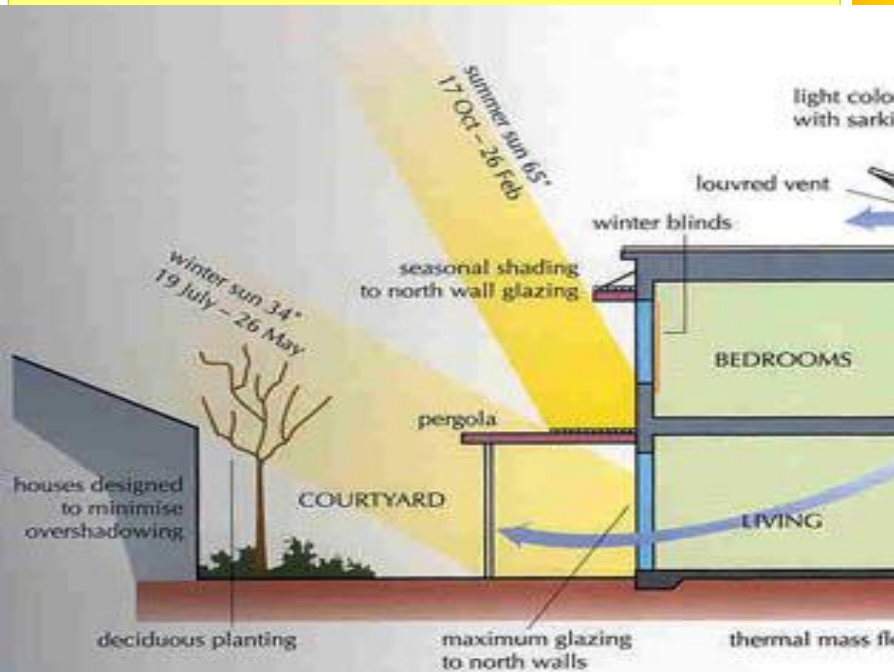


AVOID WINDOWS ON THE EAST & WEST FACADE BY SHIFTING THE WINDOWS TO FACE NORTH OR SOUTH:

Solar Geometry



Earth's motion around the sun.

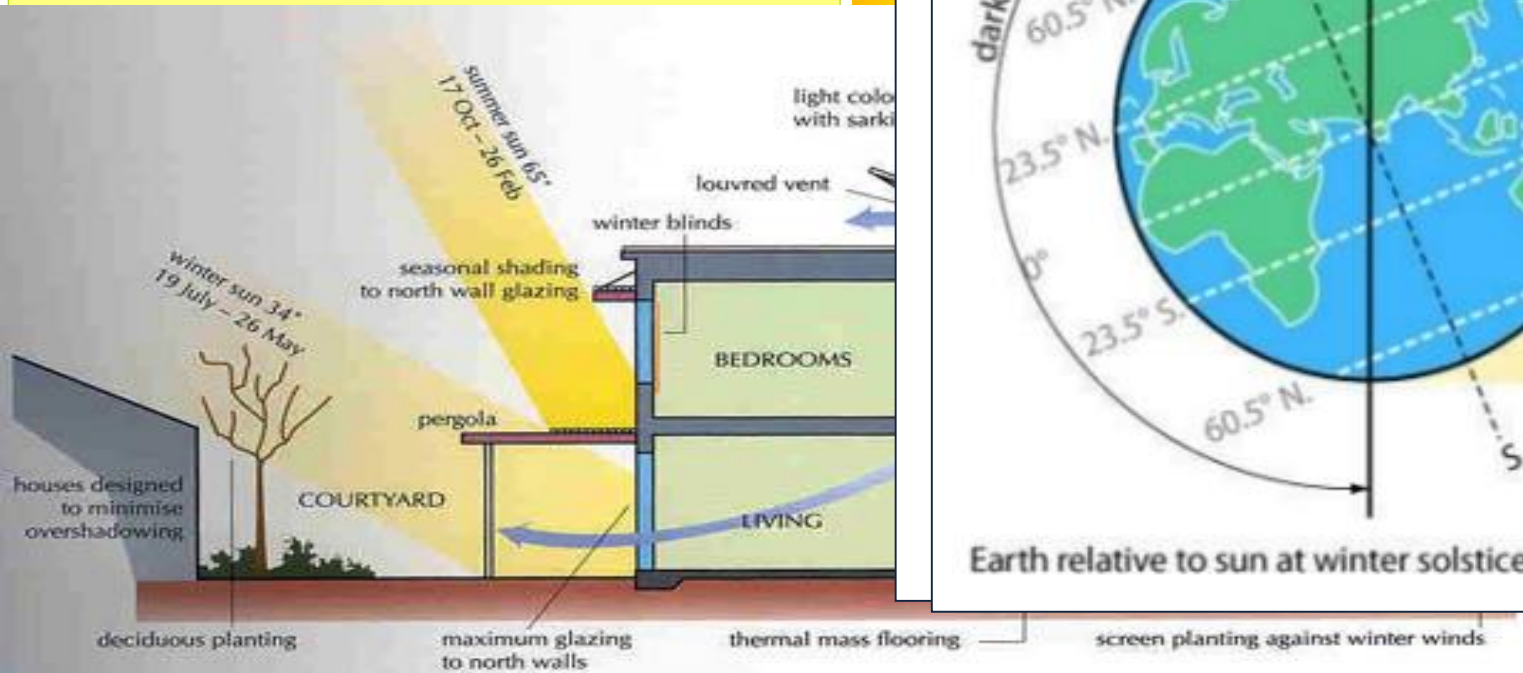
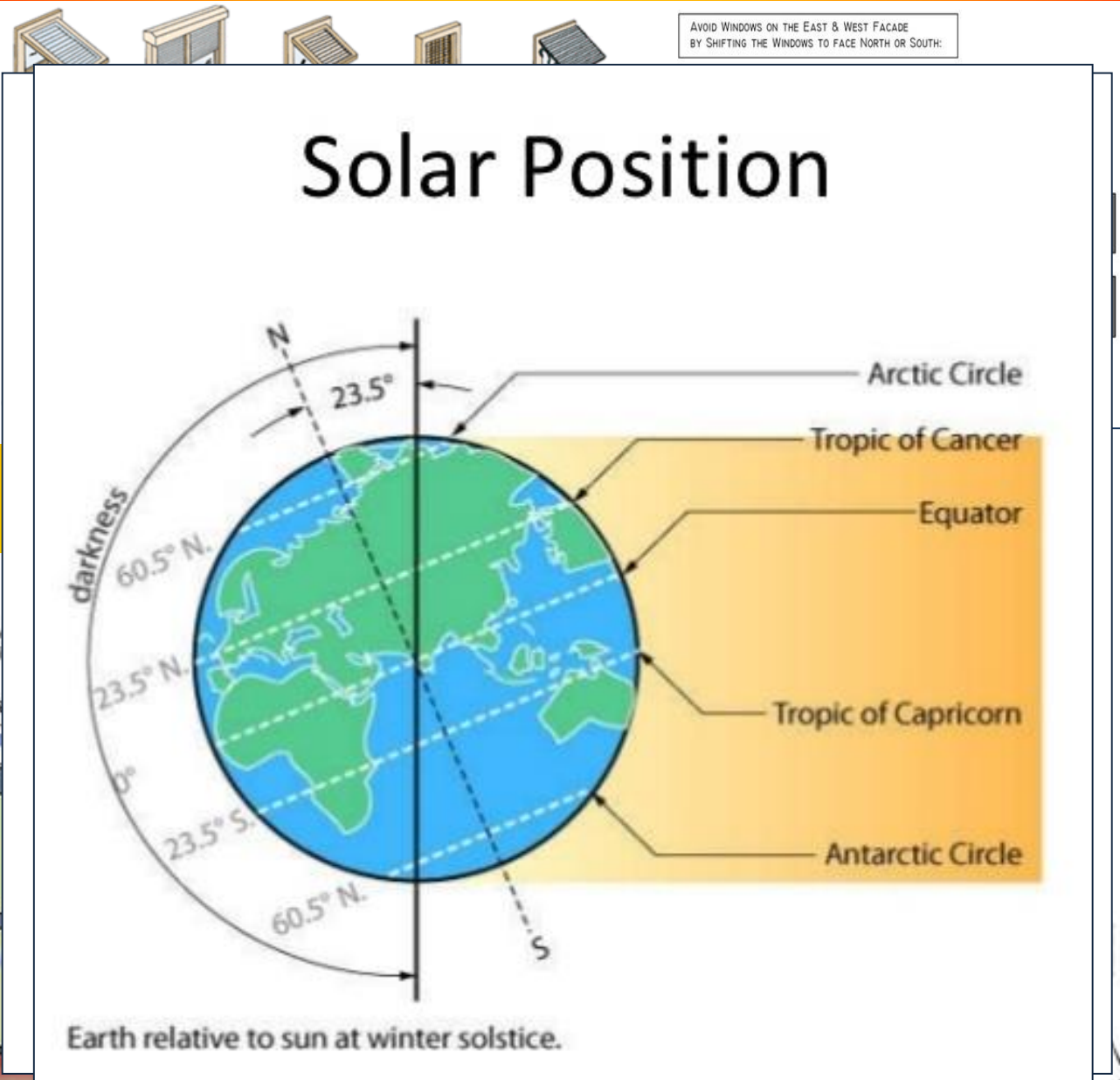


Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”

ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY”

2

- Orientation of building;
- Shading of windows and Northern face of the building

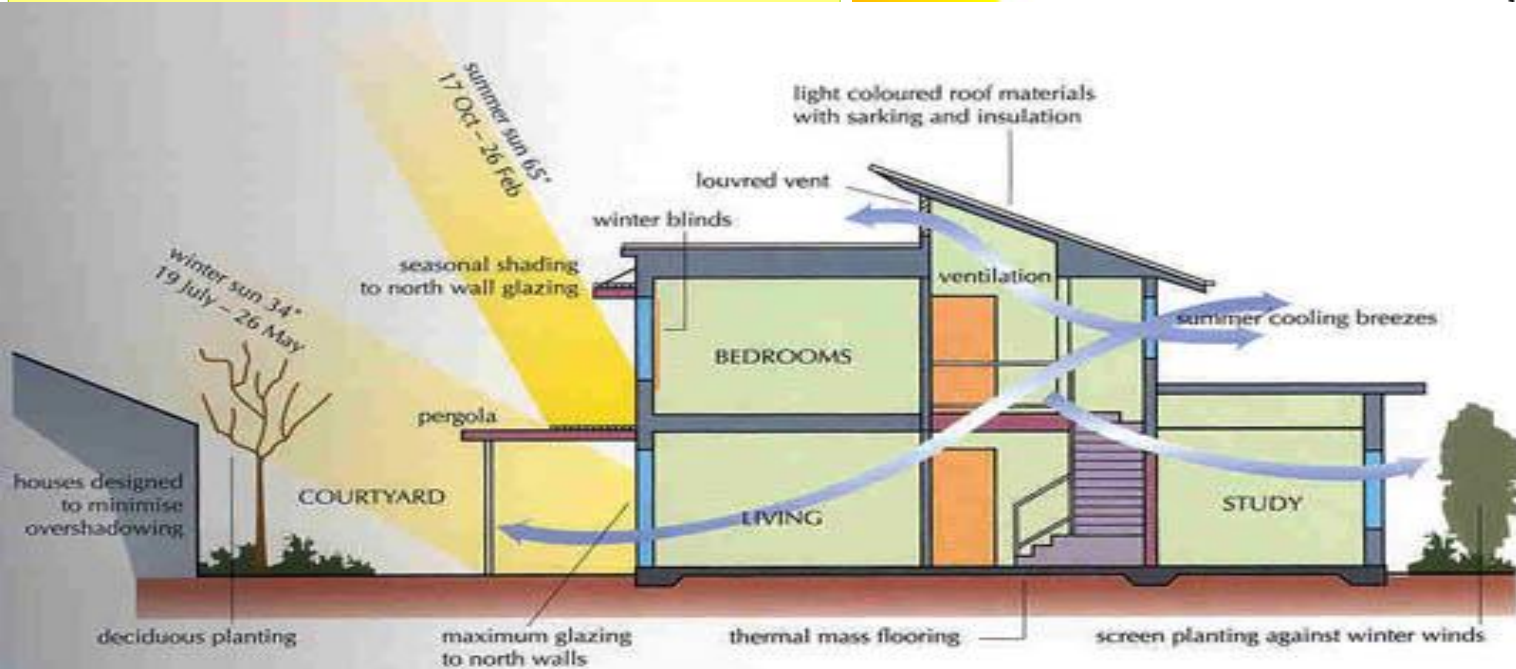
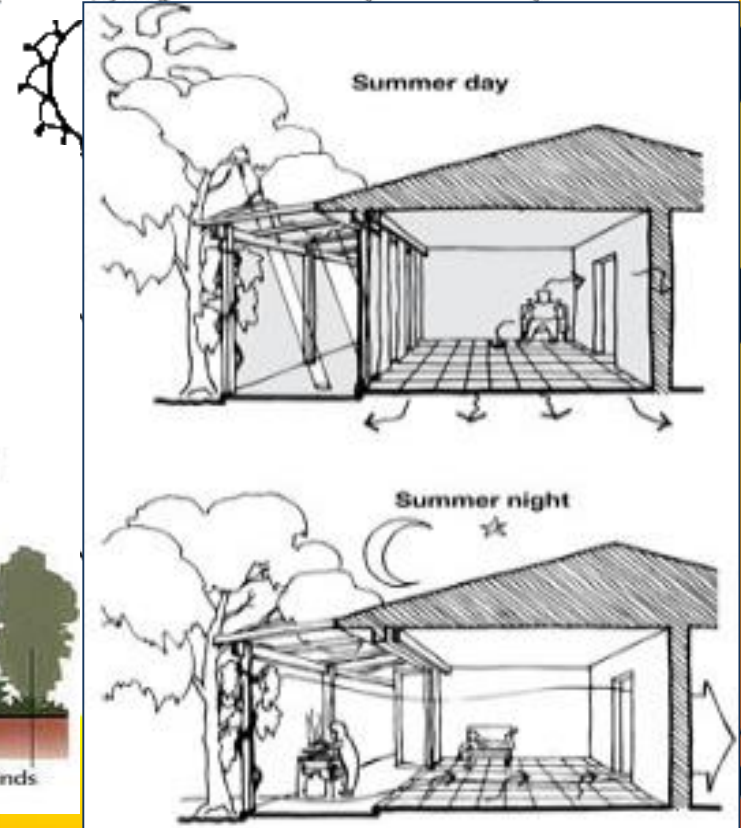
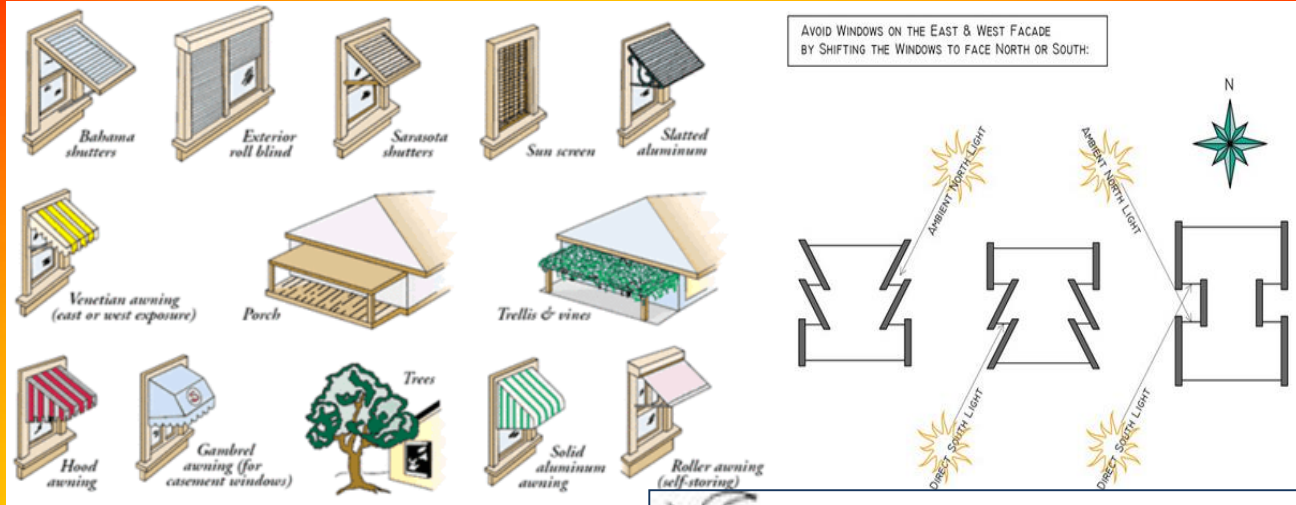


Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”

ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: **“DEEMED TO SATISFY”**

2

- Orientation of building;
- **Shading of windows and Northern face of the building**



Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy” rules provided in; SANS 10400-XA: 2017

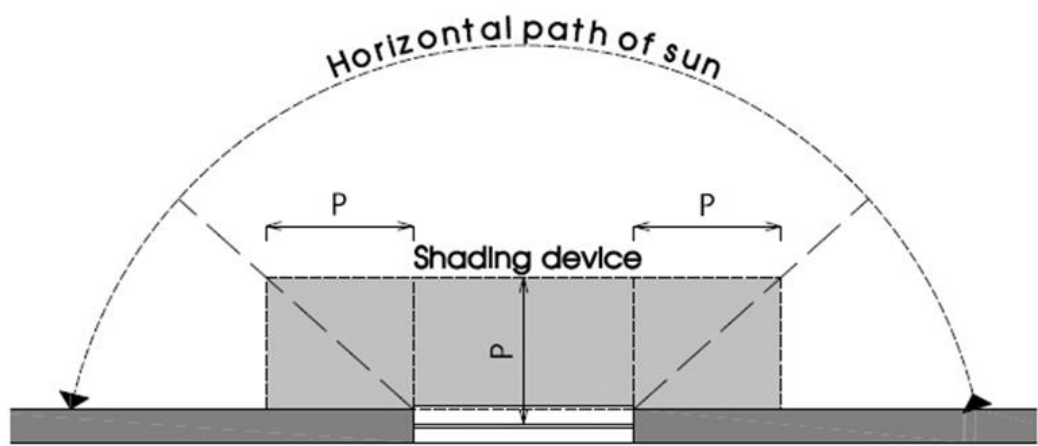
Key

P horizontal distance, expressed in meters, from the glass face to the shadow casting edge of any shading projection

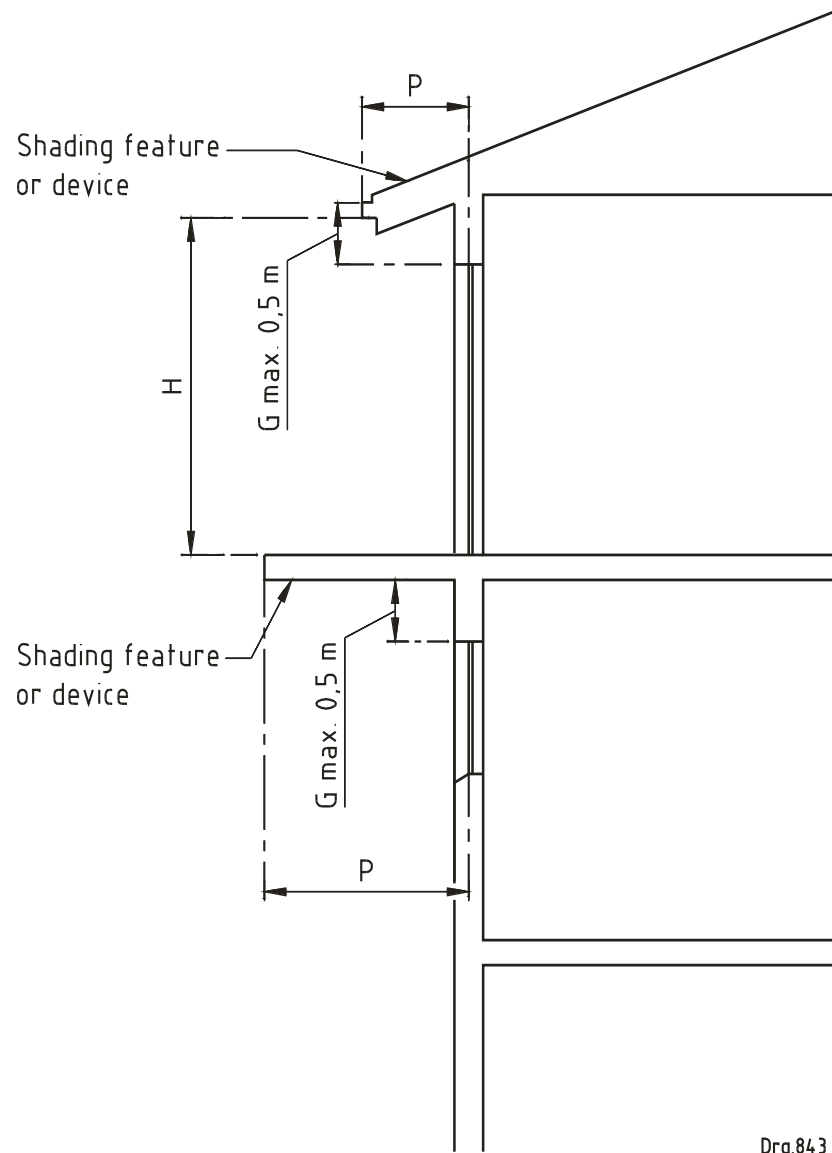
H vertical distance from the base of the glazing element to the same shadow casting edge used to measure *P*

G vertical distance from the head of the glazing element to the shadow casting edge of any shading projection

NOTE: An adjustable shading device that is capable of completely covering the glazing may be considered to achieve a *P/H* value of 2.



P: Horizontal distance from the glass face to the shadow casting edge of the shading device. (Extends horizontally on both sides of the glazing)



Drg 843

Figure 3 — Complying shading device for North, North East and North West elevations

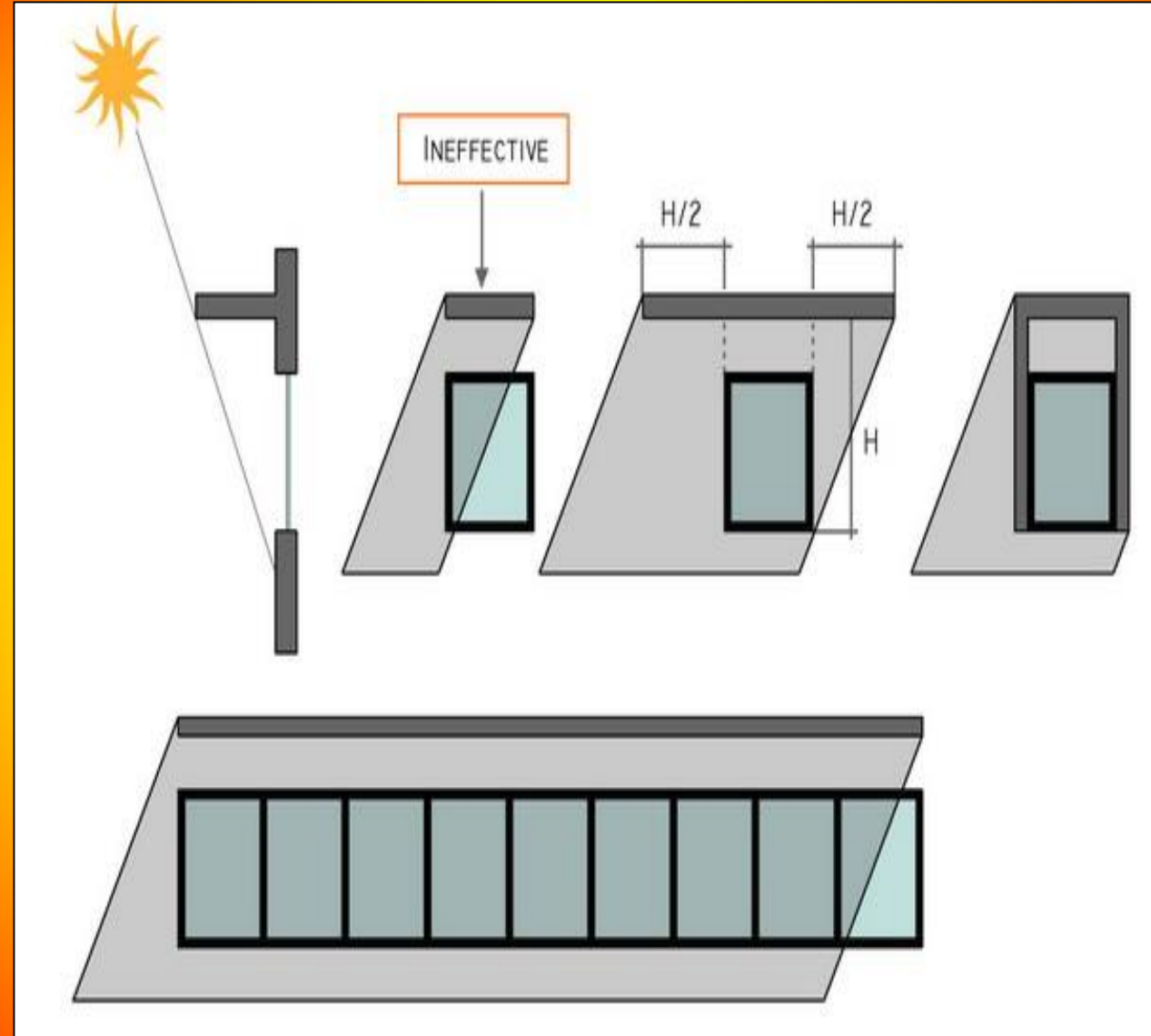
Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy” rules provided in; SANS 10400-XA: 2017

ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY”

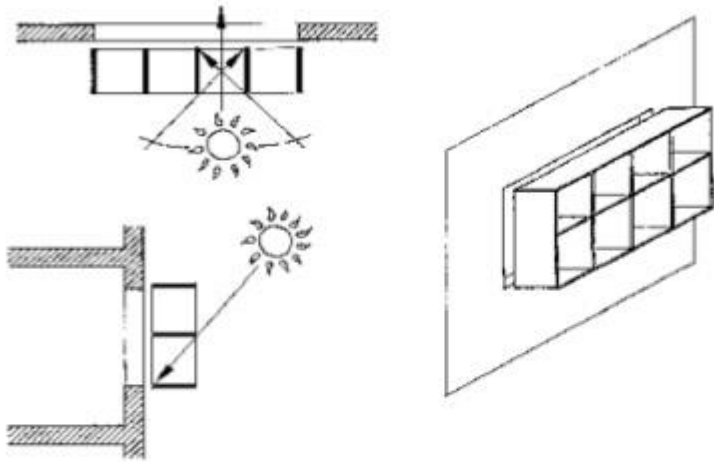
2

- Orientation of building;

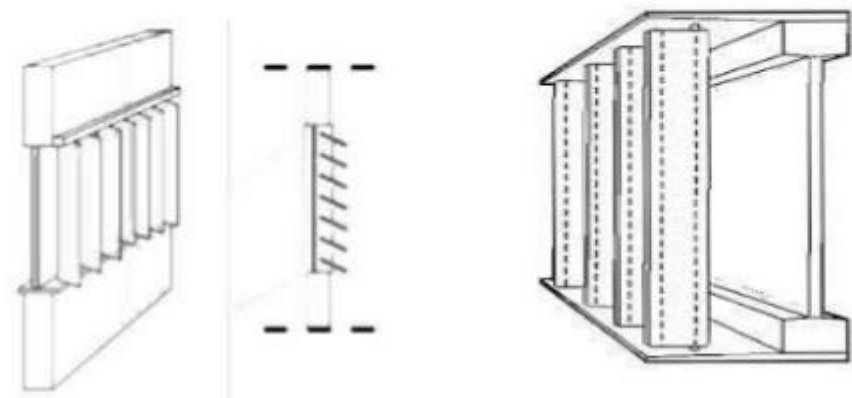
Shading of windows:



The egg-crate: A combination of vertical and horizontal shading elements commonly used in hot climate regions because of their high shading efficiencies. The horizontal elements control ground glare from reflected solar rays. The device works well on walls



Vertical Devices: Primarily useful for east and west exposures to improve the insulation value of glass in winter months by acting as a windbreak.



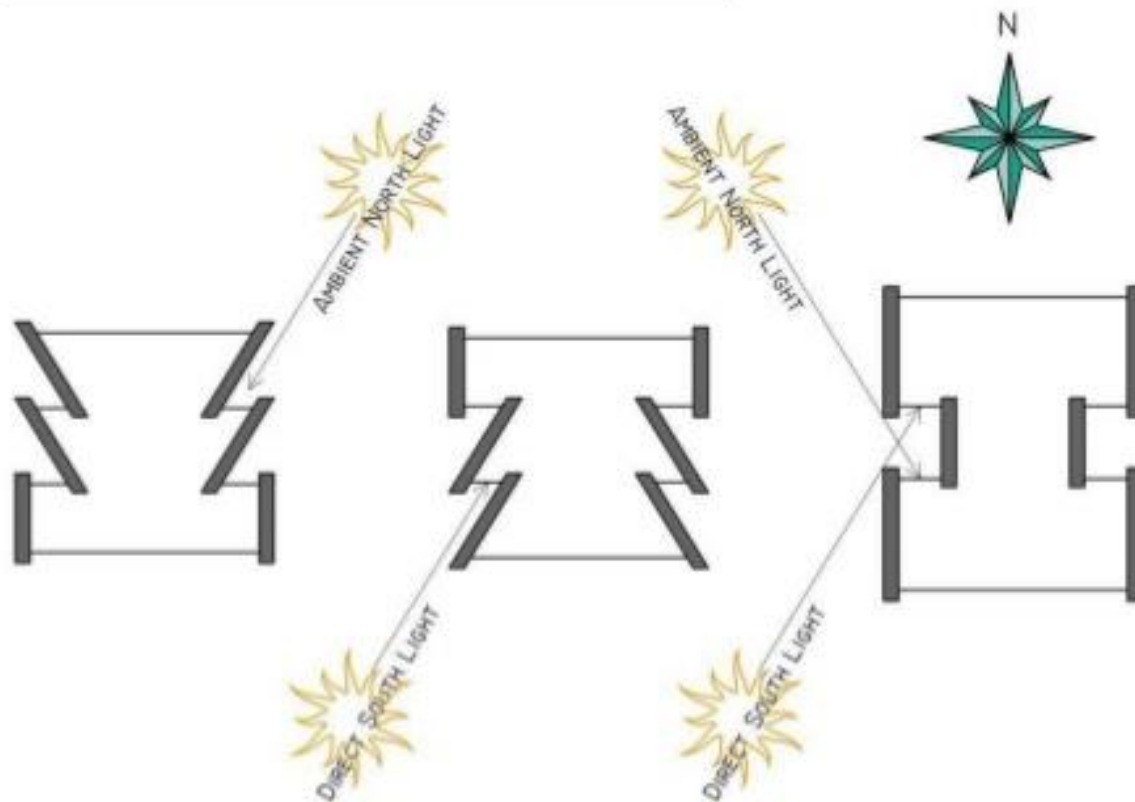
Slanted Vertical Fin

Vertical Fins

Shading Strategies for East and West Elevations

AVOID WINDOWS ON THE EAST & WEST FACADE
BY SHIFTING THE WINDOWS TO FACE NORTH OR SOUTH:

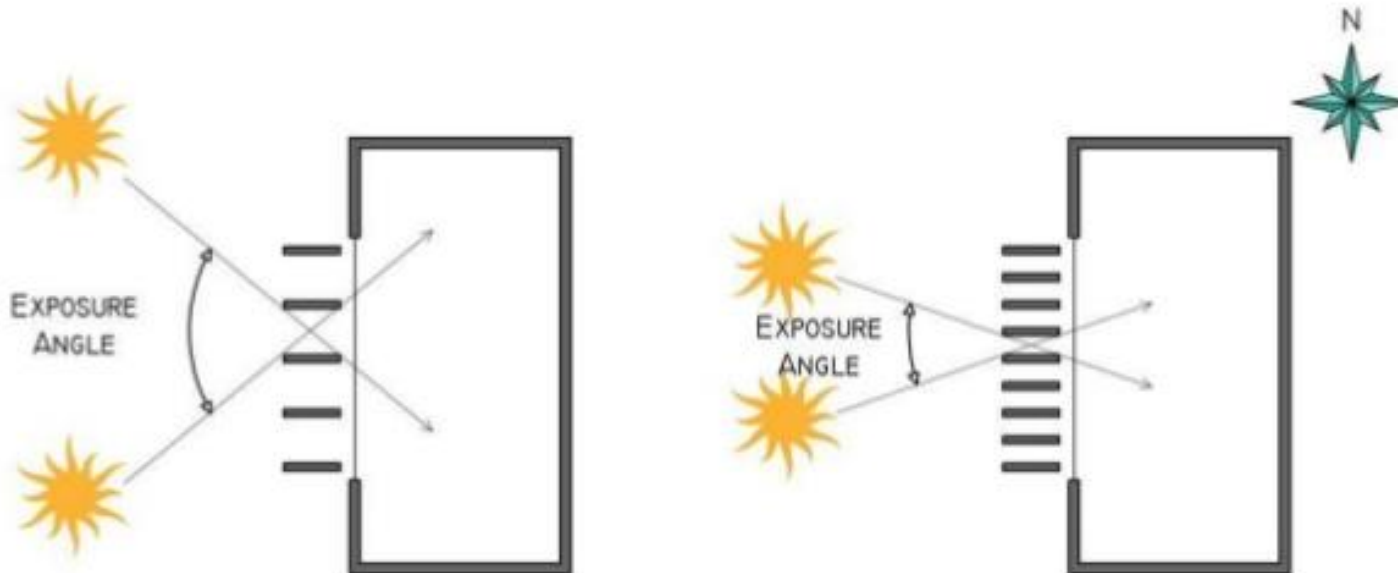
1. The best solution
by far is to limit using
east and especially
west windows (as
much as possible in
hot climates)



2. Next best solution is to have windows on the east
and west façades face north or south

Sh

Shading Strategies for East and West Elevations



SOLAR PENETRATION IS REDUCED BY MOVING FINS CLOSER TOGETHER, MAKING THEM DEEPER, OR BOTH.

3. Use Vertical Fins. Spacing is an issue, as well as fin length. Must be understood that if to be effective, they will severely restrict the view.

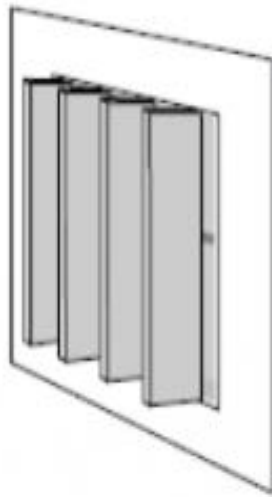
and west façades face north or south

The
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1. The best
by far is to
east and
west win
much as
hot clima

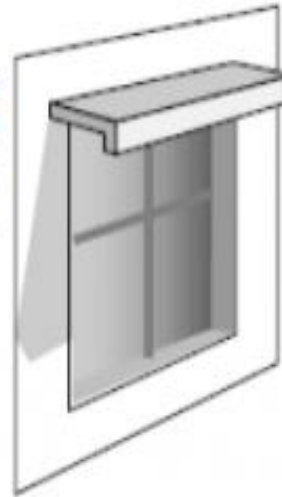
and
of
k.

Standard horizontal overhang.



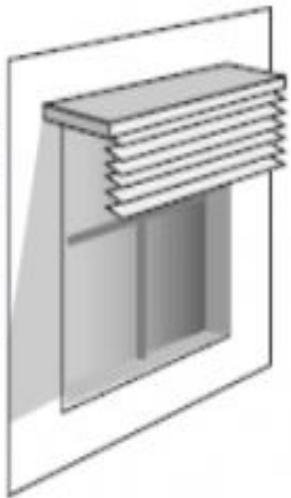
Vertical louvers or fins for east and especially west facades.

Drop the edge for less projection.

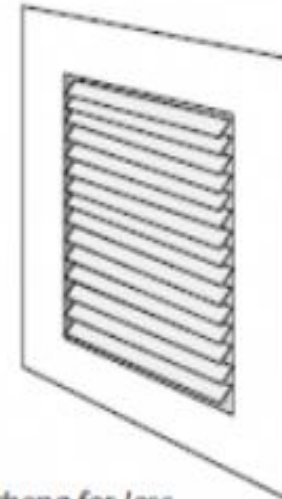
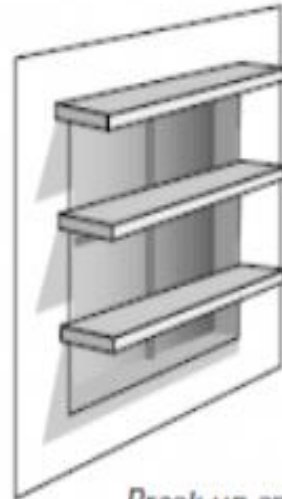


Slope it down for less projection.

Substitute louvers for the solid dropped edge to let in more light.



Use louvers in place of solid overhang for more diffuse light while still shading.



Break up an overhang for less projection.

Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy” rules provided in; SANS 10400-XA: 2017



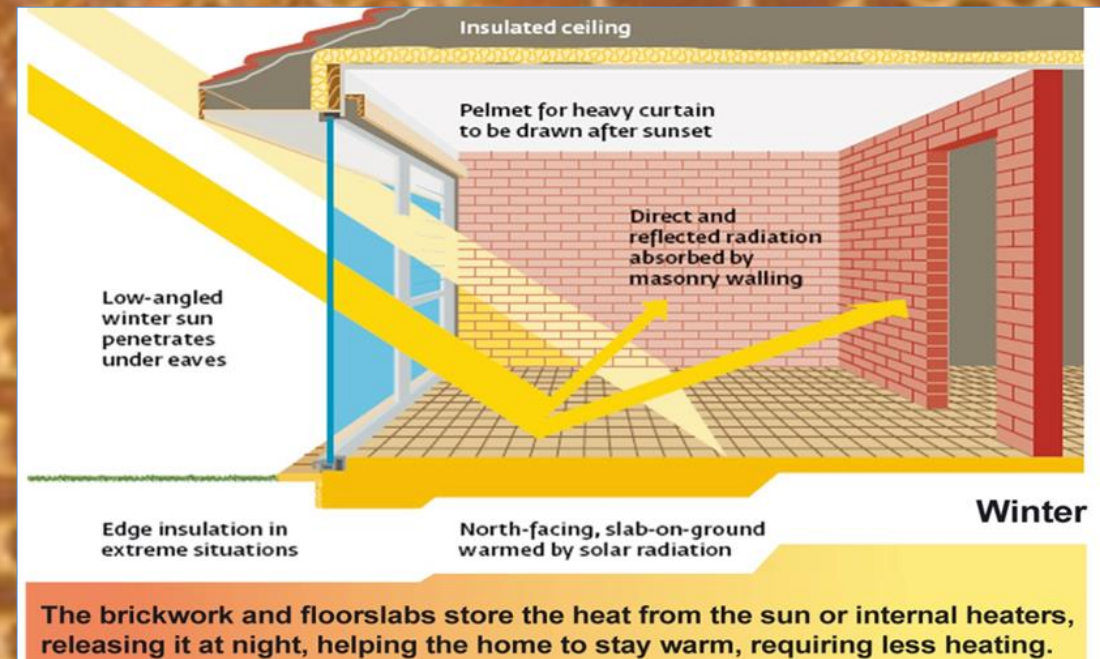
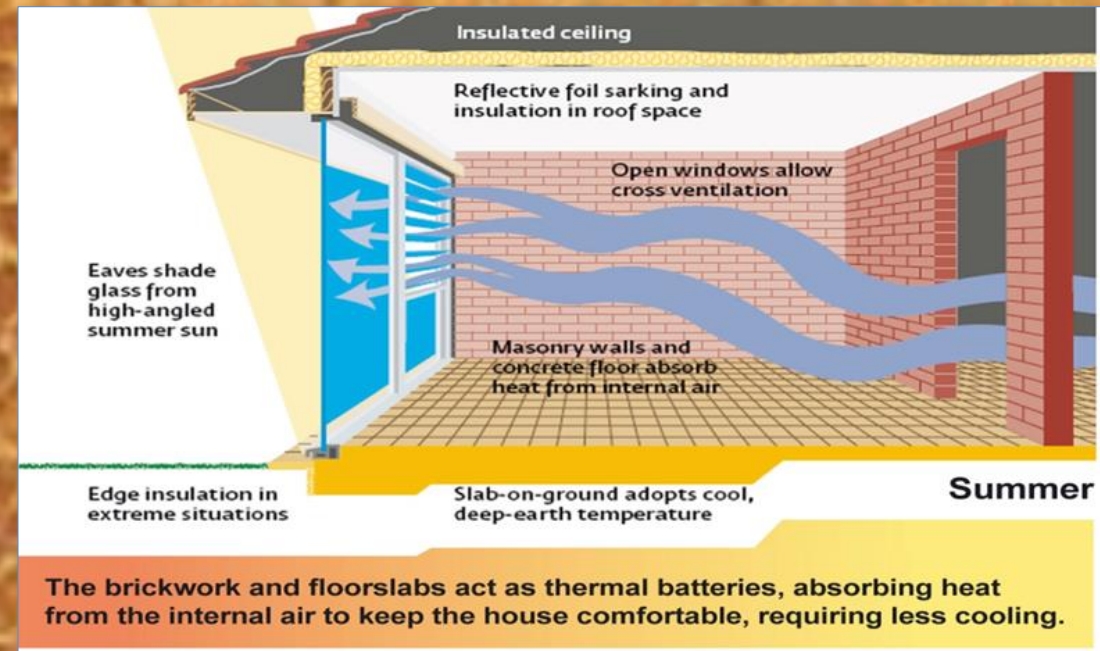
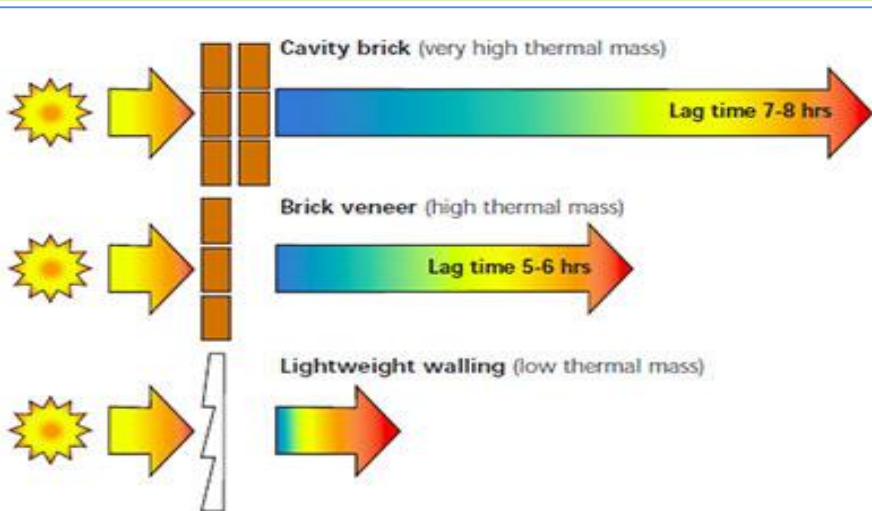
ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY” requirements.

3

For:

- Orientation of building;
- Shading of windows and north face;
- Roof and ceiling insulation;

Wall performance prescribed



Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy” rules provided in; SANS 10400-XA: 2017



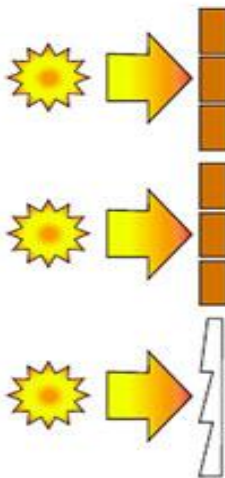
ENERGY EFFICIENCY IN BUILDINGS

is achieved through various solutions... XA or other... “DEEMED TO SATISFY” requirements

For:

- Orientation
- Shading face;
- Roof area

Wall performance



30

Cavity Wall Insulation

Reduces heat loss through the walls

- Installation takes less than a day to complete
- Payback: 3 – 4 years

5.3 External walls (See Annex D)

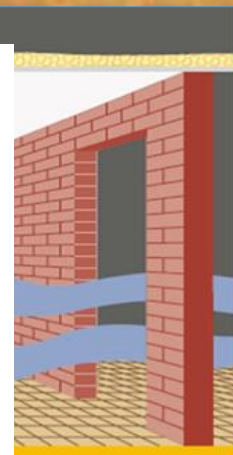
5.3.1 Masonry walls (Annex C)

The Minimum total R-value requirements for an external wall

Masonry walls			
Density	Zones (Old)	R-Value	
>300k/m ²	1, 2, 3, 4 & 6	1.35	Cavity wall with insulation R-value 1
	5	0.6	Cavity wall no insulation

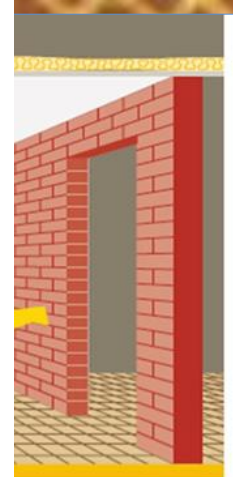


Insulated ceiling



Summer

...ing heat... less cooling.



Winter

...ternal heaters, less heating.



Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”

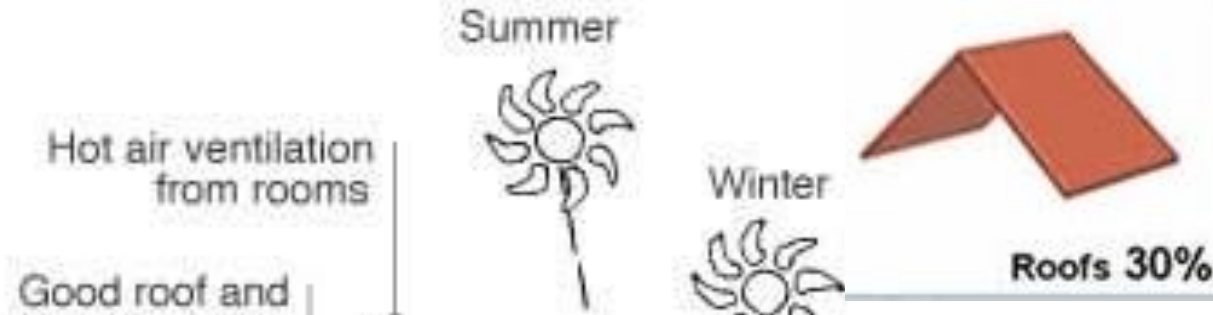
ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY” requirements.

4

For:

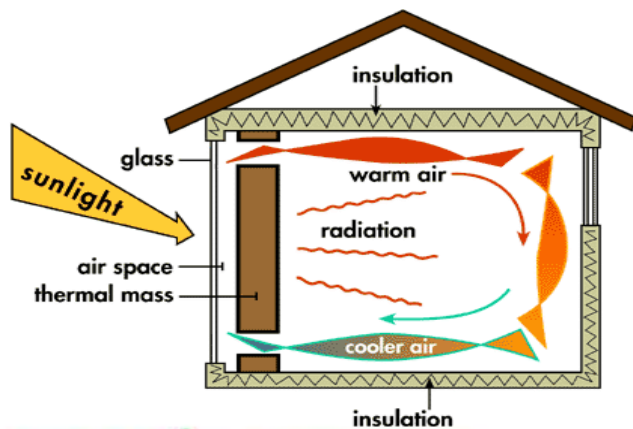
- Orientation of building;
- Shading of windows and north face;

• **Roof and ceiling insulation**

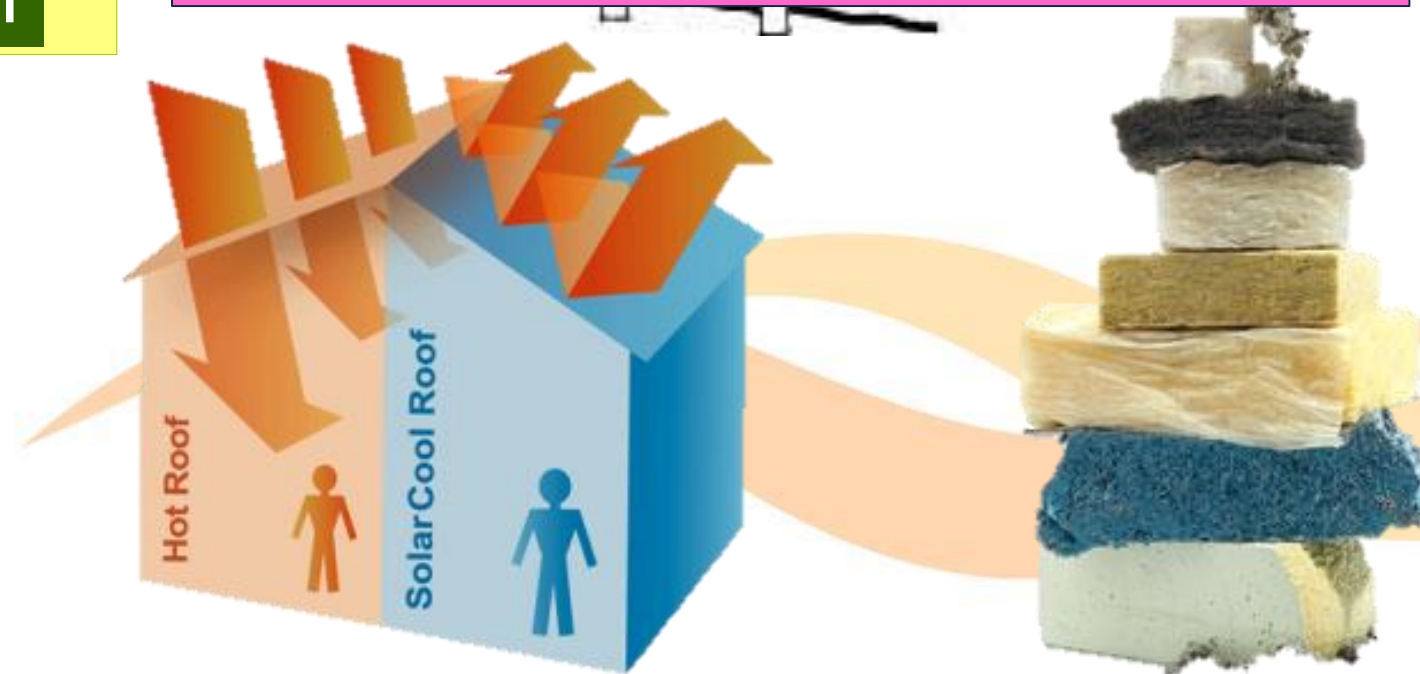


Roof and ceiling insulation is to be regulated

SANS 1381-1 TO BE CLASSIFIED AS A COMPULSORY SPECIFICATION IN SOUTH AFRICA



NRCS national regulator for compulsory specifications



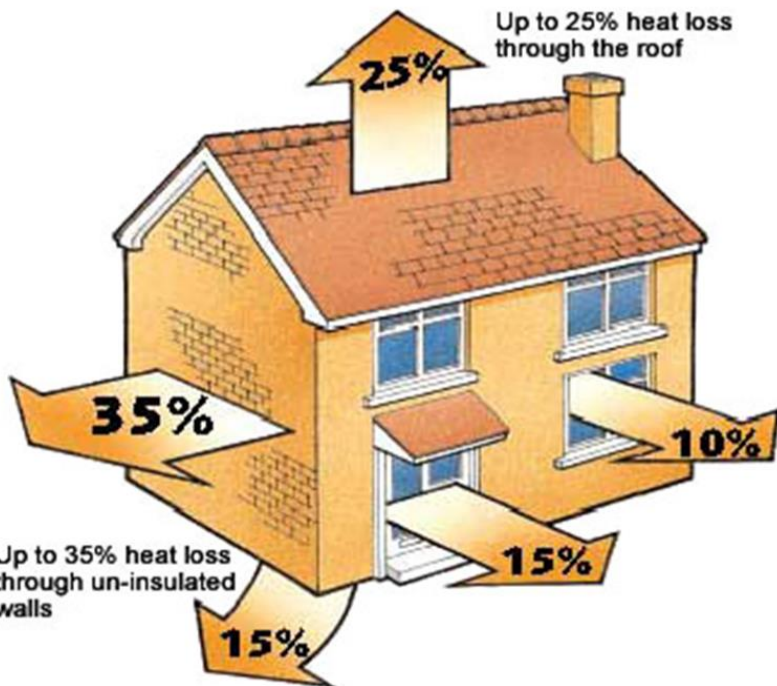
Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”

ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY” requirements.

5

For:

- Orientation of building;



Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”



ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: **“DEEMED TO SATISFY”** requirements.

6

For:

- Orientation of building;
- Shading of windows and north face;
- Roof and ceiling insulation;
- Wall performance prescribed;
- Floor insulation; where underfloor heating is installed

Electrical Lighting Regulated

- Heating of water. Use of alternatives to electric resistance heating for water such as solar collectors and heat pumps.



Environmental Sustainable Buildings within the Standards – SANS 10400 XA Efficient Energy use in buildings: “Deemed to satisfy”



Lighting

Generally the lighting performance of this standard will be satisfied by the use of LED (light emitting diode) or fluorescent technologies at the minimum lighting lux levels nominated in SANS10114.

The lighting power density as calculated by aggregating the connected lighting energy demand per occupancy and dividing this total by the net floor area for the relevant occupancy, as per table 3 below, shall not exceed the Energy Demand values set out in Table 4.

Table XX; Maximum energy demand and energy consumption for lighting for the class of occupancy or building

1	2	3	4	5
Class of occupancy or building	Occupancy	Population	Energy demand W/m ²	Energy consumption kWh/m ²
A1	Entertainment and public assembly	Number of seats or 1 person/m ²	2	
A2	Theatrical and indoor Sport	Number of seats or 1 person/m ²	8	
A3	Places of instruction	Number of seats or 1 person/m ²	10	
A4	Worship	Number of seats or 1 person/m ²	4	
B1	High-risk Commercial	1 person/15m ²	10	
B2	Moderate-risk Commercial	1 person/15m ²	8	
B3	Low-risk Commercial	1 person/15m ²	6	
C1	Exhibition halls	1 person/10m ²	10	
C2	Museums	1 person/20m ²	4	
D1	High-risk Industrial	1 person/15m ²	8	
D2	Moderate-risk Industrial	1 person/15m ²	6	
D3	Low-risk Industrial	1 person/15m ²	4	
D4	Plant Room	N/A	4	
E1	Places of detention	2 people/bedroom	4	
E2	Hospital	1 person/10m ²	8	
E3	Other institutional residences	1 person/10m ²	8	
E4	Health care	1 person/10m ²	8	
F1	Large Retail	1 person/10m ²	20	
F2	Small Retail	1 person/10m ²	8	
F3	Wholesale store	1 person/20m ²	8	
G1	Offices	1 person/15m ²	8	
H1	Hotels	2 people/bedroom	4	
H2	Dormitory	1 person/5m ²	4	
H3	Domestic residences	2 people/bedroom	4	
H4	Dwelling houses	4 people/house	4	
H5	Hospitality	2 people/bedroom	4	
J1	High-risk storage	1 person/50m ²	4	
J2	Moderate storage	1 person/50m ²	3	
J3	Low-risk storage	1 person/50m ²	2	
J4	Parking areas covered	1 person/50m ²	1	

Informative note:
 1. All lighting calculations should assume default factor of 0.80 or 80% maintenance factor.
 2. All lighting to be accordance with SANS10114:2005;
 3. Lamp lumens: the lumen output of all lamps must be stated at 25°C

Building Regulation: Energy Efficiency in Buildings satisfied by the “Deemed to satisfy” rules provided in; SANS 10400-XA: 2017



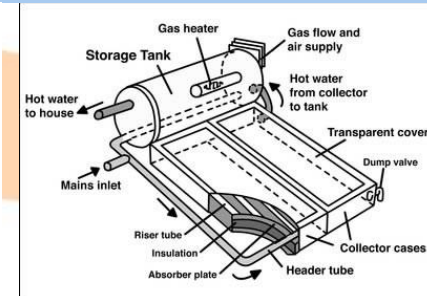
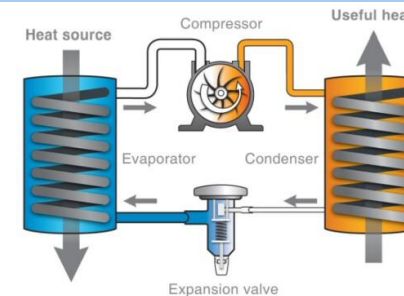
ENERGY EFFICIENCY IN BUILDINGS is achieved by compliance with solutions provided in SANS 10400 XA or otherwise described as: “DEEMED TO SATISFY” requirements.

7

For:

- Orientation of building;
- Shading of windows and north face;
- Roof and ceiling insulation;
- Wall performance prescribed;
- Floor insulation; where underfloor heating is installed
- Electrical lighting regulated.

Heating of water. Use of alternatives to electric resistance heating for water such as solar collectors and heat pumps



SANS 10400 Part XA 2017

Hot water supply

- **In order for solar geysers with back-up elements to comply with the demand requirement for hot water as per Regulation XA3, the following shall be deemed to satisfy the requirement:**

Solar water heating systems shall comply with SANS 1307, SANS 10106, SANS 10254 and SANS 10252-1.

The capacity of the storage tanks for solar geysers fitted with a back-up electrical element capacity is equal or more than that stated in table 10

The roof structure supporting storage tanks and solar collectors shall satisfy the requirements of SANS10400-B and SANS10400-L

The installation must be done by a registered plumber and a Certificate of Compliance has to be issued.

- **In order for domestic heat pump installations to comply with the demand requirement for hot water as per Regulation XA3, the following shall be deemed to satisfy the requirement:**

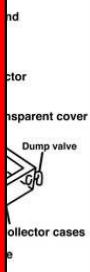
Domestic heat pump systems shall comply with SANS 1503, SANS 10254 and SANS 10252-1.

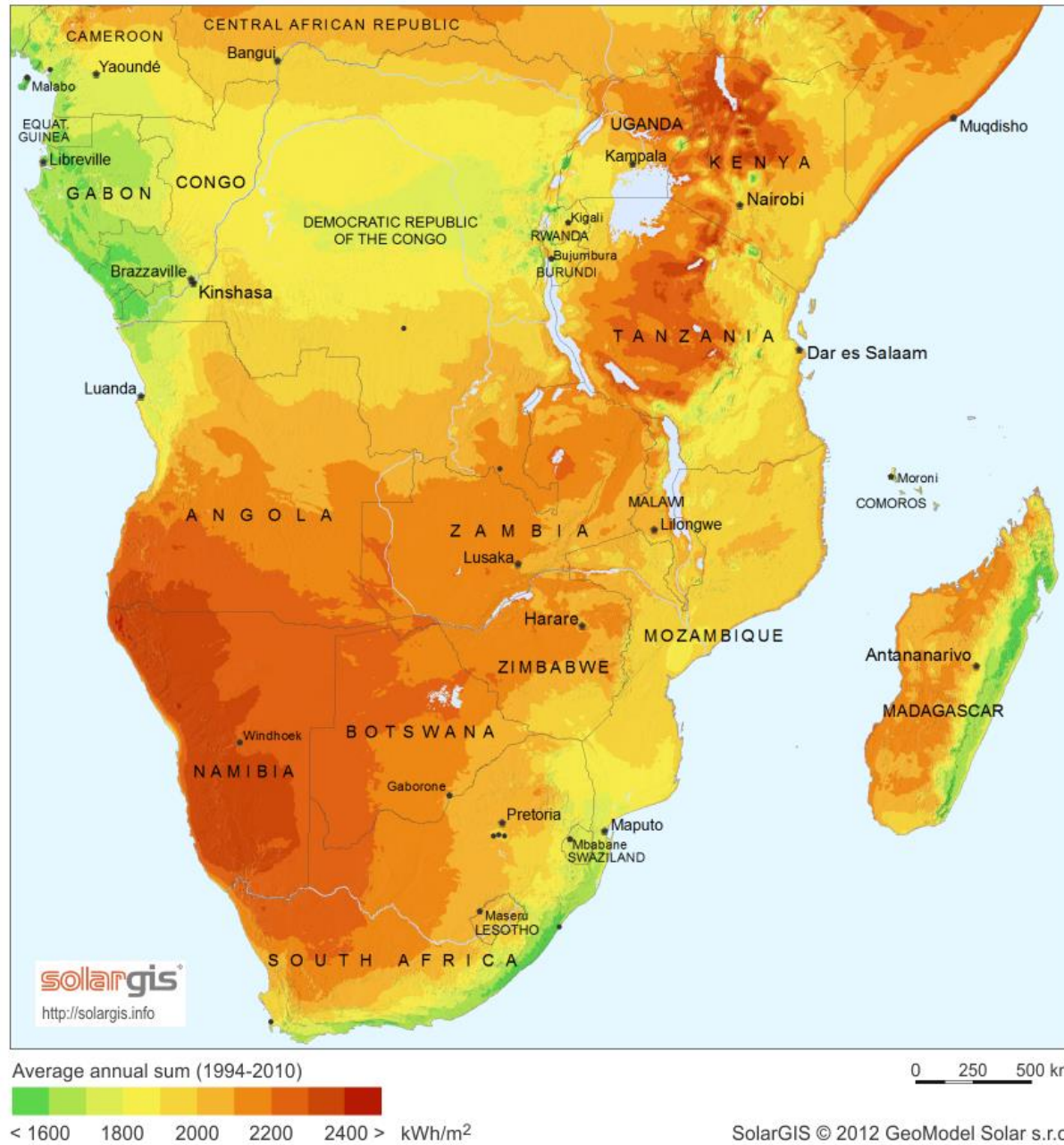
The roof structure supporting storage tanks shall satisfy the requirements of SANS10400-B and SANS10400-L

The installation must be done by a registered plumber and a Certificate of Compliance has to be issued.



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Only a guide;

A 150 litre solar water heating system on the basis that most are around 70% -80% efficient will just be adequate for 2 people.

If there are 3 to 4 people, a 200 litre system is needed (on the same assumption of efficiency).

For 4 -6 people from 300 litres or more is needed.

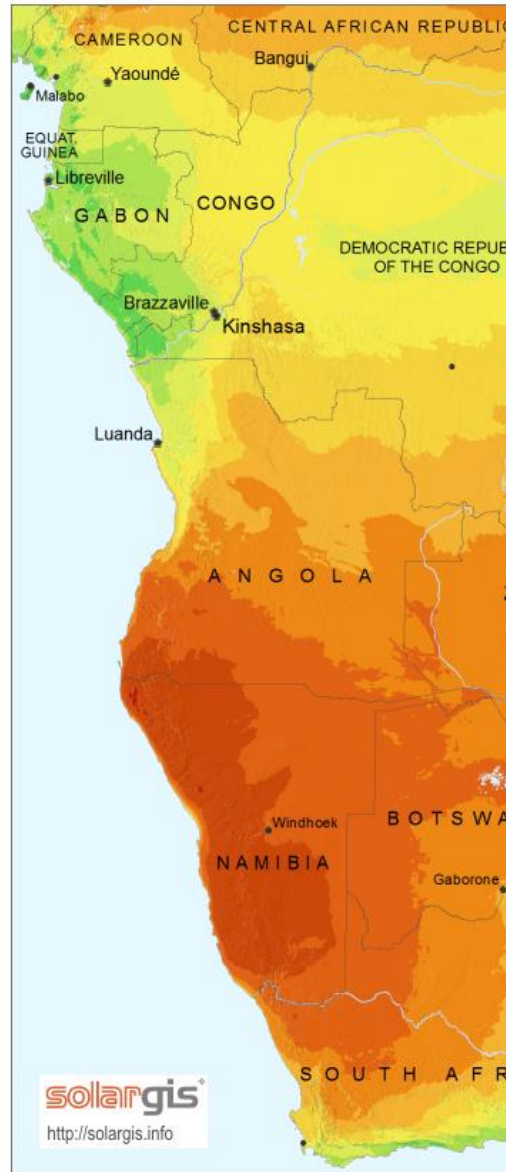
1503, SANS 10254 and SANS 10252-1. by the requirements of SANS10400-B

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1	2	3
Premises	Total hot water demand	Storage capacity (60°C)
Clinics	120 L/bed/d	60 L/bed/d
Colleges and schools:		
Day school	10 L/capita/d	10 L/capita
Boarding school	50 L/capita/d	50 L/capita
Dwelling		
houses: c Low rental	80 L/capita/d	(100 to 150) L/unit
Medium to high rental	115 L/capita/d	(40 to 50) L/capita
Factories:		
Staff Ablutions	10 L/capita/d (30 to 60) L/capita/d	(5 to 7) L/capita/d (30 to 60) L/capita/d
Flats (blocks):		
Low rental	(65 to 75) L/capita/d	(20 to 25) L/capita
Medium to high rental	(115 to 140) L/capita/d	(25 to 35) L/capita
Hospitals:		
General	(130 to 140) L/bed/d	(25 to 30) L/bed/d
Infectious	(220 to 230) L/bed/d	(40 to 50) L/bed/d
Infirmaries	(65 to 75) L/capita/d	(20 to 25) L/capita/d
Infirmaries with laundry	(85 to 95) L/capita/d	(25 to 30) L/capita/d
Maternity	(220 to 230) L/bed/d	(30 to 35) L/bed/d
Mental	(85 to 95) L/capita/d	(20 to 25) L/capita/d
Nurses' homes	(120 to 130) L/capita/d	(40 to 50) L/capita/d
Hostels	(80 to 120) L/capita/d	(30 to 35) L/capita/d
Hotels:		
with resident staff	(120 to 140) L/bed/d	(50 to 70) L/bed/d
without resident staff	(100 to 120) L/bed/d	(40 to 60) L/bed/d
Kitchens:		
Full meal preparation	(5 to 7) L/meal	(5 to 6) L/meal
Offices:		
with canteens	(25 to 28) L/capita/d	(20 to 25) L/capita/d
without canteens	(10 to 12) L/capita/d	(5 to 7) L/capita/d
Shops (staff only)	(10 to 12) L/capita/d	(5 to 6) L/capita
Sports pavilions (participants only)	(30 to 40) L/capita/d	(30 to 40) L/capita/d

Water heating system on
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Water Services - Building Regulations W



Against a global rainfall average of 870mm per year, South Africa receives a pitiful 450mm, making it the worlds 30th driest country.



Water Services - Water installations in buildings

The **Water Services Act, 1997** (Act No. 108 of 1997) enables the Minister of Water Affairs to **prescribe compulsory national standards** relating to **consumer installations**



Regulation 14 of R 509 (8 June, 2001) reads as follows:

*Every **consumer installation must comply with SABS 0252-1** (SANS 10252-1), **Water supply and drainage for buildings and SABS 0254** (SANS 10254), **The installation, maintenance, replacement and repair of fixed electric storage water heating systems, or any other similar substituting re-enactment or amendment thereof if the consumer installation is of a type regulated by either standard.***

SANS 10252-1 establishes general principles for the design, installation and testing of water installations.

Water Services - Water installations in buildings

The **Water Services Act, 1997** (Act No. 108 of 1997) enables the Minister of Water Affairs to **prescribe compulsory national standards** relating to **consumer installations**

The National Building Regulations do **not contain** any provisions that relate to **water installations in buildings** except those pertaining to **fire installations** (see part W: Fire Installations).

Therefore, consumer installations are regulated by SANS 10252-1 and SANS 10254.



Water Services - Building Regulations: Close the Gap

Wet services included in the NBR's:

1. Control of plumbers and plumbing work (Regulation A18)
 - Drainage (P)
 - Non-water-borne means of sanitary disposal (Q)
 - Stormwater disposal (R)
 - Fire services (W)

NO WATER SUPPLY INSTALLATIONS in NBR.

1. Regulations (2001) under the Water Services Act make compliance with **SANS 10252/10254** mandatory
2. DWA lacks capacity to enforce.
3. By-laws enforced by Local Authorities water authority.
4. NRCS identified the need to close the gap.
5. **DTI & DWA agree in principle to replicate regulations**



A time to ask those questions not yet answered

Q&A

You have

Questions

We have

Answers

Contact details

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