Energy Performance Certificate Guideline

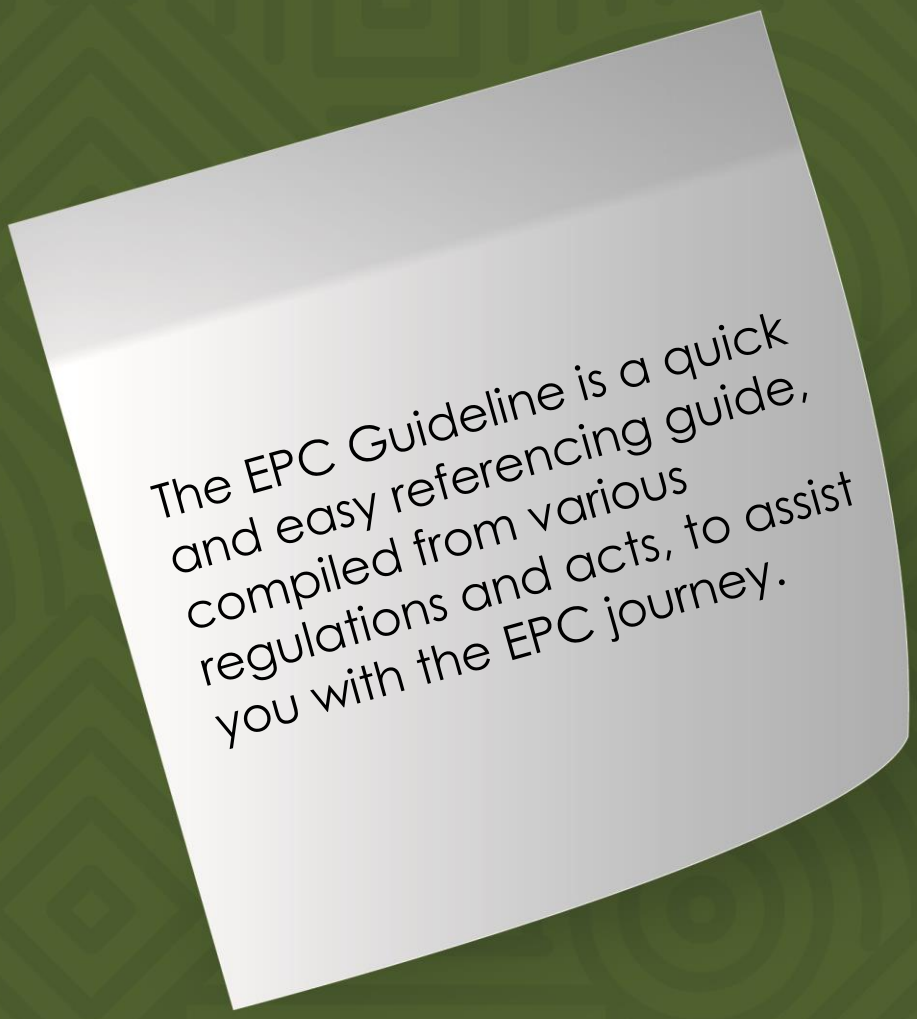
Understanding the application and implementation of EPCs for buildings in South Africa

Guidance to compliance

Version 1 | Last updated: May 2022

mineral resources & energy
Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

sanedi
South African National Energy Development Institute



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Contents

Nomenclature

Abbreviations and terminology	Meaning
DMRE	Department of Mineral Resources and Energy
EE	Energy Efficiency
Energy Efficiency	Minimizing energy consumption while still achieving the required output
Energy Performance	Net energy consumed in kilowatt hours per square metre per year (kWh/m²/a) to meet the different energy needs associated with the use of the building excluding measured or assessed energy consumed by garages, car parks and storage areas as well as energy consumed by outdoor services (for example landscape lighting and security), which may include, inter alia, heating, hot water heating, cooling, ventilation and lighting.
Energy Zone	A region or zone that is characterized by a generally consistent climate also known as a climatic zone. The updated SANS 10400-XA:2021 moved from climatic zone to energy zone. *Please note that throughout the guideline the term energy zone is used for what once was the climatic zone.*
EPC	Energy Performance Certificate
Er	Reference value – standard value against which an energy indicator/rating is compared
GHG	Greenhouse Gas Emissions
IB	Inspection Body
kWh/m²	Energy Performance in kilowatt-hour per square metre
Measured Energy Performance	Operational energy performance. Energy performance based on measured amount of energy consumed.
NBEPR	National Building Energy Performance Register
NEES	National Energy Efficiency Strategy
Net floor area	Net floor area is the sum of all areas between the vertical building components (walls or partitions), excluding garages, car parks and storerooms (SANS 1544:2014).
p.a.	Per annum; in or for each year
SANAS accredited IB	South African National Accreditation System (SANAS) accredited Inspection Bodies who are qualified to assess energy use in buildings and issue an EPC.
SANEDI	South African National Energy Development Institute established under section 7 of the National Energy Act, (Act No. 34 of 2008).
SANS1544: 2014	The South African National Standard (SANS 1544:2014) - Energy performance certificates for buildings published by the South African Bureau of Standards Act, 2008 (Act No. 8 of 2008)

Introduction

This Energy Performance Certificate (EPC) Guideline will assist and guide various stakeholders (in particular accounting officers and building owners) that need to adhere to and implement the newly promulgated regulation stipulating the mandatory display and submission of Energy Performance Certificates for buildings.

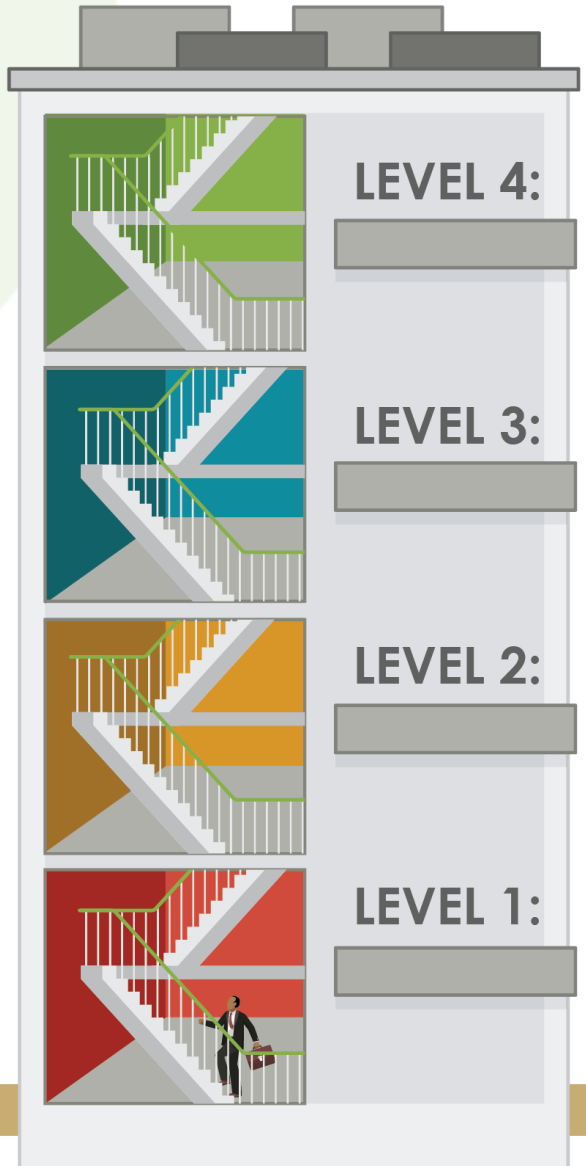
The purpose of the EPC Guideline is to assist accounting officers and building owners to understand:

- the South African energy efficiency journey up to date,
- the various regulations regarding energy efficiency,
- the South African Energy Performance Label for Buildings and building classifications, building assessment and energy measurement, and
- the Energy Performance Certificate concept, illegalities, display of certificate and validity criteria.

After reading the EPC Guideline, you will be able to successfully undertake and complete the EPC certification process for your building/s.

There are four (4) levels that you have to work through in order to complete the **EPC building certification process**:

The EPC building certification process



Energy Performance Certificates explained

How to obtain an EPC for your building

Energy Performance Certificates in South Africa

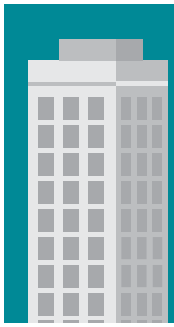
Understanding Energy Efficiency in South Africa

LEVEL 1:

Understanding the South African Energy Efficiency Approach

1.1. Understanding the South African Energy Efficiency Approach

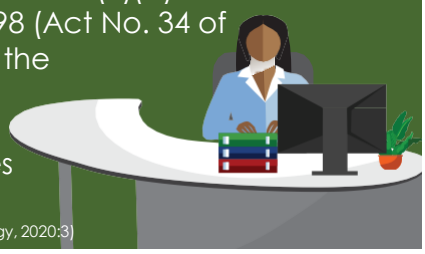
South Africa's reliance on coal, makes us the **12th** largest emitter of greenhouse gasses in the world.
(Engineering News, 2022)



Buildings alone account for **15%** of our country's greenhouse gasses.

Building emissions will need to decrease by **34%.**
(Carbon Trust & GBCSA., 2021:4)

The Minister of Mineral Resources and Energy, promulgated, under section 19(1)(b) of the National Energy Act, 1998 (Act No. 34 of 2008), the regulation for the mandatory display and submission of energy performance certificates for buildings.
(Department of Mineral Resources and Energy, 2020:3)



Buildings with a net floor area of
≥ 2000 m²
(privately owned)
and ≥1000 m²
(government owned, occupied or operated by an organ of state),
need to display an EPC.
(Department of Mineral Resources and Energy, 2020:6)

EPC's must be displayed in building before **December 2022.**
(Department of Mineral Resources and Energy, 2020:5)

In recent years, moving buildings to a greener life cycle and striving for increased energy efficiency has become more than just another point on the current world agenda. South Africa has been moving towards energy efficiency for the past 15 years, with the National Energy Efficiency Strategy (NEES) and various regulations. Understanding the South African environment and what is required from the accounting officers, building owners and other stakeholders to ensure that the changes are made gradually and with the bigger picture in mind. In order to align the South African built environment with international best practice and increased targets for the reduction of CO_2 emissions, the Government has legislated the mandatory disclosure of energy performance of existing buildings through Energy Performance Certification.

In South Africa, the requirement of having an EPC will play a key role in reducing carbon dioxide emissions (also known as decarbonisation) in the country's building sector, which is a key requirement to improve energy efficiency.

Buildings are a key part of South Africa's decarbonisation challenge, as they account for 15% of the country's Greenhouse Gas (GHG) inventory.

Building emissions will need to decrease by 34% in relation to the Reference Technology Scenario (Carbon Trust & GBCSA., 2021:4).

The Reference Technology Scenario is a baseline scenario that takes into account existing energy- and climate-related commitments of countries by 2050.

Alternatively, if South Africa is to align itself to a Two Degrees Scenario - *this scenario translates to deep cuts in emissions*, as much as 70% by 2050, with a decarbonised or even carbon negative economy (Stolark, 2015).

Unfortunately, due to South Africa's reliance on coal, we are the 12th largest emitter of greenhouse gasses (GHGs) (Engineering News, 2022). Therefore, our response to climate change has two objectives:

1. Effectively manage inevitable climate change impact through interventions that build and sustain South Africa's social, economic and environmental response capacity.
2. Make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that avoids dangerous anthropogenic (*resulting from the influence of human beings on nature*) interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.
   (National Climate Change White Paper, 2011:5)

All of these facts, led to the Minister of Mineral Resources and Energy under section 19(1)(b) of the National Energy Act, promulgating the regulation for the mandatory display and submission of an EPC in public and private sector buildings, on 8 December 2020.

The Regulation requires an accounting officer (*organ of state*) or the building owner (*private sector*) of a building to submit a certified copy of the building's EPC to SANEDI, with a net floor area of ≥ 2000 m^2 (privately owned) and ≥ 1000 m^2 (government owned). The validity of the EPC will be for a period of 5 years from date of issue. The accounting officers and building owners have two (2) years to comply and get their EPCs in order. (Department of Mineral Resources and Energy, 2020:6).

The EPC process will create an understanding of Energy Performance across South Africa but will mainly create a baseline of the energy efficiency (kWh/m²) of buildings, initiating a turnaround for energy efficiency in South Africa.

According to SANS 1544:2014, the EPC's will be determined by:

- use the building's actual energy consumption and
- account for tenant loads in the building to determine how energy efficient the building is.

This is the first time in South African history that it is mandatory for accounting officers and building owners to publicly display their energy consumption.

Energy efficiency, the mandatory display of EPCs, and changes enforced by regulations, play an important part in the cleaner energy future of South Africa.

Did you know?

South Africa is the 12th largest emitter of greenhouse gasses.

Accounting officers and building owners with a net floor area of ≥ 2000 m² (privately owned) and ≥ 1000 m² (government owned, operated or occupied by the organ of state), need to submit a certified copy of the building's EPC to SANEDI **before December 2022** or prosecuting steps will be taken.

1.2. South African Energy Efficiency timeline

The first energy efficiency and climate change related policies for the building industry were developed more than a decade ago. Specific regulations stipulate mandatory requirements that need to be adhered to in order for South Africa to improve its GHG emission reduction targets. These practical and attainable regulations will ensure a steady incline towards positive and responsible energy consumption.

2000 - 2010

Intention:

- Stipulates upscaling of Energy Efficiency (EE) in public, commercial, private and government buildings.
- Focuses on adoption of green building regulations, standards and best practice.
- Details EE building code requirements for building approval

Document

- National Climate Change Response White Paper
- National Framework for Green Buildings
- National Building Regulations – Amendment SANS 10400-XA: 2011 v1

2012

Intention

Sets out Energy Use Intensity reduction targets by building type.

Document

National Energy Efficiency Strategy Post 2015 draft

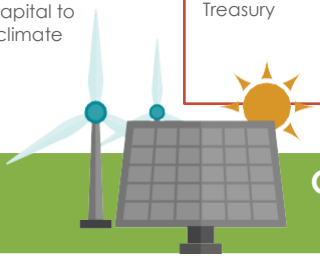
2019

Intention

Aims to regularise, build capacity and awareness across financial sector to redirect R2 trillion capital to lower carbon and climate change risk future.

Document

Sustainable Financing Initiative Report - National Treasury



October 2020

Intention

EPCs to be issued by an accredited body and displayed – valid for 5 years. Monitored by DMRE.

Document

Energy Performance Certificates mandatory for non-residential buildings of certain classifications.

Document

National Energy Efficiency Strategy

Intention

Need for labelling and certification programmes identified in - NEES of ZA (2005) - UNEP/SBCI/cidb report (2009)

2011

Document

National Development Plan

Intention

Commits to EE requirements in SA National Standards to achieve NZC building standards by 2030.

2015

Document

National Integrated Resource Plan (electricity supply plan)

Intention

Sets out consideration to meet electricity demand, in addition to Renewable Energy targets / plan.

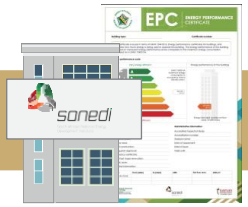
May 2020

Document

Amendment to Section 34 Electricity Amendment Act

Intention

Enables municipalities to develop their own power generation projects and to procure from IPPs.



December 2020

(SANEDI, 2021:5 and Carbon Trust & GBCSA., 2021:78)

1.3. Interpretation of the standards

The EPC process follows the South African National Standards (SANS) as reference and guidance to establish what is required and what is measured. The primary SANS used and referred to within the EPC process are:

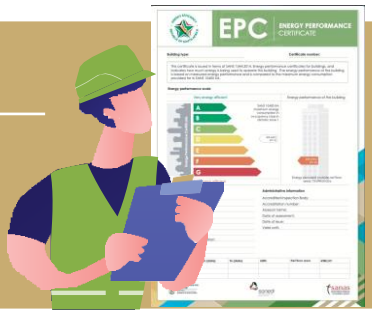
SANS 10400-XA:2021

The technical requirements that new buildings must meet in order to comply with the energy-related parts of the of the National Building Regulations.

Please note that SANS 204:2011 is no longer relevant, and all requirements are now covered in SANS 10400-XA:2021.

SANS 1544:2014

The requirements for producing energy performance certificates and the specifications for the format of the EPC.



SANS 10400-XA 2011 was a significant step towards improving building energy performance. The original specifications defined in 2011 are already being met by the construction industry. The SANS 10400-XA:2021, introduces more stringent energy requirements driving towards net zero carbon buildings.

Whilst SANS 10400-XA:2021 requirements largely cover new buildings, EPCs have been introduced to get a handle on energy consumption in our large existing building stock. EPCs will initially act only as an indication of energy consumption but the aim is for it to drive energy efficiency in existing buildings and contribute to the transition to a low carbon economy.

Reviewing and familiarising yourself with the standards will provide you with insight as you work through the EPC process and will ensure you know what to expect when you approach an inspection body to review and measure your building's energy performance in order to obtain an EPC.

The South African National Standards can be purchased via the SANAS website.

Objective of EPCs:

EPCs will initially act as an indication of energy consumption but will eventually drive energy efficiency in existing buildings and contribute to the transition for a low carbon economy.

Flagship programmes including Energy Efficiency, Demand-side Management and Energy Performance Certificates, linked to legislative requirements, have resulted in proven reduction of CO_2 emissions in other countries.

LEVEL 2:

Energy Performance Certificates in South Africa

Did you know:

The Building Energy Performance Register (NBEPR) provides a future benchmark for a building's energy consumption.

LEVEL 2: Energy Performance Certificates in South Africa

On 8 December 2020 it became mandatory for accounting officers and building owners to display and submit an EPC for their building, with an effective date, end 2022. Failure to publicly display the EPC is in contravention of the Act (Act No. 34 of 2008). (Department of Mineral Resources and Energy, 2020: 3).

The EPC process measures and normalises building energy consumption. An electronic copy of all specified data used to determine the EPC-rating has to be submitted to the South African National Energy Development Institutes' (SANEDI) and will be uploaded to the National Building Energy Performance Register (NBEPR). **The energy performance of a building is measured in terms of kilowatt-hours per square meter of net floor area, per annum (kWh/m^2/pa) in accordance with SANS 1544:2014.**

What is an EPC?

An Energy Performance Certificate (EPC) is a certificate that displays the energy consumption per square meter of a building. This energy performance is measured against a benchmark based on two factors:

1. the building occupancy class, and
2. the energy zone of where the building is located.

Energy efficiency rating is determined by measuring a building's **energy use intensity** and giving it a colour coded score from A to G.

An **"A"** score indicates that a building is most energy efficient and **"G"** indicates the least efficient, while a **"D"** score indicates the best practice for buildings, benchmarking the building against the average figures (*minimum requirement*) contained in the national South African Building Standard (SANS 10400-XA: 2021).

The EPC displays the energy performance per square meter of a building.

2.1. The importance of EPCs

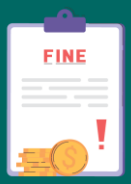
EPC's in South Africa are important as they are:

1. Mandatory in South Africa	2. Global best practice	3. Sustainable	4. Positively influencing climate change
Since 8 December 2020, it is mandatory for privately and publicly owned qualifying buildings to receive and display an EPC	Energy efficiency for buildings is becoming a common practise and will set your building apart from others	Energy efficiency is a step towards overall sustainability in any economic sector and is endorsed by the DMRE. **Become part of the solution!**	Buildings account for around 30% of all energy consumption globally, representing a major share of greenhouse gas emissions. Contributing towards a lower energy footprint will ensure you do your part in climate change

By rolling out EPCs across South Africa, these are the key benefits that will be gained:

- create an understanding of our energy consumption in buildings across South Africa,
- establish a national database that can be used to track our greenhouse gasses and carbon emissions from the built environment sector, and
- Reducing our contribution to greenhouse gas emissions in South Africa, not only serves the public and current international demands and trends, it ultimately serves our future South Africans.

Penalties for non compliance as stated in the National Energy Act 34 of 2008 (the building owner and/or organ of state will be guilty of an offence):



(a) a fine not exceeding five million rand;

(b) imprisonment for a period not exceeding five years ; or

(c) both such fine and such imprisonment.

2.2. Stakeholders and role players in the EPC process

The EPC process involves various role players, varying from energy supply, conversion, efficiency, and regulation, with each role player having their own mandate to fulfil.

2.2.1. DMRE

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The Department of Mineral Resources and Energy's (DMRE) mission is to regulate, transform and promote the minerals and energy sectors, providing sustainable and affordable energy for growth and development, and ensuring that all South Africans derive sustainable benefit from the country's mineral wealth. The DMRE is **the custodian of all energy policies and energy security in South Africa.**

The DMRE is also responsible for:

- Issuing the EPC regulation
- Monitoring of compliance

2.2.2. The South African National Energy Development Institute (SANEDI)

SANEDI was established in 2011 under the National Energy Act, (Act No. 34 of 2008). SANEDI's primary function is to direct, monitor and conduct applied-energy research and undertake specific measures to promote the uptake of green energy and energy efficiency in South Africa. SANEDI is responsible for supporting the objectives of the National Energy Efficiency Strategy (NEES), which is the main strategy that guides energy efficiency implementation in South Africa.

SANEDI will be responsible to set-up, maintain; operate & manage the National Building Energy Performance Register (NBEPR) and issue unique identifying certificate numbers for the EPCs.

2.2.3. South African National Accreditation System (SANAS)

SANAS is one of the Department of Trade Industry & Competition's (DTIC) Technical Infrastructure (TI) Institutes. The TI institutes are responsible for standards, quality assurance, accreditation, and metrology activities.

SANAS is responsible for setting out criteria around inspection bodies and will also carry out accreditations of institutions and organisations that will be required to submit an EPC on behalf of accounting officers and building owners.

2.2.4. National Building Energy Performance Register (NBEPR)

SANEDI is responsible for the establishment and hosting of the National Building Energy Performance Register (NBEPR), to record all specified data used to determine the EPC rating. The NBEPR will serve as the feedback loop into updating the SABS 10400-XA and will ensure transparency when selling or leasing properties.

The data submitted will be confidential and only used for analysis/modelling, but the EPC register (where your building's EPC certificate will be uploaded) will be public.

Did you know

Your building's EPC will be uploaded to the EPC register where any person can access the database to verify if your building has undergone the EPC certification process.

2.2.5. Accounting officers and building owners

The accounting officers and building owners are responsible for implementing the regulations and complying to the mandatory display of an EPC (public and/or privately owned commercial buildings). It is the responsibility of the accounting officer and building owner to appoint a SANAS accredited IB assessor to evaluate the property and produce the certificate. Accounting officers and building owners will need to submit a copy to SANEDI that will be uploaded to the NBEPR.

Besides this, there are no formalised requirements for accounting officers and building owners, however understanding your building's energy performance is considered good practice.

The below table is a summary of the primary and secondary stakeholders in the energy efficiency process and shows who takes responsibility for which actions.

Primary stakeholders are those that are responsible and essential to the implementation of the EPC process and secondary stakeholders are responsible for following and endorsing the EPC process.

● Primary Stakeholder ○ Secondary Stakeholder

	Stakeholder Group						
	DMRE	SANEDI	BEPR	Building owners/ managers	Inspection Bodies	SANAS	Eskom and Utilities
Energy Efficiency Standards	●	○		○		●	○
EPC Labelling	○	●		○	○	●	○
Certification and Accreditation		●		●	●	●	
Education and Awareness	○	●	●	●	○	○	○
Research and Technology		●					●
Regulation	●	○				○	
Energy Audits					●		
Energy Management	○	●		●			○
Policy, Mandate and Governance	●	●		○	○	●	○

(Department of Mineral Resources and Energy, 2005:25)

LEVEL 3:

How to obtain an EPC for your building

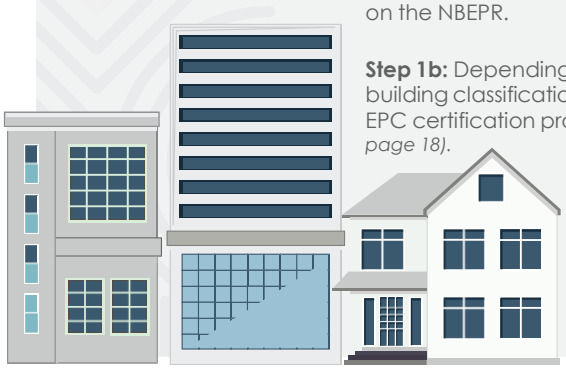
LEVEL 3: How to obtain an EPC for your building

The below information is a step-by-step process to start the EPC certification process for your building.

STEP 1

Step 1a: Register your building on the NBEPR.

Step 1b: Depending on your building classification, start the EPC certification process *(see page 18)*.



STEP 2

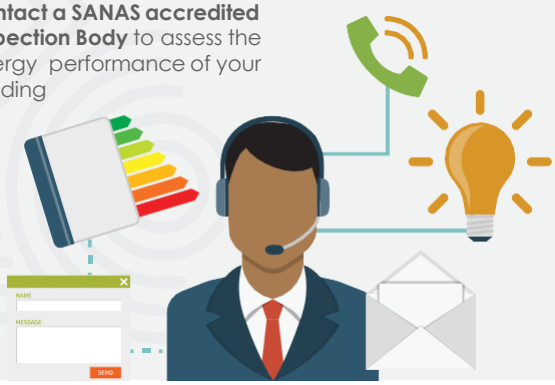
Determine the net floor area of the building and package all the relevant information for the SANAS accredited IB to assess

Information required by the SANAS accredited IB:

- Net floor area
- Occupancy class
- Building Energy Data

STEP 3

Contact a SANAS accredited Inspection Body to assess the energy performance of your building



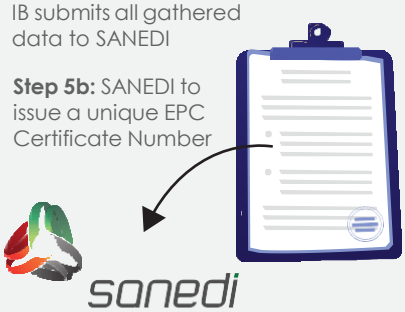
STEP 4

SANAS accredited IB **conducts the assessment** according to SANS 1544:2014

STEP 5

Step 5a: SANAS accredited IB submits all gathered data to SANEDI

Step 5b: SANEDI to issue a unique EPC Certificate Number



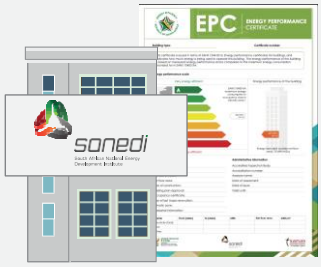
sanedi
South African National Energy Development Institute

STEP 6

SANAS accredited IB to **submit the EPC to the building owner / accounting officer**

STEP 7

Building owner / accounting officer to submit an electronic copy of the EPC to SANEDI



DID YOU KNOW?

The energy efficiency rating is determined by measuring a building's **energy use intensity** and giving it a colour coded score from A to G.

The EPC certification process starts with you, the building owner. It is your responsibility to reach out to a SANAS accredited Inspection Body (IB), indicating that you would like to start the EPC process for your building. The SANAS accredited IB will take up the responsibility to assess your building's energy performance and issue an EPC for the building.

When the SANAS accredited IB, also referred to as the assessor, visits your building, they will assess a number of factors to determine the energy efficiency of the building (from this process the energy rating of your building will be determined). The assessor will need to have access to energy data and every part of the building to be able to carry out the assessment properly.

Gather data needed beforehand and submit to the assessor BEFORE their visit to provide them with the necessary information.

This information includes the:

- Energy zone (*previously climatic zone*) of your building,
- Building services (electricity and/or gas use for a year) of your building, and
- Occupancy of your building

The time to complete an EPC is dependant on the preparedness of the building owner having all relevant data on hand, this allows for the speedy completion of the process

STEP 1a: Register your building on the NBEPR

Navigate to SANEDI's website to register your building on the NBEPR. The data submitted will be confidential and only used for analysis/modelling, but the EPC register, where your building's EPC certificate will be uploaded, will be public.

STEP 1b: Determine your building classification

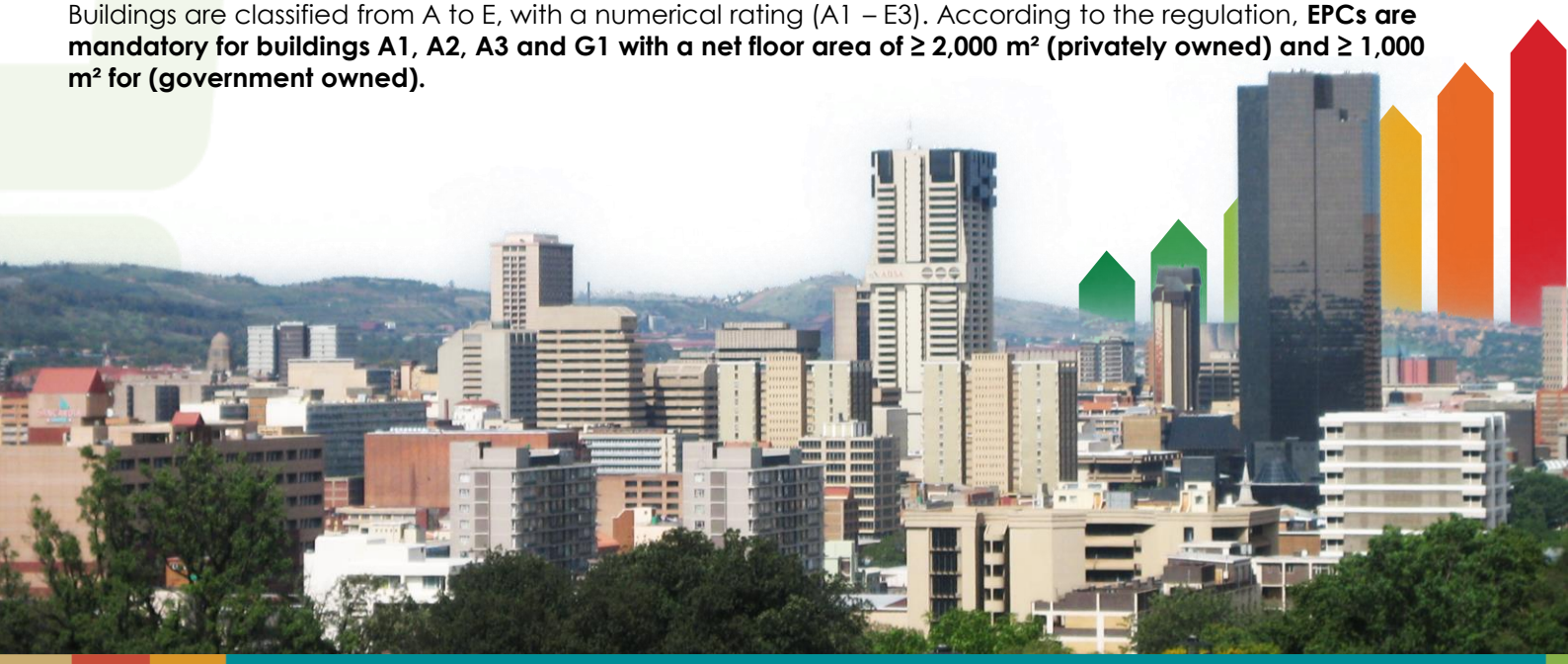
The building classification is the occupancy class in which a building falls and has an impact on how the building's energy consumption is measured.

Once the building classification is determined, you will know whether an EPC should be obtained for your building.

Buildings are classified using key factors:

1. building location (climatic zone) or submarket,
2. materials and methods used during initial construction and or current renovations,
3. building services, use and upkeep, and
4. building occupancy.

Buildings are classified from A to E, with a numerical rating (A1 – E3). According to the regulation, **EPCs are mandatory for buildings A1, A2, A3 and G1 with a net floor area of ≥ 2,000 m² (privately owned) and ≥ 1,000 m² for (government owned).**



Do you need to obtain an EPC?

Do you own one of the below building classifications?

Building Occupancy Class

	Occupancy	Description
A1	Entertainment and public assembly	Occupancy where persons gather to eat, drink, dance or participate in other recreation
A2	Theatrical and indoor sport	Occupancy where persons gather for the viewing of theatrical, operatic, orchestral, choral, cinematographic or sport performances
A3	Places of instruction	Occupancy where school children assemble for the purpose of tuition or learning
A3	Places of instruction	Occupancy other than primary or secondary schools, where students or other persons assemble for the purpose of tuition or learning
G1	Offices	Large multi-storey office buildings, banks, consulting rooms and similar uses with lifts and energy consuming services that operate on a typical daytime occupancy
G1	Offices	Stand-alone blocks and / or campus of buildings that form an office park but operate separately

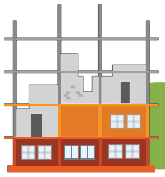
Yes / No

Is the building you own ≥ 2000 m² (privately owned) and / or ≥ 1000 m² (owned, occupied and operated by an organ of state)?

Yes / No

Is your building older than 2 years?

Yes / No



Has the building undergone major renovations in the last two years?

No / Yes

Your building qualifies to be registered on the NBEPR. According to the regulation, you have to start the compulsory EPC certification process.

You do not need to apply for an EPC. It is however recommended to keep yourself updated with EPC requirements for future regulations.

*SANS 10400-XA:2021 and SANS 1544:2014 provides more information on energy performance and EPCs for buildings. It is recommended that newly renovated and built buildings familiarise themselves with the information and procedures to **ensure future awareness and compliance**. It is important that the accounting officers of these buildings register for an EPC once the buildings reach a minimum of 2 years in operation to ensure compliance with the existing regulations published on the 8th of December 2020.*

What is your building's classification?

Step 2: Determine and package all the relevant information for the SANAS accredited IB to assess

The regulations place responsibility on accounting officers and building owners to publicly display an Energy Performance Certificate at the entrance of their building/s, within two years of the regulation coming into effect. The accounting officer and building owner, however, is responsible to gather all data needed for the assessment. The SANAS accredited IB is responsible for the assessment and determination of energy performance, and can support with the gathering of data needed or conduct any measurements.

Building Orientation

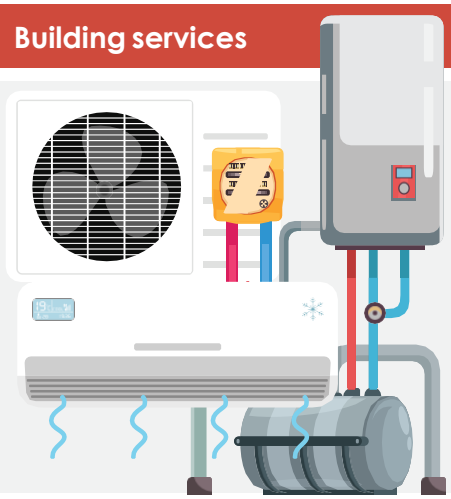
- Energy Zone of your building

Did you know?
Climatic Zone (SANS 10400-XA:2011) are now being referred to as Energy Zone (SANS 10400-XA:2021)

Building design

- Net floor area

Building services



- Energy sources

Energy sources / energy carriers refers to how a building gets powered

Building occupancy

- Occupancy profile of the building

Determination of Energy Performance:

Effective energy consumption (kWh/m^2/annum) =
measured net energy consumption (kWh/annum) / occupied net floor area (m^2)

The occupied net floor area is normalised to account for the unoccupied floor area for the performance period. All energy sources are accounted for in the calculation.

3.1. Measurement of energy performance

The operational energy performance of your building – which is the amount of energy consumed by the building – will be expressed in terms of measured annual net energy consumption in kilowatt hours per square meter per annum (kWh/m²/a) of the net floor area.

The energy consumption shall include the amount of all energy carriers and shall be assessed as accurately as reasonably practicable from recorded data, energy bills or measurements. This shall only be conducted for existing buildings.

3.1.1. Energy Performance Scale

The performance scale consists of seven grades of performance, ranging from performance class A (buildings of the highest energy performance) to performance class G (buildings of the lowest energy performance).

Grade D is the reference energy performance (Er) – best practise for energy performance in buildings (SANS1544:2014)

Performance scale determination	Meaning	Label as found on certificate
Energy performance < 0,30.Er	Highest energy performance	A
0,3.Er ≤ energy performance < 0,6.Er	Energy efficient	B
0,6.Er ≤ energy performance < 0,9.Er	Energy efficient	C
0,9.Er ≤ energy performance < 1,1.Er	Energy efficiency best practice	D
1,1. ≤ energy performance < 1,4.Er	Not energy efficient	E
1,4. Er ≤ energy performance < 1,7.Er	Not energy efficient	F
Energy performance ≥ 1,7.Er	Lowest energy performance	G

Performance scale resource: SANS 1544:2014, pg. 7 - 8

3.1.2. Energy Performance Indicators

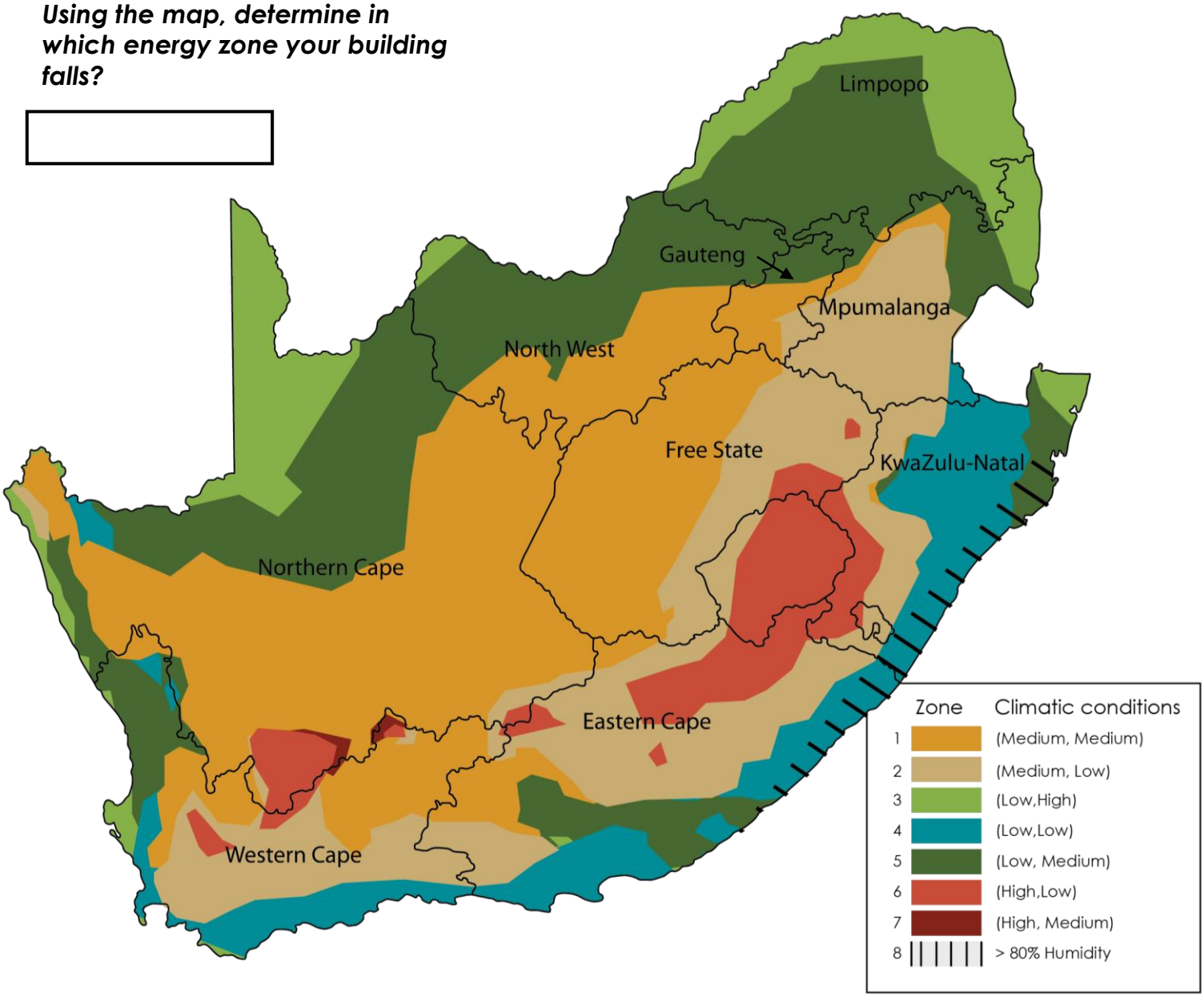
The building's energy performance will be indicated against the energy performance scale.

Where the energy consumption of the exclusions (see Step 4 on page 29) exceeds 10% of the building's energy performance, the total energy performance of the building will also be indicated against the energy performance scale.

3.2. Building energy zone

The energy zone of a building is the region in which the building resides and where the climatic conditions are similar. The climatic zone has certain data points connected to each zone that in itself has a set of information that will be used by the SANAS accredited IB in the assessment of your building and the overall energy performance score.

Using the map, determine in which energy zone your building falls?



Assessment shall only be conducted for **existing buildings.**

3.3. Building Occupancy

Building occupancy is the particular use or the type of use to which a building or portion thereof is normally put or intended to be put as defined by the relevant national legislation (National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977).

3.3.1. Unoccupied floor area

If your building is an office building, and the offices never close, the building will be classified as an Area C, since the building is used for office purposes and occupied year-round by the people that work in the building.

- Area A = Unoccupied for 30% of the year
- Area B = Unoccupied for 60% of the year
- Area C = always occupied (100% occupied)

A, B and C make up the net floor area. Therefore, usable net floor area = (A + B + C) – ((0.3 x A) + (0.6 x B))

(SANS 1544:2014)

Occupied net floor area is the net floor area minus the unoccupied floor area.

Determination of the reference energy performance (Er)

The standard value against which an energy indicator/rating is compared.

Single occupancy

building in which a discrete occupancy accounts for ≥ 90% of its net floor area

The reference energy performance, Er, shall be determined by the maximum annual energy consumption per building classification for each climatic zone

Multiple occupancy

building in which no discrete occupancy accounts for ≥ 90% of its net floor area

The reference energy performance, Er, shall be determined by prorating the net area of each individual occupancy with the maximum annual energy consumption as provided for in SANS 10400-XA for the relevant occupancy class and climatic zone. Any occupancy that comprises ≤ 10% of the net floor area of the total building shall be included in the predominant occupancy provided such occupancy does not contribute to ≥ 10 % of the energy performance of the predominant occupancy.

Resource: SANS 1544:2014

3.3.2. Occupancy profile of the building

The below table gives an outline of the maximum energy consumption (in kWh/m²) that your building can use per year. If your building's maximum energy consumption is higher than the below figures, this will impact your energy score and your building might receive a lower score. The calculations made using the energy performance calculations for the EPC process are based on the building classification, the energy zone and the reference energy performance (Er) value as defined in SANS 10400-XA:2021.

The Er value is the best practise for your building, in your specific climatic zone and using that value against your building's operational energy consumption will allow the SANAS accredited IB to assess and establish the accurate energy rating for your building (A – G).

1		2							
Class of occupancy	**Description of building**	Maximum annual energy consumption per building classification for each energy zone (kWh/m²/a)							
		Energy Zones							
		1	2	3	4	5	5H	6	7
A1	Entertainment and public assembly Occupancy where persons gather to eat, drink, dance or participate in other recreation	75	75	95	70	95	95	80	80
A2	Theatrical and indoor sport Occupancy where persons gather for the viewing of theatrical, operatic, orchestral, choral, cinematographical or sport performances	95	95	110	90	110	110	105	105
A3	Places of instruction Occupancy other than primary or secondary schools, where students or other persons assemble for the purpose of tuition or learning	110	155	110	125	140	140	120	120
A3	Places of instruction Occupancy where school children assemble for the purpose of tuition or learning	60	65	55	60	55	60	65	65
G1	Offices Large multi-storey office buildings, banks, consulting rooms and similar uses with lifts and energy consuming services that operate on a typical daytime occupancy	90	105	110	95	110	95	100	100
G1	Offices Stand-alone blocks and / or campus of buildings that form an office park but operate separately	70	150	190	145	180	165	75	75

Note 1: The annual consumption per square meter shall be based on the sum of the monthly consumption of 12 consecutive months.
Note 2: Non-electrical consumption, such as fossil fuels, shall be accounted for on a non-renewable primary energy thermal equivalence basis by converting megajoules to kilowatt hours.

Resource: SANS 10400-XA:2021

Please note that only building classification A1, A2, A3 and G1 is listed above. For other building classifications refer to SANS 10400-XA:2021 – Note that SANS 10400-XA:2011 was updated and should be used in accordance with SANS 10400-XA:2021.

The maximum energy consumption is the best practise of energy consumption for your building classification in your buildings energy zone

Activity
What is the classification of occupancy for your building?

For more information on the occupancy classification of a building, refer to SANS 10400-XA:2021

Activity
Referring to your building's classification and the climatic zone, what is the best practise maximum energy consumption (in kWh/m²) that your building can use per year?

For more information on the Energy Consumption of a building, refer to SANS 10400-XA:2021

If you do not have a building occupancy certificate use either a:
- *Fire certificate or*
- *Municipality certificate (approval of the development)*

3.4. Building design

The SANAS accredited IB will need to understand the internal layout of the building and the purposes it was designed for, when doing the assessment. This is to calculate the energy consumption of each individual space (zone) in accordance with its designed use.

If there are no plans for the building available, the SANAS accredited IB will need to survey the building during the site inspection to gather the appropriate information.

If you have up to date information and building plans, along with utility bills the site inspection will be less time consuming.

The SANAS accredited IB is responsible for ensuring that the information used, in the energy calculations, is accurate. Even when detailed plans are available for existing buildings, the SANAS accredited IB must validate the information by doing a site inspection.

3.4.1. Net floor area

Net floor area is the sum of all areas between the vertical building components (walls or partitions), excluding garages, car parks and storerooms (SANS 1544:2014).

Unoccupied floor area: Normalisation shall be undertaken to account for unoccupied floor areas, as follows:

Effective energy consumption (kWh/m²/a) = **measured net energy consumption (kWh/a) /occupied floor area (m²)**

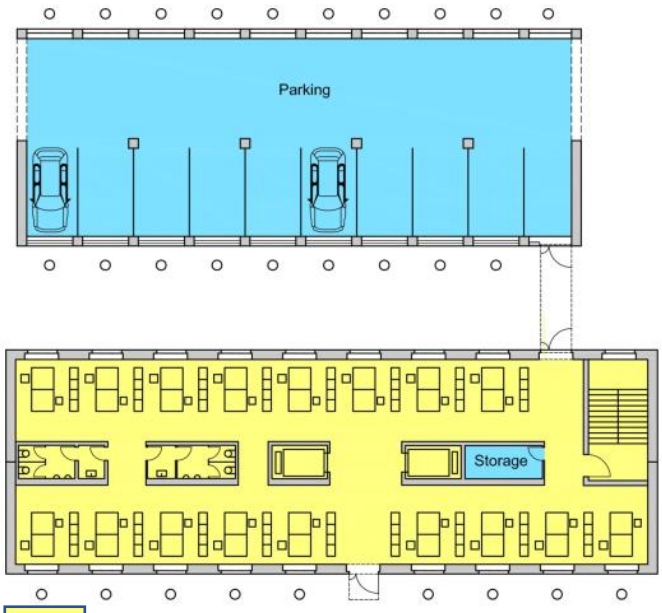
where

Occupied floor area is the net floor area minus the unoccupied floor area.

SANS 1544:2014 prescribes that unoccupied floor area shall be prorated to the measurement period, for example:

Area A is unoccupied for 30% of the year, Area B is unoccupied for 60% of the year, Area C is always occupied – 100% occupied. A, B and C make up the net floor area. Therefore, useable floor area = (A+B+C) – ((0.3 x A) + (0.6 x B)).

Example of occupied and unoccupied net floor area (SANS 1544:2014):



Net floor area

Excluded from net floor area

Unoccupied floor area
Unoccupied or vacant area that is not being used for its intended function and that is not consuming any net energy (SANS 1544:2014).

Did you know?
It is the responsibility of accounting officers and building owner to determine the Net floor area of the their building – during the year of assessment.

3.5. Building Services

Building services include the services within the building which make the building functional, comfortable and safe for occupation and use. These services include:

- Heating
- Cooling
- Lighting
- Generators
- Gas and/or electricity and/or fuel use

Recorded but excluded from assessment

Did you know?

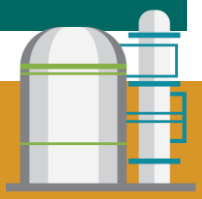
An **energy carrier** is an energy form or system, including but not limited to, electricity, gas, fossil fuels, and renewable energy (SANS 1544:2014)

3.5.1. Fuels

As part of the building services, the fuels used for the building will be measured. Fuel measurements are added to your energy demand rating and an understanding of the various fuels will assist you to grasp what your EPC means and what is measured and assessed by the SANAS accredited IB.

Metered fuels

- The energy use is the difference of two readings of the meter taken at the beginning and the end of the assessment period.
- If energy used by rented premises is metered and billed separately, such energy shall be included.
- Exported energy shall be deducted from the metered amounts.



Liquid fuels in tanks

Fuel bills or records of bought fuel shall be collected.

- The fuel level in the tank shall be measured at the beginning and the end of the assessment period, using a calibrated scale. The fuel use during the assessment period is then assessed as follows:

E = content of the tank at the beginning of the assessment period
- content of the tank at the end of the assessment period
+ quantity of fuel bought during the assessment period.

Any fuel not forming part of the bulk storage facility shall be assessed on the basis of records kept. Alternatively, if a burner/generator/turbine operates at fixed power (not modulating) and is equipped with a burning time counter, the fuel use is the difference of the two readings taken at the beginning and the end of the assessment period, multiplied by the fuel flow rate of the burner/generator/turbine. This flow rate shall be measured before the first reading and after each adjustment or cleaning of the burner. The energy use corresponding to the amount of fuel used should be obtained by multiplying the measured amount by its gross calorific value (SANS 1544:2014).

Solid fuels

- The energy content of solid fuels (coal, wood, etc.), depends on their calorific value and density. The most accurate way of assessing it is to weigh the fuel. If volume is measured, it shall be multiplied by the density of the fuel to calculate the mass of solid fuel. When calculating the confidence interval of the mass, the uncertainty of its density shall be taken into account.

The solid fuel use shall then be assessed as follows:

E = fuel weight in stock at the beginning of the assessment period
- fuel weight in stock at the end of the assessment period
+ fuel weight bought during the assessment period.

- The energy value use corresponding to the amount of fuel used shall be assessed by multiplying this amount by its gross calorific value.

Resource: SANS 1544:2014
For more information on fuels – refer to SANS 10400-XA:2021

3.6. Example of the determination of an EPC – Single Occupancy

Examples for the determination of the reference energy performance and its position on the energy performance certificate performance scale are given in the tables below. *Please note that the data from the examples does not reflect reality and serve the sole purpose of demonstrating how the energy performance calculations are done. The data does not necessarily represent energy consumptions of buildings in these particular classes and energy zones. For more information refer to SANS 10400-XA:2021 and SANS 1544:2014.*

The energy performance calculated by the inspection body's assessor

Example 1: Single Occupancy – Energy zone 1

1	2	3	4	5	6	7
Classification of Occupancy	**Description**	**Measure overall energy performance kWh/m²**	**Reference energy performance ErkWh/m²**	**Variance kWh/m²**	**Multiple of reference value**	**Performance scale**
G1	Office block	230	90	-140	2.6	Grade G
A2	Theatrical and indoor sport	550	95	-455	5.8	Grade G

Offices: Large multi-storey office buildings, banks, consulting rooms and similar uses with lifts and energy consuming services that operate on a typical daytime occupancy

Best practise energy performance for the building in the buildings climatic zone

The difference between the best practise energy performance and the measured and calculated energy performance (operational) of the building

The energy performance whereafter the grade according to the performance scale is given. Refer to SANS 10400-XA:2012 Edition 1 and SANS 1544:2014 for more information on the multiple of reference value.

The energy rating that will be displayed on your certificate

Both sample buildings shall thus be placed in Class G as they perform much worse than the reference energy performance (Er).

Example 2: Single Occupancy – Energy zone 1

1	2	3	4	5	6	7
Classification of Occupancy	**Description**	**Measure overall energy performance kWh/m²**	**Reference energy performance ErkWh/m²**	**Variance kWh/m²**	**Multiple of reference value**	**Performance scale**
G1	Office block	120	90	-30	1.3	Grade E
A2	Theatrical and indoor sport	105	95	-10	1.1	Grade E

The building occupancy G1 shall thus be placed in Class E as it performs worse than the reference energy performance (Er). The building occupancy H1 shall thus be placed in Class C as it performs better than the reference energy performance (Er)

Did you know?

Delivered Energy *is energy per energy carrier, supplied to the building system, to satisfy the uses taken into account (heating cooling, ventilation, domestic hot water, lighting, appliances, etc.) or to produce electricity (SANS 1544:2014*

3.7. Example of the determination of an EPC – Multiple Occupancy

Please note that the data from the examples does not reflect reality and serve the sole purpose of demonstrating how the energy performance calculations are done. The data does not necessarily represent energy consumptions of buildings in these particular classes and energy zones. For more information refer to SANS 10400-XA:2021 and SANS 1544:2014.

Building that is used for two or more occupancies. The example below is a building that is being used as an office and a hotel.

The energy performance as measured and calculated by the assessor from the inspection body

The prorated contribution is determined by the occupancy percentage of the building. *For more in-depth information in terms of building and floor occupancy review SANS 10400-XA:2011 and SANS 1544:2014 respectively.*

Value calculated using the **prorated** measurements from each classification and adding them together.

The variance between the reference energy performance and the measured energy performance

Example 3: Multiple Occupancy – Energy zone 1

1	2	3	4	5	6	7	8	9	10	11
Classification of occupancy	**Description**	**Measure energy performance of occupancy kWh/m²**	**Prorated contribution to overall Value**	**Measured overall energy performance (kWh/m²/a)**	**Reference energy performance RkWh/m² SANS 10400-XA:2021 (Energy zone1)**	**Prorated contribution to reference value**	**Prorated reference value**	**Variance (kWh/m²/a)**	**Multiple of reference value**	**Performance scale**
G1	Office block	230	230 x 9% = 20.7	20.7 + 500.5 = 521.2	90	90 x 9% = 8.1	8.1 + 86.45 = 94.55	-426.7	5.5	Grade G
A2	Theatrical and indoor sport	550	550 x 91% = 500.5		95	95 x 91% = 86.45				

The energy performance score used to indicate your energy efficiency on the performance scale. *For more information on Energy Performance scoring refer to SANS 1544:2014 and SANS 10400-XA:2011 Edition 1*

The energy rating that will be displayed on your certificate

Offices: Large multi-storey office buildings, banks, consulting rooms and similar uses with lifts and energy consuming services that operate on a typical daytime occupancy

Using the **measured energy performance** from both classifications and adding them together to gather the overall energy performance

Best practise energy performance for the building, in the climatic zone of the building

The **prorated contribution** is determined by the occupancy percentage of the building. In the example the office block occupancy is only 9% of the overall occupancy whilst the Hotel occupancy is 91%, leading to a 100% occupancy, classifying building occupancy as Area C. The reference energy consumption is multiplied by the prorated contribution to reference value

The sample buildings shall thus be placed in Class G as they perform much worse than the reference energy performance (Er).

For more examples **of the energy consumption included in an EPC** review SANS 1544:2014, for more information on energy efficiency, review SANS 10400-XA:2021

3.7. Example of the determination of an EPC – Multiple Occupancy (continue)

Example 4: Multiple Occupancy – Energy zone 1

1	2	3	4	5	6	7	8	9	10	11
Classification of occupancy	**Description**	**Measure energy performance of occupancy kWh/m²**	**Prorated contribution to overall Value**	**Measured overall energy performance (kWh/m²/a)**	**Reference energy performance RkWh/m² SANS 10400-XA:2021 (Energy zone1)**	**Prorated contribution to reference value**	**Prorated reference value**	**Variance (kWh/m²/a)**	**Multiple of reference value**	**Performance scale**
G1	Office block	120	120 x 9% = 10.8	10.8 + 95.55 = 106.35	90	90 x 9% = 8.1	8.1 + 86.45 = 94.55	-11.8	1.12	Grade E
A2	Theatrical and indoor sport	105	105 x 91% = 95.55		95	95 x 91% = 86.45				

Please note that the data from the examples does not reflect reality and serve the sole purpose of demonstrating how the energy performance calculations are done. The data does not necessarily represent energy consumptions of buildings in these particular classes and energy zones. For more information refer to SANS 10400-XA:2021 and SANS 1544:2014.

The sample buildings shall thus be placed in Class C as they perform much worse than the reference energy performance (Er).

Everything **below** 1 is positive (1 = level D). Everything **above** 1 is negative, (level E and below).

Level D is best practise

For more examples **of the energy consumption included in an EPC** review SANS 1544:2014, for more information on energy efficiency, review SANS 10400-XA:2021

STEP 3: Contact a SANAS accredited IB to assess the energy performance

According to SANS 1544:2014, all energy consumption data [for an EPC] shall be assessed by a body that has been accredited by the relevant national body: SANAS. This is to ensure that the energy consumption data collected is accurate (with calibrated instrumentation or utility bill information), is traceable and in line with international standards.

This means that you need to ensure that your EPC assessor is SANAS accredited. A SANAS accredited IB can be found by visiting the SANAS and/or SANEDI website (https://www.sanedi.org.za/SANAS_Certificates.html).

You will also receive a quote from the SANAS accredited IB whereafter you can decided whether or not you want to step into a contractual agreement with the SANAS accredited IB.

It is important to note that although the SANAS accredited IB must verify the energy mix of the building and the quantity of fuels used – no measurements will be done during the inspection.

STEP 4: SANAS accredited IB conducts the assessment according to SANS 1544:2014

The SANAS accredited IB enters into a contractual arrangement with you, the building owner and conducts the assessment according to the SANS 1544:2014 standard.

South African EPCs will be calculated on **operational consumption**, reflecting a need for simplicity as EPC's are introduced. Local EPCs will only be **a declaration of energy consumption**, considering tenant loads and existing buildings.

Operational energy performance is the energy performance based on measured amount of energy consumed over a period of 12 consecutive months. The operational energy data for the building has to be collected and measured by the building owner and signed off by the SANAS accredited IB.

3.8. Exclusions

The SANAS accredited IB will acknowledge the below as part of exclusions:

Energy consumed by garages, car parks and storage areas as well as energy consumed by outdoor services (for example landscape, lighting and security) shall be excluded through measurements or assessments from the energy performance. In buildings where such energy has been excluded, such energy shall be normalised by the net floor area and shall be indicated separately on the EPC.

In cases where the energy consumption of the excluded areas exceeds 10% of the energy performance, the total of the energy performance and the excluded energy shall be indicated graphically on the EPC (SANS 1544:2014)

3.9. Example of the energy consumption included in an EPC

The below tables is reference to energy consumption data used in the determination of the energy performance of a building. For more information on energy consumption and the reference energy per energy zone of a building, refer to SANS 10400-XA:2021.

The SANAS accredited IB will use the data to determine the energy grading of your building. As the building owner / accounting officer you are responsible for data collection.

Name of building		**A Government Building**	
Occupancy class	Office (G1)	**Climatic zone**	1 (Cold interior)
Occupancy rate (in net floor area)		C (100 %)	

A - Energy used in entire building complex					
Energy used for	Heating	Cooling	Lighting	Electrical appliances	Outside net floor area (specify under B)
Please tick	x	x	x	x	X

Energy source	**From (date)**	**To (date)**	**kWh used**
Electricity	2011/01/01	2011/12/31	415,000
Gas	n/a	n/a	
Other	n/a	n/a	

B - Energy used outside net floor area					
Energy used for	**Watts**	**N°**	**Time of use**	**Calculation**	**kWh used**
Lights parking	58	25	24/7	0,058[kW]·25·24[h]·365[d]	12,702
Outside lights	100	120	8 h/d	0,1[kW]·120·8[h]·365[d]	35,040
Ventilation storage	45	1	24/7	0,045[kW]·25·24[h]·365[d]	9,855
Fridge's storage	500	2	24/7	0,5[kW]·2·24[h]·365[d]	8,760
Total					**91,761***
* Represents more of 10 % of total consumption [415,000 kWh] therefore displayed in EPC as excluded energy in kWh/(m²·a) [91,761/1,250]					73

Please note that the information above is an example of energy consumption included in an EPC and might differ from assessment to assessment.

3.9. Example of the energy consumption included in an EPC (continue)

C - Net floor area					**1,250 m²**
Energy used in entire building complex in kWh	415,000	Consumption outside net floor area in kWh			91,761
Energy consumption net floor area in kWh					**323,239**
Energy consumption net floor area in kWh/(m²·a)					**259**
Maximum energy consumption (SANS 10400-XA: 2021)	Occupancy class	G1-Office	Energy zone	1	90
Variance **kWh/(m²·a)** [90 - 259]					-169
Multiple of reference value [259/90]					2.9
Performance scale (see 2.1.1.1)					**G**

Please note that the information above is an example of energy consumption included in an EPC and might differ from assessment to assessment.

Did you know?

- **Exported Energy** is energy, per energy carrier, delivered by the building system and used outside the building system
- **Net Energy** is delivered energy minus exported energy (SANS 1544:2014)

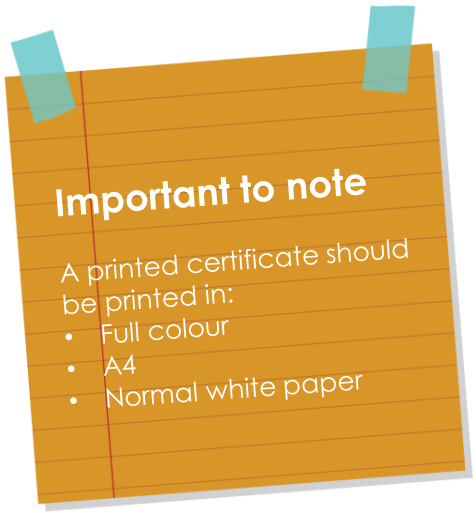
STEP 5a: Assessor submits all gathered data to SANEDI

It is the inspection body's responsibility to submit an electronic copy of all the data they have gathered during the site visit to your building – which will be used to determine the EPC – to SANEDI.
SANEDI will use the provided data to populate the National EPC Building Register (**step 5b**) and issue a unique EPC Certificate number.

STEP 6: Assessor to submit the *printed* EPC to the building owner

Upon receiving the certificate number from SANEDI, the assessor will then issue the formal EPC for the building to the building owner or accounting officer.

An Energy Performance Certificate will never be issued to you as a soft copy (i.e. electronically) as it can be easily forged.



STEP 7: Building owner / manager to submit an electronic copy of the EPC to SANEDI

Once you have received your final EPC from the assessor, it is your responsibility as the building owner to scan and send the electronic copy of the EPC to SANEDI.

It is crucial for accounting officers and building owners to complete this step, as SANEDI will only upload the building's EPC to the Building Energy Performance Register (NBEPR) once they receive it from you.

The public will be able to access the NBEPR and will be able to verify your building's energy performance and current rating.

Did you know?

SANAS Accredited Inspection Bodies
- SANAS accredited IB's pay an application fee and an annual fee

LEVEL 4:

Energy Performance Certificates Explained

LEVEL 4: Energy Performance Certificates Explained

The EPC process is implemented to not only gain access to accurate and reliable building data for energy efficiency monitoring and GHG emission obligations but to encourage accounting officers and building owners to improve the energy performance of their buildings and aspire to eventually achieving an A-rating for those facilities.

The EPC process will be implemented by an accounting officer or building owner and the assessment and data will be signed off by the SANAS accredited IB. The certificate process (unique certificate number and upload to the NBEPR) is the responsibility of SANEDI and on site inspections for compliance will be executed by the DMRE or a representative.

Once you have completed the EPC process, you will need to display the certificate at the entrance of your building, where it can be easily viewed by any person entering the building.

The certificate can only be used as a reference to the building's energy performance. The below information provides an overview of the certificate that you as the building owner will receive and can be used as a reference in the determination of authenticity and reading your certificate correctly.

4.1. Certificate concept

A sample of the South African Energy Performance Certificate that n accounting officer or building owner will receive from the inspection body can be seen in this Level. This certificate will be displayed at the entrance of the building and would need to be submitted to SANEDI for inclusion in the Building Energy Performance Register (NBEPR).

Important to note

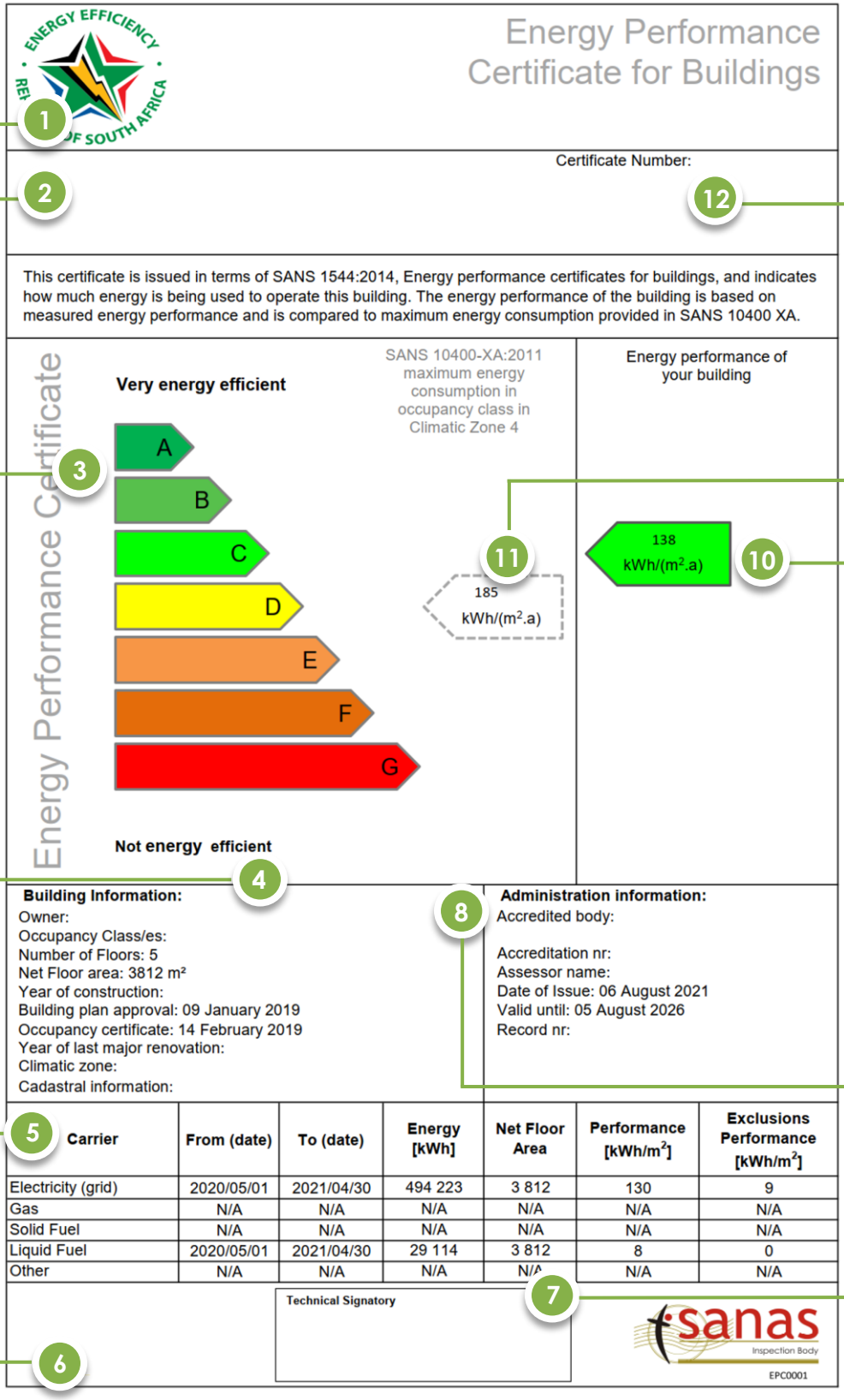
SANEDI will send a renewal reminder to you and the assessor after three years. Thereafter they will send a final renewal reminder to you and the assessor after four years.

4.2. Energy Performance Certificate

Certificate is valid for 5 years

The energy performance certificate was designed in accordance with the standard based on a unique look and feel that will be the standard for South African EPC's.

SANS 1544:2014 is in review whereafter the necessary updates will be announced and published.



Energy Performance Certificate for Buildings

Certificate Number:

This certificate is issued in terms of SANS 1544:2014, Energy performance certificates for buildings, and indicates how much energy is being used to operate this building. The energy performance of the building is based on measured energy performance and is compared to maximum energy consumption provided in SANS 10400 XA.

Energy Performance Certificate

Very energy efficient

A
B
C
D
E
F
G

Not energy efficient

SANS 10400-XA:2011 maximum energy consumption in occupancy class in Climatic Zone 4

185 kWh/(m².a)

Energy performance of your building

138 kWh/(m².a)

Building Information:
Owner:
Occupancy Class/es:
Number of Floors: 5
Net Floor area: 3812 m²
Year of construction:
Building plan approval: 09 January 2019
Occupancy certificate: 14 February 2019
Year of last major renovation:
Climatic zone:
Cadastral information:

Administration information:
Accredited body:
Accreditation nr:
Assessor name:
Date of Issue: 06 August 2021
Valid until: 05 August 2026
Record nr:

Carrier	From (date)	To (date)	Energy [kWh]	Net Floor Area	Performance [kWh/m²]	Exclusions Performance [kWh/m²]
Electricity (grid)	2020/05/01	2021/04/30	494 223	3 812	130	9
Gas	N/A	N/A	N/A	N/A	N/A	N/A
Solid Fuel	N/A	N/A	N/A	N/A	N/A	N/A
Liquid Fuel	2020/05/01	2021/04/30	29 114	3 812	8	0
Other	N/A	N/A	N/A	N/A	N/A	N/A

Technical Signatory

sanas Inspection Body

EPC0001

1 The South African Energy Efficiency logo is always in the top left corner

2 **Building Address**

12 **Certificate number**: Each number is unique and issued by SANEDI

3 The seven energy efficiency levels.

11 The best practise reference value for your specific building type.

10 The measured energy performance of your building as determined by a SANAS accredited IB

4 Your building's information

8 The information of the SANAS accredited IB

5 Energy carriers of the building, the period of data capture, the net floor area of the building and the kWh/m² used by the carrier.

7 Signature of the assessor of the SANAS accredited inspection body

6 Logos of the SANAS and the SANAS accredited inspection body

4.3 Illegalities

As proclaimed in the regulation, it is mandatory to display **your** EPC at the entrance of **your** building, there are however other legalities to take into consideration for **your** EPC.

1. Your EPC must be issued by a SANAS accredited inspection body.
2. The EPC must be submitted to SANEDI and will be uploaded to the Building and Energy Performance Register (NBEPR). Data is confidential and used for analysis/modelling, but the EPC Register will be public.
3. An EPC must be reviewed and renewed after a period of five (5) years.
4. Your EPC certificate cannot be copied and shared with another building.
5. An EPC is only valid for the building that was inspected and cannot be used for other buildings owned.

4.4. Energy Efficiency Label

The energy efficiency label is designed to provide South African stakeholders with accurate comparable information on the energy efficiency of the building they occupy, manage and/or own.

The label has seven horizontal colour coded bars, extending from left to right, ranging vertically from dark green on top to dark red in the bottom.

Each colour reflects an energy efficiency rating against which the building performance is positioned. This is indicated on the right of the label, aligning the performance with the colour coded bar in which it falls.

The energy grades vary from A to G with A being very energy efficient, G being least energy efficient and D being the mid-point and best practice for energy efficiency in buildings as defined in SANS10400-XA:2021. The aim would be to improve and move towards an A grading.

Once the inspection body has successfully assessed your building, they will submit an electronic copy of your energy performance certificate to SANEDI to obtain a unique certificate number. Once they have received the unique identifying number, the inspection body will provide you with a hard copy of the EPC. It is your responsibility as the building owner / manager to submit the certificate to SANEDI, who will upload the certificate to the NBEPR system.

4.4.1. Correct use of the label

The energy label is included in the certificate. It is similar to the well known energy labels of appliances.

Rating scale colour codes

Each colour on the label reflects an energy efficiency rating.

The energy label was designed to be internationally recognised and applied as a standard worldwide. Incorrect use of the label includes:

- Do not change the colours of any component of the label
- Do not change the font of any component on the label
- Do not stretch any component of the label
- Do not change the position of the label
- Do not omit any information or graphics from the label

The above information can also be applied to verify and check the validity and legitimacy of an Energy Performance Certificate as the label is displayed on the certificate to indicate the building's energy efficiency.

4.5 Timeline

Obtaining an EPC could be a lengthy process due to the involvement of various stakeholders and data collection. Therefore, planning and allocation of resources will be necessary to complete the certification process within the afforded timeframe, i.e., end of 2022.
The energy assessment period shall be one year in respect of the data for the preceding year.

Did you know?
Your certificate has to be printed and publicly displayed at the entrance of your building.

4.6 Validity

Once your Energy Performance Certificate is issued, you have five years, before it needs to be renewed. The renewal process is similar to the initial application and compliance process; thus it is recommended to start the renewal process in the fourth year after initially obtaining your EPC certificate to ensure that your building remains compliant.

The EPC must be issued by a SANAS accredited inspection body.

5. Closing

The EPC process aims to unlock a wider energy efficiency value chain, where building owners / accounting officers work towards implementing more efficient systems and improving the EPC rating of the building.

EPCs allow for access to accurate and reliable building data, that will ultimately support government initiatives in the areas of energy efficiency monitoring, GHG emission obligations, carbon tax, etc., and allow for effective planning towards the future of energy efficiency in South Africa.

You as the building owner / accounting officer are the key activator of the process and your implementation thereof will set the EPC value chain in motion, meaning that you are the leading role and your part is integral in the bigger picture for a greener South Africa and world.

You are now equipped with the tools and information to start and complete your EPC process. For reference and further reading the resource and reference list can be used along with SANEDI's website for guidance.

You are not alone in the process, the energy efficiency value chain (SANAS accredited IB's, Energy Consultants, SANEDI etc.,) has been set-up to support and successfully guide you through the process.

Q&A sheet and Resource list

Addendum A: Frequently asked questions

Questions	Answers
General EPC questions	
Q: What does the SANAS accredited IB do with your data on completion of the assessment?	**A:** The SANAS accredited IB submits an electronic copy of all specified energy data used to determine your building's EPC rating to SANEDI. SANEDI uses this information to populate the Building Energy Performance Register (NBEPR). SANEDI will also issue a unique EPC Certificate number to the SANAS accredited IB, which will be included on the certificate and send to the building owner.
Q: What are the direct opportunities arising from the EPC mechanism?	**A:** This process will help DMRE understand buildings, energy consumption across South Africa while also establishing a national database to contribute to the GHG and carbon emissions tracking from the built environment sector.
Q: By when does my building have to be compliant?	**A:** 07 December 2022
Q: Who is subject to the EPC process?	**A:** Buildings that are subject to the EPC process are: **Ownership and Size** • Public sector buildings greater than 1000m^2 • Private sector buildings greater than 2000m^2 **Operational Status** • Buildings that have been in operation with a particular use for minimum two years • Buildings with no major renovations carried out for the past two years of operation **Occupancy Classes** • A1: Entertainment and Public Assembly • A2: Theatrical and Indoor Sport • A3: Places of Instruction • G1 Offices
Q: Are shopping malls classified as category A1 occupancy class?	**A:** A mall/shopping centre is not mandated to acquire the EPC under the current regulation as it is classified under Class F1 of section A20 of the National Building Regulation.
Q: Should an EPC be completed for properties located in Namibia, Lesotho and Swaziland?	**A:** The mandate of this regulation is only within South Africa. If other countries are required to have an EPC, it will be under the regulation of their respective governments. Therefore, if you have business operations in other countries, you may acquaint yourself with their government building regulation in case you may need to comply.
Q: What is the penalty if I do not comply?	**A:** **Penalties for non compliance** as stated in the National Energy Act 34 of 2008 (the building owner and/or organ of state will be guilty of an offence): (a) a fine not exceeding five million rand; (b) imprisonment for a period not exceeding five years ; or (c) both such fine and such imprisonment.
Q: Do I need to submit my EPC to SANEDI?	**A:** Yes, once you receive your EPC from the SANAS accredited Inspection Body, you have to send an electronic copy to SANEDI, who in turn will upload the EPC to the Building Energy Performance Register (NBEPR) The data submitted will be confidential and only used for analysis/modelling, but the EPC register (where your building's EPC certificate will be uploaded) will be public.

Frequently asked questions

Questions	Answers
General EPC questions	
Q: Where do I put my EPC?	**A:** At the entrance of your building, where it can be easily seen.
Q: Why did South Africa move from modelled measurement (in SANS 10400-XA:2011) to operational measurements in SANS 1544:2014 (for EPC certificates)?	**A:** **The below text is an extract from a Carbon Trust & GBCSA report:** "This is the first time in SA that building owners will need to publicly declare their energy consumption in South Africa. Unlike the international examples reviewed, where EPCs have been entrenched in the market place for a good number of years, the local EPC regulation is a first step in trying to get a handle on energy consumption in existing buildings. Therefore, local EPCs will only be a declaration of energy consumption and are not currently positioned to make performance recommendations to building owners as they will not be linked to a rational assessment (energy modelling) of the buildings design and management initiatives. Despite this, it is worth noting that the underlying standard for EPCs, SANS 1544:2014, refers to the values in SANS 10400-XA as midpoints, which are based on a rational assessment, making use of theoretical modelling to predict performance. Additionally, as opposed to rational assessments SANS 1544 further considers tenant loads. The proposed EPC standard will therefore provide greater insight into actual performance given that modelling outputs from rational assessments demonstrate energy consumption between 15-20% less than actual consumption. This is largely due to how a building gets commissioned; occupied and effectively managed"
Q: Should old buildings, even those that are not close to being energy efficient, obtain an EPC?	**A:** Yes, all buildings that fall within the size, occupancy class and operational status guidelines have to comply with the EPC process.
Q: If you sell your building, is it mandatory for the building to have an EPC?	**A:** No, not currently, but the goal is to make it a mandatory conditions for the selling of buildings.
Q: Do I have to re-do the EPC process if I go through a major renovation before the 5-year period is over?	**A:** Due to a major renovation, the net floor area, the areas of exclusion and the general building's energy need will be drastically affected and altered, hence rendering the EPC invalid. The Building owner will have a minimum of two years to re-issue a new EPC after the major renovation.

Frequently asked questions

Questions	Answers
Building Services questions	
Q: Data gathered for the past two years (2020 – 2021) does not accurately represent the energy consumption of a building *(due to Covid-19 and people working from home*. Can I use data from 2019?	**A:** No, the data for the past two years must be used. Since building owners and accounting officers need to comply first, thereafter measures towards positive energy performance can be undertaken. Underperforming buildings are not yet being penalised they will have the opportunity to better their performance before the next cycle of measurements and evaluation.
Q: What if you have additional wheeled power from a distribution point to the building, what is the process then in registering your building to obtain an EPC?	**A:** Unless the generated Energy is exported i.e. used outside the building being accessed, it will be omitted however if the power generated is for the building's energy needs it must be considered. *Refer to SANS 1544:2014 paragraph 4.4, for more information.*
Q: How does the additional energy resources impact the EPC process?	**A:** Currently it does not impact the EPC process.
Q: There are a lot of areas within a building that are excluded from the EPC process i.e., parking lots and basements. How do I get a baseline of energy supply without the exclusions added to the measurements?	**A:** Your building metering should assist in this regard or the services of an energy consultant can be used in the data gathering process to ensure collection of accurate energy performance data for your building.
Q: Are fuels part of the building services that is excluded from your EPC?	**A:** No, as part of the building services, the fuels used for the building will be measured. Fuel measurements are added to your energy demand rating and an understanding of the various fuels will assist you to grasp what your EPC means and what is measured and assessed by the SANAS accredited IB.
SANAS accredited Inspection Bodies	
Q: Who can assess my building and provide me with an EPC?	**A:** Only a SANAS accredited IB can provide you with an EPC assessment and Energy Performance Certificate.
Q: Can I only use a SANAS accredited IB in my province?	**A:** No, any SANAS accredited IB in any province can assist you with your EPC process.
Q: Where do I find a SANAS accredited IB?	**A:** Use the tab "SANAS Accreditation" on the SANEDI website for more information.
Q: Will a SANAS accredited IB gather and measure all the data?	**A:** No, the assessor will only evaluate and assess the data, it remains the responsibility of the building owner / accounting officer to collect all measurements and data needed for assessment.
Q: How much are the services of a SANAS accredited IB?	**A:** Costing varies. It is the responsibility of the building owner / accounting officer to collect quotes from different service providers to estimate the cost for to complete the EPC process.

Frequently asked questions

Questions	Answers
Building Occupancy questions	
Q: How do I determine what my building's classification is?	**A:** Your building classification is depicted on your building occupancy certificate.
Q: What if I do not have a building occupancy certificate?	**A:** If you do not have a building occupancy certificate use one of the below documents: • A fire certificate or • Municipality certificate (approval of the development).
Q: In an office park, does each building need an EPC or is there one assessment (and EPC) for the entire office park?	**A:** Each accounting officer or building owner is responsible for their own separate unit within the office building, provided each unit meets the requirements. Each office needs their own assessment and EPC.
Q: If you have an office block with sectional titles and there are a number of owners, how do you go about the EPC process?	**A:** Each accounting officer or building owner is responsible for their own separate unit within the office building, provided each unit meets the requirements. Each office needs to conduct their own assessment and EPC.
Q: Does retail spaces fall under: • an A1 building classification as an area of entertainment and public assembly or, • F1, a large shop?	**A:** Retail spaces fall under F1 and not A1.
Scenario 1: A building is privately owned and less than 2000 m² but more than 1000 m², the tenants are government, where does the building fall regarding EPC? And does EPC apply to the building owner?	**A:** If a building is owned, occupied or operated by an organ of state, and the building is > 1000 m², it is mandatory for the accounting officer from that organ of state to complete the EPC process. Thus, a the privately owned building owner will not be responsible to complete the EPC process. It will remain the responsibility of the tenant (organ of state leasing the building).
Building Design questions	
Q: What is net floor area?	**A:** Net floor area is the sum of all areas between the vertical building components (walls or partitions), excluding garages, car parks and store rooms.
Q: Is unoccupied floor area used in the overall energy performance calculations?	**A:** No, normalisation shall be undertaken to account for unoccupied floor areas, as follows: **Effective energy consumption (kWh/m²/a) = measured net energy consumption (kWh/a)/occupied floor area (m²)** where occupied floor area is the net floor area minus the unoccupied floor area. SANS 1544:2014 prescribes that the unoccupied floor area shall be prorated to the measurement period, for example: Area A is unoccupied for 30% of the year, Area B is unoccupied for 60% of the year, Area C is always occupied – 100% occupied. A, B and C make up the net floor area. Therefore, useable floor area = (A+B+C) – ((0.3 x A) + (0.6 x B))

Frequently asked questions

Questions	Answers
SANAS related questions	
Q: For reference purposes which SANS should be used: SANS 10400-XA:2011 or SANS 10400-XA:2021?	**A:** SANS 10400-XA:2021 should be used for the most recent energy usage in buildings information.
Q: The data from SANS 10400-XA:2011 is still reflected in SANS 1544:2014, what data should be used?	**A:** SANS 1544:2014 is currently under review and will be updated accordingly with the reference information from SANS 10400-XA:2021.
Q: SANS 1544:2014 refers to the climatic zone. Will this terminology still be used?	**A:** Climatic zone was updated to *energy zone* for future use and reference as it was found to be a more accurate description for the purpose and determinations of reference energy and energy efficiency.
Q: Where do I find the Standards?	**A:** The South African National Standards can be accessed on the SANS website, following their procurement process.

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