SUSTAINABLE GREEN BUILDING

When do you need to worry about all the hype?

- New builds
- Additions / Alterations / Renovations / Plan submissions for approval at council
- As built plans

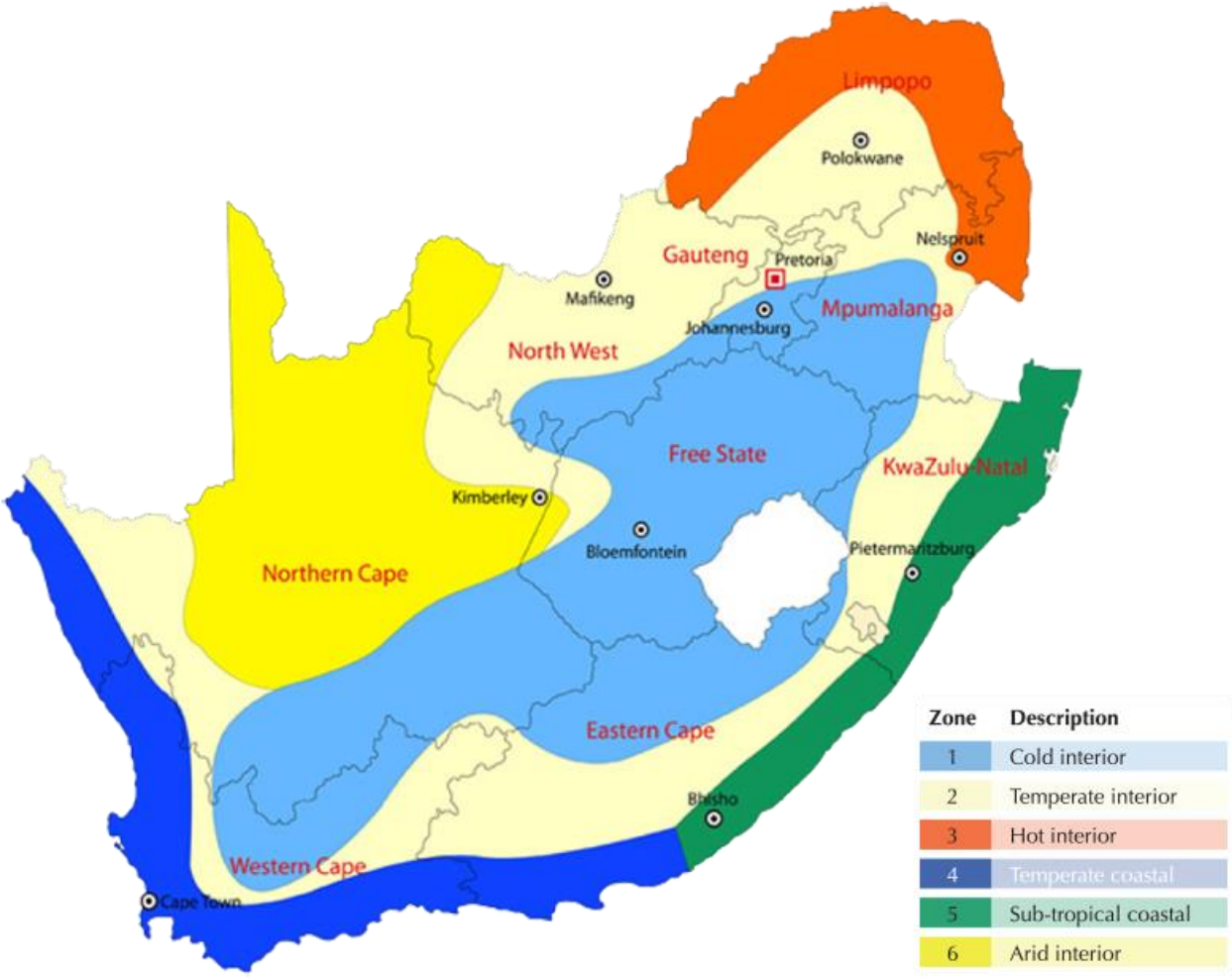
IS YOUR RESIDENTIAL HOME ENERGY EFFICIENCY COMPLIANT?

WHAT DOES ENERGY EFFICIENCY FOCUS ON?

So, what really does energy efficiency focus on?
For one, this should not be confused with the "green building" notion which is more concerned with the embodied energy and other renewable materials like timber, but this is more of "after the building has been erected to completion". issues which effect energy efficiency once a building has been erected include:-

- window sizing, positioning, shading,
- materials chosen,
- solar heating natural
- cooling
- and day-lighting among other factors.

Therefore, it is important to note that it is the design and planning of the mentioned aspects which are stipulated by the newly set regulations. Usually, the SANS 10400 -XA serves the role of providing the 'deemed-to-satisfy' energy requirements need for the compliance with National Building Regulations concerning energy usage while the SANS 204 is more concerned with specifying the actual design requirements to achieve the needed levels of energy efficiency on the long run. For instance, an example of "a deemed to satisfy energy prerequisite" when the fenestration is considered, is where the total floor area (FAR) is about 15%. As such, such a building is assumed not to overheat or loose excess heat as a result of fenestration, if all the other energy requirements are all met. However, if the floor area is over 15%, which is in the case for most non-economic types of housing, then in such a case, a reference table depicting the requirement for the various environment conditions is used.



Nonetheless, it is important to note that the success or not of achieving energy efficiency is the sum of many parts, considering the above given example.

With this, it is important to understand some examples of specification requirements which are to be considered for various types of household parts.

- WALLS
  For the non-masonry, this must be set at somewhere around a maximum of R-Value of R2,2 in the climatic zones 1 and 6 while this must be altered and set to an R-Value of 1,9 in the zones 2,3,4 and 5. See map of zone descriptions above.

- ROOFS
  From the foregoing, the insulation of the roof has been determined as one of the single best factors which tend to affect or rather impact on the overall energy efficiency. This makes this area to be one of the most considered when aiming at energy efficiency.
  Usually, the minimum R-Value of roof assembly is set to about R3,7 for zones 1 and 4 with other zones being realistically way lesser. What this means using an example is that for a clay roof for instance, when once one deducts the R value, then another 3.3 of R-value is needed by simply adding the insulation. Nevertheless, this amounts to about 150mm of basic cellulose fibre insulation. On the other hand, if roofs with exposed rafters are brought into the picture, then this is going to automatically change the mechanism which will be used to detail the construction of the roof.
- SOLAR WATER HEATING
  Usually, and from the foregoing, it is very clear that 50% of the total water heating energy should come to sources other than the resistance electricity. This therefore means that aside basic water heating from the likes of geysers which use some relative amount of electricity, this must be averted all together and hence the reasons as to why better energy efficiency methods must be given some thought fast.
- LIGHTING
  At this point, it is very paramount that lighting must be specified as opposed to the previous case where it was only mentioned that lighting must be considered. Instead, the lighting aspect must be given the seriousness

which it deserves. This must in effect take into consideration the likes of light levels, energy demand as well as the consumption of energy.

Basically, at this point, designers like BuildItBetter.co.za have a lot to process. This is because with the newer and emerging regulations, the designers must cope with the changes whether they like it or not. **Nonetheless, it has been noted that for one to be recognized as the ""Competent Person", then they must have undergone some previous training and recognized to have done so. This will make sure that the chosen Competent Persons have indeed accomplished and gone through all skill instilling practices such as learning how to calculate the required energy efficiency as well as being able to formulate plans and projects with the urgency it deserves.**

SANS 10400-A Quick Guide

A QUICK GUIDE TO SANS 10400 REGULATIONS

As of now, the new South African National Building Regulations require each of the following regulations:

- SANS 10400 XA1
  This regulation stipulates that buildings are to be able to use energy efficiently and be able to reduce the overall greenhouse gas emissions, which is in accordance with the present set of requirements.
- SANS 10400 XA2
  Under this regulation, it has been said that no more than 50% of the total volume of domestic hot water is to be supplied using electrical resistance heating mechanisms. Case in point, 50% of the heated water, either for domestic purposes or in organizations has to be heated with other sources other than via mechanisms other than electricity.
- SANS 10400 XA3
  Basically, the compliance of the SANS 10400 XA1 method has to be at all times achieved using any one of these methods. If a building practitioner builds in accordance with SNAS 10400-XA, then such a building is deemed to comply with the National Building Regulation XA1.

WHICH BUILDINGS WILL ACTUALLY GET AFFECTED?

From the foregoing, it is vital to note that the main target are the buildings which do consume energy as a result of human occupancy. From this, it is important that all new buildings should try and comply with the building regulations and standards, and so should any additions/extensions to these buildings. However, it is important to note that if a building is not in any way affected with the standards, then any sort of addition to the building has to be set and fitted to comply with the SANS 10400 regulations. Moreover, renovations which are not the same as extensions must also comply with the newer SANS 10400 regulations, if these are to be allowed by the local authorities.

However, it is crucial to note that buildings like garages which don't form part of the habitable area don't have to comply with these regulations – holding true for the likes of factories and other operational aspects of any business.

HOW DO YOU ACHIEVE COMPLIANCE?

Form the actual wording of regulation XA3, SANS 10400 -XA is indeed certified to achieve compliance regulations and requirements. Thus, if you wish to comply with the regulations then you have to start with the XA3 document which can easily be obtained from www.sabs.co.za or you can ask BuildItBetter.co.za to assist in achieving compliance. Moreover, for compliance to be possible, then conditions must be met, and can be down by employing a certified Architect or a SACAP Registered Professional and employ BuildItBetter.co.za

COMPLIANCE ROUTES:

- The Performance Route.
- The Perspective Route.
- The Reference Building Route.

Of the three, the most common compliance route is the "Perspective Route". This is generally available for all persons, meaning that it will be used more often in houses and buildings.
What **"The Perspective Route"** requires is that a set of rules is followed when it comes to water heating, insulation (e.g roof) and/or any sort of glazing for windows & doors. Water saving has also come to play an important role.
Compliance via the **"Performance Route" or the ""Reference Building Route"** may be achieved by using "Rational Design". Rational design is obtained through a competent person such as an engineer or SACAP registered professional like BuildItBetter.co.za .
Note: that hotels are by chance the only residential buildings to which "Performance Routes" may be applicable as this may not be used in actual residential homes. So, after this, it is best to understand some of the best and rational designs to comply with.

QUESTIONS? CLICK ON THE LINK FOR MORE INFORMATON ON:

- WHICH METHODS SHOULD BE FOLLOWED WHEN BECOMING COMPLIANT
- WHAT IS RATIONAL DESIGN
- WHO CAN BE ABLE TO PERFORM RATIONAL DESIGNS?
- WHO IS RESPONSIBLE IN THE LONG RUN?
- WHAT DOES THE TERM COMPETENT PERSON – ENERGY MEAN?
- WHICH DOCUMENTATIONS HAVE TO BE CONSIDERED?
- COMPLIANCE VIA PERSPECTIVE ROUTE.
- OPTIONAL TECHNOLOGICAL CHOICES TO WATER-HEATING ACCORDING TO SANS 10400 -XA.
- COMPLIANCE THROUGH REFERENCE BUILDING ROUTE.
- WHAT DOES THE REFERENCE BUILDING ROUTE ACTUALLY INVOLVE?
- WHAT SHOULD BE DONE TO FOLLOW THE REFERENCE BUILDING ROUTE?
- ENERGY CODES AND STANDARDS – EXPLAINED
- PERFOMANCE REQUIREMENTS

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