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# BUILDING A THATCHED LAPA

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## **Is building approval required?**

In terms of the **National Building Regulations (NBR)** all buildings or additions require a formal plan submission to your Local Authority. The building plans must indicate the position of the structure in relation to site boundaries and any other structure on the same premises. The position and height of existing boundary walls for the fire safety assessment of the proposed structure is also an important parameter for consideration during the assessment.

## **What is the maximum size permitted without a fire safety assessment by a competent person?**

The **NBR** permit a lapa with a maximum of 20 m<sup>2</sup> on plan provided it is not closer than 1 m from the boundary. The overhang of the roof must not be closer than 0,5 m from the boundary wall which must be at least 300 mm above the bottom edge of the roof.

Lapas more than 20 m<sup>2</sup> on plan and lapas or conservatories attached to your home, requires a fire safety assessment prepared by a competent person for submission to Local Authority. Depending on the total area of the attached combustible roof in relation the existing roof area of your house (more than 20 m<sup>2</sup>) the entire roof of your house may be classified as combustible and new safety distances may be required.

## **NOTE!**

Also make sure that your insurance is informed as they may have additional requirements.

## **Can you extend any building structure without plan approval or permission form Local Authority?**

Extension of any existing approved structure is possible, provided the proposed extensions is approved by Local Authority prior to erection. The Local Authority will consider or permit relaxation of safety distances provided a suitable tested fire protection system have been incorporated in the fire safety design of the structure. Relaxation of safety distances in terms of the **NBR** is based on the classification of the combustible roof system (fire properties and radiation levels) which is determined by means of the required test method, **SANS 10177, Part 12**. Classifications A (Low) and B (Moderate) can be used for the determination of safety distances using Table 1, **SANS 10400-T**. However, classification C is regarded as combustible and normal safety distances to boundaries and other buildings on the same premises apply.

Neighbour consultation is important in many instances; however, it can never replace the requirements in terms of the **NBR**, which require submission of drawings and approval by Local Authority as the custodian for the implementation of the Regulations (**NBR**).

## **Can a Lapa be attached to a house?**

The lapa may be attached to the main house or a separate structure a few meters away from the house. Traditionally, there can be more than one lapa in a single yard. However, the proposed structures must be in compliance with the requirements in terms of the **NBR**, which requires approval by Local Authority.

Thatched structures attached to any building will change the fire risk of the main building and must be communicated with your insurance.

## Complexes

In terms of the **NBR**, all structures erected must be approved by the Local Authority. During the approval process, all requirements will have to be considered, including restrictions from the Management agency and/or Body Corporate, which may be embedded in the original approval of the complex or estate. Safety distances would be a major consideration between units as well as the “notional” boundaries between the units whether it is communal (sectional title) or separate (full title).

## Safety distances

Many lapas are constructed close to or against boundary walls. **NBR** stipulate that any thatch roof covering a roof-plan area greater than 20 m<sup>2</sup> must be constructed at least 4.5 m from any boundary. This is to prevent a fire from spreading to your neighbour. If a thatched lapa has been erected within 4.5 m, further steps must be taken to ensure adequate fire safety.

There are also safety distances between buildings and/or structures erected on the same premises which are determined by the composition of the structure in question. Determining factors that apply here include the combustibility of the roof or walls and the presence and distances of openings of the relevant structures.

These aspects as mentioned must then be considered and addressed by means of a "Rational design" prepared by a competent person for approval by a Local Authority. It must also be made available to the relevant Governing Body and likewise to the relevant Insurance Institution.

If such a structure is within a complex, approval must be obtained from the Governing Body for certain conditions that may exist. It may also include the insurance of the complex, that must be considered. This includes aspects such as safety distances and fire separations where necessary.

The question is therefore: Did the establishment of the relevant lapa meets all the above Statutory requirements and was it approved by the Governing Body and by Local Authority? Had the establishment of the lapa been before the Regulations offered a solution as contained in **SANS 10400-T, Clause 4.12.2?**

**Solution:** In order to find a solution to the problem, the following must be looked at:

1. Can the Regulatory requirements be met, and
2. the insurance requirements are met because they sometimes have requirements that fall outside the normal scope. Compliance with the Regulatory requirements can be an important consideration for acceptance here.

The important consideration is therefore whether all the Regulatory requirements can be met? Should it be possible, this can be done by a "Rational design" looking at all the relevant aspects (fire walls and separating walls and safety distances relating to openings facing the structure) or just meeting the deemed-to-satisfy requirements of **Clause 4.12.2** mentioned above.

## Specifications

Thatch roofs should have a roof slope of 45° or more to perform properly. The steep slope is needed so that water will run off from the thatch with minimum penetration into the thatch. At a pitch of less than 45° the thatch will decay rapidly. Furthermore, the thatch will absorb the water increasing the weight on the support structure. The thatch thickness should be as recommended in the guidelines and other documentation of the Thatching Association. The thickness should be at least 175 mm for normal thin thatching grass and should be well compacted. However, the thatch thickness should not be more than 250 mm, which may result from over-thatching which may impact on the stability of the existing roof structure. Over-thatching in thin layers is not recommended as it will impact on the life expectancy of the newly thatch cover.

The surface of the thatch layer must be smooth to prevent accelerated weathering and water ingress and the thatch layer must be well compacted to ensure a longer life expectancy. It is well compacted when it is not easy to pull out individual stalks of thatch.

Roof structures with a span of more than 6 meters supported by non-structural elements should be designed by a professional engineer. Smaller roof structures with less than 6-meter span can be constructed within the deemed-to-satisfy requirements contained in the relevant parts of the **NBR**.

### **Structural Problems**

The poles used as rafters should not have a diameter of less than 100 mm measured at the **thin end**, provided no structural connections in the design are more than 3.5 meters apart. In addition, the rafters should not be spaced further than 900 mm apart. The support poles, with a minimum diameter of 150 mm for smaller structures, should not be further than 3.5 m apart. Support poles are the poles that go into the ground that holds the whole structure up.

All the poles and timber used to construct a lapa should be treated to the correct treatment level.

### **How to plant a pole**

If a treated pole is planted into the ground, it is essential to look at the drainage of rainwater. If a pole is planted on top of a concrete base, make sure the base is completely dry before the pole is planted. If concrete is used, allow the concrete to form a collar with the pole protruding at the bottom to allow moisture movement. Any pole planted in the ground should have a minimum classification of H4. The support poles in the ground are also specially treated to withstand insect and moisture damage.

### **Chimneys**

Where a chimney penetrates the roof of any thatch structure, it should be constructed in such a way that the exterior that is in contact with the thatch cannot become hot. In terms of **SANS 10400, Part V**, Space heating, the minimum requirement for a brick chimney is 200 mm solid build brickwork. A normal chimney of a full brick thickness (220 mm) would satisfy this requirement.

The chimney is not a structural element for the support of a roof structure and therefore no timber of the roof structure may penetrate the brickwork of the chimney. Should it be necessary to utilise the chimney, an additional layer of bricks may be added to provide the minimum of 190 mm solidly build brickwork as required for the chimney.

All mortar joints in the stack must be properly filled and smooth to minimise soot retention in the flue. Flashings is required to prevent water penetration in the area where the chimney stack penetrates the roof plane. This can be done with sheet metal or fibreglass reinforced polyester flashing over and underneath the top surface as well as between the layers of the thatch.

The width of the flashing should be at least 250 mm.

The chimney should be at least 1 m higher than the thatch roof.

### **Spark arrestor**

A spark arrestor fitted not less than 700 mm from the top of the stack must be provided in all chimney stacks. The typical spark arrestor comprises of a 1 mm thick x 10 x 10 mm (minimum) section of stainless-steel wire mesh across the full width of the flue and securely built into the flue around the edges or supported on mild steel dowels.

It is recommended to have the chimney flues and spark arrestor be cleaned at least once a year to avoid an accumulation of soot which can ignite or generate sparks.

## Safety precautions

Keep an area of up to 25 m around the lapa / thatch clear of unkept plants, grass and weeds to prevent fire hazards from sparks, etc. This condition however does not apply to cultivated and maintained lawns and gardens.

Also, have firefighting equipment ready on site. In compliance with the **NBR**, you are responsible for the testing and servicing of the equipment once a year to ensure that it would be always ready for use. In most cases a 4 kg dry powder fire extinguisher should be sufficient.

## Fire retardant

The use of fire retardants can never make a combustible product non-combustible; however it slows down fire propagation to enable more time to the occupants under the roof to get out and take any emergency actions. It does not prevent a fire incident, but **only slows down** the fire. In most cases this causes the thatch to smoulder and not burst into flames - depending on the prevailing weather conditions such as the strength of the wind.

The denser the compaction of the thatched roof to allow the minimum amount of oxygen to pass through, the longer the roof will smoulder. During the service of a thatched roof, the tar treated sisal twine must be pulled tight again to regain the compaction of the thatch.

In most cases, it is the heat that ignites the thatch.

## Lightning Conductors

SANS 10400-T building regulations pertaining to fire states the following:

1. no Lightning Protection System (LPS) is required when the thatched roof structure is less than 20 m<sup>2</sup> and the Lighting Ground Flash Density (LGFD) is less than 3 strikes / km<sup>2</sup> / year.
2. that any thatched roof structure in excess of 20 m<sup>2</sup> using in areas with a Lighting Ground Flash Density (LGFD) of more than 7 strikes / km<sup>2</sup> / year should be fitted with a Lightning Protection System (LPS)
3. all thatch roof structures in which wire or metal rods (conductive sways) are used in the fixing of thatch shall in areas with a LGFD of more than 3 strikes / km<sup>2</sup> / year be fitted with an LPS.

**SANS 10313** refers to **SANS 62305** where a risk assessment can be conducted to determine the risk and which can be submitted to your Underwriter for consideration; however, in our experience the underwriters tend to follow the **SANS 10400-T** guidelines.

Exceptions are possible for smaller structures provided the safety distances of the lapa is at least 5 m away from any other building and do not infringe on the safety distances of the house (main building) itself and the boundary. The fire risk in this instance is localised to the lapa only and not the entire homestead.

Although a lightning conductor is not compulsory in terms of the **NBR**, the insurer may insist on the installation of one and it may be a good preventative measure, especially in Gauteng with its frequent thunderstorms. According to the insurers, an effective lightning mast of the correct height shall provide a shielding angle to the structure/s it is meant to protect. A minimum angle of 45 degrees for a single pole arrester (mast) taken from the highest tip of the mast to ground zero is prescribed. The height of the masts can be minimised by using multiple masts in which case the protection angle between the multiple masts increased to 60 degrees. Any lightning mast should be free-standing, not closer than 1 m from the protected structure and can therefore not be attached to the building. The lightning mast should have a finial arrester at the top be bonded (bolted) to the earth electrode of the structure or an earth electrode of its own.

The reason for the bolting of the earth electrode is to enable routine testing of the ground resistance which must be done at regular intervals or when the lightning arrester attracted a strike. In the event of an arrester being hit or attract a lightning strike, the ground resistance may change not being suitable for protection. Hence the requirements for routine testing and certification by a specialist to ensure full functionality. This may also be required by the insurance in the event of a lightning/fire incident.

The metals that were used in the thatch construction (i.e. wire mesh, metal coated insulation, etc.) should also be bonded to the earth electrode of the structure. Connections to water mains could be problematic should the ground resistance not be adequate or non-metal or discontinues metal water supplies lines are installed.

Should the chimney or gable ends extend above the shielding of the LPS, a peripheral conductor should be used around the chimney or along the gable, provided it is not within 1 m from the thatch. This should also be connected to a down conductor bonded to the earth electrode.

The installation and maintenance of lightning protection should be undertaken only by qualified contractors.

## **Legality Issues**

If you have a lapa and it is not shown on any approved municipal drawings it may be an illegal construction. Your insurance may not cover your lapa and its contents in the event of an incident if the correct approval are not available.

All thatched roofs and lapas are required to comply with the **SANS 10407:2015 Edition 2** specification pertaining to thatch roof construction and **SANS 10400 (National Building Regulations)** with special reference to Part L, Part T and Part V). Your lapa must be built according to design of the building plans approved by a registered professional engineer and Local Authority. The formal approval must be clearly visible on the design drawings. The drawing must be signed by a competent person.

## **Certification and Approvals**

A competent person (usually an engineer or similar) must certify that the construction complies with the **SANS 10407** specification. He or she confirms that your lapa is built as designed and that the workmanship is of a professional standard. You will then receive an A19 Certificate of compliance confirming that the lapa complies with all Standards and Regulations. Without such a certificate the municipality will not sign off any structure for approval. The building inspector will also issue a Completion Certificate from the Municipality when all requirements have been met.

## **Remember!**

**No property may be bought or sold without this certificate.**

**All lapas or extensions to lapas must be approved by Local Authority.**

## **Conclusion**

Try and ensure that the company or person erecting the lapa is registered with TASA (Thatchers Association of South Africa) to ensure good workmanship. Thatchers registered with TASA all comply with the requirements and standards of a quality thatched lapa. This will give you peace of mind and protect your investment.

Then you can truly enjoy your Lapa!

“A Guide to Thatch Construction in South Africa” which explains the **SANS 10407** (Thatched Roof Construction) Specification requirements, is downloadable at no cost from the TASA website at [www.sa-thatchers.co.za](http://www.sa-thatchers.co.za)

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