CELL: 065 829 7073
admin@malindoconstruction.co.za
VAT No: 4810269441

GAUTENG
16 Barclay Street
Krugersdorp
1740
TEL: 011 660 4468

WESTERN CAPE
50 Long Street
Cape Town
8000
TEL: 021 013 3062

MALINDO CIVIL & CONSTRUCTION Pty Ltd

10TH ANNIVERSARY

REPORT

FOR

HOUSE DE RUST

PARYS GOLF & COUNTRY ESTATE,

PARYS

9585

Prepared For:	Prepared By:
National Home Builders Registration Council	**Malindo Civil and Construction Pty Ltd**
27 Leeuwkop Rd, **Sunninghill,** **Sandton,** **2157** Contact No.: (011) 317 0000	16 Barclay Street, Krugersdorp, 1740 Contact No.: Email:

cidb Construction Industry Development Board

NATIONAL HOME BUILDERS NHBRC REGISTRATION COUNCIL

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1. INTRODUCTION

Malindo Civil and Construction Pty Ltd was appointed by the National Home Builders Registration Council (NHBRC) to compile a report on the defects and conduct remedial works of house **De Rust** in **Parys Golf & Country Estate,** located in Parys, Free State Province, South Africa.

The NHBRC provides a warranty scheme to enrolled the Housing units/Homes. The scheme is divided into three categories:

(i) 90 days snag list.

(ii) 12 months roof leaks.

(iii) 5 years on defined structural defects.

This report details what was found on site and how we will remedy the noted defects. The defects are mainly roof leaks, moisture consequential and minor structural defects.

2. BACKGROUND

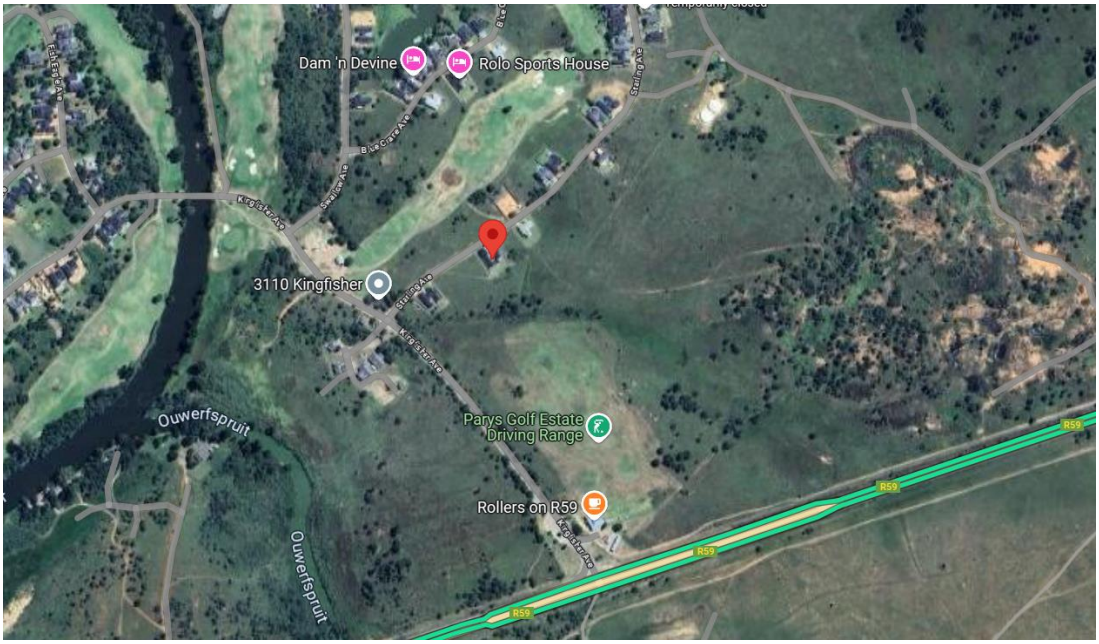

Figure 1: House De Rust in Parys Golf & Country Estate

3. LIMITATIONS

We could only conduct visual assessment and develop our recommendation based only on what we noticed on site. This report is only limited to what was visible (only noticeable by sight), therefore, Malindo Civil and Construction Pty Ltd and its employees cannot be held liable for defects that were concealed by plaster, the ground and or any other items. Concealed defects would have to be remedied but we can only make recommendations during construction, therefore. Malindo Civil and Construction Pty Ltd cannot be held liable for not seeing them nor commenting on them.

4. FINDINGS

Figure 2: Front elevation of flat roof with moisture damage and cracks

4.1. Poor drainage and cracked walls

Both the flat roofs have less than required retention depth to allow enough water to be stored while draining takes place, resulting in the defects displayed in figure 2 above.

4.1.1 Flat roof were supposed to be built at least 400 mm lower than start of pitch roof.

4.1.2 Roof sheets are joined to flat roof waterproofing membrane resulting in water ingress.

4.1.2 Fewer weepholes that SANS10400-L:2011 Edition 3 section 4.3 figure 2 that requires 1 outlet for every 3 m x 4 m.

4.1.2 Moisture damage on the walls.

4.1.3 Poor drainage slope of existing screed.

4.1.4 Cracks on parapet walls (see figure 2 and 3).

Figure 3: Front elevation with horizontal parapet wall crack

4.2. Recommendation

1. Remove existing waterproofing and screed (the removal of existing screed shall be such that new shallow results with 100mm weather step).
2. Add 2 more 110 mm diameter weep holes resulting in 3 per slab.
3. Reinstall screed and waterproofing.
    a. Surface Preparation
    b. Ensure that the slab is clean, dry and free of all contaminants and correctly prepared.
    c. All dust and loose friable material must be removed.
    d. Blow holes and voids should be fully exposed then repaired.
    e. Install a new 20 MPa screed with a 5% minimum slope lower that current level to improve temporary retention during a storm.
    f. Clean substrate before applying product.
    g. Apply Sika Black Seal Primer Coat or similar approved for concrete surfaces at the correct consumption to the prepared surface and allow to dry.
    h. Place Sika Index VIS or similar approved
    i. Unroll the torch-on and align it before torching or bonding.
    j. Each membrane must be laid parallel to each other and must be staggered by at least 1 m to avoid coinciding joints.
    k. The end-to-end overlaps must always be alternate, never arranged along a single line.
    l. Always start on the lowest height of the slope and with the drains, the downpipes or other details.
    m. The torching of the rolls must heat the membrane and the substrate at the same time, concentrating on the roll and the overlapping.
    n. The overlaps must be welded with great care until a trickle of melted mixture about 1 cm wide can be seen coming out along the line of the overlap.
    o. Final Top Coat (Clean substrate before applying product).
    p. Apply Sika BlackSeal Silvercoat (or similar approved) coating can be applied by a brush or roller.
    q. New waterproofing to wrap 230mm brick to avoid water absorption in case of overflow.
4. Remove plaster and repair horizontal cracks on the parapet walls.
    a. Masonry cracks:

b. Clean all loose material and dust.
c. Install diamond mesh (1000mm wide) or similar approved using 6mm easy drive nails with 20mm washers to hold mesh in place.
d. Mesh to be installed after all weepholes are installed to prevent any cracking.
e. Apply plaster prime at 5m^2/litre or as per manufactures' instructions
f. Re-plaster over mesh with class I plaster mortar.

5. Repaint all affected inside walls from corner to corner and the affected slab under side.
6. Repaint outside wall from corner to corner.

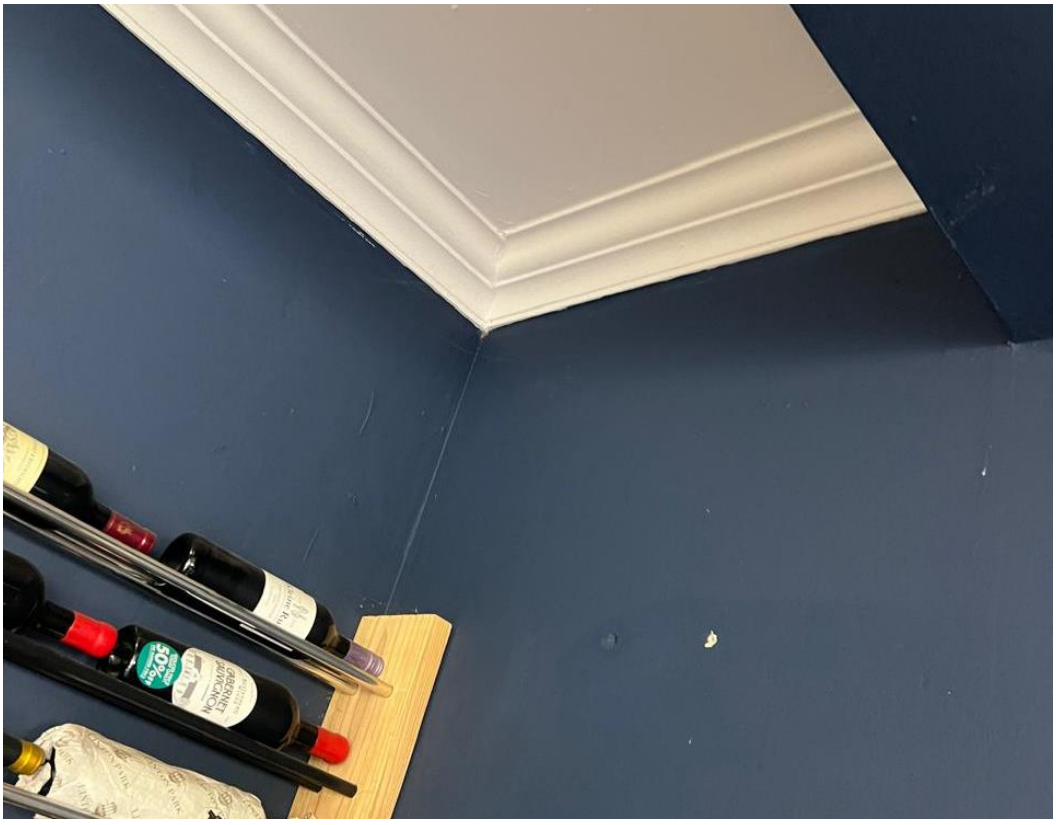

Figure 4: Internal moisture damage

5. CONCLUSION

The flat roofs were constructed with no temporary water retention during storms and fewer weepholes to the recommendation of SANS10400-L:2011 Edition 3 section 4.3, resulting in the moisture damages due to leaks. Cracks noted are resulting from moisture penetration due to poor construction practises.

The noted defects are **leaking flat roofs resulting in secondary damages and compromised integrity of the home** but repairable. The following are the summary of the work that needs to be done to repair the property.

1. Remove existing waterproofing,
2. Remove existing screed,
3. Reapply screed at a lower level to improved water retention,
4. Add more weepholes,
5. Reapply waterproofing and,
6. Repair all minor cracks and paint (inside and out to existing specification).
7. Repair the cracks on both sides of the walls by strengthening them externally.

The defects detailed in the report above are mainly due to poor workmanship from the original Builder and could have been prevented but currently repairable. **These can be covered under the 1-year roof leaks warranty provided by the NHBRC but the final decision rest with the Council and its policies.**

We have done enough to assess the structure and note all visible defects, but we cannot confirm that we noted concealed defects. Should such be revealed during construction, such defects will be brought to the attention of the client.

6. Appendix I: Photos

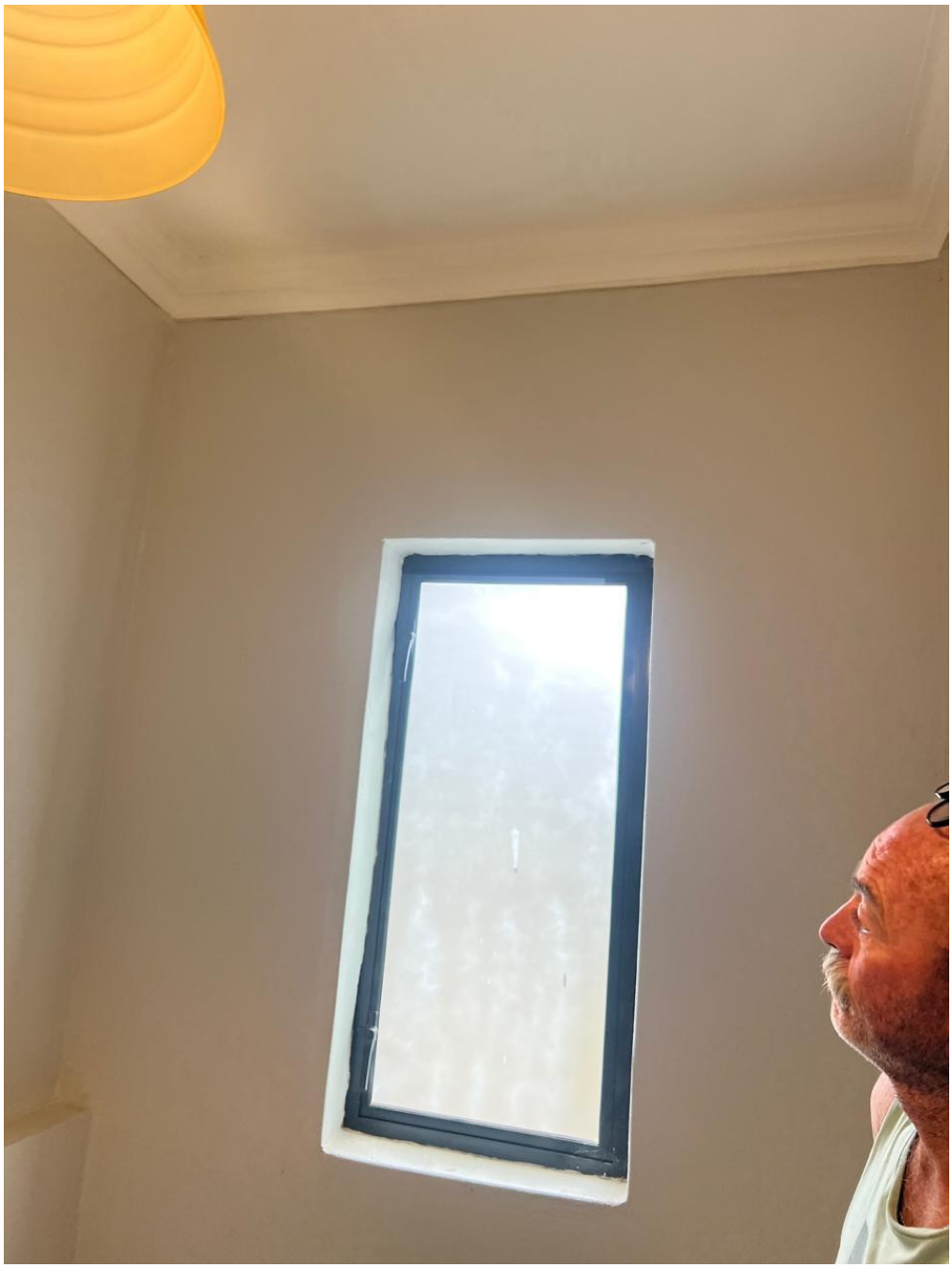

Figure 5: Internal damages

Figure 6: Internal moisture damages along the slab