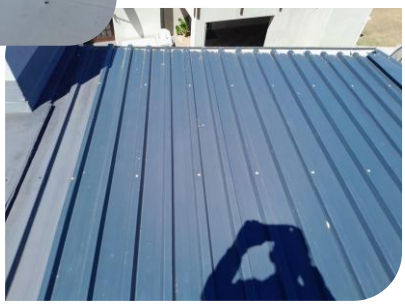
TechQ Development
Consulting Engineers, Project and Construction Managers

Office Corner
Block C, 184 Lancaster Road,
Gordon's Bay,
7140
066 105 1226
techq.development@outlook.com
086 474 1937

www.techq-development.com



NATIONAL HOME BUILDERS REGISTRATION COUNCIL
NHBRC

Ref: DM2025 – WC – SE - 041

Professional Engineering Services

Structural Engineering Investigation to the property
on Erf 3126, Hartenbos
House Venter

Report – Rev 0

15 October 2025

Contact Person: **Melt Badenhorst** (Pr.Tech.Eng)(Pr.CPM)

CESA Consulting Engineers South Africa
IAF Member of Multilateral Recognition Arrangement
ISO 9001:2015

Document Control Sheet

Client Project Reference	**Internal Project Number**
DM2025 – WC – SE - 041	TechQ – 041

Title

Structural Engineering Investigation to Erf 3126 Hartenbos

Project Stage

Investigation and Concept Remedial Proposals

Version	Date	Comment
Rev 0	15 October 2025	Report submitted for review.

Prepared For:

The Project Manager

National Home Builders Registration Council

27 Leeuwkop Road, Sunninghill

Johannesburg

2191

Prepared By:

TechQ Development (Pty) Ltd

OFFICE CORNER – Block C

184 Lancaster Road

Gordon's Bay

7140

Compiled By: Consultant

MJ Badenhorst (Pr.Tech.Eng) (Pr.CPM)

ECSA : Pr. Reg No. 200270009

NHBRC : 601551

PROFESSIONAL ENGINEERING TECHNOLOGIST
MELGEORG JACOBUS BADENHORST
13:10 PM (Africa/Johannesburg) on 11 Oct 2025

Reviewed By: (Client – NHBRC)

Dalitso Mkandawire (Pr.Eng)

Provincial Engineer - WC

15 October 2025

PROFESSIONAL ENGINEER
DALITSO JARANTHOWA MKANDAWIRE
08:40 AM (Africa/Johannesburg) on 15 Oct 2025

Table of Contents

Annexures

EXECUTIVE SUMMARY

This ***Structural Engineering and Waterproofing Investigation Report*** is presented by **TechQ Development (Pty) Ltd** based on the *Request for Proposals (RFP)* called by the ***National Home Builders Registration Council (NHBRC)*** in terms of the *Housing Consumer Protection Measures Act (Act 95 of 1998) and Regulations (HCPMA), and the NHBRC Technical Requirements* **at *Erf 3126, Hartenbos*** Western Cape Province. This development is referred to as **House Venter** in this report.

The original RFQ dated 21 February 2025 recorded structural defects in the roof structure, with special reference to the back Patio balcony roof, which area of defects constitutes the scope of investigation.

A site brief was held on 7 August 2025 to acquaint all parties with the defects followed by an official inspection held on 15 September 2025.

Documentation made available to **TechQ** are listed and elaborated on in **Section 1.3** below.

Section 2 of the report outlines the affected areas with notes taken during the investigation.

The concepts remedial works outlined in **Section 3** of this report are informed by the site inspections, review of architect drawings together with the assessment done towards the complaints raised by the Homeowner as recorded in the RFQ.

A concept design review discussion session was held with the NHBRC on 10 October 2025, with relevant comments incorporated in this report.

In summary, the following concept remedial repair works are presented.

Section	Concept Remedial Actions – Drawing attached as Annexure A
• **Patio balcony roof structure**	<u>Re-construct Patio balcony roof structure</u> • Remove all existing roof covering of the Patio balcony roof structure on the outside of the building only. • Supply and erect new timber roof trusses as detailed on the drawing attached as **Annexure A**. • Finish roof off with new gypsum ceiling boards and strips. <u>Repair damaged roof flashing, waterproofing, ceiling boards and strips</u> • Repair all damaged roof ceiling boards, flashing, waterproofing and strips in the area as indicated on the drawing attached as **Annexure A**.

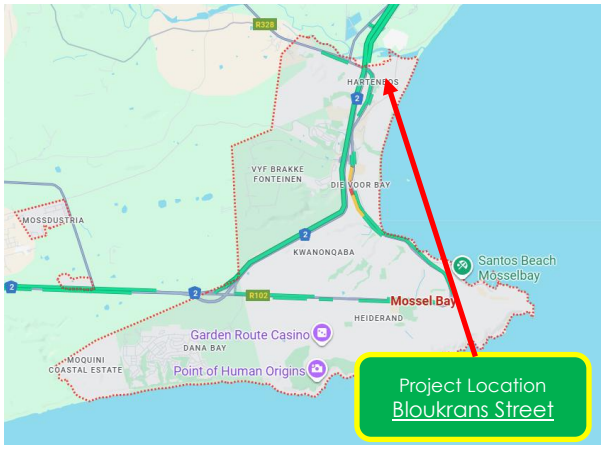
---- End of Executive Summary ---

1 PROJECT LOCALITY, SCOPE AND INFORMATION

1.1 Project Locality

Erf 3126, Hartenbos (House Venter) is located at *No.51 Bloukrans Street, Hartenbos,* within the boundaries of the ***Mossel Bay Municipality*** as show on the Figures below.

Site coordinates are **South:** 34° 07' 20" **East:** 22° 06' 53"



Project Location: House Venter

1.2 Scope of Work

1.2.1 Original RFQ scope of works

TechQ Development (Pty) Ltd was appointed by the **NHBRC** to conduct an ***Investigation*** towards structural and waterproofing defects of the property with the following specific deliverables.

- Investigate structural and waterproofing defects that have manifested at the above-mentioned home and classify them interms of the Housing Consumer Protection Measures Act (Act 95 of 1998) and Regulations (HCPMA) and the NHBRC Technical Requirements.
- Structural defect to roof section.
- Determine the root causes of defects, report on the defects of the existing structure and provide remedial solutions and specifications including drawings where necessary.

Throughout the investigation and considerations of remedial works, special attention is drawn to **Chapter III** of the Act, clause 13(1)(b) – (i) "rectify major structural defects" and (ii) "deviation from plans or any deficiency related to design, workmanship or materials".

1.2.2 Additional scope following site brief and site inspection

The main focus of the investigation is towards the defected metal roof section reported by the Homeowner, located on the outside Patio balcony area. No additional defects were highlighted at the site brief or during the investigation period.

1.3 Information Provided and Independent tests conducted

Information received from the NHBRC, Homeowner and design Architect involved in the planning and construction of the building, provided background to the building and affected area of investigation

1.3.1 Annexure B – Municipal approved Architect drawings

The original architect design drawings prepared by **SHAZCO Draughting** dated February 2020, approved in June 2020 is attached as **Annexure B**. Very limited detail is given on the architect drawings towards the investigation area, which was measured during the investigation period.

2 INVESTIGATION: DISCREPANCIES, NON-CONFORMANCES AND POSSIBLE ROOT CAUSES

Pictures related to the defected areas with brief comments are given below taken during the investigation. Remedial engineering concepts are elaborated on in **Section 3.**

2.1 Defected metal roof of Patio Balcony

The Homeowner reported that the external Patio balcony metal roof shows areas of settlement on the top and suspected the timber beam in support of the roof canopy to have deflected.

The picture album below provides images of the timber beam in support of the roof canopy, also roof flashings, ceiling boards and straps damaged on top of the metal roof.

Pic 01: Patio balcony roof construction.

Pic 02: Timber beam in support of roof structure.

Pic 03: Deflection in metal roof sheeting.

Pic 04: Damaged roof flashing and ceiling board elements.

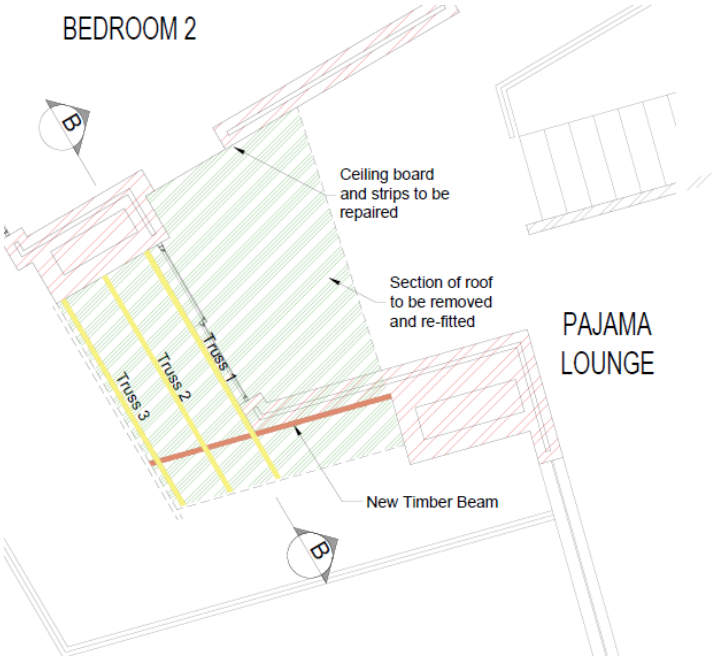
3 ENGINEERING REMEDIAL SOLUTIONS AND RECOMMENDATIONS

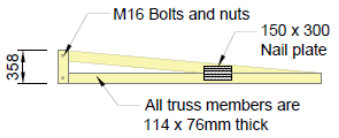
Contributing factors towards the **possible route causes** resulting in the metal roof to deflect and timber beam not to function as intended were investigated to determine possible concept remedial works to the investigation area.

3.1 Reconstruct Patio balcony roof section

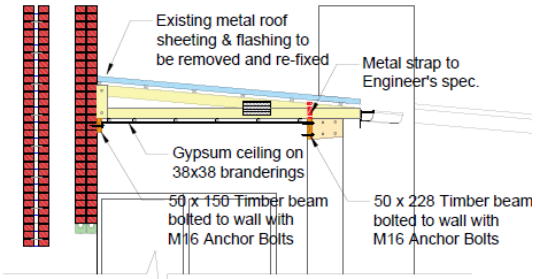
All indications are that the timber beam in support of the balcony roof assembly has deflected, or the 3 x anchor bolts used to fix the timber beam to the external building wall, may have come loose during windy and abnormal rain conditions.

The images below are graphical views of the remedial works towards balcony section of the roof, also detailed on the drawing attached as **Annexure A**.





DEATIL 1: TYPICAL TRUSS DETAIL - TRUSS 1
New Truss Design



DETAIL 2: NEW PATIO TRUSSES
Support beams and ceiling detail

3.2 Repair roof flashing, ceiling boards and straps

Evidence of damaged roof flashing, possible waterproofing defects and damaged ceiling boards with strips were located for approximately 3m along the chimney brickwork towards the centre of the building roof section as indicated on the drawing attached as **Annexure A**.

The damaged roof material to be removed and replaced with new elements to match exiting.

Where waterproofing is damaged, these areas to be re-waterproofed and watertightness tests conducted to ensure no leaks to the roof.

3.3 Summary: Engineering Solutions

In summary, the following concept remedial repair works are presented.

Section	Concept Remedial Actions – Drawing attached as Annexure A
• **Patio balcony roof structure**	<u>Re-construct Patio balcony roof structure</u> • Remove all existing roof covering of the Patio balcony roof structure on the outside of the building only. • Supply and erect new timber roof trusses as detailed on the drawing attached as **Annexure A**. • Finish roof off with new gypsum ceiling boards and strips. <u>Repair damaged roof flashing, waterproofing, ceiling boards and strips</u> • Repair all damaged roof ceiling boards, flashing, waterproofing and strips in the area as indicated on the drawing attached as **Annexure A**.

4 RISKS & MITIGATION MEASURES

Qualifications, risks and possible sensitivity issues needs to be considered in performing the proposed remedial Works during the construction stage. The main objective of the Project is repair works as defined in **Section 3** above, however, the following aspects with mitigation proposals, need to be taken into consideration in the Risk Register of the Project.

Risks and mitigation measures

Nature of Risk	Risk	Mitigation
Site and Construction Risks	Abnormal rainfall and restricted working space	Proper scheduling of Works, being aware of the "critical path" items and implementing effective construction methodologies, Quality Assurance and Controls.
Limiting Factors	Decanting plan	Phased implementation of Works in accordance with proper planned decanting program.
Health and Safety	Delays and Fatal	Detailed OH&S plan compiled.
Quality Assurance	Construction Management	QA and QC Inspection procedures in place and approved
	Sub-standard materials	Quality tests and Agrements in place
OH&S and Environmental	Disturbance to environment, community and workers	Focus on the environment, building rubble disposals, air and noise pollution and disruption of day-to-day operations

--- End of Report ---