

*Press release from Jan de Beer, cell 082 456 3677:*

## FOUNDATION UNDERPINNING TO PREVENT STRUCTURAL COLLAPSE

Using traditional underpinning methods, Gauteng Piling recently strengthened and stabilised the foundations of an upmarket residence in the Irene Farm Villages security estate in Centurion.

Thanyani Sikhitha, Gauteng Piling's Site Manager for the project, said the double-storeyed residence had begun to develop serious internal cracking caused by changes in the bearing capacity of the dolomite soil on which the relatively new house was built.

"Because of limited access to the site, Gauteng Piling opted for a mini-piling technique which involved the excavation of a corbel next to – and under – the existing foundation. A micro-pile was then installed inside the corbel and cut off at the bottom of the corbel. The foundation was then supported with the corbel, filled with reinforced concrete. The underpinning process called for the manual excavation of 18 piling holes, measuring 1 metre by 700mm in diameter, which exposed the current foundations at a depth of 600mm," Sikhitha explained.

Gauteng Piling then excavated another 600mm deeper, and also dug under the current foundations to create a cavity of 400mm that penetrated under the house's current foundation slab.

"We then employed the Grindomat hammer piling technique - which is normally used for horizontal installation of services below roads – to install 165mm diameter steel tubes as micro piles into the ground, using compressed air to drive the hammer. At the Irene house, we could drive the piles to a depth of 3m to serve as new foundation after being filled with 25MPa concrete. We also manufactured 18 steel reinforcement cages, 500mm by 500mm, which were connected to the piling shafts and then filled with concrete of the same strength. These cages were pushed into the cavities under the house to support the existing foundations that were settling."

The entire project took about a week to complete.

Hennie Bester, MD of Gauteng Piling, says the company is often called upon to perform similar underpinning projects, particularly for existing private residences which had developed severe cracking which could ultimately cause collapse. "Mini-piling, using the hammer piling technique, minimises noise and vibration disturbance to the residents and properties surrounding the house. Another major benefit is that the underpinning of the foundations can generally be carried out entirely from outside the building," he explained.

Bester said the need for underpinning varied but could be caused by the supporting soil having changed its bearing capacity: water penetrating the area is the most common agent for creating problems in existing foundations.

"Underpinning to strengthen and stabilise foundations is essential to provide additional load-bearing capacity when additional storeys are added to an existing structure, or the structure is employed for a new more, robust type of usage. Without sufficient strengthening of the foundation, structural collapses - as reported regularly in the media these days - are almost inevitable. When that happens, lives can be lost," Bester added.

Ends

**Caption: 'gp Irene house thanyani and elvis':**

Gauteng Piling's Thanyani Sikhita, Site Manager (top), and his assistant, Elvis Valoyi, on site at the foundation underpinning operations in Irene.

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**Caption: 'gp Irene house mini piling':**

Gauteng Piling opted for a mini-piling technique with minimal disturbance and noise to stabilise the foundations of an upmarket house in Irene Farm Villages. Pictured: the piling steel pipe through which a Grundomat hammer was used to drive the pipe into the ground to secure the new underpinning foundation.

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**Caption: 'gp Irene house excavation under house':**

Underpinning the foundations of the Irene structure called for 18 excavations next to - and under the house (pictured) - into which steel cages, filled with high strength concrete, were inserted.

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*Issued for Gauteng Piling, Fourways / Further info: Hennie Bester, tel 011 465 7751 / [www.gautengpiling.co.za](http://www.gautengpiling.co.za)*