

NO ROOM TO MOVE

Adapting a 40 m² Cretan Stable into a Home

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In Kakodiki, a small, remote village in Crete with just twelve residents, I was asked to convert a 40.20 m² stable, built in 1960, into a home for a couple. The village sits 370 metres above sea level, within a steeply sloping landscape where opportunities for development are limited. At first glance, the brief seemed straightforward: to create a modern, functional home at the lowest possible cost, while preserving the character of the place.

I surveyed the site and level changes, documented the existing building, developed the architectural proposals, produced the construction drawings and supervised the works.

At first, the project seemed deceptively simple: a compact, single-storey building whose size concealed its complexity.

The 330 m² site was accessed from the south and bordered by a provincial road to the west, an old two-storey building to the north, and an almost vertical natural slope of low-cohesion soil to the east (Fig. 1a-b).

Planning regulations ruled out demolition: the required 20-metre setback from the road centreline exceeded the site's 17.5-metre depth. Because the existing footprint remained legally valid owing to the building's age, retention was the only realistic way to use the property.

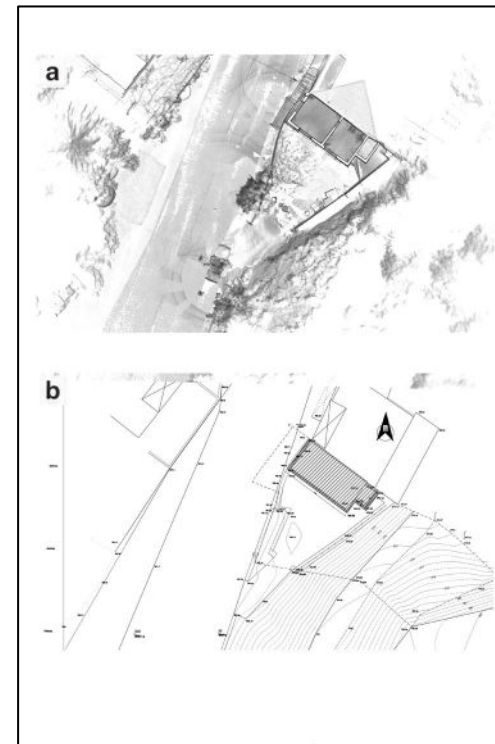


Fig. 1a–b: The constrained site: laser-scan point cloud and topographic survey.



Fig. 2a-b: Existing interior and low timber mezzanine.

The old stable was built of unrendered, one-brick-thick load-bearing brickwork, with rudimentary foundations along its three exposed sides and a reinforced-concrete slab. Inside were two rooms, an earthen floor and an old timber mezzanine, which divided the interior into two very low spaces. At first, the solution seemed obvious: retain the shell, rebuild the interior and make vertical use of the limited footprint (Fig. 2a-b).

That was where the first unexpected turn came.

Making both levels genuinely usable required about a metre of additional headroom. The only available direction was downwards. Excavation began by hand to minimise disturbance. It soon became clear, however, that the rudimentary foundations did not extend deep enough. Further excavation could have destabilised the masonry walls (Fig. 3).

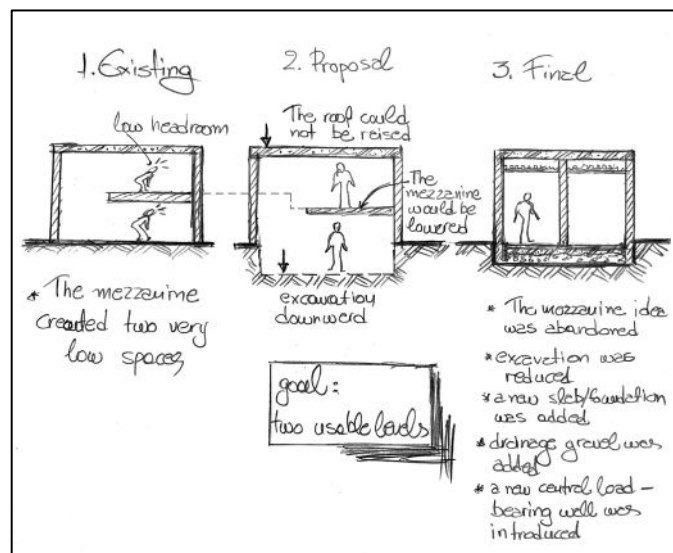


Fig. 3: Excavation exposed the shallow foundations and forced the design to change course.

The mezzanine was abandoned. The failed idea revealed something important: maximising every square metre mattered less than the safety and stability of the existing structure.

The ground was compacted, gravel laid for drainage, then waterproofing and a new reinforced-concrete slab. A narrow full-depth separation joint allowed independent settlement, keeping the new construction structurally separate from the existing masonry (Fig. 4).

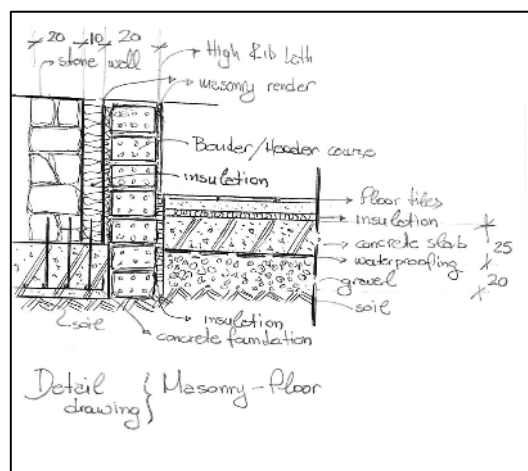


Fig. 4: Wall-floor junction and structural separation from the existing masonry.

A different problem emerged on the north-east side. The substantial earth pressures from the slope, combined with the need to support the neighbouring building, led to the construction of an L-shaped reinforced-concrete wall. The same element also formed the bathroom enclosure, integrating an essential domestic space into the structural intervention (Fig. 5c–d).

This solution combined two different needs in a single intervention: retaining the slope and creating an essential space within the house. In such a small project, where both space and budget were limited, making each intervention serve more than one purpose became a key design strategy.

A new one-brick-thick masonry wall was built at the centre of the plan, anchored to the new slab and reinforced with a reinforced-concrete tie beam. Beyond dividing the house, the wall provided an additional load path, reducing demands on the existing roof slab and creating a more coherent structural grid (Fig. 5a–b).

At the same time, the existing masonry walls were reinforced internally and externally with galvanised mesh, then finished with a high-strength cement render. Thermal insulation was added to the floor, followed by a levelling screed for the tiles.

Expanded polystyrene insulation was applied to the external face of the walls to improve the thermal performance of the existing shell. A new stone wall on an independent foundation was built against it. Stone was chosen not only for constructional reasons, but also to integrate the house more closely with the local landscape. The wall was extended to roof level to form a parapet, turning the existing slab into an accessible roof terrace.

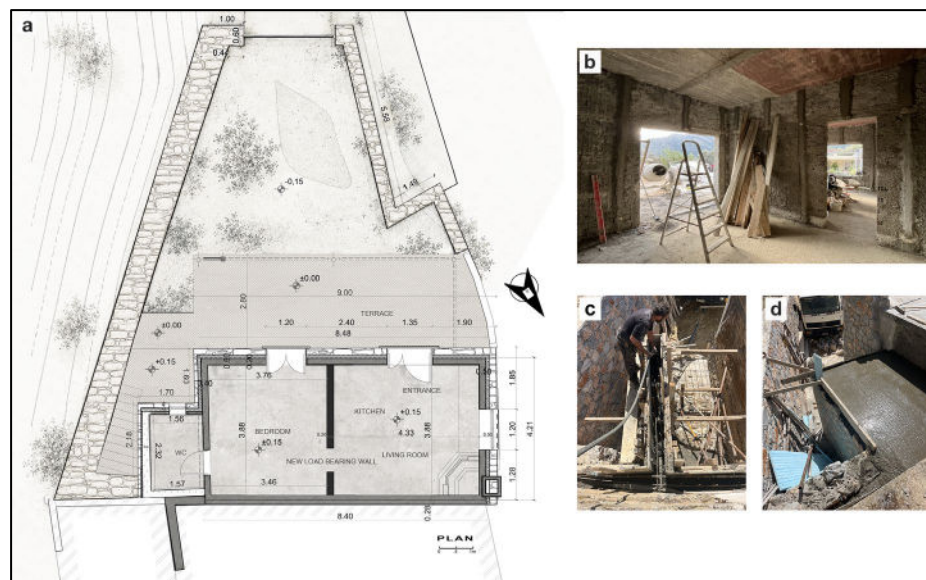
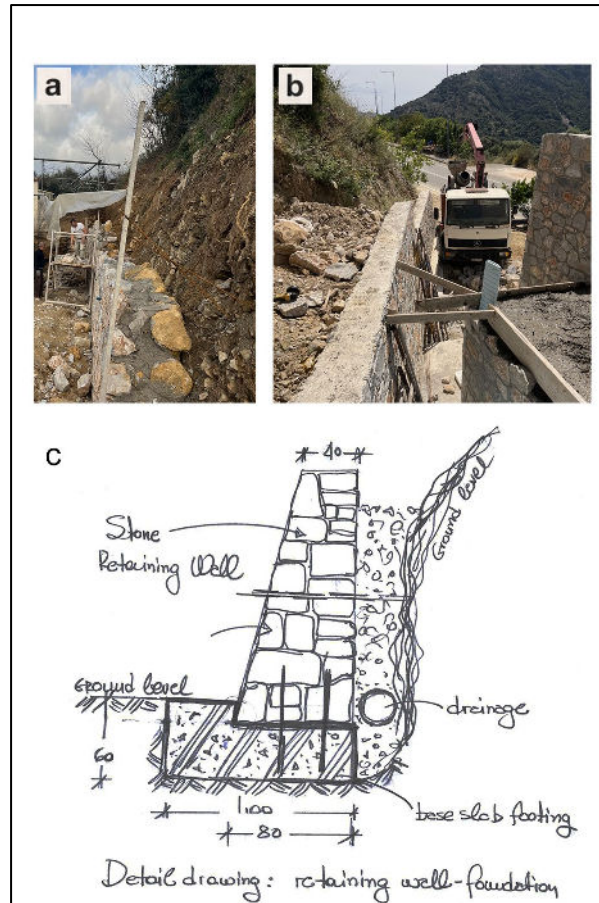


Fig. 5a-d: Structural interventions reshaping both plan and load path.

The second major problem, however, was not inside the building. It was behind it.

The eastern slope, with its steep gradient and unstable soil, posed a constant threat. The solution was a stone retaining wall on a reinforced-concrete strip footing, tapering from 80 to 40 cm. Gravel and drainage pipes behind it carried away rainwater (Fig. 6a–c).



The intervention resolved the stability problem, but at a cost: the usable courtyard was reduced to about 50 m² from the original 330 m². For such a small house, outdoor space was particularly valuable. The intervention therefore did more than solve one problem; it created a new constraint that had to be incorporated into the design.

The existing roof slab was retained. Cracks were repaired and corroded reinforcement treated with specialist mortars. A lightweight layered insulation system provided waterproofing and thermal performance. Levelling screed and tiles then turned the roof into an accessible terrace, extending the limited outdoor space.

Fig. 6a-c: Holding back the slope: retaining wall during construction, completion and detail.



Fig. 8: From stable to home: a second life for the existing shell.

Internally, the ceiling was lined with plasterboard and fibreglass insulation to improve thermal performance. New thermally broken aluminium frames with double energy-efficient glazing improved both thermal and acoustic performance.

A south terrace extended everyday life beyond the 40.20 m² interior for much of the year, shaded economically by a galvanised steel pergola with locally sourced reeds.

Material choices were guided by both economy and place: stone, reeds and simple construction methods helped maintain continuity with the surrounding landscape and village character.

The project's greatest success was giving the old building a second life without new construction. Strengthening and insulating the shell, upgrading the openings and using the roof created a contemporary home, while the terrace offset the limited interior (Fig. 8).

Not everything, however, went according to plan. The most significant change was abandoning the mezzanine. The initial attempt showed that the true condition of an old building cannot be fully anticipated from drawings alone. At the same time, the retaining wall significantly reduced the courtyard, affecting the overall layout of the site.

If I were to redesign the project, I would place greater emphasis on surveying the existing conditions and investigating the foundations before any intervention. I would also explore alternative ways of managing the slope to preserve as much outdoor space as technically and financially feasible.

The most important lesson, however, was different. In an old building, design does not end when construction begins. In many ways, that is when its true condition starts to reveal itself. Each new discovery can overturn an earlier decision and trigger a new chain of problems. For future projects, this means more preparation, but also accepting uncertainty as an integral part of the process.

On-site presence proved just as important as the initial design. The project in Kakodiki showed that the success of a small intervention depends not only on the final outcome, but on the design's ability to adapt to real conditions. **Perhaps that is the most important lesson: in adaptive reuse, you do not simply design the building you want to create; you keep redesigning as you discover the building that is already there.**