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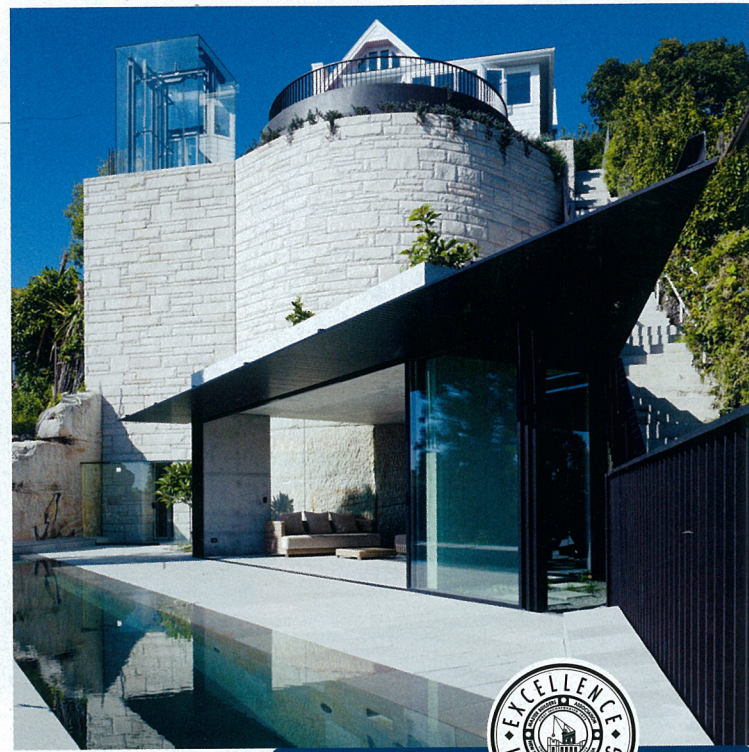
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## HERITAGE ON HIGH

An existing heritage-listed, two-storey Bellevue Hill home, 'Kharkov', was originally built in 1914 and perched on a fragile, steeply sloped natural mountain-like rock formation, more than 18m above street level, with access via an inclinator.

The design brief from the architect required an extensive renovation and roof attic addition for the existing house. Also part of the brief was the complete restructuring of the steep front landscape in order to create a new garage/entry at street level and a new level midway, involving the construction of a cabana, gardens and suspended concrete lap pool, all linked to a new glazed passenger lift set in the cliff face.

Another key feature of the design was the 12m-high sandstone wall extending from the cabana level. Ultimately, the aim was to provide maximum use of space, amenity, and views with state-of-the-art features, while blending into the surrounding environment, to the point of appearing to have been built many years earlier.

The existing house, almost a century old, was in a quite dilapidated condition, with very concerning levels of structural deterioration throughout, including extensive dry rot and termite damage.

The first of many extraordinary, daunting, and unprecedented challenges to contend with over the two-and-a-half-year construction phase was the excavation and rock-face cutting stage.

Initially, due to the sheer height and lack of access, tradesmen needed to abseil down from

the 18m-high base with jackhammers, to manually excavate the sandstone rock cliff face in order to create a 4m<sup>2</sup> platform. A four-tonne excavator was then craned up to this platform to excavate further and create a larger platform, which then allowed for a larger 22-tonne machine to be craned up. Both excavators could then be used to continue excavating and cut away at the rock face until it was cleared and cut all the way back to create a 17m-high vertical rock wall, incorporating a semi-circular profile down to street level.

This resulted in 2500 tonnes of rock and soil being removed from site. Of this, 1000 tonnes of sandstone was cut for re-use and taken to the stonemason's yard, where it was further cut to specific sizes, based on the detailed "random-look" design. The blocks were individually detailed by hand and laid on site by stonemasons, covering more than 400m<sup>2</sup> and taking 12 months to complete.

In addition, parts of the cut rock face, such as in the entry and cabana level areas, were left exposed, which were then carved and detailed by hand by a master stonemason, who worked specifically on this for five months.

The construction of the 18m-high concrete lift shaft within the rock face also presented a number of unique challenges. Of concern was the possibility of water travelling into the lift shaft pit, below the water table. Another interesting challenge was to construct the 22m-long suspended concrete lap pool above

the garage, on the cabana level. Apart from the main structural issues, Mardini was particularly concerned about the possibility of water leakage. Therefore, it was decided to fully form the pool and pump the concrete in a single pour, to avoid potential cracking.

Site restrictions, such as not being able to have an on-site crane and minimal storage space, along with the project's scale and complexity, also meant the co-ordination and logistics of trades and materials handling needed constant attention and flexibility.

**JUDGES' COMMENTS:** The commitment of the builder to accept the challenge of building on such a difficult site with such huge proportions was an achievement on its own, according to the judges. The work has included major rock excavation, natural rock walls, and the reuse of excavated material for external stonework. The use of a glass lift and other modern materials incorporated with the rock and stonework contrasts with the refurbishment and roof conversion of the 100-year-old house above.

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