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## Cover Story: Design and density critical in hillside homes

By Khairul Khalid

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**NEUTRAL:** Award-winning architect David Mizan Hashim, Group President and Director of VERITAS Design Group which designed Gasing Heights gives his views on hillside developments

**RED:** What's your take on hillside developments seeing that you are one of the earliest architects of a high-rise on a hill slope in Malaysia?

**DAVID:** Malaysia is a naturally hilly country. You cannot be a developer in Malaysia without coming across some steep situations. The draw for hillside developments is caused by a number of things. One is the shortage of land. The other reason being the added value that hillside development has because of the views. If you are on flat ground, you probably don't have a view, unless you're in front of a lake or the sea.

Typically, hillside properties with a view tend to have higher values than those on flat land. For example, homes with a view in Kenny Hills could cost 20 per cent more compared to those without a view in the same location. Urban areas are running out of flat lands, especially Kuala Lumpur. If you go to the north, south and west of KL, it's already bursting at the seams but if you go to the east, they're building up against the mountain range. That's why you see the eastern part of KL getting quite steep.

### View premiums

Normally, when we are asked to design hillside homes, it's because of the views. People will pay huge amount of premium for a good view, so you have to make sure that when you're designing properties on a hillside, you are strategising for the best view angles. The other technical challenge is safety. Building on a hill is different than building on flat ground. You really need to understand the geotechnical situation.

On flat ground, you could get away with a lot of things. On slopes some small error in your designs might lead to catastrophic results. Any shifting of the ground on the hill below or above your home could affect you, even if your house is perfectly strong. In fact, that is what happened in Highland Towers. It wasn't the fault of the building itself but the failure of the slope behind the site. There have been other problems in the Ampang area where the houses were fine but the hills came crashing down on them.

### Tighter rules

I'm pleased to see that rules and regulations for building on slopes have become tighter now. Unfortunately, it usually happens only after some tragedy has occurred.



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Now, if you're building on slopes, engineers must submit their plans to IKRAM (Public Works Institute of Malaysia). There are also guidelines by local councils on slopes developments. For example, you are not allowed to build on slopes of more than 30 degrees without some special technical appeal. These rules are meant to prevent further mishaps and I feel that IKRAM submission process is a good step forward.

Another important aspect is public awareness and education on hillside developments to the laymen. I would also include developers in this category. In a way, developers are also laymen. Most developers are accountants and businessmen with very little geotechnical knowledge. They need to be more aware of the issues regarding slopes. We need to educate them on the importance of being even more cautious and not pushing the consultants to design something that is potentially dangerous. They need to attend these slope-related courses and seminars as well.

#### No shortcuts

A very aggressive developer might push its consultants to make decisions with lesser safety margins to make more profits. There should be no attempts to cut costs. There should be no shortcuts in structural design. In these cases, who draws the line? There are a few checks and balances. If a client gets lucky, they would get experienced senior engineers and architects who are not afraid to say "No" and not allow things that are just not right. If they are junior engineers, this might not be the case.

Then you have the local authorities but they could be influenced by the developers to accept something. Or maybe even IKRAM might overlook something. Often, it's a combination of things that cause the problem. They say that tragedies occur simply because a number of mistakes are made. The system works most of the time and you can't avoid acts of god, but too often I find that acts of god is used as an excuse when a tragedy could actually have been avoided.

#### Lower densities

One mistake can't create a huge problem but if many people make a series of mistakes, it compounds the original mistake and something very bad can happen. Homebuyers, developers, consultants, engineers, architects, local councils - the whole property industry needs to learn about what is considered safe and what is not on slopes.

One of the first tall buildings on a slope in KL was Gasing Heights in the early 1990s. It was one of the biggest residential developments in Malaysia at that time with over 800 units and was one of our breakthrough projects.

It created a lot of controversy because we were building a 30-storey tower on slopes. We got very good engineers and studied the site very carefully. A lot of geotechnical studies or probing were conducted to determine the best structural solution for the building.

The client did not try to save any money or cut corners. They said they wanted the best, most stable design that we could create. There are six towers ranging between 20-30 storey high and in all these 20 years, there has not been even the slightest problem. It was built on a steep slope of more than 30 degrees. Ironically, today IKRAM would not allow that project! But the point is that 22 years on and Gasing Heights is still in very good condition.

There's nothing inherent in a hillside development that is sustainable or unsustainable. A lot depends on the design and the density of the project. Generally, the higher the density, the less sustainable it is.

For hillside developments, I would suggest slightly lower densities for landed homes. If you're building a high-rise, it doesn't matter how high you go. You can go as high as you like. For example, Gasing Heights is 30 storeys high. If you're going to do landed units, try to make it less dense. That way, you impact less of the ground and leave more of the hill's natural elements intact.



Gasing Heights – one of the biggest residential developments in the early 1990s (pic courtesy of VERITAS)

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