

## BRITISH COMPANY WINS INTERNATIONAL COMPETITION



The British Antarctic Survey's new base will be built on skis so it can be moved around and escape the fate of its predecessor – which is drifting out to sea. The new base, called Halley VI, will consist of a series of pods, each atop six mechanical legs on skis. The contract to build the new base was announced at the end of July.

The legs can be periodically raised, pair by pair, as the snow builds up, allowing the entire pod to then be lifted so that it does not get buried – the fate of the first four Halley stations. To move the station along, the legs must be fully lowered, crampons that grip the skis to the ice loosened, and the whole building can then be pulled along the ice by bulldozers.

The skis will allow the entire building to move position on the ice several times per year – essential, since it will be built on the floating Brunt Ice Shelf, which drifts 400 metres per year towards the ocean and consists of ice 150 m thick. Halley V, the current Antarctic station, is already so far out to sea it risks being calved off the shelf onto an iceberg unless it is dismantled soon.

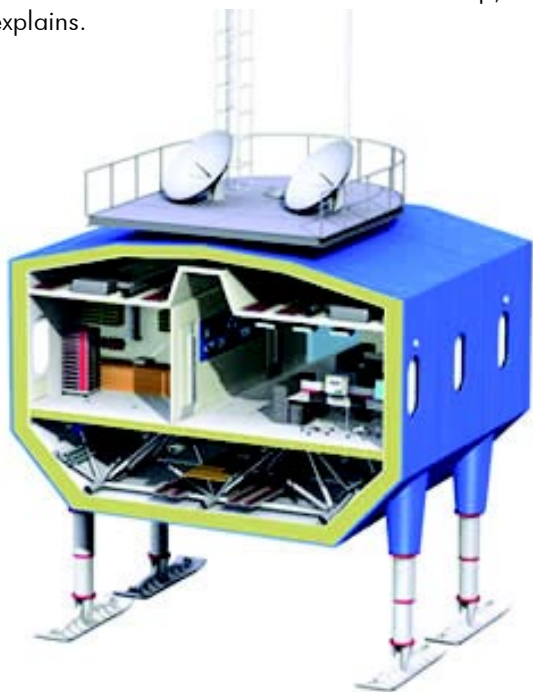
The building was designed to withstand low temperatures of  $-60^{\circ}\text{C}$  and also heat of up to  $50^{\circ}\text{C}$  since transporting the components from the UK to the pole involves passing the equator. It has meant using particularly ductile steels. "All the materials we've used have been tried and tested at the Poles," Ayres says.

Peter Ayres, project director at Faber Maunsell, the firm who developed the winning design with Hugh Broughton Architects, says the concept needed to be highly creative to meet the challenges of the harsh Antarctic climate and to comply fully with the Antarctic Treaty Environmental Protocol.

Some of the modular design will have been built in the UK before being shipped out, but getting to the Antarctic site involves crossing a long sheet of fragile sea ice on sleds. The weight limit for carriage across the sea is 6 tonnes on the 3.5 tonne sleds.

"It is extremely cold and windy there with about 1.5 metres of snow per year, in addition to the constantly moving ice shelf. So we built the pods in an aerodynamic shape, on legs, to channel the wind underneath and minimise snow build-up," he explains.

But, again, the team has come up with a novel approach: by incorporating the skis into their design, they can transport a full 9.5 tonnes of prefabricated material across. It means that in the narrow two-month Austral summer, when building is possible, they will be able to put together a more complex station, more swiftly.



Much attention has been paid to the living conditions of those who will be working there. The 16 scientists who spend many months in wintry isolation will have a gym, sauna, climbing wall and other recreational facilities.

"We used a colour psychologist to help give vibrancy to a building surrounded by whiteness. And we've designed the whole station with optional internal walls, so that bedrooms can become labs and vice versa, according to optimum usage," Ayres says.

They have tried to minimise the environmental impact of the project too. All waste will either be stored for return home, incinerated or reused. Waste cooking oils will be used as fuel for the incinerator, for example. Liquid waste will be fully treated for the first time on a BAS base, and only released into the pristine Antarctic waters when it is "swimming pool grade". And solar panels will supplement the building's energy requirements during the summer months

The whole station has 'optional' interior walls so labs can become bedrooms and vice-versa