

The Infrastructure Road to Recovery

The Snowy Scheme

William Hudson: Snowy Mountains Engineer

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William Hudson, an inspiring leader and civil engineer, headed the construction of the Snowy Mountains Scheme. Photo: Snowy Mountains Hydro-Electric Authority

Born in Nelson, New Zealand, in 1896, Hudson was educated at Nelson College and studied civil engineering at London University. When Hudson told his father of his decision to study engineering, the response was, "Bill, that's all you're bloody well good for"—an ironic understatement for the man who was to forge one of the world's great engineering feats. When war was declared he enlisted in the British army. After the war he graduated with first class honours and completed post-graduate study in France before working for a large British engineering firm, Armstrong Whitworth.

The Chosen One

He returned to New Zealand in the 1920s to undertake supervision of the construction of some of New Zealand's first hydro-electric power schemes at Mangahao and Arapuni. After work in Australia and Scotland, Hudson became New South Wales Chief Civil Engineer and in 1948 was personally approved by Australian Prime Minister Ben Chifley to head the construction of the Snowy River scheme.

In the post-war 1940's Australia's acute needs for water, power, labour and capital were the most important challenges it faced. As demands for agricultural exports increased and the manufacturing sector boomed, irrigation and power became pressing concerns. Despite opposition to the project, these concerns, along with a perceived need to modernise industrially and defend against the communist threat, determined that the scheme must go ahead.

William Hudson took up duty on 1 August 1949, under the *Snowy Mountains Hydroelectric Power Act*, and on 17 October 1949 he fired the first explosive charge, starting a project that would launch Australian engineering and industry into a new era and usher in an enduring multi-cultural legacy.

United Nations of Snowy

From the beginning Hudson was urged to recruit mainly from overseas to avoid taking skilled personnel away from other post-war reconstruction work. Workers from "acceptable" countries proved difficult to garner so Hudson initiated a bold and innovative program which saw hundreds of thousands of immigrants drawn from Germany and the Mediterranean countries. Consequently a cosmopolitan staff and work-force was created, many expecting welcome release from the devastation, turmoil and unemployment of post-war Europe. Few of the workers appreciated the difficult and demanding living conditions that they would soon find themselves in. The varied composition of the

workforce that came to Snowy also meant that it came from countries who had fought on opposite sides during World War II. As Brad Collis writes in *Snowy: The Making of Modern Australia*,

"In the primitive workcamps high in the Australian Alps Englishmen, Germans, Italians, Austrians, Poles, Greeks, Dutchmen, Portuguese, Spaniards, Hungarians, Swiss, Swedes, Finns, Czechs, Lebanese, Latvians, Russians, Danes, Cypriots, Ukrainians, Americans, Turks, Frenchmen, and Norwegians, more than thirty-three nationalities in all—shared hard work and laughter, ate from the same cooking pots, drank at the same bars and vowed to keep ethnic hatreds out of this young country which promised them a new life."

Rugged Conditions

For the pragmatic Hudson this melting pot was a management challenge, not just in terms of the cultural dynamic, but in terms of safety, of which he was acutely conscious. The living conditions were extremely rugged, even primitive, with some comparing temperatures to fighting on the Russian Front during the war. The working environment was equally as hazardous, with workers having to contend with difficult access across hastily made tracks, and tunneling and working round-the-clock on wet and snowy mountainsides.

"Generally you worked in teams so you could watch each other's backs. It was a harsh environment at the face. Newcomers needed mates to watch out for them until they became acclimatised to the conditions.

"With up to thirteen drilling machines working on a jumbo, visibility would be cut to just a couple of feet after fifteen minutes through fog from the water-cooled drills, dust and exhaust fumes—not a very pleasant breathing atmosphere either.

"It worsened what was already poor visibility, remembering the only illumination in the first place were lamps. Changing thirteen foot drill bits in two feet of visibility meant you needed to know what you were doing".

Safety and Innovation

Years before McLuhan coined the phrase, Hudson's Snowy community resembled a tangible global village. The diversity of the force developed quickly into a unifying strength socially, but in safety terms it was seen by Commissioner Hudson as an added risk. His solution for the many non English-speaking workers was to make English language classes a mandatory requirement for safety. As well, the wearing of seatbelts in Authority vehicles was compulsory



Tourists have the opportunity to experience the great legacy of nation building, viewing the grand Tumut 2 power station, which is 244 metres below the surface at the end of a kilometre-long tunnel. Photo: Snowy Mountains Hydro-Electric Authority

at Snowy well before it was a requirement elsewhere, and drinking while in charge of an Authority vehicle was a dismissible offence.

Hudson was aware of opposition to the project by taxpayers (especially from those away from the southeast), and recognising that postwar Australians were now going on holiday in the family car, he developed escorted car convoys round the scheme to promote a sense of communal ownership. Bus tours were also accommodated. Tour operators convinced parents all over Australia that their children's education was incomplete without a school or family tour. This stroke of inspired public relations, selling the scheme to taxpayers, and the younger generation who soon would be, opened up the Australian alpine region for tourism, with the infrastructure that Snowy provided eventually paving the way for Australia's modern ski resorts.

Hudson was given substantial powers in the interests of speed and achievement, and he used these powers effectively, creating an organisation based on professional disciplines. His management style was hierarchical, but based on a respect for hard work and excellence.

Leader By Example

He could be a staunch boss, pushing engineers, administrators and workers alike to vigorously keep to budgets and timetables. Towards those he didn't consider were pulling their weight he was intolerant, and sackings for less than 100% commitment were commonplace, written into the standing orders of all supervising officers. Driven by a desire to quash criticism of the scheme, Hudson urged contractors onwards and tunneling crews repeatedly broke world records. Some viewed him as tyrannical, but he was also down-to-earth and only demanded of others what he expected of himself: "I like sudden problems. They're a challenge. I like building dams. They're a job to be done." Under his leadership the

scheme was completed in 1974, under budget and before deadlines.

There were many design and construction innovations achieved in the scheme, in particular the technique of rockbolting. Previously concrete lining had been usual in protecting workers from unstable rock when tunneling. Under Hudson's charge researchers developed innovative rockbolts which were used to individually tie a rock face to the rock beneath it. When linked together in a pattern they provided a lateral force that obviated a need for concrete lining, a technique begun at Snowy and recently used in the construction of the Sydney Harbour Tunnel.

Above all, it grandly met its primary aims, harnessing snow melt from the Australian Alps, diverting it westwards under the mountains to irrigate the arid interior for food production, while generating hydro-electricity as the water falls to the level of the plains....

[H]aving recently celebrated its 50th anniversary Snowy remains an important asset and documents a massive human achievement—reflected in no one more so than William Hudson. As Sir James Gobo, Governor of Victoria, stated in the 1999 Ian McLennan Oration, "He [Hudson] enjoyed the respect of both staff and workers for he worked with prodigious energy and single mindedness and was very much directly in touch with the site and job difficulties. He believed in the project passionately and managed to ensure its survival through some difficult early years when its success remained to be proved and when doubters, especially amongst the politicians were numerous".

Hudson resigned grudgingly in 1967 aged 71 and died eleven years later in 1978, after receiving international acclaim.

Praise and Acclaim

He was knighted Sir William Hudson in 1955, awarded the Kermont Memorial Medal for Outstanding Engineering Achieve-

ment, made a fellow of University College, London, a fellow of the Royal Society, endowed with an honorary doctorate from the Australian National University and was honoured with an Australian stamp. The American Society of Civil Engineers twice rated the scheme as one of the great engineering achievements of the Twentieth Century, and as well as contributing pivotally to a pan-cultural society; it put a young, primarily agricultural country at the forefront of world construction technology. Australia's highest award for engineering excellence is named in his honour. In 1958, then Australian Prime Minister, Sir Robert Menzies, spoke of the triumph of the scheme: "In a period in which we in Australia are still, I think, handicapped by parochialism, by a slight distrust of big ideas and of big people or of big enterprises; this scheme is teaching us and everybody in Australia to think in a big way, to be thankful for big things, to be proud of big enterprises; to be thankful for big men."

William Hudson: big man for a big scheme.

Footnotes

1. This quote and the following are from a paper Martin Albrecht delivered to the Australian Academy of Technological Sciences and Engineering, in November 1999, entitled "The Spirit of the Snowy—Fifty Years On". Albrecht's paper is entitled, "The Australian Construction Industry—the Snowy Legacy". (<http://www.atse.org.au/publications/symposia/proc-1999p4.htm>) Additional information for this introductory section was provided by the Snowy Mountain Hydroelectric Authority (<http://www.snowyhydro.com.au>).

2. Reprinted from *On Line Opinion* <http://www.onlineopinion.com.au/April00endersbee.htm> Prof. Endersbee also authored a paper refuting the lunatic proposal to corporatise the Snowy, preparatory to selling it off. The attack on the Snowy also involves the proposal approved in late 2001 by the Scheme's owners, Victoria, New South Wales and the Commonwealth, to restore 28% of the Snowy's original flow, on alleged "environmental" grounds.

3. Web address <http://www.nzedge.com/heroes/hudson.html>