



A marvelous engineering feat

A milestone in engineering

The cable car system, designed by Dunedin-born engineer James Fulton, was a major milestone in New Zealand engineering. It was 785 metres in length, rose over 119 metres (390 feet) at an average grade of 1 in 5.1, and passed through three tunnels and over three viaducts. Beside the upper terminus was a two-storey power house which included winding gear, a steam engine, garage and workshop, as well as a boiler house with a 19 metre-high smokestack. Slightly further down the incline a windmill pumped the water, essential for running the steam engine.

How it worked

Powered by a steam engine, the cable winding gear drove an endless wire rope (or haulage cable) alternatively up one line of track and down the other. The winding gear was originally operated by an engineer in the winding room, in response to bell signals from the car drivers. A gripper lever in the descending cable car gripped the cable. As this car was pulled down the slope, a second cable called the tail rope, or balance, hauled the ascending car up the slope - thereby making them counterbalanced. When the respective cars reached top and bottom, the rope came to a halt. Fulton's system was thus technically a funicular, but also used the true cable tram grippers. The cars had a wooden block brake, an iron or shoe brake and a fell emergency brake on a central rail.

The new system

The original cable cars' 76 years of service came to an end on 22 September 1978. The historic final run commenced just after 11 pm, when grip car No. 2 set off from Lambton Quay. Having decided to retire the old system, the hunt for a replacement began in earnest. After considering various alternatives, a standing funicular was still deemed to be the most practical and economical option and a similar but modern version of the original system remained the best solution.

Designed by a leading Swiss cable car firm, the new system has two cars with a driven balance rope running on a single track. A passing loop is situated midway up the incline. There is an electric drive and control system as well as numerous safety features, including overload prevention and earthquake protection. The new cars began running on 22 October 1979.