

Woodstock No. 5 Level entrance



Alexander Turnbull Library, Karangahake 1916 -20 Talisman GM APG-1203 ATL. John Agnew collection.

Woodstock No. 5 Level entrance

1892	Crown Company construct tramway from their No. 6 level (river level) to their new battery. ¹ This extends the old Woodstock tramway.
1895	Woodstock No. 5 level commenced. ²
1896	At the mouth of the crosscut [No. 5 level] an ore paddock has been cut out of the rock large enough to hold 50 or 60 tons of quartz, and emptying into the trucks on the tramline below. This tramline runs round the hill and joins the Crown tramway, after 290 feet of excavating and 100 ft of tunnelling. ³ Woodstock connect No. 5 level tramway with Crown tramway
1900	3 August The management of the Woodstock Gold Mining Company have accepted a tender for excavating a shaft chamber at No. 5 level, and the work is to proceed at once. The location of the shaft will be about 150 ft in from the mouth of No. 5 level, and at a point about 100 ft to the west of the lode... ⁴ 26 October At the Woodstock Gold Mining Company's mine... The shaft chamber at the No. 5 level is now finished, and the poppet legs are being erected. As soon as this work and the necessary timbering is completed sinking the new shaft will be commenced. ⁵ Shaft chamber excavated and completed 45½ft. long by 37½ft. wide, and 40 ft. high. ⁶
1901	Compressed air piped to No. 5 level from compressors in the Woodstock battery. ⁷
1904	Talisman buy Woodstock for £7000. The Woodstock No.5 level and shaft retain their names under Talisman ownership.

¹ <https://paperspast.natlib.govt.nz/newspapers/NZH18920504.2.47>

New Zealand Herald, Volume XXIX, Issue 8869, 4 May 1892, Page 6

² <https://paperspast.natlib.govt.nz/parliamentary/AJHR1896-I.2.1.4.3>

THE GOLDFIELDS OF NEW ZEALAND: REPORT ON ROADS, WATER-RACES, MINING MACHINERY, AND OTHER WORKS IN CONNECTION WITH MINING., Appendix to the Journals of the House of Representatives, 1896 Session I, C-03

³ <https://paperspast.natlib.govt.nz/newspapers/AS18960514.2.36.12>

Auckland Star, Volume XXVII, Issue 112, 14 May 1896, Page 6

⁴ <https://paperspast.natlib.govt.nz/newspapers/NZH19000803.2.58.4>

New Zealand Herald, Volume XXXVII, Issue 11441, 3 August 1900, Page 1 (Supplement)

⁵ <https://paperspast.natlib.govt.nz/newspapers/NZH19001026.2.60.4>

New Zealand Herald, Volume XXXVII, Issue 11513, 26 October 1900, Page 1 (Supplement)

⁶ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1901-I.2.2.2.4>

THE GOLDFIELDS OF NEW ZEALAND: REPORT ON ROADS, WATER-RACES, MINING MACHINERY, AND OTHER WORKS IN CONNECTION WITH MINING., Appendix to the Journals of the House of Representatives, 1901 Session I, C-03

⁷ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1902-I.2.1.4.3>

THE GOLDFIELDS OF NEW ZEALAND: REPORT ON ROADS, WATER-RACES, MINING MACHINERY, AND OTHER WORKS IN CONNECTION WITH MINING., Appendix to the Journals of the House of Representatives, 1902 Session I, C-03

Woodstock No. 5 Level entrance

1909	Talisman start cutting out a large chamber in the immediate vicinity of the Woodstock shaft. This chamber will be 100 feet in length, by 30 feet in width, and 35 feet high. It will be occupied by a powerful winding and pumping plant. ⁸
1910	Chamber completed at the Woodstock No.5 level A chamber at the Woodstock, 110 ft. by 30 ft. by 25 ft. has been cut out and timbered. In this chamber will be installed the pumping-machinery that will ultimately drain the whole of the mine. ⁹
1911	The Woodstock shaft has been sunk 20 ft., and the first set of Cornish pump-workings is now practically in place. The boilers and engine for actuating the new pump are erected, and practically ready for work. A new change-house, 30 ft. by 70 ft., has been erected at the mouth of the Woodstock No. 5 level, and will be equipped with hot and cold shower-baths and steam-heat for drying clothes. ¹⁰

1892

The Woodstock Company have been mining the Woodstock Blow at the higher levels, delivering ore to the battery by cableways. By 1892, with nearby access being provided by the new Crown tramway, the company is considering a low level, or No.5 level, a little above river level.

13 July

Nothing is at present being done in the upper parts of the mine, but the company's future operations will no doubt tend to the development of a still deeper level upon the reefs that have yielded so remuneratively in the past in the upper workings, and this will be easily accomplished by commencing the same from the Crown Company's new tramway, which runs along the Woodstock boundary on the south bank of the Waitawheta river, and from which point backs of several hundred feet in height will be available. From this point an extent of country would be opened up that would provide for future operations for many years to come, and that, too, at a comparatively small outlay of capital.¹¹

This suggestion will come into being as the Woodstock No.5 Level in the future (1895/96), at what we now think of as the underground pumphouse area.

Prior to the establishment of a tramway by the Crown Company to their No. 6 or River level, the Woodstock tramed ore from their No. 2 level adit (on the eastern side of the Blow) to the northern extent of the Woodstock Blow. We see this in photographs and maps. From here by cableway to their tramway on true left bank of

⁸ <https://paperspast.natlib.govt.nz/newspapers/WHDT19090223.2.31>

Waihi Daily Telegraph, Volume VIII, Issue 2484, 23 February 1909, Page 2

⁹ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1910-I.2.1.4.9>

THE GOLDFIELDS OF NEW ZEALAND (REPORT ON)., Appendix to the Journals of the House of Representatives, 1910 Session I, C-03

¹⁰ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1912-II.2.2.2.7>

MINES STATEMENT, BY THE HON. JAMES COLVIN, MINISTER OF MINES., Appendix to the Journals of the House of Representatives, 1912 Session II, C-02

¹¹ <https://paperspast.natlib.govt.nz/newspapers/NZH18920713.2.51>

New Zealand Herald, Volume XXIX, Issue 8929, 13 July 1892, Page 6

Woodstock No. 5 Level entrance

the Waitawheta River. It is this tramway beside the river that the Crown Company extends to their mine entrance.

After the extension of the original Woodstock tramway by the Crown Company, Woodstock were able to cable from their No. 3 level tramway (also on the eastern side of the Blow) directly across the river to a hopper beside the Crown tramway.

The same appears to have applied the No. 4 level.

The No. 5 level was the lowest level before sinking, a little above river level. This level could be linked directly to the Crown tramway via a short section of tramway. "This tramline runs round the hill and joins the Crown tramway, after 290 feet of excavating and 100 ft of tunnelling."¹²

Jarman summaries this in 1911.

"In the Woodstock mine (absorbed by the Talisman Co. in 1904) access was obtained by adits driven on the reef from the precipitous edge of the Waitawheta gorge. The river level, which is about 30 feet above ordinary water-level, now provides the chief entrance to the Talisman mine. The tramway to the mouth of this level is cut out of the rock in many places. After driving this level 100 feet, a station was cut in which headgear was erected and a shaft then sunk vertically for 240 feet."¹³

Once this connection is made at river level, it is conceivable that some, or all, of these cableways (2, 3 and 4) became redundant?

Woodstock Mine...These levels [1, 2, 3, 4, and 5] have all been connected one with the other, partly by rising and partly by sinking, and the whole of the mine-workings are now splendidly ventilated. The No. 5 is the lowest level obtainable, bar sinking.¹⁴

Finally, the Woodstock No.5 Level should not be confused with the Talisman and Crown No.5 levels ;).

1895

AJHR 1896

"No. 5 level: The starting-point of this cross-cut is about 30ft. above the bed of the Waitawheta River, and it may be said to be the lowest obtainable level — bar sinking. Since it was commenced, a distance of 78ft. has been driven, and another 30ft. of driving should bring it up to the Maria lode, upon which it will afford 85ft. of backs, up to the floor of the No. 4 level, and the distance to drive in order to reach the southern boundary is about 1,100ft."¹⁵

¹² <https://paperspast.natlib.govt.nz/newspapers/AS18960514.2.36.12>

Auckland Star, Volume XXVII, Issue 112, 14 May 1896, Page 6

¹³ Mining and Ore-Treatment at the Talisman Mine, Karangahake, New Zealand.

By: Arthur Jarman.

Presented at the Australasian Institute of Mining Engineers Thames 1911.

¹⁴ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1898-I.2.1.4.3>

THE GOLDFIELDS OF NEW ZEALAND: REPORT ON ROADS, WATER-RACES, MINING MACHINERY, AND OTHER WORKS IN CONNECTION WITH MINING., Appendix to the Journals of the House of Representatives, 1898 Session I, C-03

¹⁵ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1896-I.2.1.4.3>

1896

14 May

In No. 5 level a crosscut is in 83ft to cut the reef, which is expected to be to hand after another 30ft. This level is 20ft above the tramway, the object being to guard against the flooding of the drive by a sudden rise in the Waitawheta River. I think this a very wise precaution, seeing the way in which the bed of the river is being filled up by the Crown and Woodstock tips, and it is likely enough the benefit of it will be felt before the present winter is over. At the mouth of the crosscut an ore paddock has been cut out of the rock large enough to hold 50 or 60 tons of quartz, and emptying into the trucks on the tramline below. This tramline runs round the hill and joins the Crown tramway, after 290 feet of excavating and 100 ft of tunnelling. It will be completed probably by the end of this week.¹⁶

Woodstock connect No. 5 level tramway with Crown tramway

This is the presently closed section of tramway/walkway that gave access to the underground pumphouse (which doesn't exist at this date).

15 July

WOODSTOCK

The "Graphic" follows up its fine mining pictures of last week with a large sketch of the Woodstock mine, Karangahake. A more romantically situated mine than the Woodstock could hardly be imagined. As the picture shows, it is situated in a deep gorge in the hills. At the bottom of precipitous cliffs, in which are the drivings of the mine, the Waitawheta River brawls along amid great boulders. It seems an ideal locale for hidden treasure.¹⁷

The image appears to show a stylized view of the No. 5 Level entrance, beside the Waitawheta River.¹⁸

5 September

Before drawing my report on the mine to a close it is as well to mention that in order to supply good ventilation to those working in the level upon the No. 3 lode a Pelton wheel 2ft in diameter has been fixed about 200ft below the No. 3 level. This fixture is connected by iron pipes with the mine. All the drainage water from here is carried down by these pipes, and is quite capable of giving a 1,200lb [120 lb?] pressure. With this acquirement excellent ventilation is the result, enabling these operations to be carried on successfully, and without hindrance to the men.¹⁹

THE GOLDFIELDS OF NEW ZEALAND: REPORT ON ROADS, WATER-RACES, MINING MACHINERY, AND OTHER WORKS IN CONNECTION WITH MINING., Appendix to the Journals of the House of Representatives, 1896 Session I, C-03

¹⁶ <https://paperspast.natlib.govt.nz/newspapers/AS18960514.2.36.12>

Auckland Star, Volume XXVII, Issue 112, 14 May 1896, Page 6

¹⁷ <https://paperspast.natlib.govt.nz/newspapers/AS18960715.2.54>

Auckland Star, Volume XXVII, Issue 165, 15 July 1896, Page 5

¹⁸ New Zealand Graphic, 18 July, 1896. Page 71

<https://paperspast.natlib.govt.nz/periodicals/new-zealand-graphic/1896/07/18/7>

¹⁹ <https://paperspast.natlib.govt.nz/newspapers/AS18950905.2.24.22>

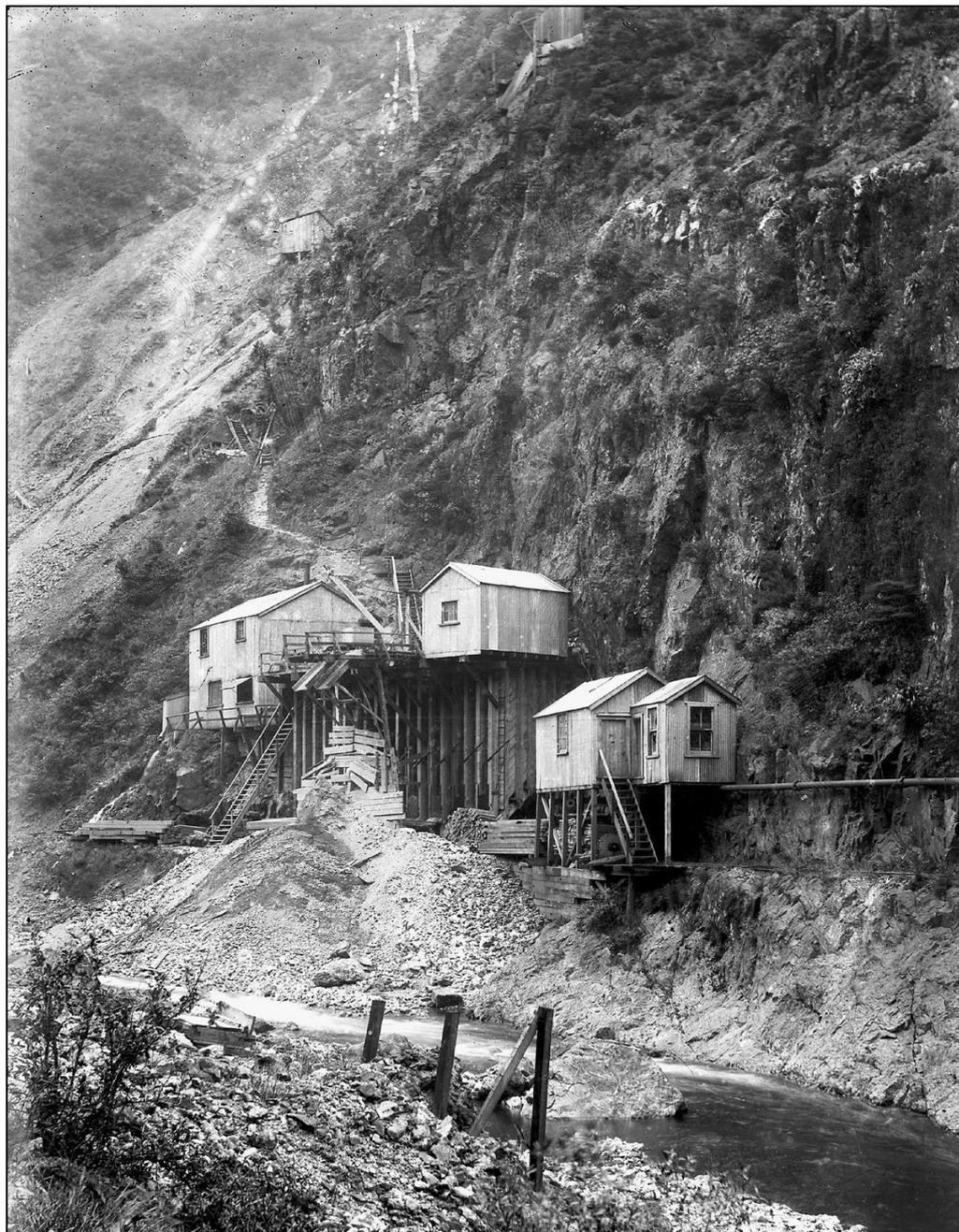


THE WOODSTOCK MINE, KARANGAHAKE, SHOWING THE WAITAWHITA GORGE.

[See Mining.

We are looking upstream across the river from above the Crown tramway.

Woodstock No. 5 Level entrance



Auckland Institute Museum.

This appears to be the earliest photograph. There is not yet a concrete retaining wall at river level beyond the mullock tip.

The buildings are probably a change-house for the miners (the larger building?), perhaps a smithy and workshop (or an earlier change-house). This is probably during Woodstock Company tenure, excavating the drive, and/or chamber and shaft.

The site is inaccessible at present, but from memory:

Mullock is tipped from the drive proper, which is at the level of the high platform. The ground tramway (to the battery) enters a short tunnel beneath the right hand building. It allows a short rake of ore carts to be filled from ore hoppers under the middle building. This heavily timbered structure is a series of hoppers, each with a door operated by a lever and rope. "At the mouth of the crosscut an ore paddock has been cut out of the rock large enough to hold 50 or 60 tons of quartz, and emptying into the trucks on the tramline below."²⁰

²⁰ <https://paperspast.natlib.govt.nz/newspapers/AS18960514.2.36.12>

Woodstock No. 5 Level entrance

The pipe above the ground tramway is the compressed air pipe from the battery. Mine timbers are stacked. Drainage water is discharged beyond the main building; or is this water from the pelton wheel?²¹ Is the narrow building above the water discharge the housing for the pelton wheel? It is present in the next image too.

Tracks and steps up the cliff give perilous access to higher workings. At the very top of the photograph a cableway can be seen, presumably connects to the Crown tramway across the river. A mullock chute delivers rubble on to the barren “slip” area. It is the Woodstock No.3 level cableway to the Crown tramway.

At the ladder on the pathway is a structure that also appears to have a cableway. It could be Woodstock No. 4 level.²²

The No. 3 cableway shows two cables, one thicker than the other. The thinner cable facilitates the return of the ore skip? The lower No. 4 cableway shows only one cable. How did it work? These cables may already be derelict by this time.

The small wooden building top left is labelled “Timber House” on the old maps. It is at the entrance to the No. 3 adit, and may serve as a change room. It lingers for many years.

1900

3 August

The management of the Woodstock Gold Mining Company have accepted a tender for excavating a shaft chamber at No. 5 level, and the work is to proceed at once. The location of the shaft will be about 150 ft in from the mouth of No. 5 level, and at a point about 100 ft to the west of the lode...²³

26 October

At the Woodstock Gold Mining Company's mine... The shaft chamber at the No. 5 level is now finished, and the poppet legs are being erected. As soon as this work and the necessary timbering is completed sinking the new shaft will be commenced.²⁴

Shaft chamber excavated and completed 45½ft. long by 37½ft. wide, and 40 ft. high

Sinking of a shaft commenced

24 December

One of the most important works recently commenced is the sinking of the new shaft from No. 5 level. This work is now well in hand, and it is intended to carry it down a depth of 300 ft to commence with, and open out an intermediate level at 150 ft down from the floor of No. 5 level. By this means the lower blocks of the Woodstock mine will be opened up, and it is confidently anticipated that some of the rich runs of ore developed in the

Auckland Star, Volume XXVII, Issue 112, 14 May 1896, Page 6

²¹ <https://paperspast.natlib.govt.nz/newspapers/AS18950905.2.24.22>

Auckland Star, Volume XXVI, Issue 212, 5 September 1895, Page 6

²² 40_32_19_Woodstock_Levels_Old_300ppi

²³ <https://paperspast.natlib.govt.nz/newspapers/NZH19000803.2.58.4>

New Zealand Herald, Volume XXXVII, Issue 11441, 3 August 1900, Page 1 (Supplement)

²⁴ <https://paperspast.natlib.govt.nz/newspapers/NZH19001026.2.60.4>

New Zealand Herald, Volume XXXVII, Issue 11513, 26 October 1900, Page 1 (Supplement)

upper level will be, if anything, of greater value as depth upon the reef system is attained...²⁵

1901

18 January

...The Woodstock mine ...One of the most important of this company's development works was the starting of the new shaft from No. 5 level, which it is intended to carry down 300 ft, with a view of developing the low levels, where the rich runs of ore found in the upper levels are expected to be intersected with greater values.²⁶

25 February

The Woodstock Company has recently erected a corrugated iron building at its mine; it is to be used for a change-room, and will afford convenience to the workmen who are engaged in the mine. A number of men are employed laying heavy airpipes from the company's battery to the shaft.²⁷

AJHR, published 1901, but largely for 1900

The shaft-chamber in No. 5 level, which is 45½ft. long by 37½ft. wide, and 40 ft. high, has been completed, and a connection from it to the surface also made. The shaft is being sunk 8 ft. by 18 ft. in the clear, and has two hoisting-compartments, 6 ft. by 4 ft.; also a pumping-compartment and ladder-way, 6 ft. by 6 ft. 6 in. The shaft is now down 40 ft. from the floor of the chamber, the collar-set in place, and the concrete work around the shaft-mouth and chamber-floor completed. A small steam-boiler and winch have been set up in the shaft-chamber to expedite sinking until the air-compressor plant is completed.²⁸

AJHR 1902

Woodstock Gold-mining Company (Limited), Karangahake.— Two air-compressors have also been installed—one an Ingersoll-Sergeant compound, rope-driven, low-pressure cylinder 24 1/4 in. diameter, high-pressure cylinder 15 1/4 in. diameter, 18 in. stroke, ordinary capacity 1,170 cubic feet free air per minute; and the other a Schram single-compressor cylinder 14 in. diameter, 24 in. stroke. The compressed-air pipe-line erected during the year is of 8 in. diameter wrought-iron welded pipes with loose flanges, and is about 2,300 ft. in length, connecting the compressors and the shaft-chamber. At each end of this pipe-line there is a receiver, and in the chamber a porcupine

²⁵ <https://paperspast.natlib.govt.nz/newspapers/NZH19001224.2.61.3>

New Zealand Herald, Volume XXXVII, Issue 11533, 24 December 1900, Page 1 (Supplement)

²⁶ <https://paperspast.natlib.govt.nz/newspapers/NZH19010118.2.74.3>

New Zealand Herald, Volume XXXVIII, Issue 11554, 18 January 1901, Page 1 (Supplement)

²⁷ <https://paperspast.natlib.govt.nz/newspapers/OG19010225.2.12>

Ohinemuri Gazette, Volume X, Issue 784, 25 February 1901, Page 2

²⁸ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1901-I.2.2.2.4>

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reheater. The reheater is enclosed in brickwork, requires very little fuel, and entirely prevents any trouble from freezing at the pumps.²⁹

Compressed air now available at the No.5 level, replacing the small boiler. There is a reheater, presumably within the chamber.

1904

Talisman buy Woodstock for £7000

The Woodstock No.5 level and shaft retain their names under Talisman ownership. For clarity: the Woodstock Company install the level (1895), and cut a chamber to allow a shaft to be sunk (1900). Only much later, under Talisman Company management, is the chamber enlarged to accommodate a large pump(1910).

1909

With reference to the comprehensive scheme for the development of the deeper levels, the management is now engaged in supervising the cutting out of a large chamber in the immediate vicinity of the Woodstock shaft. This chamber will be 100 feet in length, by 30 feet in width, and 35 feet high. It will be occupied by a powerful winding and pumping plant. The type of machine has not yet been decided upon, but the general manager (Mr. Stansfield) states that it will be operated with steam power, and that the shaft will most likely be sunk to a depth of 100 feet below the No. 13 level. At this substantial depth the unwatering of the whole of the mine will be negotiated...³⁰

The Talisman Company is pumping from their incline shaft. The pumps are powered by compressed air, supplied by a large new compressor in the power house on Battery Flat and/or the old Woodstock battery (it is run by water, and steam backup). Smaller, older, compressors are on standby. The compressed air is conveyed to the mine via a pipeline (8 in. diameter wrought-iron welded pipes³¹) which enters at the Woodstock No.5 Level portal.

The Talisman pumps are lowering the water level in their mine, and also to some extent in the Crown. The Crown are not pumping; they are installing an electricity plant at their battery to power their new pumps when installed.

The Talisman Company intend to cut out a large chamber in the vicinity of the Woodstock shaft (inside No. 5 level) to house a powerful winding and pumping plant. This will become the "Underground Pumphouse" as we know it. This is additional to, or adds to, the original chamber cut by the Woodstock Company. The machinery will be run by steam, the boilers will be installed outside the No.5 portal, jammed in a tiny area beside the Waitawheta.

²⁹ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1902-I.2.1.4.3>

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³⁰ <https://paperspast.natlib.govt.nz/newspapers/WHDT19090223.2.31>

Waihi Daily Telegraph, Volume VIII, Issue 2484, 23 February 1909, Page 2

³¹ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1902-I.2.1.4.3>

THE GOLDFIELDS OF NEW ZEALAND: REPORT ON ROADS, WATER-RACES, MINING MACHINERY, AND OTHER WORKS IN CONNECTION WITH MINING., Appendix to the Journals of the House of Representatives, 1902 Session I, C-03

Jarman (1911) has a detailed description of how the chamber was excavated:

Woodstock Shaft.

In the Woodstock mine (absorbed by the Talisman Co. in 1904) access was obtained by adits driven on the reef from the precipitous edge of the Waitawheta gorge. The river level, which is about 30 feet above ordinary water-level, now provides the chief entrance to the Talisman mine. The tramway to the mouth of this level is cut out of the rock in many places. After driving this level 100 feet, a station was cut in which headgear was erected and a shaft then sunk vertically for 240 feet.

The shaft has three compartments, a pumping and ladderway compartment 6 foot 6 inches x 6 foot and two winding compartments, each 4 foot x 6 foot inside timbers. Sinking is to be continued for another 200 foot and a straight haulage level will then be driven to connect with No. 14 level which will be the next one to be opened up on the Talisman and Bonanza chutes...

To accommodate the pumping-engine, winding engine and pump-winch, the existing chamber had to be considerably enlarged.

Considerable economy should result from using this shaft as a main travelling and haulage way. At present, the miners walk in along the river level to the Talisman shaft (1,650 feet) and those who work on Nos. 12 and 13 levels then descend the ladderway...

Excavation of the Pumping Chamber.

In order to accommodate the pump-capstan, new winding engine and pump-engine, the chamber at the head of the Woodstock shaft had to be enlarged. That portion which accommodates the pump-engine is 100 feet x 40 feet x 25 feet high and its excavation was interesting.

On the south end, the rock was a firm blue altered andesite, decomposed to a softer brown rock in patches, especially adjacent to a small quartz-vein which ran through the chamber at an acute angle to its longer axis. This softer material made the roof treacherous and therefore it was deemed advisable not to use machine drills. The whole of the work was done by hand drilling and day labour.

From the existing chamber, a drive was projected to the full length of the required extension and this was met at right-angles by a crosscut from the river-level, thus providing the necessary ventilation.

Leading stopes,

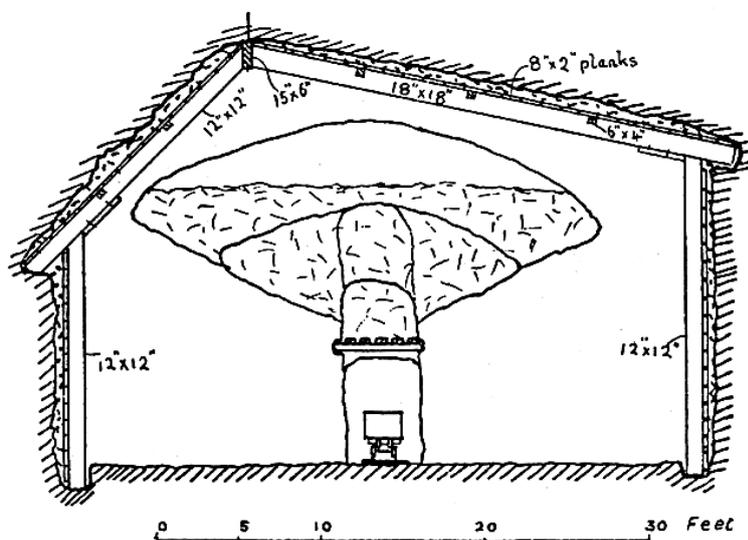


FIG. 2.

Section of Pump-Chamber, Showing outline of cuts made in excavating.

with a height of 4 foot, were carried along this drive and also along that portion of the crosscut which was to form the back or end of the chamber (fig. 2).

Light stulls were placed in hitches cut at 7 foot from the floor and at intervals of 3 foot 6 inches. Across these were laid rough slabs to support the broken rock and the excess was drawn off into trucks by moving or withdrawing one or two of the slabs after the manner of a "Chinaman." Another stope about 5 foot high was carried along and then the sides were broken into about 2 foot above the stulls, the floor formed on either side being given an upward pitch. This procedure was repeated until the height of the centre of the arch was reached and the necessary width obtained. Sufficient broken rock was always left in the stope for the men to stand on and conveniently sound the roof for treacherous or loose ground. A 6 foot barrier was allowed to remain between the new chamber and the existing one until the timbering of the former was completed, an inclined rise being put through it so that timber could be hauled into the chamber by a hand winch.

The roof at the centre and western ends was at all times heavy and it was thought safer to catch it up by rafters and close slabs before excavating the floor. Also, at this stage of the proceedings, the timber was more easily handled than would have been possible had the chamber been completely excavated.

Twenty sets of rafters were put in at intervals of 5 foot. These are of kauri 20 feet x 12 inches x 12 inches at the south end where the span is 30 feet. The rafters increase on the west side of the chamber to 30 feet. x 18 inches x 18 inches towards the north end where the span widens to 40 feet as shown in Fig. 2.

Hitches 2 foot high x 2 foot 6 inches wide were cut to receive the rafters, the depth of the hitches varying from 2 foot 6 inches to 4 foot according to the state of the rock. A centrepiece of 15 inch x 6 inch hardwood was suspended by wrought-iron bolts, 10 feet apart, let into the rock and wedged firmly in place. Against this centre-piece the upper ends of the rafters rested; 6 inch x 4 inch spreaders or distance pieces were put between rafters to prevent end movement, two or more being used to each space. Planks, 8 inch x 2 inch, were placed across the rafters and the space behind them filled with broken rock.

The roof having been secured, the end barrier was removed and the timber over this portion completed and joined to that of the existing chamber, which was 40 feet high.

The broken rock was then removed from the chamber and the excavation of the floor portion commenced from the south end, the work proceeding in benches from the centre so as to take advantage of the rill as far as possible. The walls were next secured by uprights of rata 16 foot x 12 inches x 12 inches, let into hitches 12 inches deep in the floor and the top end of the leg was cut to fit against the rafter and kept in place by a block nailed on to the rafter. Kauri planks, 8 inches x 2 inches, were placed behind these uprights and the space behind them filled with waste rock. An inside roof was constructed of 12 inch x 1 inch boards lined behind with ruberoid in order to prevent slightly-acid water from dripping on the machinery.

The winding station was then widened on the east and west sides to accommodate a new winding engine and a capstan engine for handling pump rods. The roof was also heightened to enable the 40 foot rods to be lowered.

The completion of this chamber together with the erection of two Babcock & Wilcox boilers on an outdoor site excavated on the side of the gorge will enable the existing 240 foot shaft to be utilised in the near future. Any outside site for a shaft would have been exceedingly difficult of access owing to the precipitous nature of the country and would also have entailed much extra sinking...

Cornish Pump.

The new Cornish pump which is being installed in the Woodstock shaft is estimated to have a maximum capacity of 124,000 gallons per hour in three lifts of 250 feet each.

92,500 gallons per hour through 1st lift.

99,500 “ “ “ “ 2nd lift.

124,000 “ “ “ “ 3rd lift.

It has three plungers, each 26 inch in diameter and with strokes of 10, 8, and 6 foot respectively; at 10 r.p.m. of the crank-shaft, this gives plunger displacements of 124,000, 110,400 and 102,800 gallons per hour or, allowing 10% slip, which is probably excessive, a capacity of 124,000, 95,500 and 92,500 gallons respectively. The engine driving this pump is a cross-coupled compound Corliss engine with cylinders 18 inches and 34 inches in diameter and, by a rope drive of sixteen 2 inch ropes, it drives a 20 foot rope-wheel connected to the pump gear, thus giving a reduction of speed of 2 to 1. The big spur flywheel of the pump-gear is 17 feet 6 inches in diameter and weighs 43 tons. The spur gearing, by which it drives the pump, effects a further reduction in speed of 5 to 1, a total reduction of 10 to 1. By this means the piston speed of the engine is kept reasonably high. Steam is supplied at 150lb. per square inch by two Babcock & Wilcox (W. I. F. type [Wrought Iron Frame]) boilers each of 1619 square feet heating surface; super-heaters each with 250 square foot, and chain-grate mechanical stokers. The exhaust steam goes to a jet condenser of barometric type.

The pump rods are of Oregon pine, in 40 foot lengths, and are respectively 24 inch, 22 inch and 18 inch square for the three lifts. Butt joints are used with 15 inch x 1 inch side-plates, 18 feet long. The balance bob has a radius of 16 feet and will weigh about 40 tons. The pump column is 24 inches in diameter.³²

Jarman makes it clear that the original Woodstock chamber is enlarged, it is not a new chamber. He also indicates that the No. 5 level is the primary entry point for the miners. So a large change-house will be required.

³² Mining and Ore-Treatment at the Talisman Mine, Karangahake, New Zealand.

By: Arthur Jarman.

Presented at the Australasian Institute of Mining Engineers Thames 1911.



Winkelmann 1346. Staples collection.

Photograph taken from the Crown tramway, looking upstream.

This shows the same larger building as previous image.

To the left, a platform is being cut to house the new boilers installed early 1911. Ore carts and rails are being used to clear the spoil and dump it into the river. As they cut into the slope, material slips from above. Prior to this work a concrete retaining wall had been built on the river bank. No reference to this has been found in the literature.

In the early 2000s(?) Dan Bustard's crew provided some remedial work to the bottom of this wall, adding concrete at the lower edge where the river was taking away stones. This needs to be repeated.

The large pile of material at right of image is mullock from underground.

The cableway from the previous image is now draped down the cliff and appears to be coiled up just to the left of the water discharge.

To the left of the structure on the cliff, with the steps, is a pipe and tank(?). Something to do with the pelton wheel ^{33?}

7 June

For the twelve months ending April, 1909, the Talisman Consolidated, Ltd, has paid some five thousand pounds odd gold duty, and we claim our demands are entitled to consideration, and we know that your Council will do their utmost to meet us. In about six months' time we have £20,000 worth of machinery coming to Karangahake, and some of the pieces are too heavy (ten ton pieces) to come over the present bridge, and they are too long to be taken over the hill. The driving shaft is 26 inches in diameter in itself. The last lot of machinery brought out had to be taken over the hill because many of the parts

³³ <https://paperspast.natlib.govt.nz/newspapers/AS18950905.2.24.22>

Auckland Star, Volume XXVI, Issue 212, 5 September 1895, Page 6

(six ton pieces) were considered too heavy for the bridge, and the cost to the company was enormous, for it took 16 horses to come up the Crown Hill. Then there was the great risk of an accident as it was brought down the hill, and the company would not risk any of the new machinery coming that way, even were it possible. Therefore, we have to respectfully ask your Council to consider the erection of a new traffic bridge at Karangahake, after the pattern of the Waitawheta one just erected at Waikino.³⁴

1910

Chamber completed at the Woodstock No.5 level

AJHR 1910

A chamber at the Woodstock, 110 ft. by 30 ft. by 25 ft. has been cut out and timbered. In this chamber will be installed the pumping-machinery that will ultimately drain the whole of the mine. A large part of this machinery has arrived, and the necessary arrangements for its installation are well in hand.

Also, a new boiler plant is to be erected at Woodstock No. 5 level to supply steam for the Woodstock shaft pumping and winding machinery.³⁵

1911

AJHR 1912

The Woodstock shaft has been sunk 20 ft., and the first set of Cornish pump-workings is now practically in place. The boilers and engine for actuating the new pump are erected, and practically ready for work.

A new change-house, 30 ft. by 70 ft., has been erected at the mouth of the Woodstock No. 5 level, and will be equipped with hot and cold shower-baths and steam-heat for drying clothes.³⁶

³⁴ <https://paperspast.natlib.govt.nz/newspapers/OG19090607.2.9>

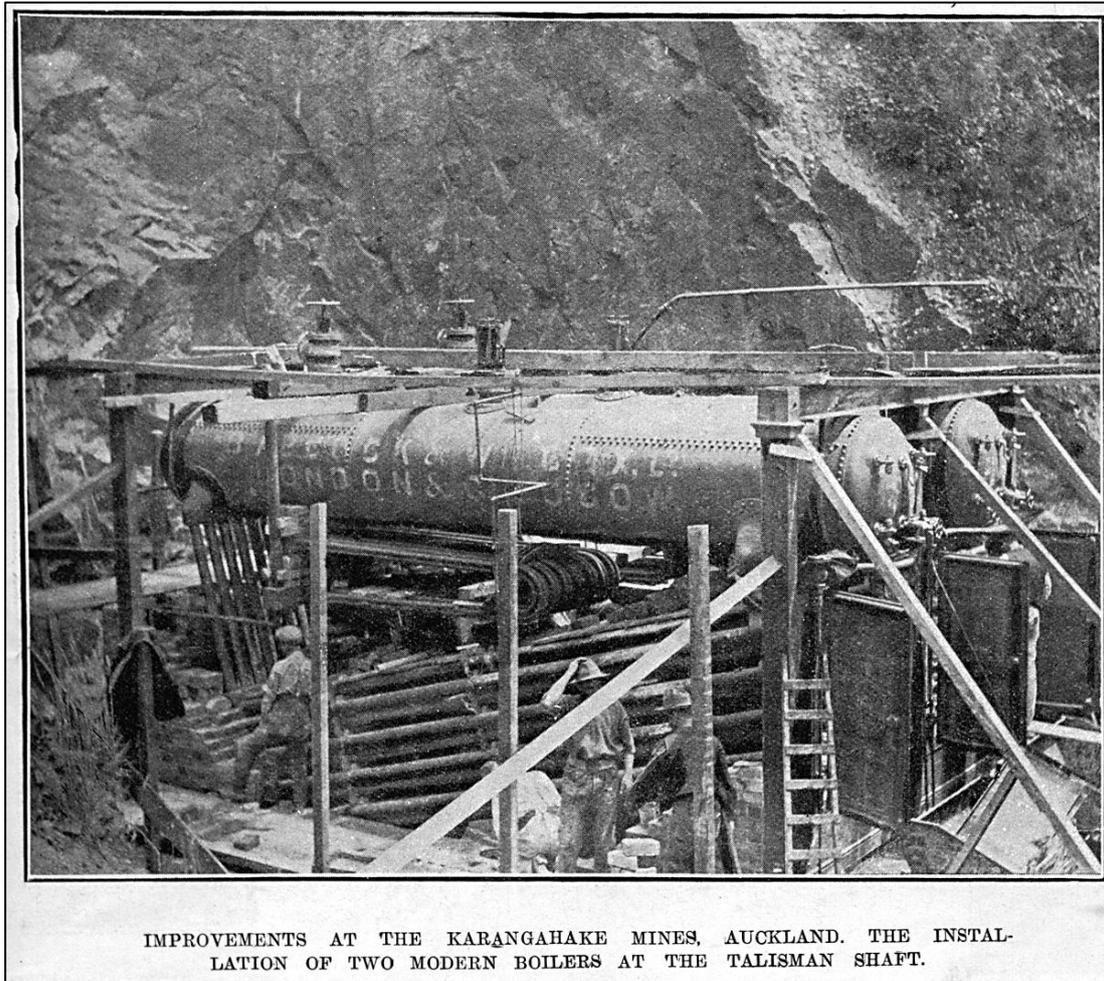
Ohinemuri Gazette, Volume XX, Issue 2503, 7 June 1909, Page 2

³⁵ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1910-I.2.1.4.9>

THE GOLDFIELDS OF NEW ZEALAND (REPORT ON)., Appendix to the Journals of the House of Representatives, 1910 Session I, C-03

³⁶ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1912-II.2.2.2.7>

MINES STATEMENT, BY THE HON. JAMES COLVIN, MINISTER OF MINES., Appendix to the Journals of the House of Representatives, 1912 Session II, C-02



Auckland Weekly News March 1911.

This installation of two Babcock and Wilcox boilers is under the cliff/slip. It will be covered by a sloping roof and sport a large chimney.

4 February

This is a description from a report on the travels of delegates to the mining engineers conference.

To reach this point it was necessary to cut a way out of the solid rocky sides of the creek, and in one place tunnel through, but the most remarkable achievement is the pumping chamber at the top of the shaft. So precipitous is the frowning chasm through which the creek rushes turbulently that they could not find a flat surface large enough to carry the machinery, so they were forced to burrow into the flint-like rock, and hew out a cave-like chamber about 100 feet long by half that width. Here they are installing a huge pumping plant, which when finished will be the largest single plant this side of the line. Lit up with electric light the place, with the enormous cogged wheels, cranks, and massive iron beds, is most weird, and the scene is just the sort of thing Jules Verne might have imagined. The machinery weighs many tons, and all had to be hauled into this ungetatable chamber through a short drive about eight feet high, so the parts had to be specially cast. Outside a narrow shelf was hewn from the adamantine cliff to house the boilers, and the whole

scheme is an astonishing proof of the ingenuity of man and the apparent impossibilities he will overcome in the search for gold....³⁷

1912

AJHR 1913

Woodstock shaft: This shaft is now sunk 454 ft. below the engine chamber, and it is intended to sink 40 ft. to 50 ft. deeper before opening out for No. 14 level. The first section of the Cornish pumping plant has been placed in the shaft, and the second set will be installed when No. 14 level is opened up, when the plant will be started, thus making the Woodstock the main drainage-shaft of the mine...

A new fitting-shop and a new change-house are the principal items in the way of construction-work for the year.³⁸

This is the same change-house mentioned last year? 30 ft. by 70 ft. must be the large building at the upstream end of the site.

The following photographs may or not be in correct sequence. They all show the site after the boilers and new change-house.



Karangahake 1916 -20 Talisman GM APG-1203 ATL. Alexander Turnbull Library. John Agnew collection.

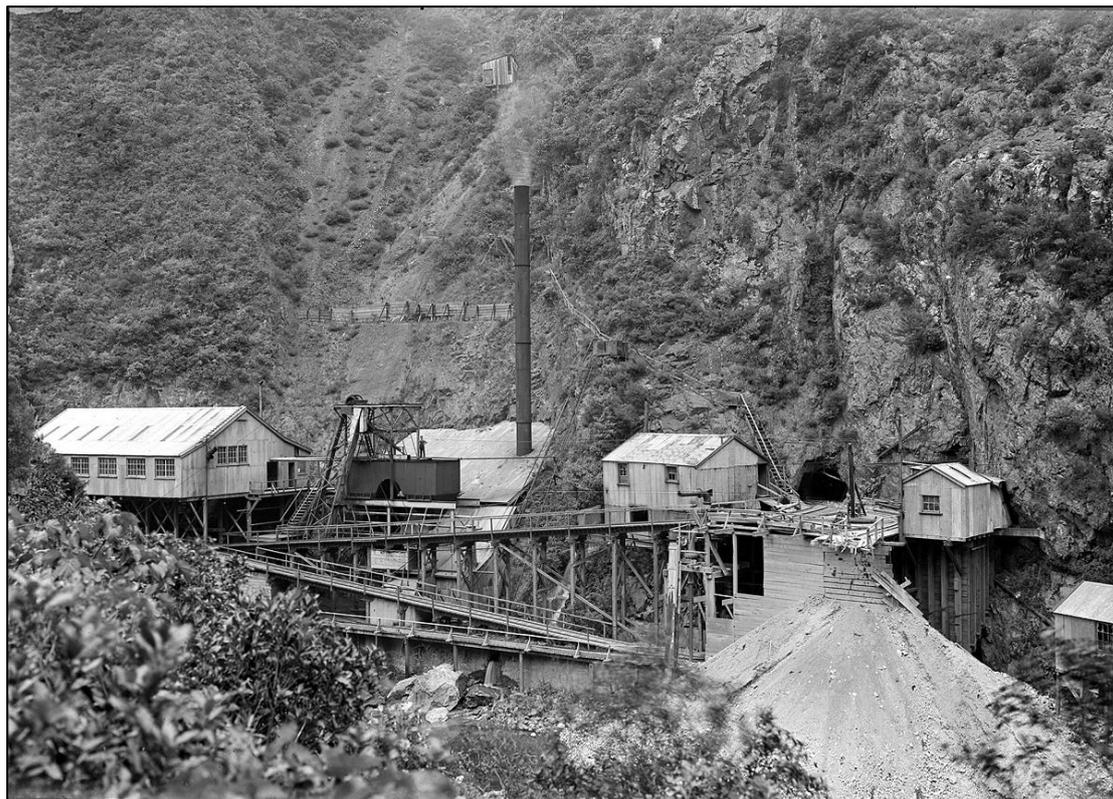
New change-house at left; a sizable building.

³⁷ <https://paperspast.natlib.govt.nz/newspapers/AS19110204.2.70>

Auckland Star, Volume XLII, Issue 30, 4 February 1911, Page 10

³⁸ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1913-I.2.3.2.12/1>

MINES STATEMENT, BY THE HON. W. FRASER, MINISTER OF MINES., Appendix to the Journals of the House of Representatives, 1913 Session I, C-02



Alexander Turnbull Library, Karangahake 1916 -20 Talisman GM APG-1203 ATL. John Agnew collection. Photographer: George Chappell maybe?

Change-house to left. The steeply sloping flat roof covers the boilers; the chimney pokes through. In front of this roof is the double coal hopper to feed the mechanical stokers. A lifting “poppet head”, with lattice work, facilitates coal to be elevated from the bottom tramway and distributed into the two hoppers. A man conveniently provides scale.

Steam is conveyed to the chamber by a tunnel cut through the cliff near the chimney. Its portal was concreted. A wooden staircase was built to provide modern access to this tunnel and pumphouse. This area is currently inaccessible.

At right the adit mouth and tramway platform are seen. Mullock is tipped into the river. A flood is required to take this material away. This No. 5 level handles only mullock. All ore is raised inside the mine to the No. 8 level, from where it is transported to the battery by ropeway. At the left side of this platform is some construction including large pipes. What is it? Pump? See below.

So what is the zig-zag tramway for? For facilitating the lifting of the many very heavy items of machinery from the tramway level to the adit level. This is the only explanation this writer has, it is not mentioned in the literature. These double ramps are heavily timbered and very closely sleepered. Heavy items could be winched up on tramway bogeys? Pedestrian access to the mine entrance is also facilitated.

A water tank has been installed beside the path up the cliff, and a retaining wall of sorts catches some of the debris that comes down the slip face.

1913

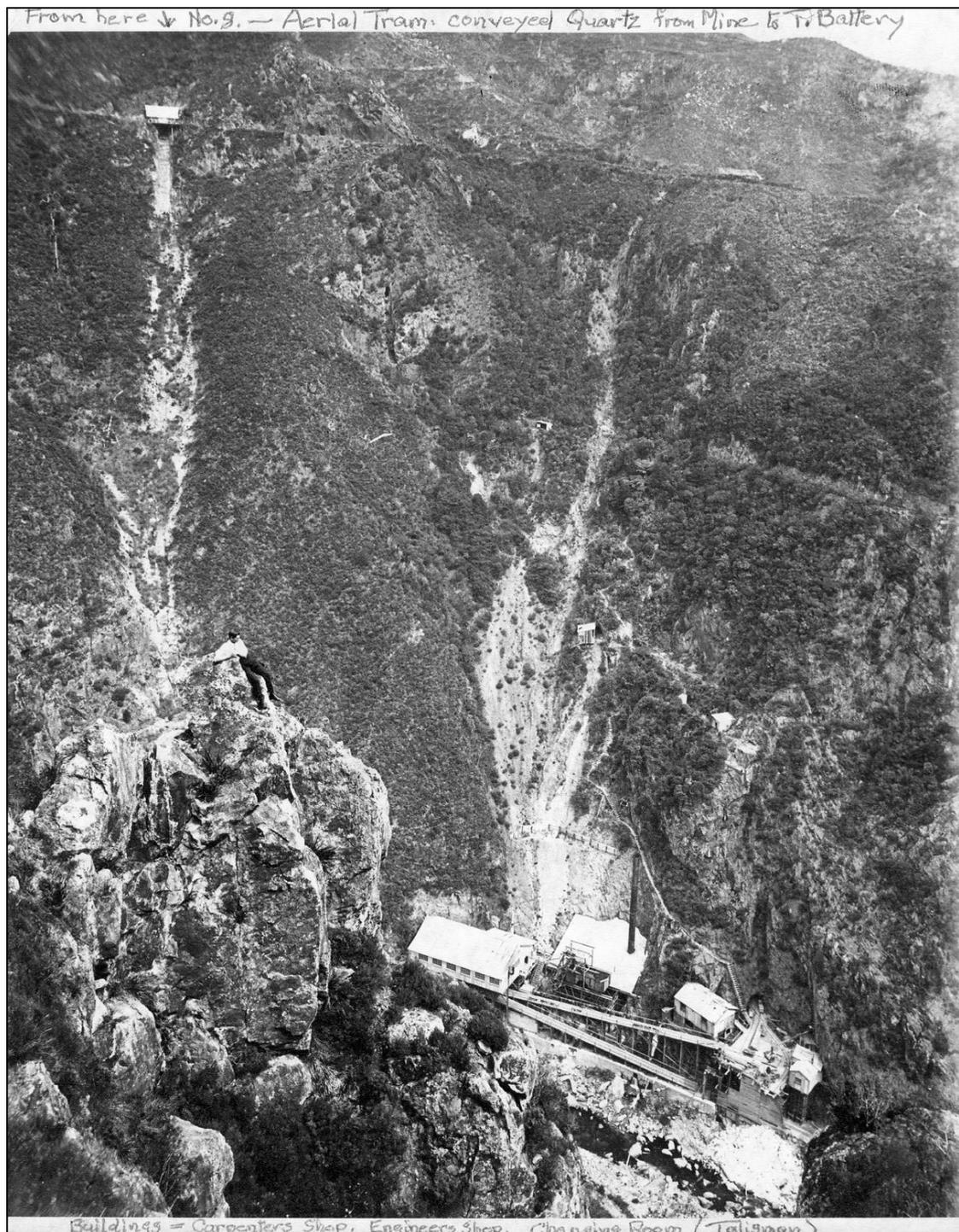
AJHR 1914

New Zealand Crown Mines (Limited). —... In the Crown section the change-house has been improved, and considerable additions made to the rock-drilling plant. A high-pressure pump has been installed for supplying water to rock-drills above the main adit level, and air and water services have been extended in that direction.³⁹

³⁹ <https://paperspast.natlib.govt.nz/parliamentary/AJHR1914-I.2.1.4.10>

Woodstock No. 5 Level entrance

A high pressure pump is installed. Is that what we see in the above image?



George Chappell photograph. Staples collection.

This is one half of a stereo pair. We are looking from high on Taukani. Note the well dressed gent. Chappell took a series of photographs around Karangahake with one or two well attired men in almost impossible locations. One of these men was a draper, Billy Davidson.⁴⁰

Someone has added interpretation, but miss-identified the No.8 cableway. It is the Crown No. 7 level on the County Road, established 1912.⁴¹ Labelling of the buildings may be correct if in reverse order.

MINES STATEMENT, BY THE HON. W. FRASER, MINISTER OF MINES., Appendix to the Journals of the House of Representatives, 1914 Session I, C-02

⁴⁰ Caption on a Staples collection photograph

Woodstock No. 5 Level entrance



Kevin Jones collection.

The truss traffic bridge visible in distance. The Woodstock No. 2 level tramway⁴² on cliff to left. It delivered ore to a cableway out of sight around the cliff in the distance.

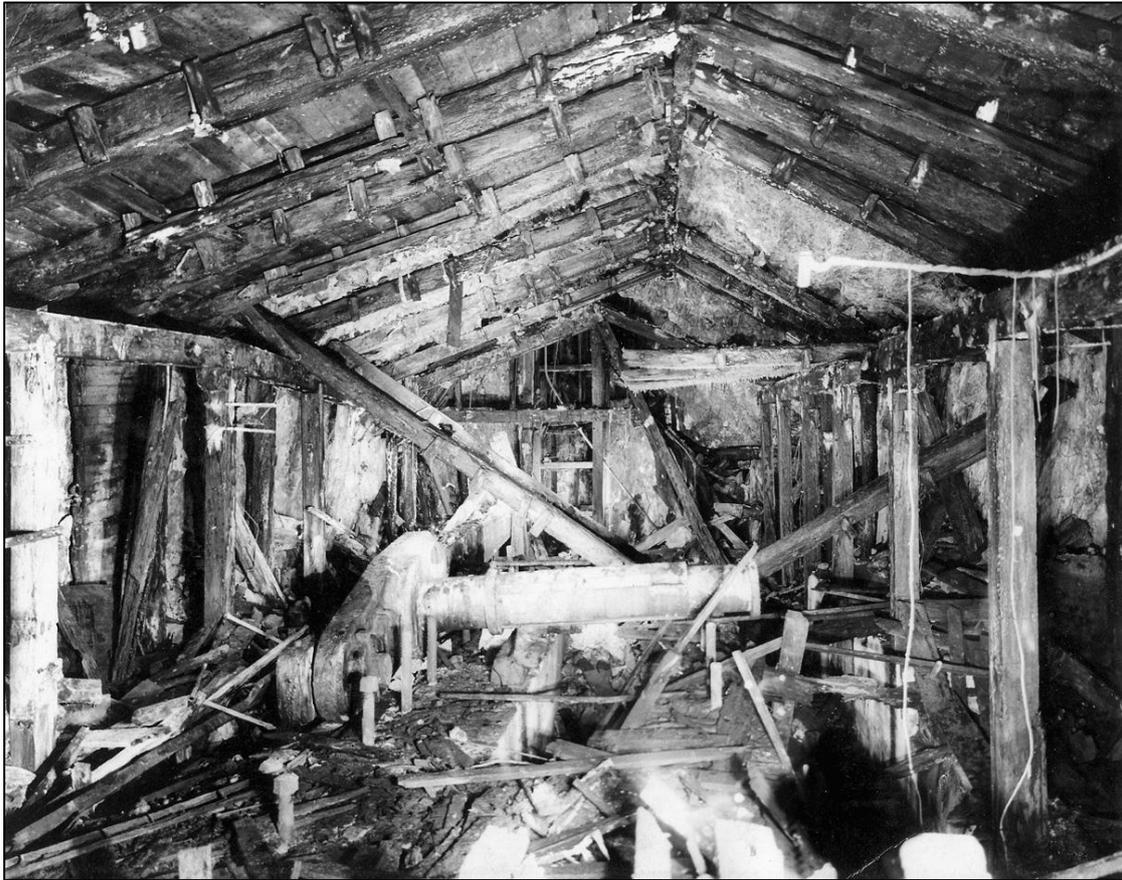
No. 3 level, with the shorter section of tramway, lower down.

⁴¹ <https://paperspast.natlib.govt.nz/newspapers/NZH19120127.2.12>

New Zealand Herald, Volume XLIX, Issue 14900, 27 January 1912, Page 5

⁴² 40_32_19_Woodstock_Levels_Old_300ppi

Woodstock No. 5 Level entrance



Staples collection. Photographer Kevin Jones??

The underground pumphouse chamber c. 1970?

This chamber was completely cleaned out early 2000s(?) prior to opening to the public.