



Charming Creek Walkway

Baseline Inspection Report

Jackie Breen and Amy Findlater West Coast *Tai Poutini* Conservancy

A report prepared for the Buller Kawatiri Area Office

Department of
Conservation
Te Papa Atawhai

Acknowledgments

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Coal miners being transported from the Charming Creek mine at the end of a working day. Photograph taken in 1945 by John Pascoe. ATL 1/4-001229-F

All photographs, if not separately credited are from the West Coast Conservancy Archives

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Initially Jackie and Amy created this document as the

Charming Creek Walkway Historic Heritage Assessment and Baseline Inspection Report – some 250 pages of text and images.

After consideration it was decided to create three documents:

Charming Creek Tramway – milling, mining and walkway – a history

Charming Creek Walkway – baseline inspection report

Charming Creek Walkway – baseline inspection GPS identification data (a series of tables relating to the sections of the baseline inspection).

A bibliography is available in the history report.

All three are available as related documents on the Department of Conservation website.

Table 1: Charming Creek Walkway recorded sections

SECTION NUMBER	NAME
Section 1.	Charming Creek Coal Mine to Papa Tunnel
Section 2.	Papa Tunnel to first mine Portal
Section 3.	first mine Portal to Mumm's Mill
Section 4.	Mumm's Mill
Section 5.	Mumm's Mill to Charming Creek Bridge
Section 6.	Charming Creek Bridge to Watson's Mill
Section 7.	Watson's Mill to the Ngakawau Suspension Bridge
Section 8.	Ngakawau Suspension Bridge to Irishman's Tunnel
Section 9.	Irishman's Tunnel to the Ngakawau Bins Siding
Section 10.	Ngakawau Bins Siding to Ngakawau Car Park

Historic Baseline Inspection fieldwork results

Fieldwork for the baseline inspection of the Charming Creek Walkway took place on the 6th of May 2008. The methodology followed and definitions used were derived from the guidelines provided by Breen and Nelson in *A Guide to Historic Track Baseline Inspections*. Baseline inspection process and definitions Part 1 – Track types and feature definitions.¹ The objectives were to locate and document visible historic fabric. While the focus was the tramline / walkway, brief surveys were made of Mumm’s Mill, Watson’s Mill and the Ngakawau bins using maps and information from the initial NZFS survey of the area. More time was spent at the second coal mine site as there was little known about the existing features there.

The field team consisted of Jackie Breen (TSO Historic, West Coast Conservancy), Amy Findlater (TSO Historic – Temporary, West Coast Conservancy) and Jim Staton (Programme Manager Historic, Greymouth Area Office). Jim was enlisted to assist with the fieldwork due to his invaluable knowledge of the history and fabric associated with the walkway. The walkway was traversed from the Seddonville end at the Charming Creek Coal Mine to the Ngakawau entrance.

Two types of survey technique were used to obtain the baseline data. Firstly, all historic features on the walkway and tramway alignments and associated with historic sites were recorded using GPS.² The position of features and sections of tramway formation were recorded with point data and the alignment followed was recorded as line data. A feature name was recorded with the GPS point, followed by a description and notes on condition or threats. Secondly, existing fabric relating to the Charming Creek Coal Mine, Mumm’s Mill, Watson’s Mill and the Ngakawau Bins was marked on aerial photographs and NZFS survey plans and these were used to produce sites maps.³ Digital photographs were taken of selected features and sections of track to aid interpretation and relocation. Jim Staton was able to provide historical information on features and verify the phase of development they were associated with.

Raw data was compiled to allow sorting based on location, GPS ID, feature type, site name, or industry type, tramway formation type, or to separate historic features from modern walkway features. For interpretation purposes the walkway and tramway data was broken down into ten sections for presentation. These sections are illustrated in Figure 1 and listed in Table 1.

Within the most enclosed section of the walkway, in the lower Ngakawau gorge, accurate recording of some features and sections by GPS was hindered. Some GPS points in this area had an error of up to ±45m. Between Watson's Mill and Ngakawau Bins readings were especially inaccurate. In these cases the GPS data is only a guide, but the order of features encountered along the walkway is still accurate and known features, such as tunnels, can be used to anchor the data reasonably well. Due to time constraints some associated features and areas known to be outside of the immediate proximity of the walkway were not visited or recorded in detail.⁴ A full list of detailed notes from the baseline inspection is found in baseline inspection GPS identification data booklet..

¹ Breen, J. and M. Nelson 2006. *A Guide to Historic Track Baseline Inspections*. Baseline inspection process and definitions Part 1 – Track types and feature definitions.

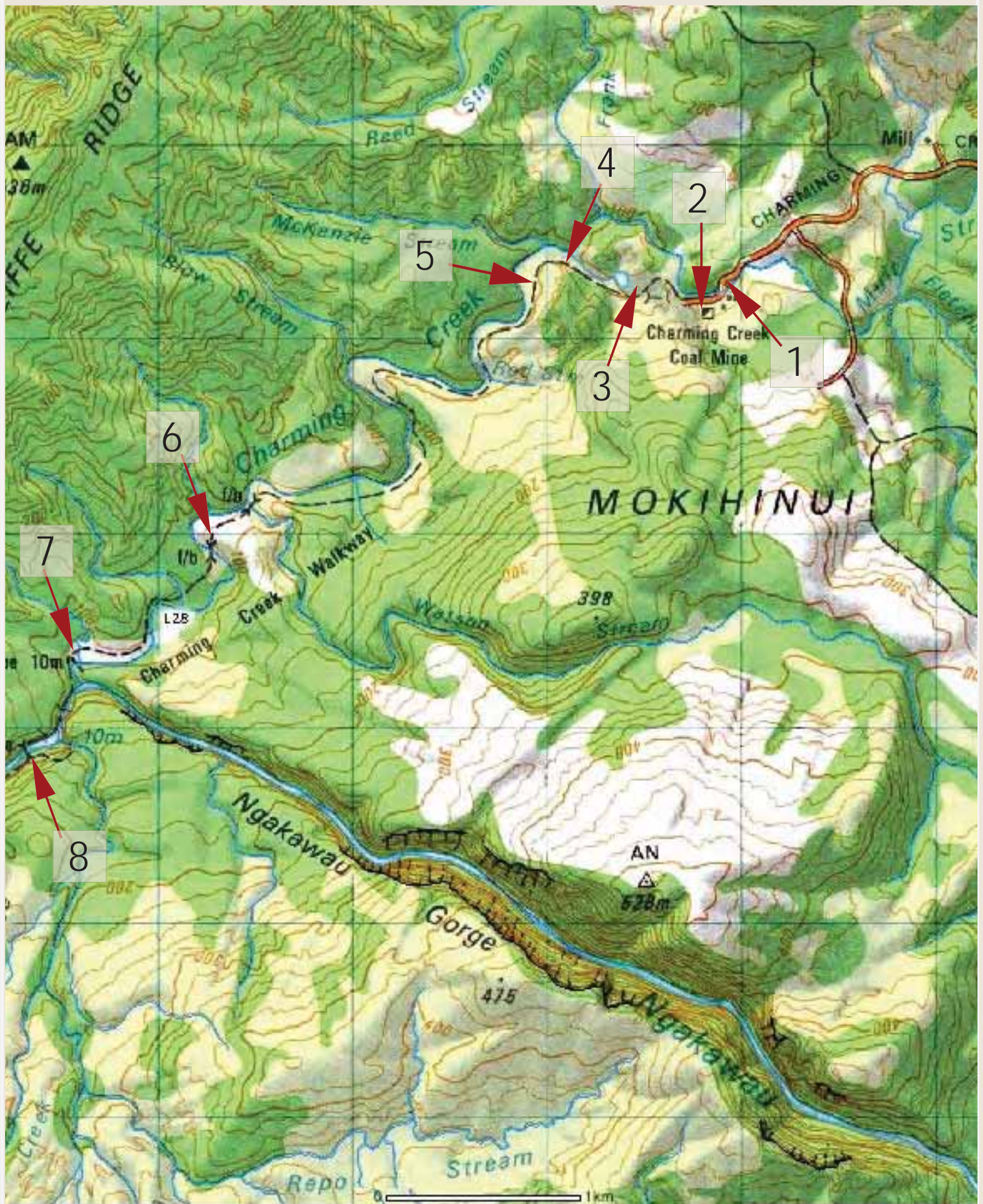
² GPS data was not differentially corrected.

³ Aerial Photographs. Mokihinui State Forest: 1980 S.N.5823 (28/12/80) held by the Department of Conservation, West Coast Conservancy, Hokitika.

⁴ For copies of the original baseline inspection data, including GPS point data, photographs and drawings please contact the TSO-Historic West Coast Conservancy.



Figure one: Map showing the start of each section, as used in this baseline inspection report



Section 1

Charming Creek Coal Mine to Papa Tunnel

Main features

This section covers the walkway from the northern car park at the end of Charming Creek Road through the second Charming Creek Coal Mine, and onto the start of Papa Tunnel. Details of features at the second mine are also documented in this section.

- Second Charming Creek Mine – 1943 to 1986
- Charming Creek Road – completed to the mine in 1949
- Tramway – this extension completed 1943 to the second mine site.

Length of Walkway

320m (GPS ID 010-038)⁵

Other Recorded Features

Bridge (modern utilising old abutments) (1), Culvert (1)

Tramway modification – bulldozed (1 section), Tramway formation – benched (1 section), Tramway formation – sleepers (misc)

Ruston and Hornsby Lokey (1), Boiler (1)

Air ventilation shaft (1), air receiver (1), fan house (1), bathhouse (1)

Bins (1), upright rails (1), tar bin (1), hydraulic hoist shaft (1)

Mine Entrance (1), chimney (2), blacksmith shop remains (1)

Water tank (1), Concrete foundations (1) and Mine office and store room (1)

Tramway formation – benched (1), tramway formation – sleepers (misc)

Culvert (1), magazine (1), various metal equipment remains (including a boiler, winch drum, docking saw, 1.7 tonne truck).

Associated Historic Features

Government Coal Prospecting Site: From the car park this site is about 60m away over the creek on a ridge to the east. This was the last place that the state undertook core sampling. There are metal relics in the bush still.⁶ This site was not visited.

Charming Creek Coal Mine Dam: A hydro pipeline used to lead from the base of the blow up system at the Charming Creek Coal Mine to a concrete dam a kilometre or so up the valley. The dam is still there but was not visited during this field work.

Section 1 Second coal mine site and associated features along the walkway

This is the site of second portal into the mine. The use of this site spans from 1943 until the mine closed in 1986, and has been subject to a considerable degree of modification over the years. The landscape is rich with historic fabric associated with coal mining (see Figure 2). Many of the historic features associated with mining activities are accessible to visitors and many structures remain.

The mine site itself is partially clear of vegetation, with a number of old road and track alignments still visible. Throughout the site there are metal historic artefacts lying against structures and in the scrub, most were not identified and documented in detail during this field work. The historic

⁵ All lengths are approximate and are taken from the distance between GPS points obtained.

⁶ Staton 2008 pers.comm.

fabric in this section gives the most complete example of coal mining activities at Charming Creek. The site contains many structures not found elsewhere on the walkway, such as the remains of bins, bathhouse and fan house.

Portable Boiler in car park

There is a Clayton & Shuttleworth portable boiler (No. 8657; GPS ID 010) located at the Charming Creek Road car park. It was bought to this location by Red Duncan, former mine manager. It was shifted from Government Bore Hole 10.⁷

Air Ventilation Shaft

The air ventilation shaft (GPS ID 011) originally used by the mine is located between the car park and the bridge. The shaft reportedly contains the remains of 'Speedy' the mine horse that was used to haul coal tubs underground. This shaft is now filled and covered by rubble.

⁷ See interview with Red Duncan in Lands and Survey Department File 8/7/4/4/1 Charming Creek Walkway Historical Research. 1980-1987.

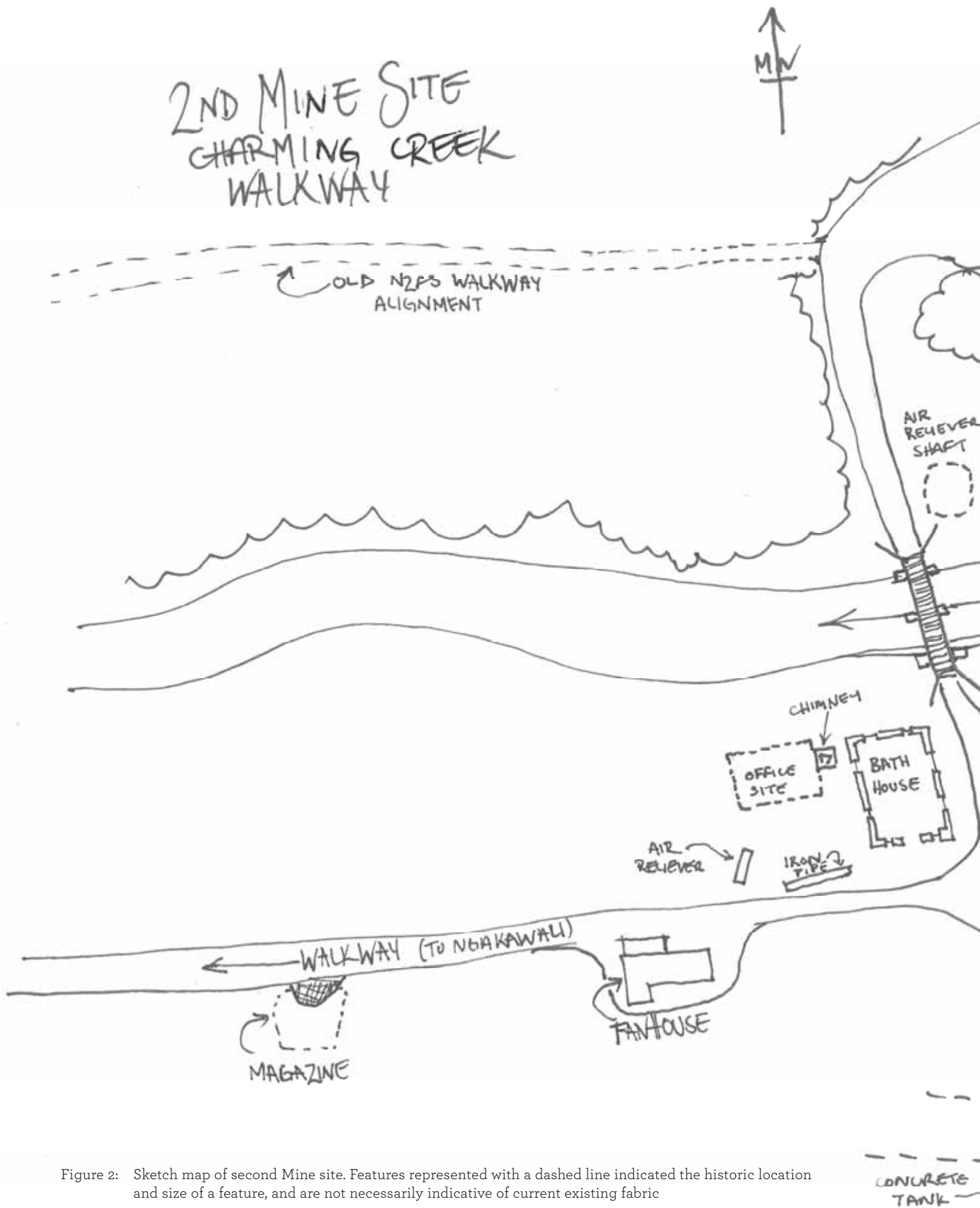
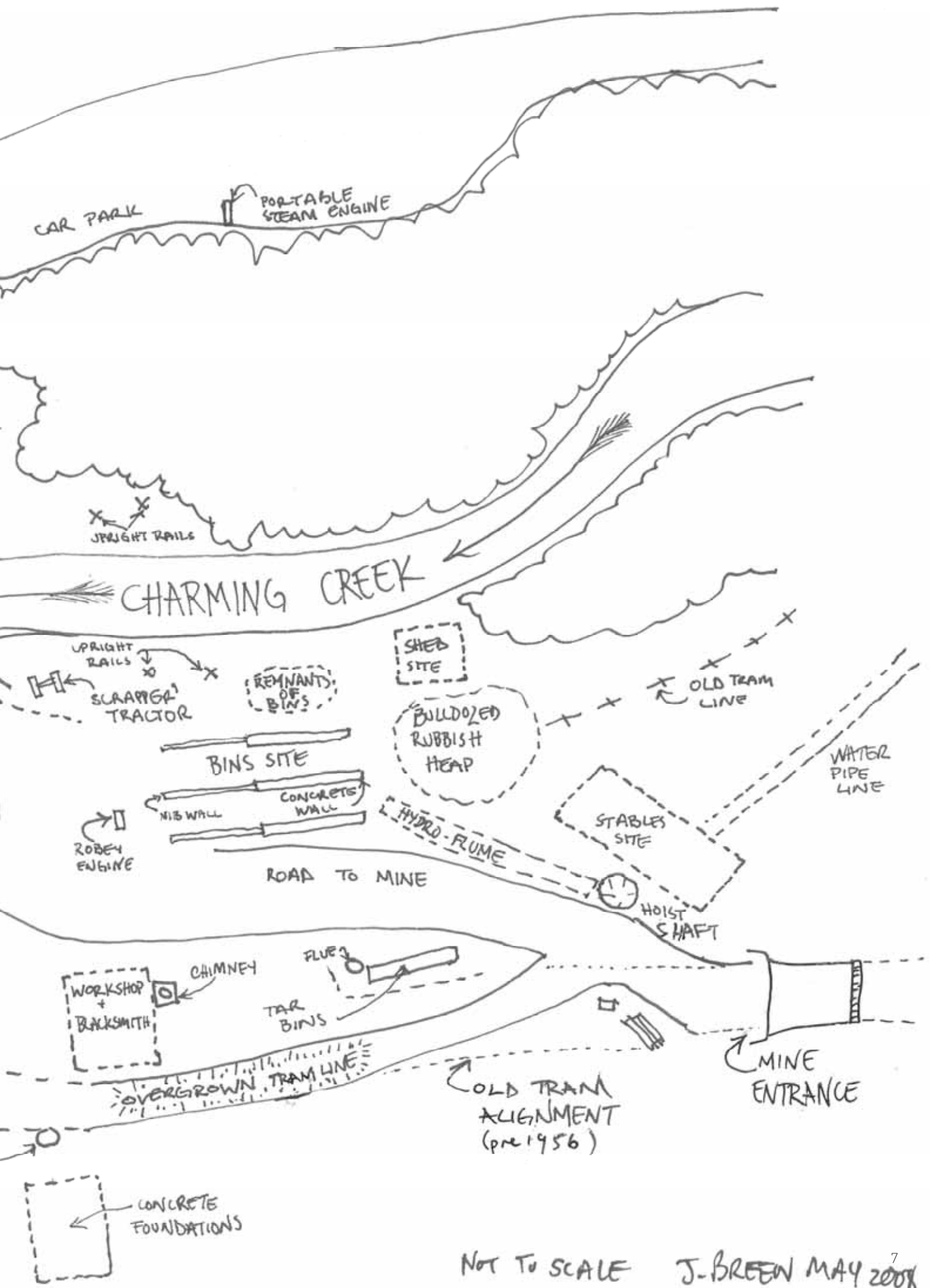
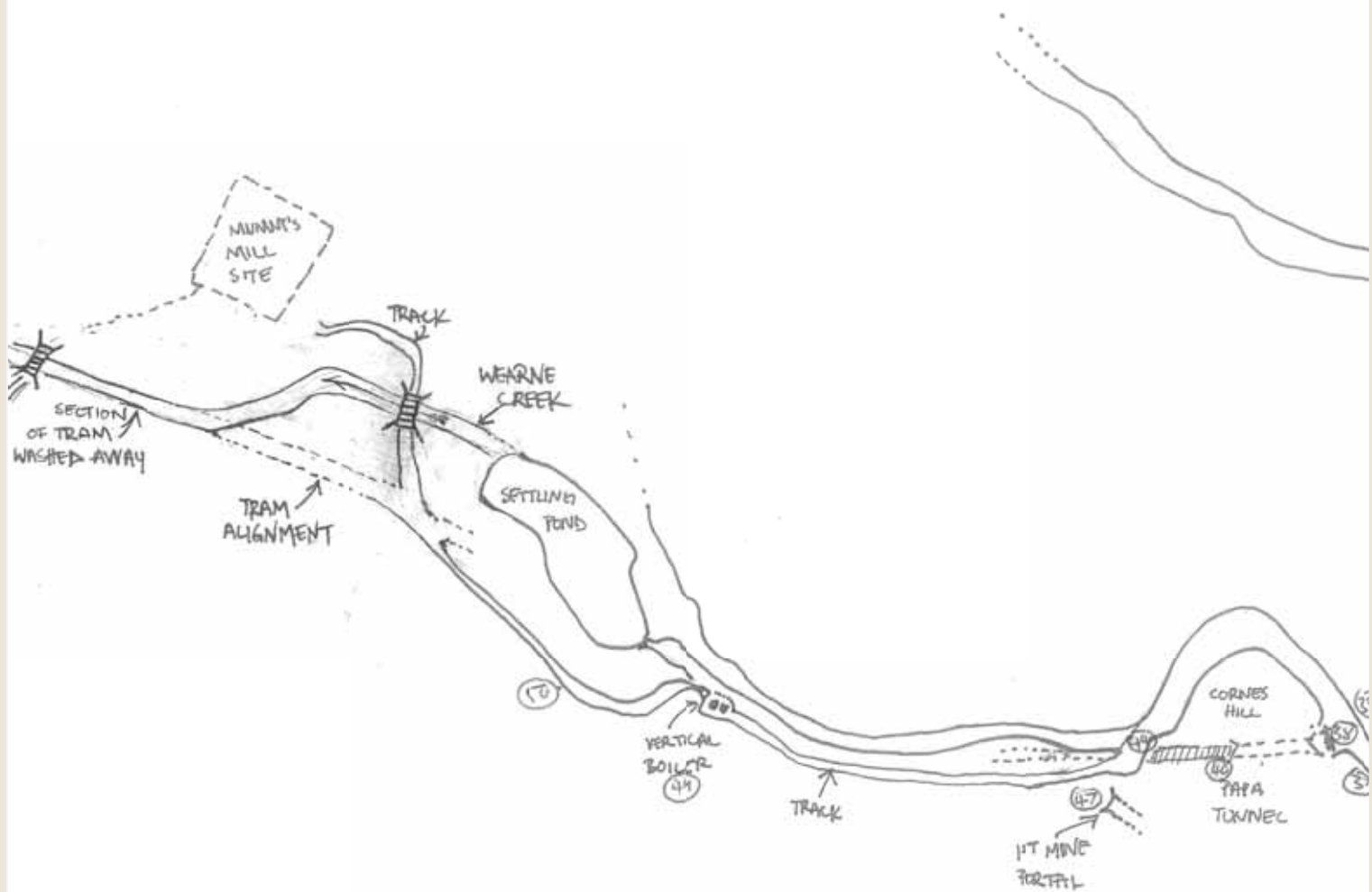


Figure 2: Sketch map of second Mine site. Features represented with a dashed line indicated the historic location and size of a feature, and are not necessarily indicative of current existing fabric



NOT TO SCALE J. BREEN MAY 2008

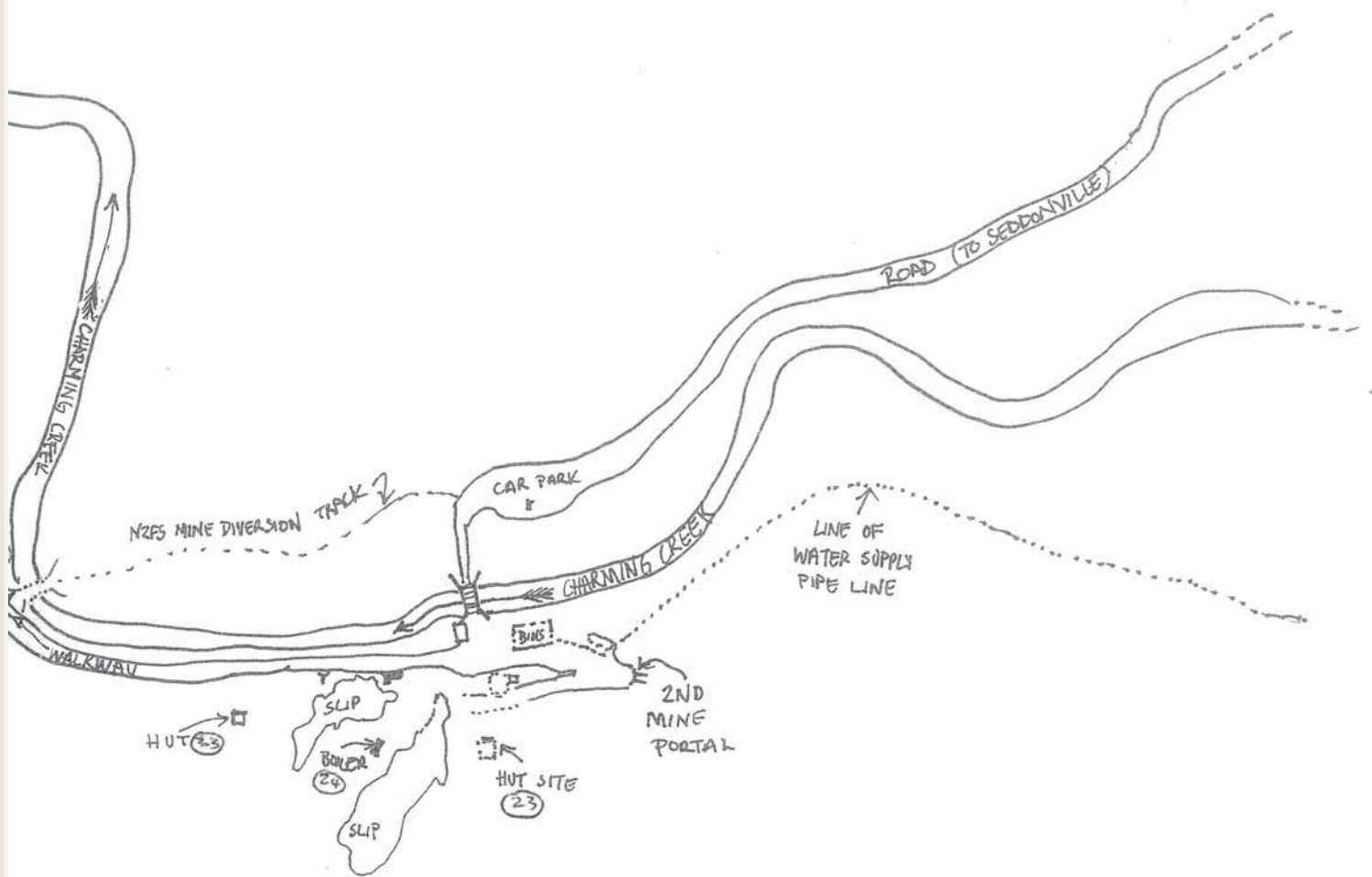


OVERVIEW MAP OF FEATURES
 FROM 2ND MINE SITE TO
 MUMM'S MILL SITE
 CHARMING CREEK WALKWAY

NOT TO SCALE

J. BREEN MAY 2008.

Figure 3: Sketch plan of area from second Mine site to Mumm's Mill. Numbers refer to GPS ID numbers.



Bridge

A modern NZFS pedestrian bridge now spans Charming Creek, replacing an earlier version that enabled coal trucks to cross to the mine. The piers and abutments of the old bridge are used by the current one.

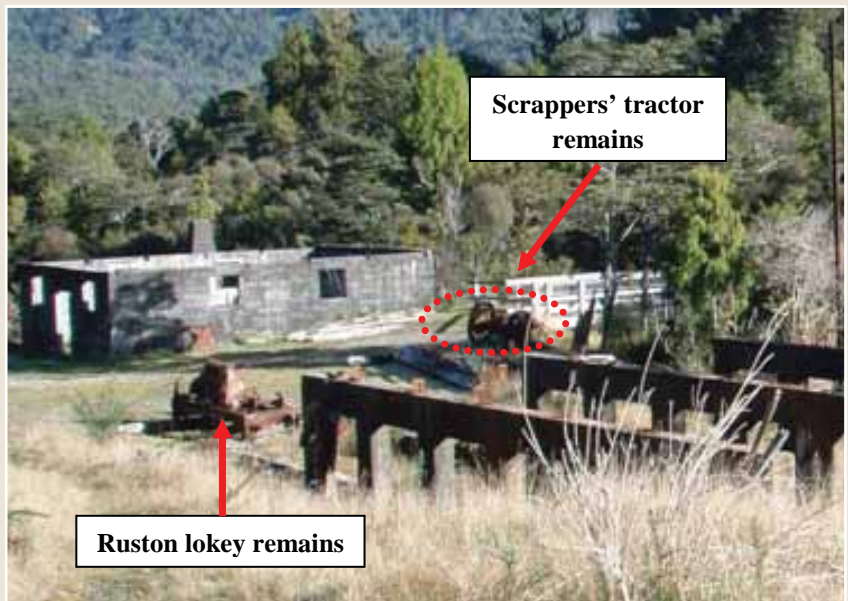
Photo 1: Bridge across Charming Creek at the start of the Walkway.



Scrappers' tractor

On the mine side of the bridge, directly to the east is the remains of a tractor that is thought to have been used by scrappers who spent time dismantling Mumm's Mill when it was shifted in 1958 (see photo 2).⁸

Photo 2: Looking north-west over the remains of the bins to the bathhouse. The scrappers' tractor and Ruston Lokey are marked.



⁸ Jim Staton personal comment, 28/5/2008.

Second mine portal

This portal is reached via a short section of track that leads from the bins, up the terrace to the southeast. Before the installation of the hydraulic hoist in 1956, coal was hauled out of the mine up the dip to the portal by a winch (see photo 3). Once above ground horses pulled the tubs to bins. About 5m inside the portal entrance remains of wooden doors are visible which were used in conjunction with a ventilation shaft to control air in the mine. The mine was sealed by the NZFS when it closed in 1986. A set of tram rails and sleepers are still present at the entrance.

Photo 3: Second portal to the mine



Hydraulic hoist shaft

The hydraulic hoist shaft which was used in later mining operations is located about 15m from the mine entrance to the north of the tramway formation. It was installed in 1956.

Pitch bins

On a hillside south of the bins is the remains of a horizontal bin which was used to melt tar or pitch. The melted tar or pitch was used during the hydro scheme operation at the mine for sealing pipes.

Photo 4: Pitch bin



The Bins

Of the bins, only the parallel concrete foundations are still present. They are a dominant feature at the site. Other remains from the bins include wooden beams, trap doors and four sliding gates (for dropping coal into trucks) now found NE of the bins. The bins were modified during their use (1956 to 1986), mainly to accommodate a transportation change from rail to road..

Beside the north upright of the bins rails are visible. These are dug into the ground and probably are left over from the tramway. There are another two on the opposite side of Charming Creek. Their function is unknown but it is thought that they may have been used to transport water from the bins into Charming Creek.



Photo 5 top: Remains of the bins
Photo 6: Ruston Lokey remains

Ruston Lokey remains

The remains of a Ruston lokey is also situated to the west of the bins. It originally worked the tram line at the Ngakawau end, but was left here when the tram line was no longer used. Photo 2 shows the lokey in relation to other features at the site, and photo 6 a close up view.⁹

⁹ There is a story that about the last day the tram operated; the lokey drivers went on a joy ride and the lokey that worked from the sawmill to the bins was run up to the mine, and the one that worked from mine to the sawmill was run to the bins. This is where they were left, and still remain.



Terrace to the west of the second mine portal

This area was originally the site of the first set of mine buildings built at the second mine portal dating from 1943. Coal tubs ran along an alignment from the mine portal, between the buildings and on to a set of bins. After a fire in 1952 and the installation of hydro-mining and a hydraulic hoist in 1956, this area was not used as much. Later mine works and salvage operations have modified this area, including the original tram alignment from the second portal. Following a heavily overgrown tram alignment, the chimney from the workshop/blacksmith is found (photo 7). There are numerous artefacts (such as a grinding wheel cover) scattered in the undergrowth.

Photo 7: Chimney thought to be from the blacksmith workshop.

Opposite the workshop site is another chimney lying horizontal in the vegetation. There are ideas that this is a bathhouse site, but as the mine bath house wasn't built until 1948, this is unlikely.¹⁰ In the vicinity concrete foundations are also noticeable underfoot and under vegetation.

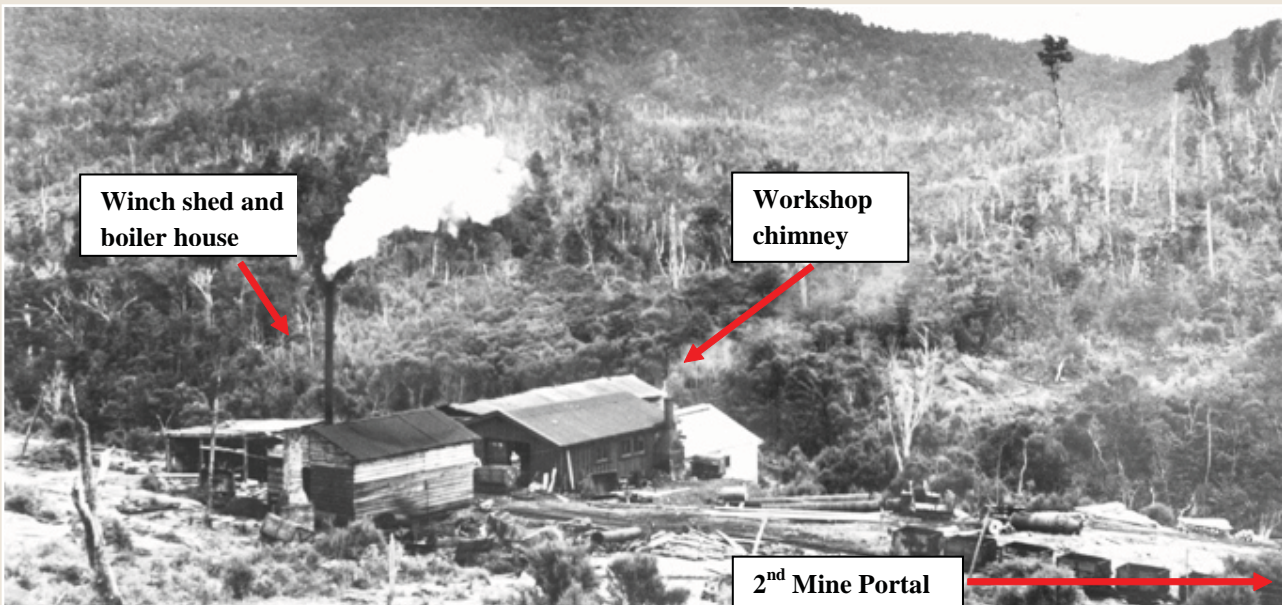


Photo 8: The winch shed, boiler house and workshop prior to 1956.

¹⁰ 1947 Mines Department valuation report, page 3, Mines Department file, MD IC 11/35 1 Purchase of Charming Creek Coal Mine, 11/8/47 - 13/3/58.

A circular concrete water tank (Photo 9) is situated near these foundations. It is mounted on stone blocks and rails. The tank has been set in corrugated iron. The tram to the bins used to be between these buildings.

Photo 9: Water tank



Further west there is a hut site (Photo 10). The structure of this 3x4m hut including wooden beams and corrugated iron has now collapsed but the chimney is still standing.

Photo 10: Hut site



Photo 11: Package boiler



Following the terrace further west, a couple of slips are crossed. Near here there is a package boiler with fire bars scattered around it. It is a short package 'Dryback' boiler with a compact marine type firebox and may have started life on a ship, but there is no makers mark on the boiler indicating who built it (photo 11). It may have been one used in the early period of the second mine (pre-hydro hoist 1943 to 1956) to provide motive power for the winch that hauled tubs out of the mine.¹¹

As the walkway is traversed a number of other historic features are encountered, all associated with the mine.

Bathhouse

At the start of the walkway, as you come across the bridge, is the 1948 bath house.. All that remains (photo 12) is the concrete shell and some wooden framing around windows and doors. While the condition of the bathhouse remains is good, this structure has been subjected to extensive graffiti..

Photo 12: Close up of bathhouse



¹¹ See reference to use of a 16hp Dryback boiler for the winch in the 1947 Mines Department valuation report, page 3, Mines Department file, MD IC 11/35 1 Purchase of Charming Creek Coal Mine, 11/8/47 - 13/3/58.

Mine Office Chimney

Directly to the west of the bathhouse are the remains of the mine office which was later used as a storeroom. This was a wooden structure but only the chimney now remains (see photo 13).

Beside the track, and in front of the office site, are the remains of the air receiver, which collected air to send down to the pneumatic drills used in the mine.

Photo 13: Chimney on the mine office and storeroom site.



Fanhouse

Some 15m further down the track is the fan house site. There are substantial remains here including the fan, metal fan housing, and concrete foundations for the engines that drove the fan. Air was expelled through a vent at the top of the fan house using a sirocco fan. This was originally driven by a diesel engine which was superseded by an electric motor mounted on a concrete foundation (see photo 14 and 15 for a historic view of the area).

Photo 14: Fan house at the mine.





Photo 15: 1940s tramline view. The fanhouse and associated building are seen on the right of the image. Note the double track of tram, with the right hand line being slightly higher than the left.

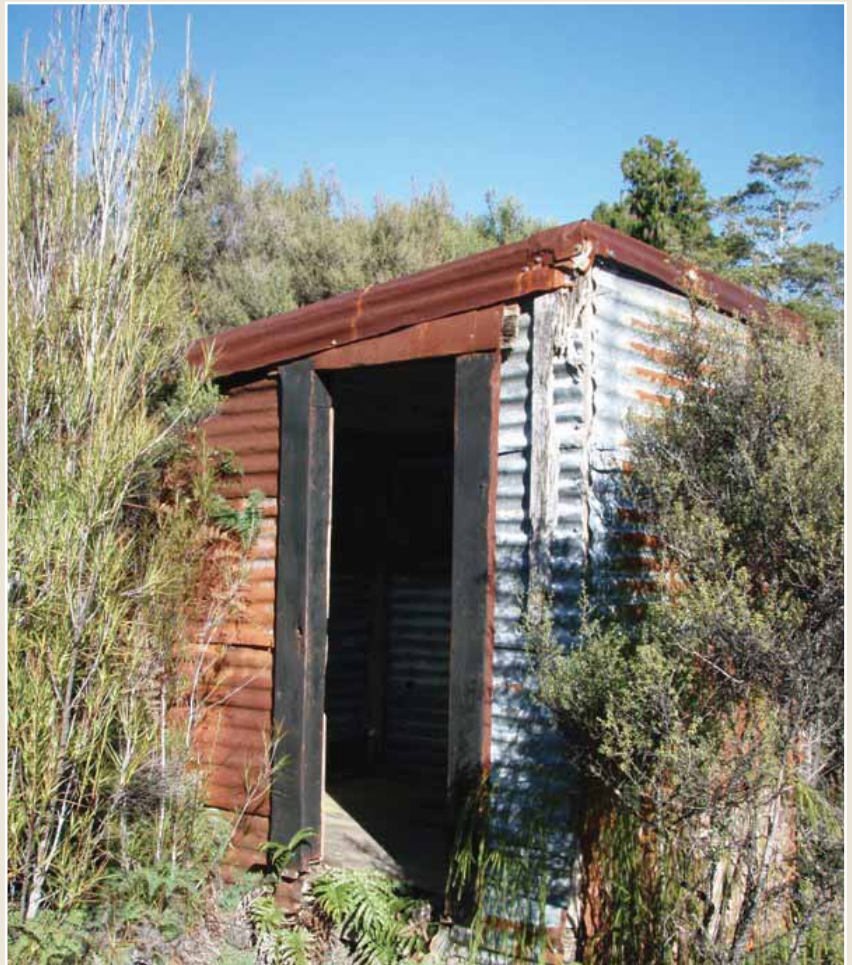
Along the walkway, past the fanhouse was the magazine site where explosives were kept (photo 16). All that remains is a hollowed out cavity excavated into the rock at the side of the track.

Photo 16: Magazine



A small track leaves the tramway here and progresses up the side of the hill to a hut site (photo 17). The hut is about 1.5 x 2.5 m and may have been used to store supplies during mining operations, or it may be the magazine that was reported under construction in 1947.¹²

Photo 17: Hut



¹² 1947 Mines Department valuation report, page 3, Mines Department file, MD IC 11/35 1 Purchase of Charming Creek Coal Mine, 11/8/47 - 13/3/58.

While not associated with the mine, directly adjacent to the tramway (photo 18) the abutments of a NZFS laminated bridge can be seen by the edge of the creek. This bridge marks the junction of a diversion track put in by the NZFS to bypass the mine in 1984 — the beginning of the recreational use of the area. This bridge was destroyed by a flood.

Photo 18: NZFS bridge abutment



Immediately to the north in this section of walkway are many pieces of historic equipment lying in the scrub, including a 6hp Dispatch boiler, one small winch drum, a docking saw (both probably used in saw mill operations) and 1.7 tonne coal truck chassis (see photo 19).

Photo 19: Remains of a 1.7 tonne coal truck



Work Recommendations

1. Vegetation clearance around all historic structures identified in this report should be undertaken especially within the main mine site clearing. The aim of this work is to maintain a relatively open area around the mine site to facilitate both visitor interpretation and experience, and ensure better historic fabric preservation.
2. A best practice rule of thumb of 2m area around historic features clear of vegetation should be followed. Where plants are growing out of historic fabric they should not be pulled off structures or earthworks as this can cause damage. Spray or hand cutting is recommended. Any scrub bar work to be undertaken with care so no historic fabric is damaged.
3. Re-assess the maintenance regime being carried out on historic features such as the fan house to determine how effective they are. If required update the maintenance specifications written by J. Green in 2002. For other features not covered in these specifications, with assistance from TS, produce condition reports and maintenance specifications for the historic features in table 2 below.
- 4) Investigate bio-friendly, anti-rust corrosion methods to treat metal historic features. See table three, page 23, for a list of features that require metal preservative treatment.
- 5) The condition of the historic features should be monitored. This should be a minimum of once per year.
- 6) Investigate ways to minimise vandalism to historic fabric, specifically the issue of graffiti on the bathhouse.
- 7) Carry out further more detailed site survey work at the second mine site, specifically in areas not comprehensively surveyed during the filed work for this report. For example, the area in the vicinity of the workshop, where the original mine buildings and tramline from the mine were should be surveyed to determine what remains. Seek advice about doing this.

Table 2: Historic features in section one requiring condition reports and maintenance specifications.

GPS ID	NAME	DESCRIPTION	HISTORIC FABRIC	ALT	EASTING	NORTHING
010	Boiler: Clayton & Shuttleworth (No. 8657)	Located in the Charming Creek Road end car park. It was bought to this location by the NZFS.	HF	121.00	2422943.99	5957329.38
010	State Coal prospecting core sampling site	From this GPS point in the eastern car park the site is about 60m away over the creek on a ridge. This was the last place where the State undertook core sampling. There are metal relics in the bush still.	HF	121.00	2422943.99	5957329.38
011	Air Ventilation Shaft	'Speedy' the mine horse reportedly fell in and his bones can still be found here. This air shaft is now covered with rubble on the surface.	HF	117.20	2422873.62	5957269.16
012	Bridge	GPS point marks the car park end of a modern bridge. This bridge is using old bridge abutments and the remains of the bridge can be seen to be lying beside the bathhouse.	HF/modern	116.40	2422872.87	5957261.25
013	Charming Creek Coal Mine Bathhouse	Concrete shell and some wooden framing around windows and doors is all that remains of the bathhouse. Built in 1948.	HF	117.20	2422872.41	5957237.07
014	Bins - second Charming Creek Coal Mine	Parallel concrete foundations of the bins are still present. Believed that in 2001 the bins were dismantled by the West Coast County Council as they were thought a visitor safety hazard. Remains including wooden beams, trap doors, four sliding gates (for dropping coal into trucks) are now lying NE of the bins after being bulldozed into this position.	HF	119.30	2422907.62	5957240.14
014	Tramway-modification (Bulldozed)	Tramline ran further to the NE of the bins. The area was flat and in tramway formation. Due to bulldozing and clearing on the site where the tramline used to pass through is now not flat. It is unclear if the tramline fabric is still present underneath.	HF	119.30	2422907.62	5957240.14
014	Upright rails	There are two long upright rails in ground just north of the bins. There are also another two on the opposite side of Charming Creek. Function is unknown but they may have been used to support a water transport system from the bins into Charming Creek.	HF	119.30	2422907.62	5957240.14
015	Ruston Lokey	This may be the lokey that normally worked in the gorge section.	HF	119.10	2422894.80	5957237.60
N/A	Charming Creek Mine Dam	A hydro pipeline used to lead from the base of the blow up system at the mine to a concrete dam a mile or so up the valley. The dam remains.	HF			
016	Tar bin	This is a horizontal bin for melting tar or pitch used during the hydro scheme at the mine for sealing pipes.	HF	123.90	2422922.42	5957228.76
017	Hydraulic Hoist shaft	Location of the shaft which contained the hydraulic hoist.	HF	124.10	2422934.65	5957235.19
018	Charming Creek Coal Mine Entrance - second	This is the second (and last) entrance to the mine. It is currently walled off about 10m in. About 5m in the remains of the wooden doors used for air control are visible. 1.7 tonne trucks were used here.	HF	125.80	2422957.14	5957223.56
019	Chimney	Remains of a chimney lying horizontal. Found on a southern road through the mine (now vegetated and overgrown).	HF	129.40	2422898.83	5957210.65
020	Blacksmith chimney	Standing metal sheet chimney is thought to mark the location of a blacksmith shop.	HF	128.00	2422895.56	5957220.87
020	Blacksmith shop remains	Associated with the chimney (a few metres over) are a number of metal items associated with the blacksmith shop, e.g. a grinder wheel cover.	HF	128.00	2422895.56	5957220.87

GPS ID	NAME	DESCRIPTION	HISTORIC FABRIC	ALT	EASTING	NORTHING
021	Water tank	A circular concrete water tank mounted on stone blocks and rails (possibly wood). The concrete was set in corrugated iron. Height=620mm, Inner Diameter=1320, Outer Diameter=1510.	HF	129.20	2422895.73	5957210.54
022	Concrete foundations	Concrete foundations are felt underfoot in this area and several large blocks are visible. One has a very coarse matrix with 3cm large stones. The exact extent of this concrete is unknown. One block (width=400mm, length=920-1540mm, depth=600mm) has been unusually strengthened with a fire bar, which was perhaps used as a levelling device.	HF	131.10	2422897.34	5957205.51
023	Hut site	Collapsed hut with wooden beams and corrugated iron. Chimney is still standing. Hut was about 3x4m.	HF	132.80	2422897.29	5957191.87
024	Package boiler	This is a short package boiler (maybe the bathhouse boiler). Dry back. It has a short compact marine type firebox (may have started life on a ship), but there is no evidence on it regarding its maker. Fire bars are scattered around the boiler.	HF	135.20	2422854.27	5957178.22
025	Coal mine office and storeroom	This was the location of the Office initially and then it became a Storeroom. This was a wooden structure which still has a standing chimney.	HF	124.40	2422868.72	5957238.24
026	Air receiver	Remains of the air receiver, which was part of the system that ran the pneumatic drills used for boring in the mine.	HF	124.60	2422863.55	5957230.93
027	Fan house	This fan house was installed for air ventilation (and access for miners). Air was expelled through the vent at the top using a sirocco fan. This replaced the natural air shaft (wpt 011). Originally driven by a diesel engine (has two mounting bolts on timber and concrete foundations). This engine was superseded by an electric motor mounted on a concrete foundation. Foundations of the engines are still present beside the fan house.	HF	124.40	2422862.58	5957223.64
029	Culvert	Historic culvert drilled into cutting/bench on south side of tramway. It has been modified under the current walkway in modern times.	HF	123.20	2422846.38	5957222.72
029	Tramway-formation (Benched)	After leaving the mine the tramway is benched and its alignment follows the creek.	HF	123.20	2422846.38	5957222.72
030	Tramway-formation (Sleepers)	Visible evidence of sleepers from tramway formation in some places	HF	122.70	2422824.38	5957222.91
031	Magazine	Store for keeping explosives for mine use	HF	121.30	2422820.29	5957217.29
032	1.7 tonne truck	Remains of a large 1.7 tonne truck on the side of the track.	HF	122.20	2422786.33	5957215.65
033	Hut site	A track leaves the tramway, up the hill to a hut site. The hut is about 1.5 x 2.5m and is in really good condition. This may have been used to store the supplies.	HF	123.70	2422771.13	5957197.86
034	Metal equipment remains	Between here and the Papa Tunnel are a lot of historic artefacts and rusty equipment (especially just to the south of the track). It appears to have been collected here.	HF	120.00	2422746.17	5957211.03
035	NZFS laminated bridge anchor blocks	To the north of the walkway abutments of a NZFS green laminated bridge can be seen by the edge of the creek. This bridge marks the junction of the old walkway alignment with the tramway alignment. When the mine was still operating the walkway from the car park was formed on the north side of the creek and lead over this bridge to avoid the active mine. This bridge was destroyed by a log moving downstream one day.	Modern	119.30	2422695.30	5957218.84
036	Culvert	Culvert with historic timbers still in-situ. At one point it was washed out and newly constructed or modified.	HF/modern	118.10	2422697.02	5957214.93
037	Boiler	6 hp dispatch boiler located in the scrub immediately to the south of the walkway and visible.	HF	118.80	2422687.76	5957211.96

GPS ID	NAME	DESCRIPTION	HISTORIC FABRIC	ALT	EASTING	NORTHING
037	Winch Drum	Small winch drum located in the scrub immediately to the south of the walkway and visible. From Mumm's Mill.	HF	118.80	2422687.76	5957211.96
037	Docking Saw	Circular docking saw located in the scrub immediately to the south of the walkway and visible. From Mumm's Mill.	HF	118.80	2422687.76	5957211.96
038	Papa Tunnel - east end	This marks the east end of the Papa Tunnel. This tunnel is currently closed to the public. An alternative route leaves the tramway alignment here and curves around the tunnel to the north of it to a major junction. (Tech Id 024923)	HF	119.60	2422680.09	5957216.80

Table 3: Metal artefacts in Section 1 requiring preservation.

GPS ID	NAME	DESCRIPTION	HISTORIC FABRIC	GPS EASTING	GPS NORTHING
010	Boiler: Clayton and Shuttleworth (No. 8657)	This boiler is located in the Charming Creek Road end car park. It was bought to this location by the NZFS.	HF	2422943.99	5957329.38
015	Ruston Lokey	Near the remains of the bins.	HF	2422894.80	5957237.60
020	Blacksmith chimney	Standing metal sheet chimney is thought to mark the location of a blacksmith shop.	HF	2422895.56	5957220.87
024	Package boiler	This is a short package boiler (maybe the bathhouse boiler?). Dry back. It has a short compact marine type firebox (may have started life on a ship), but there is no evidence on the boiler who built it. Fire bars are scattered around the boiler.	HF	2422854.27	5957178.22
026	Air receiver	Remains of the air receiver, which received air to send down to the pneumatic drills used for boring in the mine.	HF	2422863.55	5957230.93
027	Fan house	This is the fan house installed at Charming Creek Mine for air ventilation (and access for miners). Air was expelled through the vent at the top using a sirocco fan. This replaced the natural air shaft (wpt 011). This was originally driven by a diesel engine (has two mounting bolts and timber and concrete foundations). This engine was superseded by an electric motor mounted on a concrete foundation. Foundations of the engines still present beside the fan house.	HF	2422862.58	5957223.64
032	1.7 tonne truck	Remains of a large 1.7 tonne truck on the side of the track.	HF	2422786.33	5957215.65
037	Boiler	6 hp dispatch boiler located in the scrub immediately to the south of the walkway and visible.	HF	2422687.76	5957211.96
037	Winch Drum	Small winch drum located in the scrub immediately to the south of the walkway and visible. Originally from Mumm's Mill.	HF	2422687.76	5957211.96
037	Docking Saw	Circular docking saw located in the scrub immediately to the south of the walkway and visible. Originally from Mumm's Mill.	HF	2422687.76	5957211.96



Photo 20: An image from 1945 showing miners and mine horses travelling up the tram to the mine. Note the double rail lines.
J.D. PASCOE, WAR EFFORT COLLECTION, ATL

General Description and Condition

This section of tram that ran to the mine site was completed in 1943, and used up until 1958. From the Charming Creek Road car park the walkway follows the road (utilised by the coal mine) and crosses a bridge to reach the heart of the mine site. The walkway heads west towards Papa Tunnel passing the bathhouse using the old tram formation.

On the section of tram at the mine site there is no visible evidence of in-situ sleepers or rail. The area directly to the northeast of the bins was highly modified by bulldozer when the bins were dismantled. It is unclear if tram formation or fabric is still present underneath. There are, however, many historic remains are present in a spoil heap behind the bins. Any tram formation directly in and around the bins directly to the west is also gone, this area being upgraded to facilitate the use of truck transport in around 1958, and being part of the working mine site up until the mines closure in 1986.

Beyond the footprint of the more modern mining operations, further to the west along the walkway, the tramway becomes more distinctly benched and there are some in-situ sleepers with dog spike visible in the track surface. Originally on this part of the tram there were two lines of track (see photos 15 and 20) that enabled rakes of empty and full trucks to pass on the tram near the mine bins. Consequently the tram alignment here is reasonably wide (about 3-4m). The tramway alignment is generally clear of vegetation.

There is a historic culvert (GPS ID 029) drilled into the south side of tramway on the walkway alignment leaving the coal mine site. The present culvert, even though it has historic timbers, looks like at one point it has been washed out and newly constructed or modified in part.

When Mumm's Mill was shifted in 1957/58 after the tram was closed, some of the tram alignment was damaged or destroyed. It is unclear how much original formation still exists, but as there are some sleepers exposed in some parts of the tram that appear to be in-situ, there is the potential for subsurface remains to still exist. Using the route as an access road to the settling ponds may have also impacted on the original formation.

With the degree of modification that has occurred to the tram in this section, it is obvious that the physical values are not high. In some parts, such as around the mine, the condition is poor, to non-existent. The rest of the formation is best described as having moderate physical values. However, the modifications do have historic value in their own right, as they are part of the continuing use of the mine and mill in the latter half of the 20th century.

Work Recommendations

- 1) Maintain vegetation along the outer edges of the tramway alignment to retain historic profile.
- 2) Visitor upgrade work involving earthworks should be minimised to preserve potential subsurface remains and eliminate any further modifications to tramway profiles. Seek advice from TSO when planning any such work.

Main Features

The walkway follows a piece of rough road that bypasses the Papa Tunnel from its eastern entrance to Cornes Hill Junction. From here it crosses the tram formation and goes past the first mine entrance. The main features on this section are as follows:

- Papa Tunnel and the tramway – constructed during the tram extension to the second mine 1943.
- Bulldozed Road around Cornes Hill through to the settling ponds - dating from 1958 when the tram closed and Mumm's Mill was shifted.
- Cornes Hill Junction - a point where the 1943 tram, the bulldozed road around Cornes Hill, are crossed by the modern walkway.
- First Mine site - operational from 1927 to 1942.
- Length of Walkway
- About 325m (GPS ID 038 to 048)

Other Recorded Features

- None

Associated Features

- None

Papa Tunnel and Tramway***General Description***

The tramway in this section was constructed in 1943 when the mine shifted further upstream. The Charming Creek Walkway used to follow the old tram formation through Papa Tunnel. This route was closed in 2006 due to a washout of the track surface within the tunnel.¹³ The walkway now follows an access road around Cornes Hill (see figure 4).

From the east, the tram enters Papa Tunnel and it emerges on the western side of Cornes Hill into an impressive 30m long cutting. Beyond the cutting, the alignment and grade of the tram has been maintained using an embankment formation. The embankment appears to continue past Cornes Junction (at the old mine site) towards the settling ponds. The section of tramway leading to the ponds was not explored during this field visit as it deviated significantly from the walkway. Much of this tram alignment was washed away in 1989.

Sleepers can be seen on the embankment section leading to the tunnel, and rails, sleepers and centre brake are exposed for about 20m into the tunnel. One section of centre rail brake is still present at the tunnel entrance, and is approximately 10m long. A second section is visible on the embankment. Within the cutting before the tunnel entrance a side drain has been dug, exposing sleepers and the centre rail brake.

¹³ See Tech Id - Northern Tunnel 024936

Condition

This section of tramway through Papa Tunnel is in comparably good condition with rails, sleepers and the centre rail break all visible in-situ in places. When the tunnel was part of the walkway, gravel had been placed over some of the remnant sleepers and rail to create an even walking surface. Displacement of some of the rails in the tunnel is also evident (photo 22). Because this section of tramway is currently not used as a walkway as a result there is vegetation re-growth encroaching upon the tram alignment (photos 21 and 23).

This section of tram through Papa tunnel is important as it has substantial in situ fabric remains. It also exemplifies one of the features the tram at Charming Creek has become renowned for, namely the extensive use of earthworks.

While the walkway no longer uses Papa Tunnel, the physical values of the tram and tunnel are high.

Work Recommendations

- 1) The drain at the western end should be cleaned in order to minimise any further damage to the tram formation from water. Care should be taken around the centre rail brake, sleepers and rails.
- 2) A routine monitoring programme to assess any changes in condition over time should be established.
- 3) Vegetation encroachment should be monitored. While it is not recommended that large scale vegetation clearance should occur at this stage, a vegetation management specification should be written. This should mediate between ongoing maintenance of historic values around the tunnel and on the tram formation to the west of the tunnel, and the need manage visitors appropriately and discourage them from venturing into the tunnel.



Photo 21: Looking west from Papa Tunnel entrance.



Photo 22: Centre brake rail, sleepers and rail, looking into Papa Tunnel from its west entrance. The eastern entrance can be seen in the distance.



Photo 23: Looking east towards Papa Tunnel. Note the encroaching vegetation.

Road around Cornes Hill

General description and condition

As stated above, from the eastern portal of Papa Tunnel (GPS ID 38), the walkway follows the formation of a bulldozed road (see Figure 4). It was used to access Mumm's Mill site when this was moved in 1958 and may have also been used by the CCWCC as access to the settling ponds. This access route is not well formed, with an uneven surface and an undulating grade. Significant erosion of the track surface has occurred. Water scouring is evident on the walkway surface which has potentially slippery and large rocks exposed. It is likely that this road has been modified extensively over time right up until the closure of the Charming Creek Coal Mine.

The walkway leaves the road at GPS ID 044. The road continues on to the settling ponds. This part of the road was not traversed during the course of this site survey.

Work Recommendations

Nil.

Cornes Hill Junction

General Description

At Cornes Hill Junction the walkway traverses a road and two tramway alignments (see Figure 4). Approaching from the east the walkway leaves the road (GPS ID 044) which continues on to the settling ponds. Next the walkway crosses the embankment formation of the tramway that is part of the 1943 line that extends towards the Papa Tunnel and the second mine site. The walkway then curves around and crosses a second tramway alignment (GPS ID 045) which led from the first mine entrance of the Charming Creek Coal Mine (GPS ID 047). The first Mine Portal is off the track to the south of the tunnel.

Adjacent to the track is a tub tipper from the bins at the first mine site (GPS ID 046). These bins were established in 1938. The coal haulage system worked thus: a rake of full tubs came out of the mine and was brought to surface and shunted along to the top of the bins. The tubs were uncoupled one by one and ushered into the tipper. The tipper (a cradle of sorts) moved on a centre pivot that allowed coal to be dumped into the bins while retaining the tub. The tubs were then pushed onto an adjacent line for empty tubs. (Photo 24)

Work Recommendations

- 1) Any visitor upgrade work at this junction needs to be mindful of potential subsurface remains of the tramway formation where it crosses the walkway. Earthworks should be minimised to preserve the two tramway formations and the embankment profile.
- 2) The tub tipper should be treated with metal preservative and the vegetation kept clear from around it.

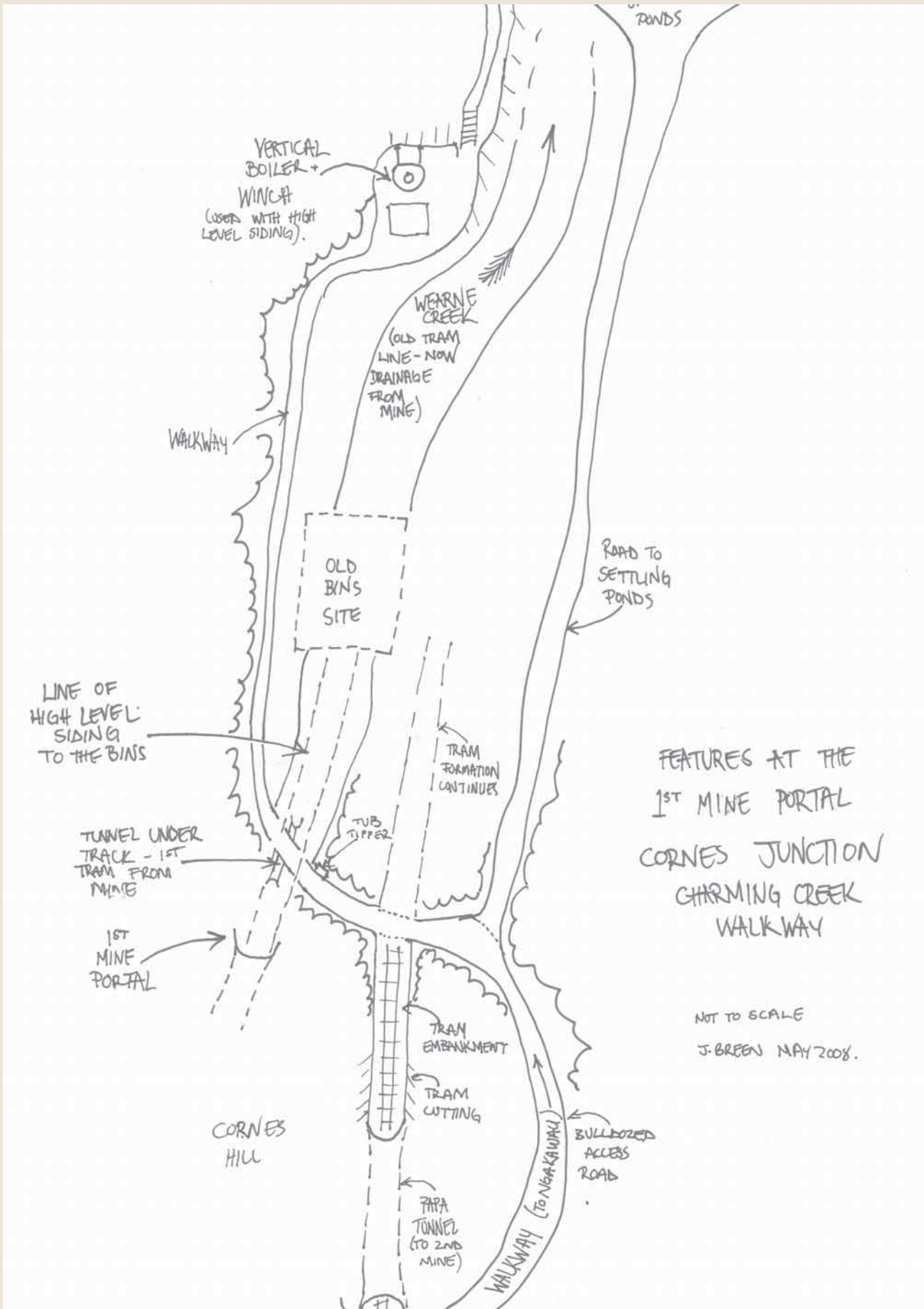


Figure 4: Sketch plan of features at Cornes Hill Junction, first mine Site.



Photo 24: Tub tipper at Cornes Hill Junction



Photo 25: The first mine entrance. Note the rail and sleepers.



Photo 26: Tramway alignment from mine entrance, where the high level siding intersects with the walkway. The line of the tram is marked by an arrow. A sleeper exposed in the track surface has been circled.



Photo 27: Remains of the bins in Wearne Creek, some time prior to 1989.

First Mine Site

General Description

The site of the first mine portal used at Charming Creek is at GPS ID 047 (see figure 4). It is off the walkway to the south in the regenerating scrub. The portal is much overgrown, but there are still the remains of rails and sleepers at the entrance. (Photo 25; see photo 6 in the history book for a historic view of the area.)

There were two phases of development at the first mine related to transporting coal from the mine. Initially a tunnel (which now dewater the mines under the current walkway) was used to haul large 1.7 tonne tubs to the tram, which is now the bed of Wearne Creek.

In 1938 this system was changed, with small tubs being used. Instead of hauling straight out to the tram, a high level siding was built up and over the old tunnel, out to a set of bins. Below the bins, the large tubs were filled and transported to the bins at Ngakawau. (Section 7, page 64 – Watson’s Mill to the Ngakawau Suspension Bridge.)

Sleepers and rail are exposed at GPS ID 045 where the high level siding crossed the current walkway (photo 26).

The remains of the old bins from the 2nd phase of development at the first mine portal are about 20m up the creek from GPS ID 048. There are still old beams in the creek, although these are not as extensive as those seen in photo 27, taken during the early 1980s. The flood that destroyed a section of tramway in 1989 also washed away much of these remains.

Condition

The top section of tramway formation which crosses the walkway is in moderate condition with sleepers and rail exposed in places.

The bottom section of tramway formation has been affected by water erosion as the first mine entrance was used to drain water from later mine operations. The tramway formation is now under water in the creek bed. Sleepers and rail are not visible.

Because the section of tramway from the mine entrance to the walkway is currently not maintained for visitor access, young trees and other vegetation are starting to become established over the sleepers and rail still in-situ.

Recommendations

- 1) Any historic or visitor upgrade work at this junction needs to be mindful of potential subsurface remains of the tramway formation where it crosses the walkway. Earthworks should be minimised to preserve the tramway formation.
- 2) Annual monitoring of historic features should be undertaken.

The walkway between the first mine site and Mumm's Mill is mainly modern track formation.

Main Features

- Vertical boiler and winch – associated with the first Mine, 1929 to 1942
- Settling ponds – associated with hydro-mining, 1956 to 1986.
- Tramway – associated with the first mine, circa 1927

Length of Walkway

Around 460m (Between GPS ID 048-056)

Recorded Walkway Features

Engine head (1), vertical boiler (1), NZ Walkway Commission Sign (1) and settling ponds (1)

General Description

The walkway from the first mine portal was constructed by the NZFS, with a later re-route by DOC. The track does not follow the original alignment of the tram. While the track itself is not historic, this was probably the site of the surface infrastructure for the mine from 1927 to 1943. There are a number of historic features that have been identified in adjacent to the track. The head from an engine is one of these features (GPS ID 048).

Vertical boiler and winch

The next historic feature along this section of track is the site of the vertical boiler from the Charming Creek Coal Mine which is next to the walkway near a rock bluff (see figure 4). This is the original site where the boiler and winch worked (see photo 28). The winch (powered by the boiler) was used for hauling mine trucks up the dip from the first mine portal to the bins.

Settling Ponds

From the boiler and winch site, the walkway negotiates a rocky bluff then passes the settling ponds. These were created in 1954, during hydro-mining operations at the second mine site. They were used to settle out coal fines from the waste water. The settling ponds are visible from old aerial photos. Today the ponds still retain coal from the mining operations (see photo 29). The original tramline crossed this area, but was destroyed in 1989. The walking track is a DOC re-build post the flood event of 1989.

Tramway and other features

Near the settling ponds is an old NZ Walkway Commission sign post with their 'W' walkway emblem on the top (GPS ID 052). This appears to be the only one left on the walkway. At this point the walkway re-joins the old tramway alignment at GPS ID 054. The tramway originally came through the area next to the settling ponds. The walkway is about 4m wide here and low lying. Sleepers are exposed in places, but some of them appear to be no longer in situ. At GPS ID 056 the walkway leaves the tramway alignment and crosses a DOC bridge over Wearne Creek and turns northwest towards Mumm's Mill. A plate layers hut site is reportedly south of the walkway at GPS ID 050.¹⁴ This site was not visited.

¹⁴ Staton 2008 pers.comm.



Photo 28: Vertical Boiler (TECH ID 042717)



Photo 29: A view of the settling ponds from the walkway.

The original tramway formation continues on a straight line from GPS ID 056 and heads towards Mumm's Mill on the south side of Wearne Creek (see figure 5). This tramway alignment used to join the timber tram line that passed through Mumm's Mill. At the western end of this coal tram alignment a section has been destroyed having been washed away by Wearne Creek (GPS ID 058). Remains of unidentified metal equipment can be found lying in the bush at GPS ID 057.

Condition

Before GPS ID 054 on the walkway, the track is of recent construction, being formed by both the NZFS and DOC. A significant part of the original tramline was destroyed in the April 1989 flood.

The section of walkway that follows the remaining tramway formation between GPS ID 054 and 056 is of moderate condition with sleepers exposed but displaced in some parts.

The vertical boiler has undergone maintenance work in the past and has been protected with Black Guard. While seemingly being effective in preserving the metal, the application of this produce has made the boiler number difficult to read.

Recommendations

- 1) Maintain the tram width on the section of walkway between GPS ID 054 and 056 as this is the only piece of original tram on this section.
- 2) Re-assess the maintenance regime being carried out on the vertical boiler and winch to determine how effective it is. If required update the maintenance specifications written by J. Green in 2002.¹⁵ Try to minimise application of treatment in the vicinity of the boiler number.
- 3) Consider keeping the vegetation low along the stretch of track bounding the settling pond. This will retain views across the area.
- 4) Further site survey work should be undertaken to more certainly identify the site of the plate layers hut site.

¹⁵ Green, J. Charming Creek Maintenance Specifications 2002.

Main features

This section includes the walkway from Wearne Creek through Mumm's Mill Site and the historic features associated with the tramway and the mill itself at this site. There are three main features in this section:

- Dispatch log hauler
- Log bogies
- Mumm's Sawmill site and steam engine- 1940 to 1957.

Length of Walkway

Walkway goes through the mill site - no formal track.

Recorded Walkway Features

Boiler (1), Mumm's Mill (timbers), Mumm's Mill Shelter (1), Mumm's Mill Boiler (1), miscellaneous equipment (including a weir feed water pump, No.5, governor valves, expansion valves and a breast bench gauge), log bogies (2), sawn timber trolley (1), 1.7 tonne coal trucks (5-7) (1); 6hp Dispatch Steam Winch (1).

Known Associated Features

Mumm's Mill has an extensive historic landscape associated with it (such as timber trams and hauler sites), and there is potential for other features to be present that were not recorded during this survey.

Dispatch Log Hauler

Approaching the mill site from the east a short and narrow track veers approximately north to a reconstructed Dispatch log hauler (photos 30 and 31; GPS ID 060). The hauler has been restored, but remains on its original site. The restoration took place in 1987 and was overseen by Jim Staton. The additional parts for the hauler came from Ray Faulkner of Faulkner and Anderson Sawmill (Omoto), and represent exactly what would have been here when the mill was operational.¹⁶

Log Bogies

There is a short track down from the log hauler, around the log bogies (Photo 32; GPS ID 061). The log bogies are sitting on rails which are on the alignment of a bush tramway that ran up the valley and brought logs down to the log skids at the mill. The two log bogies have been reconstructed along with the rails they are on. All the metal components used in the log bogies were found near the bins at the top coal mine site. The timber chassis were built in the workshop at Westport (apparently not to the original specifications). The wheels of the bogies are broad and flat indicating that they may have been used back in Watson's time when the tramway had wooden rails. The sleepers and rail were found at the Mumm's Mill site itself and are repositioned on the actual alignment of a timber tramway which brought logs down the valley to the log skids at the mill.¹⁷ The timber tramway used to extend through the site from the skids and to a bridge at GPS ID 063 (see figure 5).

¹⁶ J. Staton pers.comm. 6/5/2008.

¹⁷ J. Staton pers.comm. 6/5/2008. Jim has recently found out that the bogies actually belonged to the scrappers who took material out of the site some time after the mill was shifted.



Photos 30 and 31: log hauler





Photo 32: A reconstructed log bogie on a section of rail. Note the broad flanged wheels.

Mumm's Sawmill site and steam engine - 1940 to 1957

The steam engine that drove the mill is housed in a modern shelter with a few standing timber posts being all that remain of the mill building itself (photo 34; see figure 5). The steam engine was reinstated on site by the NZFS in the 1980s. The boiler has a Marshall Marine type fire box and was rated at 21 hp.

There is a lot of equipment that has been collected together from the site which is now housed under the shelter too. This includes a weir feed water pump, No.5 governor valves, expansion valves and a breast bench gauge. Near the west entrance to the mill site clearing there is a sawn timber trolley (GPS ID 062).

At one point the site was cleared and levelled with a digger and remains of the derelict mill structures were pushed to the edge of the clearing towards the northeast. (Photo 33 shows a view of the site prior to development of the area). The probability of subsurface remains in these areas and beyond the current mill clearing (such as along the timber tramway branch up the valley) is high.

At GPS ID 063 the walkway exits the Mumm's Mill Site clearing. This section of walkway is not thought to be on the tramway alignment. A large 1.7 tonne coal truck (GPS ID 063) lies to the north of the walkway here. The walkway joins the original tramway alignment at GPS ID 064. Near here are the remains of between 5 and 7 large coal tubs, colloquially called 'the last coal train'.

Condition

Mumm's Mill site is in good condition. There are not many structural remains of the mill buildings left, but the modern reconstructions assist with interpretation at the site. For a sawmill site there is a decent amount left - nationally it is rare to find sawmill sites with any remaining plant intact.¹⁸

Vegetation is well managed around the majority of historic features and is not currently an issue. There does however seem to have been no work carried out in the coal tubs at GPS ID 064.

Recommendations

- 1) Any historic or visitor upgrade work involving earthworks should be minimised to preserve potential subsurface remains and eliminate any further modifications to tramway and structure profiles.
- 2) Vegetation should be monitored around any historic features at appropriate intervals. The mill site clearing and around historic fabric should be maintained as an open area to facilitate visitor interpretation and enhance the visitor experience.
- 3) Assess the need for wood preservation to be carried out on the remaining timber posts from the original mill building.
- 4) Continue with metal preservation work at the site. Re-assess the maintenance regime being carried to determine how effective it is. If required update the maintenance specifications written by J. Green in 2002.¹⁹ Further specifications may be required to be written where they are not included in Green's specifications. Carry this out with advice from TSO Historic. Below in Table 4 is a list of the metal equipment that should be preserved.

¹⁸ See Breen 1996:70 for a wider discussion of this.

¹⁹ Green, J. Charming Creek Maintenance Specifications 2002.

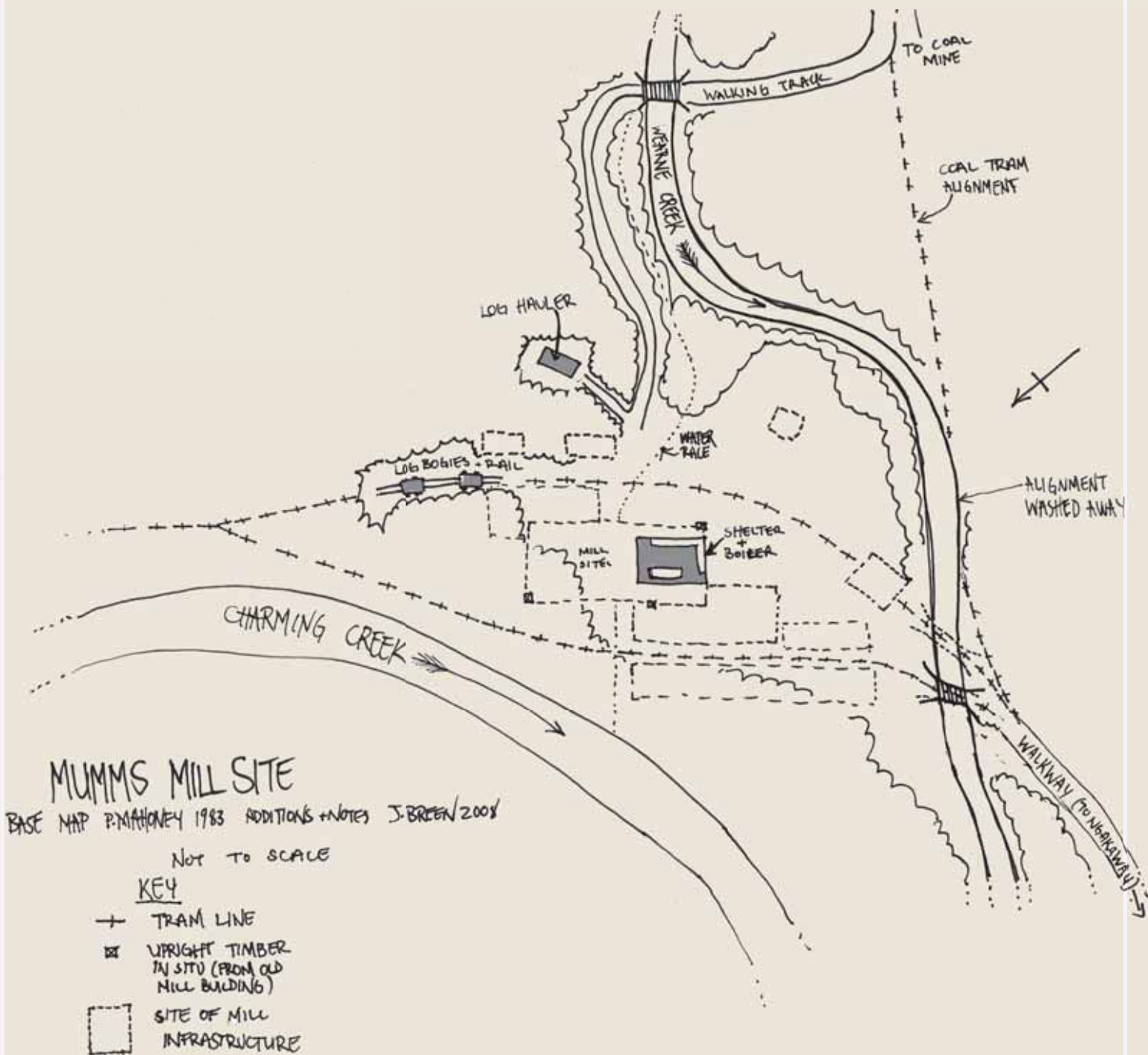


Figure 5: Sketch plan of Mumm's Mill site.



Photo 33: Mumm's Mill site prior to development of the area by the NZFS, early 1980s



Photo 34: Clearing at Mumm's mill and the shelter that houses the steam plant that drove the mill. Note the remaining upright beam from the original mill building to the left of the shelter.

Table 4: List of historic artefacts, section 4 that require metal preservation work.

GPS ID	TECH ID NUMBER	NAME	DESCRIPTION	HISTORIC FABRIC	EASTING	NORTHING
060	042719 Old Hauler	Boiler	6hp dispatch logging winch. This has been restored and the rest comes from Ray Faulkner of Faulkner and Anderson Sawmill (Omoto) and was moved here in 1987. The additional parts represent exactly what would have been here.	HF	2422154.14	5957403.96
	042714 Mumm's Sawmill (other machinery)	Mumm's Mill Boiler	This is the portable boiler that drove Mumm's sawmill (in its original position). It has a Marshall marine type fire box and is 21hp. It is housed in Mumm's Mill Shelter.	HF		
	042714 Mumm's Sawmill (other machinery)	Metal equipment remains	The Mumm's Mill Shelter also houses other equipment from Mumm's sawmill gathered into a pile beside the boiler. This includes a Weir feed water pump, No.5, governor valves, expansion valves and a breast bench gauge.	HF		
062	042714 Mumm's Sawmill (other machinery)	Sawn timber trolley	The remains (wheels) of a sawn timber trolley can be seen in the clearing here.	HF	2422098.73	5957391.74
063		Truck	Large 1.7 tonne coal truck lies to the north of the walkway here.	HF	2422099.41	5957406.64
064		Coal tubs	This is the site of the 'last coal train' used on the tramway. The remains of large coal trucks can be seen here. Two are very complete (minus the timbers) and visible and it is thought that in total there are between 5 and 7 of them.	HF	2422064.77	5957398.28
061	042714 Mumm's Sawmill (other machinery)	Log Bogies	Two log bogies have been reconstructed and are situated here on rails. All the metal components used in the log bogies were found near the bins at the top coal mine site. The timber was built in the workshop at Westport (not to the original specifications). The wheels of the bogies are broad and flat indicating that they may have been used back in Watson's time when the tramway had wooden rails. The sleepers and rail were found at the Mumm's Mill site itself and are repositioned on the actual alignment of a timber tramway which brought logs down the valley to the log skids at the mill.	HF	2422147.64	5957417.92

After Mumm's Mill the walkway joins the tramway alignment where the timber tram and the coal tram joined, and follows this to the Charming Creek Bridge.

Main features

- Union Foundry Rail Tractor and Shelter.
- Tramway formation (circa 1920s) and associated structures

Length of Walkway

3240m (GPS ID 064-147)

Recorded Features

Tramway formation – general alignment (5 sections), Tramway formation – embankment (6 sections), Tramway formation – side benched (14 sections), Tramway formation – fill (4 sections), Tramway formation – cutting (9), Tramway modification – slipped (2 sections), Tramway modification – slumped (4 sections), Tramway modification – reconstructed (1 section), Exposed rail (approx. 4 sections), exposed sleepers (approx. 11 sections), Bridge remains (6), Culverts (16), Tramway quarry (1), Log bogies (2), 1.7 tonne coal truck (1), trolley (1), Union Foundries Shelter (1), Union Foundries Rail Tractor (1), Engine (1), Brake (1), Sulphur Spring (1).

Union Foundry Rail Tractor and Shelter

Not far from the junction a modern shelter houses the Union Foundries Rail Tractor, nick-named the 'Red Terror' (photos 35 and 36; see history book cover photo for a shot of the lokey in action in 1948). The shelter was built about 10 years ago.

The rail tractor was constructed by the Union Foundry in 1938 using a McCormick and Derring tractor. The lokey worked the tram from that year until 1958 when the tram ceased to be used. The lokey has been set up with a reconstructed coal wagon attached to the rear. Also found within this shelter the only known brake from a brake car (see photo 37). This brake clamped onto and gripped the centre rail to slow loaded lokeys down, especially near corners and on steep gradients. There are remnants of coal tubs, and an International 'H' engine in the scrub near the shelter (photo 38). Vegetation is well maintained in this area.

Work recommendations

- 1) Continue with the metal preservative work on the Union Lokey.
- 2) If required update the maintenance specifications written by J. Green in 2002.

The Tram line

The first part of this section of tram has been formed on a raised ballast bed and built with a very easy grade (see photo 39). Around 100m from the rail tractor shelter (GPS ID 066) is an area that used to be fenced off as a paddock where, reportedly, cows grazed. This may be associated with farming of the area during the Depression. (See Section 5 - Mumm's Mill to Charming Creek Bridge.)

On this section of the walkway the first significant stretches of in situ tram sleepers begin to appear (see photo 40). There are some good examples with dog spikes (rail nails that held the rails to the sleepers) still present, sitting proud of the sleeper (see photo 41).

The formation of the tram switches from raised ballast bed on the flat, to side cut bench as it negotiates the steep sided banks of Charming Creek. The first section of benching from GPS ID070 to Rod Stream (GPS ID 083) is in variable condition with many slips, and track slumping especially on the outer edge above the creek. There are nine cuttings present on the section (see photo 43 for a small example).

Culverts

There are numerous good examples of original culverts, 16 in total. They are constructed using cribbing or pigsty technique, where pairs of parallel logs are set on top on each other, each pair running at 90° to the one below it, with sufficient gap left for water to flow through. The tramway is formed over such culverts. Some are still in use (see photo 44).

Bridges

There are the remains of seven bridges on this section, with one complete original bridge intact, which is a rare occurrence on the walkway (see photo 45). Numerous other bridges are evident (photo 46) but they are often in various states of disrepair and have been replaced by modern bridges. Many of these modern structures use the original concrete abutments.

Other features

Coal spoil heaps line many parts of the track (see photo 47). Rail and sleepers are exposed in a number of places along with dog spikes.

There are also many historic features adjacent to or situated on the tramway formation. At GPS ID 107 there is a large quarry that was used to obtain fill for the tramway formation. This quarry is greater than 20m across and is the only example seen during this survey.

Other features are the remains of coal tubs and log bogies such as those at GPS ID 69 (photo 48) and GPS ID 113 (photo 49).

One unique historic feature on this section of the walkway is the sulphur 'stink hole' where seepage from a government prospecting hole can be seen and smelt (photo 50).

Condition

The condition of the tramway formation in this section of the walkway is mainly very good. There are many examples of different types of formation including embankment, side benching, cuttings and fill. It provides a very different experience from other sections of the walkway, such as the Ngakawau Gorge, as it traverses through an open valley setting.

Some sections of the tramway formation have suffered from slumping, but still appear to have original tram formation (presence of sleeper etc). Some sections are also prone to slips, this making the walkway narrow in places. Slumping of the tramway edge towards the creek has effected the alignment of the walkway in places (see photo 42). One slipped section has no exposed sleepers but rail can be seen under the slip (GPS ID 105). At GPS ID 106 there is an excellent intact section of side benched formation that survives in a slip prone area. Both rails and sleepers are exposed here.

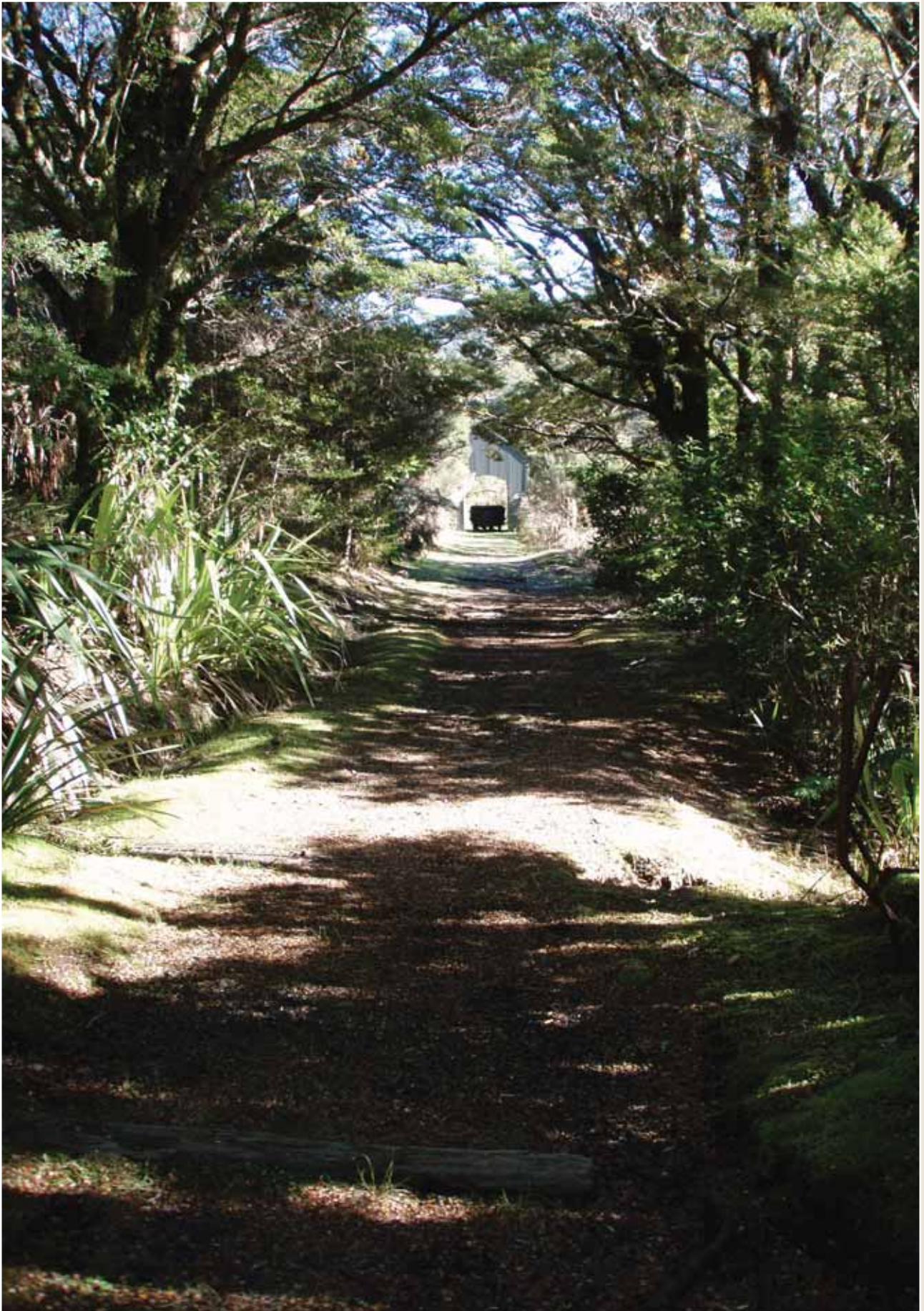


Photo 35: A tram line view with the Union Rail Tractor shelter in the distance..



Photo 36: Union Foundries Rail Tractor.



Photo 37: Brake



Photo 38: The International 'H' engine.



Photo 39: Section of tramway alignment



Photo 40: Section of tramway showing sleepers



Photo 41: A set of 4 dog spikes still in the sleeper (one spike is circled).



Photo 42: Edge of tramway showing a large area slumped away.



Photo 44: Old pig sty culvert with modern culvert inside it.

Photo 43: Cutting



Photo 45: Original bridge. The bearer is marked with a dashed line. Tram surface with sleepers can be seen on top.

Photo 46: Modern bridge constructed over old bridge with old beams still left in-situ.





Photo 47: Coal spoil heap on the edge of the tramway, seen on the left hand side of the image.



Photo 48: top right. Remains of a large 1.7 tonne coal truck.



Photo 50: Sulphur spring adjacent to the track.

Photo 49: Remains of a log bogie



At the section of embankment at GPS ID 110 there are also intact sleepers exposed.

One good example of a cutting (GPS ID 146) is relatively long with sleepers exposed in-situ. This cutting ends at the Charming Creek Bridge and is noticeably boggy underfoot.

Bridge sites are mostly in poor condition (as mentioned above) with the remains of bridges often visible scattered to the side of modern ones.

Other historic features such as the log bogie and coal truck (GPS ID 069 and 113) have vegetation encroaching upon them.

Work recommendations

- 1) Maintain vegetation along the outer edges of the tramway alignment to retain historic profile.
- 2) Vegetation clearance should be addressed especially with regard to the log bogies and trucks. Vegetation should be cleared within a minimum of a 2m radius around standing structures. Plants should not be pulled off structures or earthworks as this can cause damage.
- 3) Vegetation should be monitored around any historic features at appropriate intervals.
- 4) Slip prone areas should be monitored to mitigate further damage to historic fabric. This especially applies to the sections already affected and the benched formation section at GPS ID 106, as this is an excellent example remaining in the slip prone area.
- 5) A solution to the muddy track surface is needed within cutting GPS ID 146. Because this is an excellent example of a cutting, earthwork should be avoided in any upgrades.

Main features

This section includes the walkway from the Charming Creek Bridge to Watson's Mill Site. It also includes Watson's Mill site. The walkway traverses through two main feature types:

- Tramway formation (circa 1910s/1920s)
- Watson's Sawmill site (from circa 1903-c.a.1937)

Length of Track

1050m (GPS ID 147-186)

Recorded Features

Tramway formation – embankment (3 sections), Tramway formation – general alignment (1 section), Tramway formation – cutting (3 sections), Tramway formation – side benched (3 sections), Tramway modification – slipped (1 section), Tramway formation – sleepers exposed (at least 4 sections), Tramway formation – rail exposed (at least 3 sections), Culverts (7), Cut outs (2), Bridges (4), Boilers (2), Steel rope (1), Turntables (1), Watson's Mill Shelter (1), Modern Toilet (1), Telephone Pole (1) and Junctions (2).

Tramway formation

This section of tramway is in excellent condition. The only two cut outs present on the tram are found in this section and there are many original culverts.

At the Charming Creek Bridge the remains of old bridge timbers are still present here from 12x12 original beams and also one of the anchor blocks is still here. Another bridge (photo 51; GPS ID 154) is a modern bridge sitting on old abutments. Only one bridge in this section appears to still be original.

There is evidence of many kinds of tramway formation features in this section including benching. It is in this section of track that the first lengths of in situ rail are found. A good example of benched tram formation with a section with in-situ rail is at GPS ID 159 (see photo 52).

There are some unique historic features on this section of tramway. The first is a post suspected to be a telegraph pole, which is the only post like this known on the walkway. The other is a well defined section of embankment (GPS ID 155). This section is built up within a very boggy area - see photo 53. For the first time on the tramway alignment side drains are visible in places too. One very tall cutting has a side drain on the west side (photo 54).

There are many examples of extant tram sleepers present in the walkway surface. Some, such as that photo 55, have notches cut out them. This notch was checked into the sleeper in order to ensure the rail was fixed at the proper level.



Photo 51: Modern bridge built on old concrete abutments.



Photo 52: In-situ rail on a side benched formation.



Photo 53: Embankment formation with sleepers exposed



Photo 54: Right - Cutting with side drain.



Photo 56: Section of tramway being undermined.



Photo 55: Sleeper with a rail notch adzed into it.

Condition

The condition of the tramway formation is very good. There are a few exceptions where the tramway has been subject to slipping on sections closer to the sawmill. In some cases it appears that the rail may still be in-situ under the slips. There is some slumping evident on the north side of the embankment of GPS ID 155. One section of the tramway is being severely undermined and is fenced off (see photo 56).

Work recommendations

- 1) Maintain vegetation along the outer edges of the tramway alignment to retain historic profile.
- 2) Historic and visitor upgrade work involving earthworks should be minimised to preserve potential subsurface remains, such as sleepers and rail, and eliminate any further modifications to tramway profiles. Likewise, the width of any tramway formations should be maintained and cuttings not altered.
- 3) Cut outs should be retained and reinstated if possible without damaging original fabric.
- 4) Slip prone areas should be monitored to mitigate further damage to historic fabric. This includes the section of tramway that is currently being undermined.
- 5) Any existing historic side drains along the tram formation should be cleaned out. This will assist with ongoing tram preservation.

Watson's Sawmill Site

As can be seen in Figure 6 (page 60) there was an extensive network of tram alignments, tram infrastructure and mill buildings associated with Watson's Mill site. Since the initial survey and walkway construction work carried out by the NZFS in the 1980s, the site has become quite overgrown, and many of the features recorded in the initial surveys have become obscured. The coal tram by-passed the mill site, looping around to the north-west and eventually linking back up with the timber tram. The line of the timber tram ran closer to Charming Creek to the south west of the log skids and the mill site.

The walkway follows the coal tram line for 30m or so, until it meets a junction with a modern re-route track that links with the timber tram alignment. The coal tram alignment has become overgrown from this point (from GPS ID 180-181; see figure 6).

Watson's Mill Site is marked by posts (added by the NZFS to mark the extent of the mill), and the remnants of two steam boilers which ran the mill (see photo 57 and 58).

The boiler in photo 57 is a portable boiler, possibly a Marshall. It has a marine fire box (Tech Id asset no. 042713). The second, Photo 58, is an old style stationary boiler with a long fire box which would have been useful for utilising slab wood as fuel (Tech Id asset no.042713).

Near the boilers is an interpretation shelter built by the NZFS and DOSLI in the 1980s. There is also the site of a toilet near here, again put in when the walkway was first opened.

Not far from the shelter to the west, is a short section of the coal tram. It is easily accessible from the structures and clearing at Watson's Mill Site.

The tramway cannot be followed very far, because at either end where it has crossed the creek, the bridges are now non-existent (see photos 59 and 60). There are rails and sleepers still present on an embankment and through a long, high cutting. There is quite a bit of historic fabric on this section of tram, and sections of rail and sleepers have survived across the creek, a feature not seen on other sections of tram.

Condition

Watson's Mill site is heavily vegetated. Not all the site was visited due to time constraints. A toilet and shelter have been constructed at this site and so extensive earthworks may have modified the archaeological record to some degree.

The boilers are in a fair condition, although a past salvage attempt has left at least one of them incomplete. Neither of the boilers have had any recent preservative treatment, and there is a build up of vegetation and organic matter in and around them.

Known associated features

There are number of know features that are in the vicinity of Watson's Mill. Due to the truncated nature of the visit of the authors to Charming Creek none of these features were visited or searched for.

Junction to Watson's Picnic Area (GPS ID 173): where a small track diverges (approx. SE) from the main walkway.

Boarding House (GPS ID 180): on the flat to the north was reportedly the boarding house.

George Watson's House site: the chimney still survives, just off the coal tram alignment.

Other accommodation: oral histories recount a number of buildings in and around the mill that were used during the Depression.

The incline, turntable, platelayers shed, sand shed: these features are all marked on the 1983 sketch plan (Figure 6).

Recommendations

- 1) From the work done in the 1980s it is believed that the potential is high for further remains to be identified in this area (see Associated known features mentioned above). Further survey work should be undertaken to relocate such features and consider any future work requirements.
- 2) Historic and visitor upgrade work involving earthworks should be minimised to preserve potential subsurface remains, such as sleepers and rail, and eliminate any further modifications to either of the tramway profiles. Likewise, the width of any tramway formations should be maintained and cuttings not altered. The same considerations should be given to the mill site.
- 3) Maintain vegetation along the outer edges of the tramway alignments around the mill site to retain historic profile. Consider the potential of opening up part of the coal tram near the mill site.
- 4) Include Watson's Mill on the Tech Id/ AMIS asset list. Vegetation clearance should be addressed especially with regard to the boilers and around the sawmill site. Vegetation should be cleared within a minimum of a 2m radius around standing structures. Plants should not be pulled off structures or earthworks as this can cause damage. Spray



Photo 57: Boiler

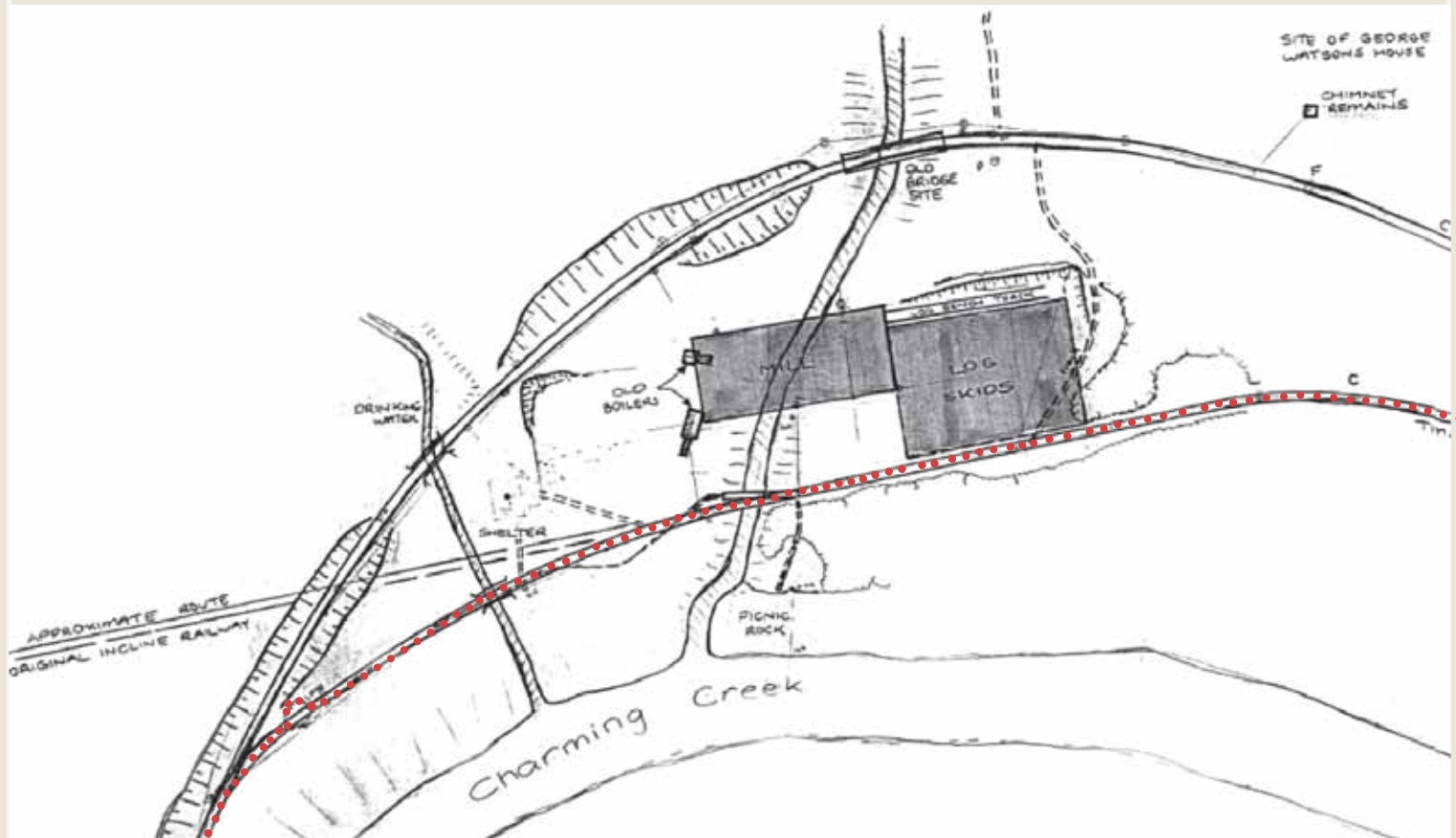
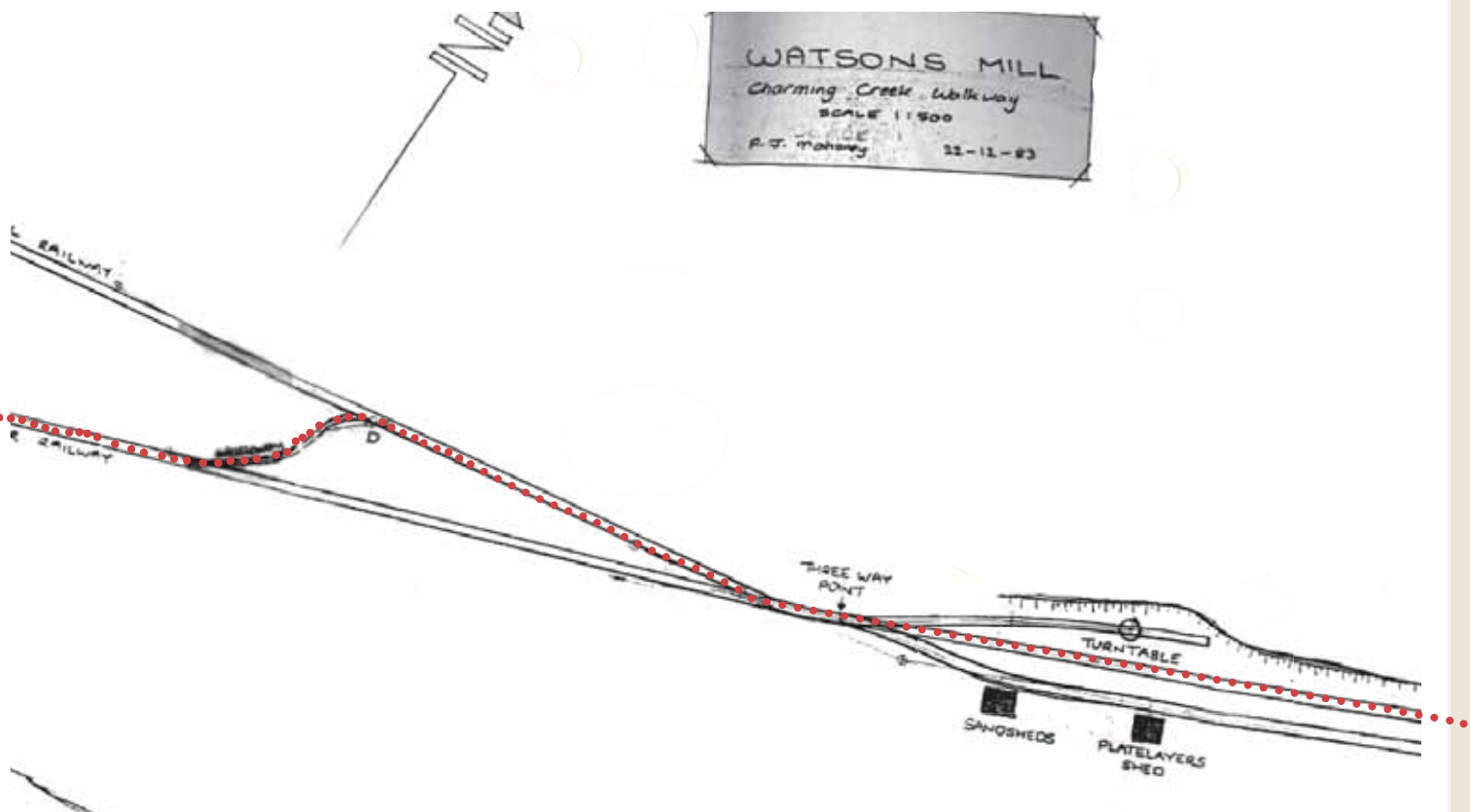


Figure 6: Sketch plan of Watson's Sawmill site, showing the two tram alignments, and other associated features. The red dotted line shows the route of the current walkway. P. MAHONEY, 1983 NZFS



Photo 58: Boiler



if appropriate. The vegetation should be cleared back to reveal the old pegs that mark out the extent of the mill site. Consideration should be given to additional interpretation to the site to explain what the pegs are.

- 6) Establish a vegetation monitoring regime.
- 7) Initiate a metal preservative programme for the two mill boilers. If required update the maintenance specifications written by J. Green in 2002.

Photo 59: Left - Bridge site near Watson's Mill Shelter. The rails hang in mid air as the bridge has been washed away.



Photo 60: At the other end of the bridge only the rail and a few precarious sleepers remain.





Photo 61: Section of in situ rail. Note the check rail bottom left. An extra safety measure to keep the tram on the rails as it negotiated tight corners.



Photo 62: A section of the concrete slab bridge which has been undermined by water.



Photos 63 and 64: Centre rail brake at the southern end of The Veranda and the north side of the Mangatini Tunnel.

Main Features

This section is from Watson's Mill Site to the Ngakawau Suspension Bridge.

- Tramway formation (from circa 1909)
- Ngakawau Suspension Bridge site

Length of Walkway

580m (GPS ID 193-223)

Recorded Walkway Features

Tramway formation – benched (4 sections), Tramway formation – cutting (1), Junction – points (1), Bridge, modern (1), Check rails (3 sections), Centre rail brake (2 main sections), Tramway modification – slip (1), Tramway formation – in situ rails (almost whole section), timber trolley (1) and there is wire ropes/displaced rail adjacent to tramway. This section also includes the Ngakawau Suspension Bridge, Mangatini Tunnel and The Verandah.

Known Associated Features

Nil.

Tramway formation and features

From Watson's Mill, at GPS ID 193 the walkway is back on a benched tramway formation. A timber trolley is found near a stream immediately adjacent to Watson's Mill. This is one of the steepest sections of the tramway alignment, also having the most curves. It is almost entirely benched as it sidles around the hill side and the Lower Ngakawau River. This section of tramway also has the most extensive and impressive earthworks built to cope with the topography. In-situ rails and sleepers are exposed continuously through-out this section. In addition there are three instances of check rail and two main sections of centre rail brake (see photos 61, 63 and 64).

At GPS ID 196 there is a concrete slab bridge built to enable water from a small waterfall to go under the tram. The course of the waterfall above the tramway has changed at sometime since the bridge was constructed, as it now falls onto a section of tram not reinforced by the concrete, thus it is becoming undermined.

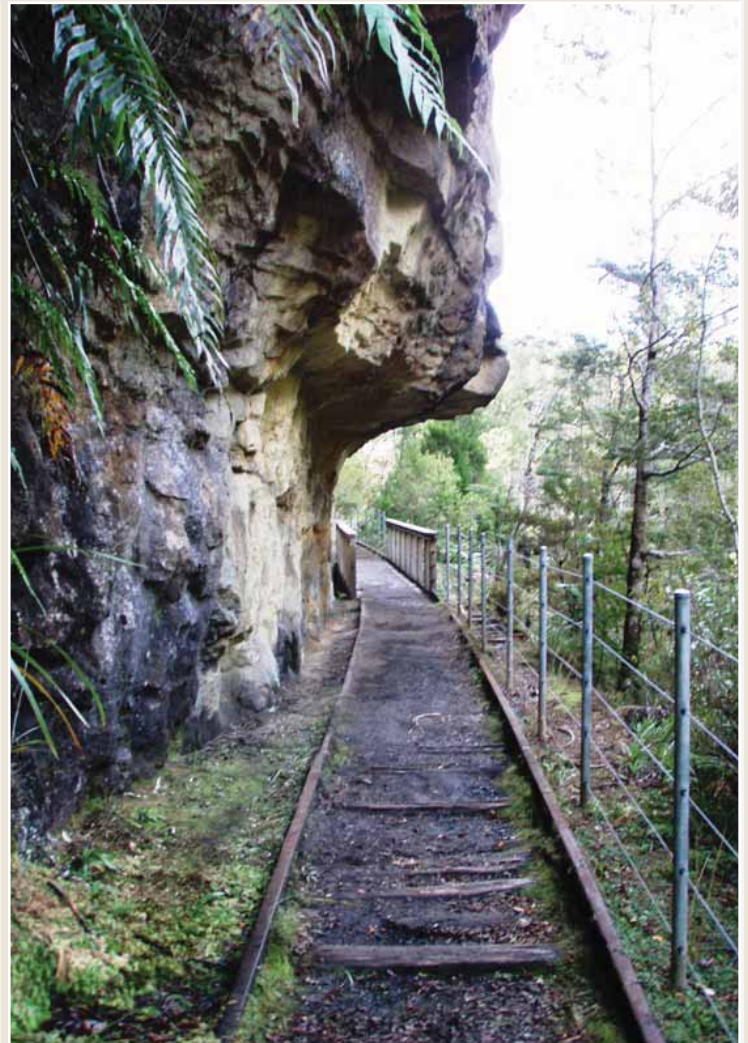
A centre rail brake is visible between the Veranda and Mangatini Tunnel, and on the other side of this tunnel. These are the best examples of centre brake on the whole Charming Creek Walkway.

The Veranda

One of the most spectacular features on the walkway is a cutting named The Veranda where the tram negotiates the rocky bluffs of the Ngakawau Gorge. The bench gets extremely narrow in places under The Veranda. A safety barrier now runs along it's the length. It was constructed to be sympathetic to the historic values with posts being carefully placed between sleepers. Beyond the addition of the modern structures, the cutting is as impressive as it was when the tram was initially built. (Photos 66 and 67)



Photo 65: Detail side view of centre rail brake showing the placement of timbers



Photos 66 and 67: The Veranda in 2008, from both directions

Mangatini Tunnel

Just after The Veranda, the tram goes through the Mangatini Tunnel. Rails and centre brake probably extend in-situ through the tunnel, but it is hard to see as there is boardwalk running through its length. The tunnel also has large stabilisation beams still present in the roof.

The other side of the tunnel breaks out into the Ngakawau Gorge, opposite the Mangatini Falls.

The tram formation immediately outside the western end of the tunnel has been undermined a little by a slip. Potentially this area was always unstable, as the tram has been built out on a series of closely spaced sleepers. A modern safety barrier has been installed to prevent track users straying too near the edge (see photo 68).

The Ngakawau Suspension Bridge

Not far from the western end of the Mangatini Tunnel, the tram crosses the Ngakawau River, passing over a suspension bridge. The Ngakawau Suspension Bridge utilises old concrete anchor blocks and abutments from the previous tram bridge (see photo 69 and 70). Figure 7 shows bridges on this site over the years.

Condition

This section of tramway is of exceptional condition. The bench is of very high quality and there are extensive earthworks remaining. It demonstrates in spectacular fashion the significant lengths that Watson went to access the timber in the Charming Creek valley. In addition there are rails, sleepers, centre rail brake and check rails still in-situ. The condition of the centre rail brake is excellent to the north of the tunnel. Generally both slabs of brake rail timber are present and there are only a few short gaps in the rail. Jim Staton believes that the condition of the centre rail brake has not changed considerably since 1975 when he first visited the site. The condition of the centre rail brake is not as good on the south side of the tunnel as in the previous section. The wood is covered in moss and would be difficult to treat with a solution such as Koppers CN Emulsion as the moss would have to be removed causing more damage to the fabric.

Some parts of the tram in this section are under threat from slips or undermining from water courses. The section of tramway closest to Watson's Mill is much modified due to poor drainage, washouts and water scouring (see photo 71). As noted previously, at the south end of the Mangatini Tunnel, a slip has undermined the edge of the tramway formation. This section has been fenced off from visitors (photo 72).

Work recommendations

1. The centre rail brake should be left as it is and not modified. It should be monitored for any signs of deterioration.
2. Slips need to be monitored for safety reasons as well as to mitigate damage to the historic features.
3. Monitor large vegetation growth, especially for roots that may become established and undermine the historic features. Maintain vegetation to retain the tramway profile.
4. Historic and visitor upgrade work involving earthworks should be minimised to preserve historic remains, such as sleepers and rail, and



Photo 68: Western end of the Mangatini tunnel where it comes out into the Ngakawau gorge.



Photos 69 and 70: The Ngakawau Suspension Bridge looking to the true right, and detail of abutments and cables in the river bed below the bridge.

eliminate any modifications to tramway profiles. Likewise, the width of any tramway formations should be maintained and cuttings and tunnels not altered.

5. The waterfall at GPS ID 196 needs to be redirected to stop the tramway from being undercut further. Seek advice from TSO Historic.
6. Drainage needs to be re-instated on the section of tramway just west of Watson's Mill in a manner consistent with past construction and without altering the historic fabric. This will ensure ongoing stability of the tram formation.



Photo 71: Waterfall undermining rail formation under concrete slab.



Photo 72: Slipped section at the south western end of the Mangatini tunnel.

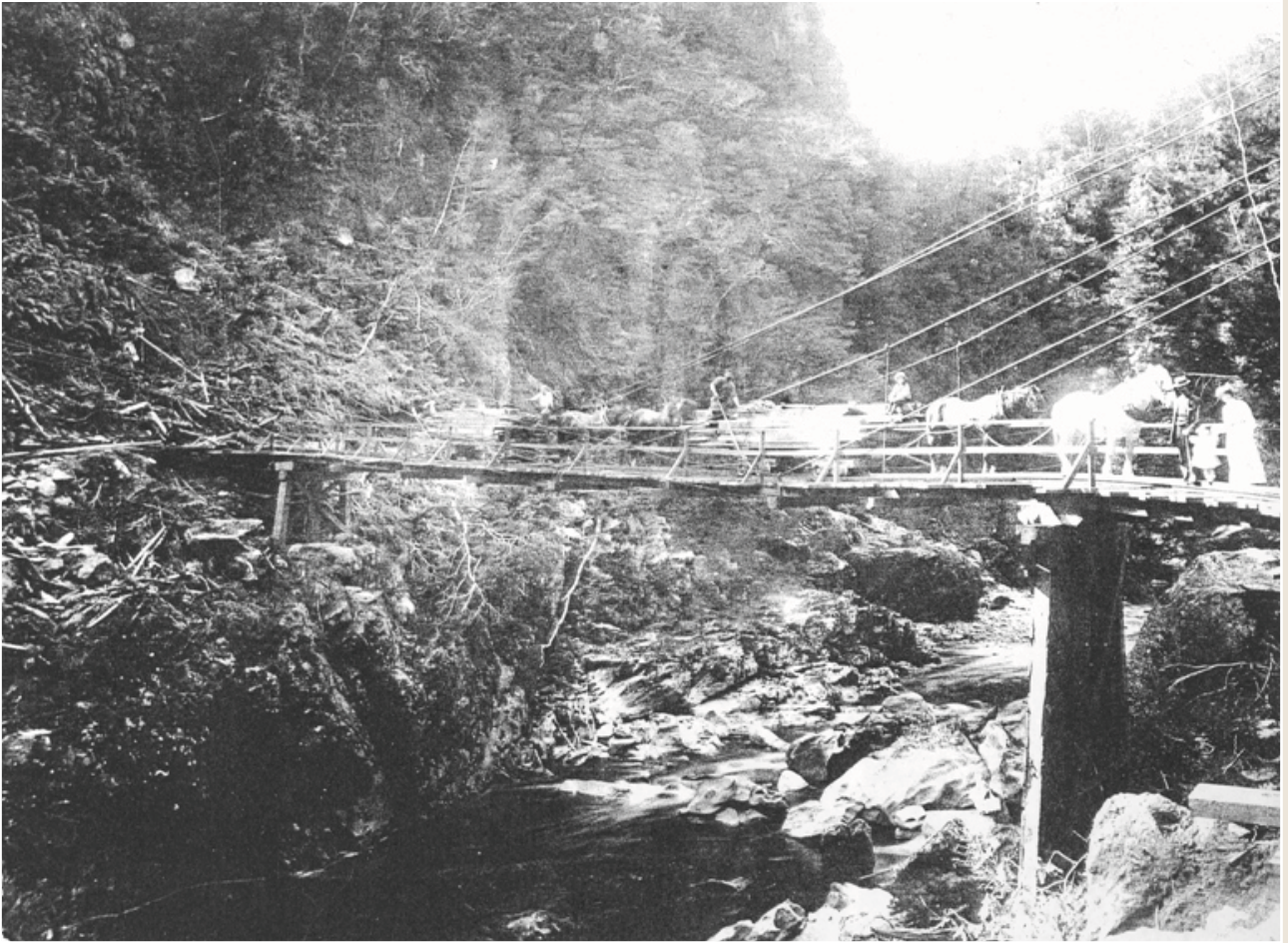


Figure 7: The Ngakawau Suspension Bridge site. The images on the following two pages show four different bridges on the site.
 1) Earliest image during the horse tram era- pre-1914;
 2) Bridge upgraded, probably to take the weight of lokeys ca.1914 - could be later;
 3) View of bridge built in 1935 taken in 1948;



4) The 1935 Bridge in 1975 - note work has been done replacing towers and the tower piers have been concreted in since the 1948 shot;

5) The current pedestrian suspension not long after it was built in 1981 by Fijian NZ Army recruits.



Section 8 Ngakawau Suspension Bridge to Irishman's Tunnel

Main Features

This section is from the Ngakawau Suspension Bridge to Irishman's Tunnel. It includes features associated with the tunnel.

- Tramway formation (from circa 1909) and associated features

Length of Walkway

930m (GPS ID 224-264)

Recorded Walkway Features

Tramway formation – benched (7), Tramway formation – embankment (1), Bridge remains (5), Tramway formation – Centre rail brake (4 sections exposed), Tramway formation – check rail (1), Culvert (1), Irishmans Tunnel (Rails and Sleepers), Tramway modification – slipped (8 sections), Tramway modification – rock fall (3 areas), Bent rails (more than 2), rock wall (1), Tramway modification – root invasion (1) and Water Shelter (1).

Known Associated Features

None

General Description

The majority of the tramway formation in this section is benched with just one section of embankment. There is only one culvert and bridges are heavily modified, mostly either washed out by slips or replaced by modern structures (see photo 73).

In this section rails and sleepers are often exposed, and there are several short sections of centre brake rail and one check rail.

There is a single tunnel on this section. It is called Irishman's Tunnel and still appears to have rail and sleepers in-situ. This tunnel illustrates evidence of both the extensive earthworks undertaken on this tramway and of an alignment blunder that occurred during its construction (see photo 75). This tunnel was a 1930s upgrade of the tram, with the original line still present as a small bench formation around the rocky bluff.

One of the more unusual features is a hand stacked rock wall, about 6m long, visible two metres from the track. This is the only example up to this point on the walkway (see photo 76). As this section is in an area prone to slips this feature would have been important for stabilising the bank above the tramline, part of an older tram alignment.

A modern water shelter (photo 77; GPS ID 228) on this section may be utilising historic tie downs.

Condition

Although the condition of the tramway formation and benching is good in places, this section is highly prone to slips and rock falls. There are at least eight major slipped sections. In some cases the rail formation appears to simply be covered with spoil, but in others the tramway alignment has been completely destroyed and rails are snapped off (see photos 78 and 79). Two bent rails on the track testify to rock falls that have been cleared in the past. There is one large area of rock fall, with a rock so large it has been blasted to give access for the tramway. This is often mistaken for a tunnel,



Photo 73: Irishman's Tunnel, showing that the bridge leading up to the tunnel has now all but gone. Note the concrete pier bottom centre. N. COOKE 2008



Photo 74: A good section of alignment, typical of the more intact parts of this section. N. COOKE 2008



Photo 75: Irishman's Tunnel. The large excavation on the right is an alignment mistake made during the creation of the tunnel.



Photo 76: Hand stacked rock wall.



Photos 78 and 79: Two sections of damaged tramway caused by rock falls.



Photo 77: Tramway going under the water shelter. N. COOKE 2008



Photo 80: left: Roots growing over tramway formation.



but is really just a large modified leaning rock. At GPS ID 257 the walkway diverges from the tramway alignment for about 5m over a slipped section. There are also numerous parts of the tram where roots from the regenerating native vegetation are intruding onto the tram (see photo 80).

Work recommendations

- 1) Historic fabric such as anchor blocks and tie downs on the water shelter should be inventoried to determine if any are used in conjunction with the modern fabric.
- 2) The centre rail brake should be left as it is and not modified. It should be monitored for any signs of deterioration.
- 3) Slips need to be monitored for safety reasons as well as to mitigate damage to the historic features.
- 4) Monitor large vegetation growth, especially for roots that may become established and undermine the historic features. Maintain vegetation to retain the tramway profile.
- 5) Historic and visitor upgrade work around historic fabric involving earthworks should be minimised to preserve historic remains, such as sleepers and rail, and eliminate any modifications to tramway profiles. Likewise, where historic fabric exists, the width of any tramway formations should be maintained and side cuttings and tunnels not altered.
- 6) If the clearance of slips or rock falls is to be considered, consideration of underlying historic features is necessary. Sections where the walkway diverges around slips or the tramway has been completely destroyed are not necessarily required to be maintained to the historic profile. Slips and washouts are part of the history of this section of track, and the best route over and around such intrusions, constructed to the desired visitor standard, may be appropriate.

Main Features

This section is from the Irishman's Tunnel to the Ngakawau Bins site. The walkway traverses through one main feature type: Tramway formation (from circa 1909)

Length of Walkway

890m (GPS ID 264-280)

Recorded Walkway Features

Tramway formation – benched (6 sections); Tramway formation – embankment (1); Tramway Modification – slips (3); Tramway modification – kinked rail (1); Tramway modification – missing centre rail brake.

Known Associated Features

None

General Description

This section of tramway is mostly formed by benching. There is only one section of embankment. There is an excellent example of retaining employed on the embankment at GPS ID 265. At GPS ID 269 it appears as if the original bench was further to the south a couple of metres. The alignment of the tramway may have been altered at some point in time. Rails and sleepers are generally exposed on most sections.

Condition

Again this section is in a slip prone area and the condition of this section is moderately good. There are at least three slipped sections recorded, one of which, from GPS ID 279 – 280 is a major one. After this slip heading towards the Ngakawau bins there are no evidence of rails and the track surface has been filled with coal fines. Around GPS ID 275 marks on the sleepers indicate that there used to be centre rail brake here but it is now gone. There is another kinked rail in this section too, testifying to a past rock fall that has been cleared.

With this being said there are some very good sections of benched tram formation, with sleepers and rail intact (photos 81 and 82).

Recommendations

- 1) Slips need to be monitored for safety reasons as well as to mitigate damage to the historic features.
- 2) Monitor large vegetation growth, especially for roots that may become established and undermine the historic features. Maintain vegetation to retain the tramway profile.
- 3) Historic and visitor upgrade work involving earthworks should be minimised to preserve historic remains, such as sleepers and rail, and eliminate any modifications to tramway profiles.
- 4) If the clearance of slips or rock falls is to be considered, consideration of underlying historic features is necessary. Sections where the walkway diverges around slips or the tramway has been completely destroyed do not require to be maintained to the historic profile. Slips and washouts are part of the history of this section of track, and the best route over and around such intrusions, constructed to the desired visitor standard, is appropriate.



Photos 81 and 82: Examples of two sections tram in very good condition.

THE BINS

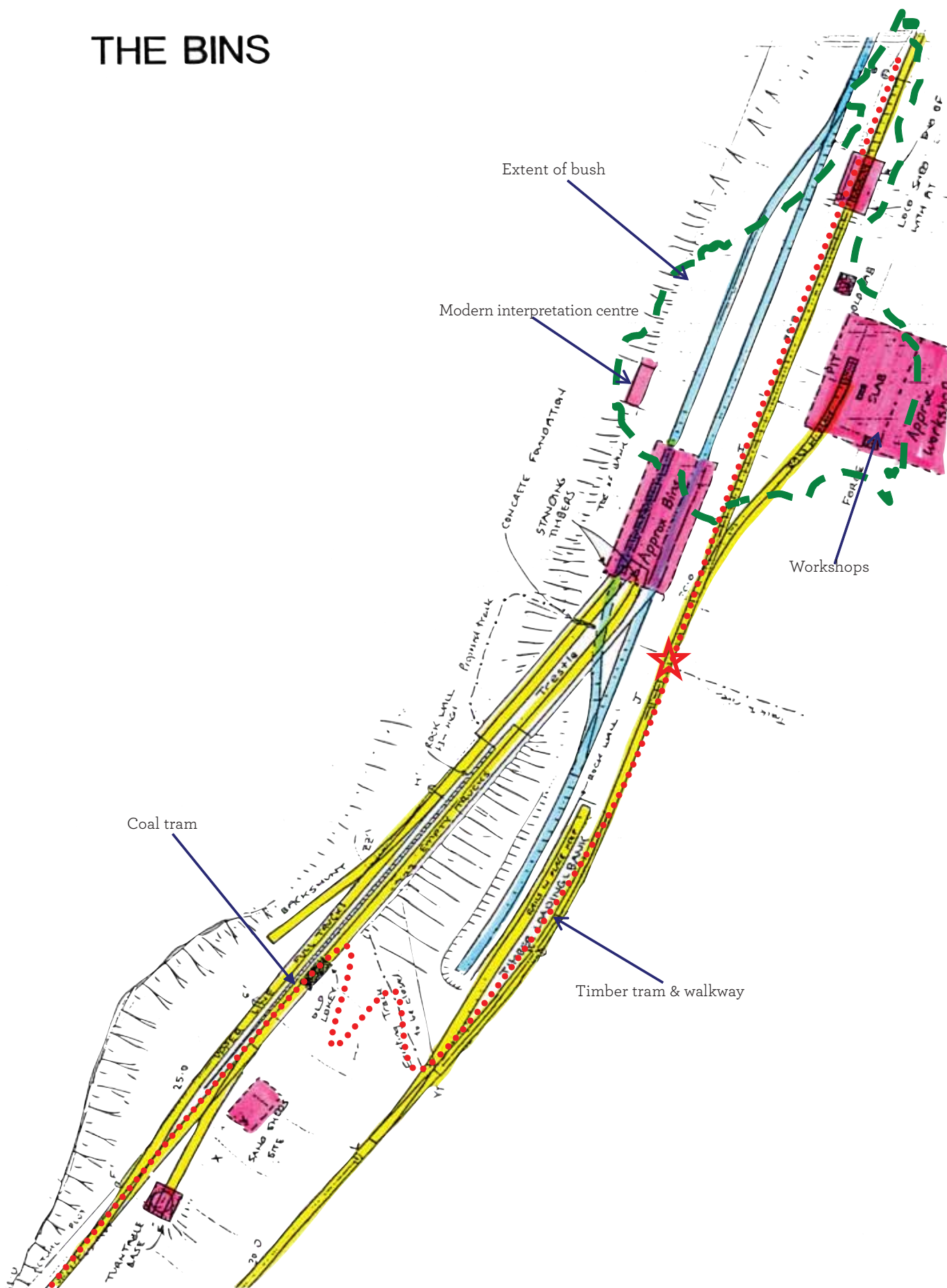


Figure 8: Plan of the sidings and bins area at Ngakawau. Red dotted lines show the walkway, including an alternative loop to the lokey. The green dashed line shows the approximate extent of the clear area at the bins site. The star indicates where the photo 7 - right, from the history book was taken. BASE MAP P. MAHONEY, 1983, NZFS

Main features

This section is from the Ngakawau Bins site to the Ngakawau car park. The features in this section include those associated with the bins site. The walkway traverses through two main feature types:

1. NZR Tramway formation (circa 1909?)
2. Bins site (circa 1930) and associated tram sidings.

Length of Walkway

1230m (GPS ID 281-309)

Recorded Walkway Features

Tramway formation – bench (1 section); Bridge – modern (1); Ngakawau bins, Ngakawau Bins shelter (showers site); Workshops; Ruston Lokey; Ruston Lokey shelter; Turntable (1); F Lokey cab (1); Shaker plate (1); Lokey smoke box (1); steel frame- shed (1); point sets (5); steam engine (1).



Photo 7: The bins at Ngakawau in 1945, showing coal bins and the high level siding. Note the trestles leading to the tipper at the top of the bins. NZR Q-wagons were shunted underneath the bins for loading and then hauled to the mainline at Ngakawau. The workshop is to the right. ATL PASCOE COLLN 1356%, WAR EFFORT COLLECTION

There are also several other GPS points that recorded the approximate location of some historic features even if they were not fully exposed such as the junction of the NZR back shunt, rail signal post, run off rail, trestles.

Known Associated Features

NIL

General Description

This is a very complex site with many tramway sidings on various levels. These include coal tram, timber tram, back shunts, timber loading bank, and run off lines. Many of these were not examined during this fieldwork as only the main walkway alignment was followed (see figure 8).

There are a number of other features along these lines, such as a set of points and a points lever (Photo 83 and 84).

As the bins site is approached, there is an alternative route that follows the coal tram to the high level siding that in turn led to the top of the bins. The tram alignments are still remarkably distinct, replete with stone retaining along their edges. From a set of points that splits the coal tram line, the track to the bins follows the lower ‘empty truck’ line. It passes the site of a turntable and the sand sheds. A little further along, not far from the edge of the tram formation sits the remnants of a Ruston and Hornsby lokey in a shelter (see photo 85).

The bins were directly in front of where the lokey now sits, but they do not exist anymore beyond the odd timber post from the wooden trestles that



Photo 83: A 'frog' at a set of points where rails for the coal and timber trams split to provide sidings access. N. COOKE 2008



Photo 84: Part of a points lever mechanism. N. COOKE, 2008



Photo 85: The remains of the Ruston and Hornsby Lokey after an application of protective oil. This lokey originally worked at the mine end of the tram.

carried the tubs to the top of the bin (see photo 7). The operation worked as follows:

60 to 80 coal boxes were tipped here each day. Trains of coal from the mine terminated on the high level line [as opposed to the low level line where the Rustson Lokey now sits]. After the rail tractor was uncoupled, the boxes were gravity-run along a trestle to the top of the bins. As each box was tipped, hinged doors [on the box] allowed the coal to be released. The boxes then ran back on a parallel line. Meanwhile the tractor [i.e. lokey] was turned, greased, loaded with sand (used for traction on the rails) and coupled onto the row of empties for another trip back up the gorge.²⁰

The bins themselves operated in the following manner:

...[The bins] held 580 tonnes of coal. This was tipped onto a rotating screen which allowed the small pieces, known as 'slack' to fall through into compartments while the larger pieces tumbled along the screen and down a chute. The larger pieces were 'nuts' and fetched a premium price. The screen was driven by belts and pulleys from a two cylinder steam engine...²¹

A modern foot track snakes down from the low level line to the timber tram line and the walkway, which is followed to the clearing at the bins site. At the bins clearing the tram is not apparent, with no rails or formation apparent. To the southeast of the clearing is an interpretation shelter which sits on the concrete pad of a shower unit. The line of a drain runs across the pad. Hot water was used from the steam plant that ran the bins screen. Other foundations adjacent to the shelter are associated with the steam engine plant. The boiler from this steam engine plant also lies near the shelter (see photo 86).²²

To the northwest of the clearing is the workshop site which is dominated by a brick chimney which was the forge. It has holes at the base that allow bellows to be inserted. Nearby is a pedestal for either a crane or drill press, other concrete foundations, an inspection pit and a lathe bed (see photos 87 and 88).

There are still many historic artefacts associated directly with the activities that occurred at the bins site in and around the area. For example a shaker plate is lying in the scrub behind the workshop was used in the bins to sort the coal, and along the track to the car park, the cab from an F-loco can be found (Photo 89).

On leaving the bins clearing, the walkway follows the rail line out to the car park at Nagkawau. Not far from the clearing the track passes the site of a loco shed, with an inspection pit (see figure 22 at the top right hand side of the plan). The section of tramway formation west of the bins is a siding built to New Zealand Rail (NZR) standard gauge. NZR Q-wagons were used to transport coal from the bins to the main line. There are rails visible here in the track surface, and these lead up to the east side of the Mine Creek Bridge (see photo 90)

From the other side of the bridge there are rails and sleepers visible on the walkway heading to the car park, but their presence is sporadic. It is possible that the walkway may leave the rail alignment in some places.

At GPS ID 303 a section of rail has been reconstructed with coal tubs sitting on top of them. This is an inaccurate reconstruction as these coal tubs did not run on this section of the line. Q-wagons were used from the bins down to the main NZR line at Ngakawau.

²⁰ Mahoney 1983: 'The Bins'.

²¹ Ibid.

²² J. Green pers.comm.; Mahoney 1983: 'The Bins'.



Photo 86: Interpretation shelter at the bins site, the steam boiler and foundations of the steam plant are to the right.
N. COOKE, 2008



Photos 87 and 88: Above – view from the bins shelter to the workshop site; right – detail of the inspection pit and the lathe bed.
N. COOKE, 2008

After this, the rails appear again in the walking track surface. This section is relatively modern, with rail screws being present to fix the rails to the sleepers. At GPS ID 306 the mounting for an electric rail signal light is present. The rail line disappears from this point, to re-emerge near the car park. It seems that this piece of the line is still being used as a back shunt by the coal trains from the Solid Energy Stockton Mine operations.

Condition

The section of line leading up to the bins clearing is in good condition, with the various levels and types of sidings being some of the more significant but least appreciated parts of the tram. There are a number of features still present such as sets of points and turntables that also add to significance of this area. Beyond this, at the bins clearing the formation of the rail line disappears and vegetation has encroached over many of the remains foundations and building sites. It is unclear whether this line was scrapped or that the remains of the formation still exists under the surface of the ground.

The track between the bins and the car park has the odd section of rail still in place. The railway formation immediately adjacent to the car park has been cleared and is used as a modern back shunt. It is likely that this section of railway formation continued to be modified at least through the 1960s.

Work recommendations

- 1) Any historic or visitor upgrade work involving earthworks should be minimised to preserve potential subsurface remains, such as sleepers and rail, and eliminate any further modifications to tramway profiles. Likewise, the width of any tramway formations should be maintained and cuttings not altered.
- 2) Carry out a more in depth site survey on the features at the bins site and sidings, taking note of their current condition.
- 3) Produce a vegetation management plan for the various tram alignments at the bins, based on subsequent survey work.
- 4) Keep up the maintenance work on the Ruston Lokey. The Lokey should remain where it sits today even though this is not the end of the tram it worked on. The current location of the lokey represents the story of the tram drivers' joy riding on the last day of the use of the tram, and as such is an important part of the history of the site.
- 5) Shift the coal tub display to the tram on the north-eastern side of the bins. Potential to set them up near the Ruston Lokey.
- 6) Vegetation should be monitored around any historic features at appropriate intervals.
- 7) Check the concrete and brick remains and produce a maintenance specification if required.
- 8) Start metal preservation work at the site. Write a maintenance specification and implement a maintenance regime, taking into consideration the maintenance requirements for the features listed in table 5. Carry this out with advice from TSO Historic.



Photo 89: An F-type locomotive cab, in the bush next to the track. N. COOKE, 2008



Photo 90: Mine Creek Bridge where the rail terminates either side of the bridge. N. COOKE 2008



Photo 91: Set of coal tubs on the line from the bins to Ngakawau - this is not a historically accurate representation. N. COOKE 2008



Photo 92: Mounting for the rail signal light. N. COOKE 2008

Table 5: List of metal features in Section 10 that should be looked at to determine their maintenance requirements.

GPS ID	NAME	DESCRIPTION	HISTORIC FABRIC	ALT	EASTING	NORTHING
282	Points set	The set of points that split the coal line from the timber line were thought to have been located here. There are no remains now etc a 'frog'?	HF	48.40	2417521.56	5954884.79
283	Turntable	This is the site where the turntable at the Bins was situated. There is a big square cut in the ground here now.	HF	50.80	2417361.82	5954780.92
284	Points set	The set of points that split the coal line, upper line (for full trucks) from the lower line (empty trucks). These points are not present here now but their location can be assumed as the bench widens here	HF	48.40	2417371.21	5954786.82
285	Steel frame	The steel frame from a building lies to the immediate north of the walkway here. This may have been from the sand sheds.	HF	46.50	2417352.12	5954776.50
286	Ruston Lokey	This Lokey has a VRH1 engine and used to work up the top end of the line (but was moved here during a joy ride on the last day of the tramway's usage). It is covered by a shelter.	HF	46.50	2417345.80	5954764.59
291	Points set	This is the set of points that split the line that went to the two pits at the workshop	HF	32.80	2417298.11	5954717.00
292	Ngakawau Bins Shelter	Boiler from the bins steam plant	HF	32.80	2417290.96	5954707.87
294	Ngakawau workshop	Crane pedestal, concrete foundations, pits and a lathe bed.	HF	31.10	2417277.78	5954700.54
295	Smoke box	This is the location of a smoke box off NZR lokey	HF	30.20	2417295.51	5954691.64
296	Lokey cab	Location of the cab of an 'F' Lokey	HF	29.20	2417284.05	5954679.27
296	Shaker plate	Location of shaker plate from the bins screens.	HF	29.20	2417284.05	5954679.27
298	Points set	Two rails are visible from here towards Ngakawau	HF	28.7	2417269.8	5954658.6
300	Points set	Points here	HF	28.00	2417197.67	5954587.09

Threat Management Principles

The identification of threats and potential risks to values is important for the protection and management of historic places. With appropriate planning threats can be minimised or even eliminated.²³

The following principles will guide the management of threats to heritage at Charming Creek.

- Clear identification of heritage places
- Clear identification of heritage fabric (i.e. material) therein
- Identification of actions and inactions that impact on heritage
- Assessment of adverse effects of these actions and inactions
- Development of solutions that:
 - avoid, remedy or mitigate adverse effects;
 - are sustainable long term;
 - match resource levels available
 - take account of real constraints

These principles should be further expanded on in a conservation plan. In the short term the following should be used to guide management at the site.

Natural Threats

Threat:

Rust is a significant threat to the metal artefacts remaining at the site. Some preservation work is being undertaken on the more significant features, such as the remains of the lokeys and the fan house.

Action:

Identify important metal items that require metal preservative treatment (see sections above for comprehensive list). This work may include lifting some artefacts off the ground, and applying metal preservative.

Carry out metal preservation work.

Monitor preservation work to ensure it is being effective.

Threat:

Rot is a threat to any wooden components at the site if not treated.

Action:

Preservation of features such as the centre brake rail or sleepers, is not realistic, and considering the current condition, is mostly not warranted. Ongoing monitoring into the future will determine if treatment is required.

The timber uprights of Mumm's Mill should be assessed for preservation requirements.

Currently the hut at the Mine is in good condition. This should be inspected to ensure any problems with rots are caught early.

²³ Egerton, R. & Staton, J. 2006, DOC Historic Heritage Standard Operating Procedure 1019, based on section 5.

Threat:

Vegetation encroachment is one of the most significant threats to the features at Charming Creek. Unchecked regeneration of the indigenous bush and introduced species such as gorse will lead to the site becoming overgrown. This will negatively impact on the heritage values at the site and is not a desirable outcome. Open spaces define the areas of industry, at places like the mines and sawmills, and as such add to the visitor appreciation of the site. Re-vegetation along the lower sections of the tramline along the Ngakawau River is impacting on the tram surface through root encroachment. Dense vegetation also exacerbates the impact of rust and rot, as it keeps artefacts moist.

Action:

Maintain open spaces at the mine and mill sites, and along the tramway.
Maintain a two metre clear area around significant fabric.

Conservation and adaptation**Threat:**

Conservation and adaptation are threats where there is an unacceptable level of modification or adaptation of significant fabric. It also occurs through a cumulative loss of heritage values where parts of a site are modified, lost or destroyed. Conservation work can also undermine visitor experience of the site. As well as having the potential to effect the physical significance of the site, inaccurate interpretation or reconstruction can also affect the historical or cultural values. An example of this at Charming Creek is the reconstructed coal trucks and rail alignment near the Ngakawau Bins which are historically inaccurate and provide a false impression of operations.

Action:

In order to provide a context for future management of the historic heritage at Charming Creek a conservation plan must be written for the site including the major features at the site, namely Watson's Mill, Mumm's Mill, Charming Creek Coal mine, Ngakawau Bins, the Charming Creek tram. This will also assist in negotiating between the joint recreation and historic management at the site, issues around hazard and disaster management, and future interpretation.

Remove the coal tub display at the start of the walkway and reinstate at a more historically accurate part of the site, such as the high level siding to the Ngakawau bins.

Management impacts**Threat:**

Poor quality of management may constitute a threat. This includes inadequate planning, delays in commencing repair work, lack of maintenance, and failure to act on known threats. Insufficient understanding or insufficient funding may lie behind these problems. One example is a matter of drainage where on one section of the tram an historic structure built in response to a waterfall is being undermined because the waterfall (GPD ID 196) has changed course. Failure to address this issue will see the undermining of the tram formation and subsequent damage to the tram.

Action:

Monitor and maintain drainage generally. Specifically, divert the outlet for the waterfall back to its original course and bolster the remaining historic fabric.

Visitor Impacts**Threat:**

Vandalism does pose some problems. There is extensive graffiti identified on the bathhouse at the second mine site. The interpretation shelters at the bins and Watson's Mill also suffer from vandalism.

Action:

Managing the impacts of vandalism can be a hard task. Keeping the sites maintained and looked after will impress upon visitors that the site is cared for and not abandoned.

Create mindful visitors - install signage at key points to remind visitors to the site that it is a historic site and needs to be treated with respect.

See section 6.0 Discussion and Recommendations

Threat:

Mountain bike use of the walkway has the potential to have substantial negative impacts on historic fabric present in the tram formation from Watson's Mill out to Ngakawau. This section has the most significant remains of iron rail and wooden centre brake rail. Wheel roll impact on in situ tram features may damage or displace them. The potential for this to occur is increased on down hill sections of tram where bikers pick up speed. With the survival of such features on the tram being national rare and outstanding this issue needs to be addressed.

Action:

The matter of continuing to promote the track as a mountain biking opportunity should be reviewed. The best outcome for the protection of the fabric would be the use of the walkway for pedestrians only.

Instigate monitoring of the historic tram rail and centre brake to determine visitor use impacts.

Loss of Use**Threat:**

For buildings and structures especially, sustained loss of use poses a significant threat to their very existence. Loss of use occurs when meaningful public interaction with a historic site no longer occurs. Lack of interest in a site leads to neglect, through a lack of maintenance and repair work. Other loss of use effects include: deterioration, vandalism, and eventual demolition. At Charming Creek this is especially an issue for the bathhouse shell at the second mine site.

Action:

The loss of use of the bath house building has meant that it has fallen into disrepair and it being vandalised. A compatible new use for the structure, such as an interpretation display area should be investigated, to assist in retention of the heritage values of the building into the future.

Loss of Information

The failure to identify historic values or fabric, sources of information and poor conservation/preservation practices can all contribute to information loss.

Threat:

There is a great deal of information about Charming Creek in government files and a certain amount in local museums, and person collections. Not all of these sources were consulted during the preparation of this report, for various reasons such as time constraints, and prohibition of access.

Action:

At some time in the future complete researching files at National Archives especially in Christchurch, and check out information available at local museums such as Coal Town and the Granity Museum.

Continue to attempt to access privately held information.

Threat:

The loss of personal stories from those who lived and worked in the area through old timers dying is a threat.

Action:

Carry out oral history interviews with people associated with the site.

Threat:

Little is recorded of the wider archaeological landscape of Charming Creek – this includes branch trams for Watson’s and Mumm’s mill, the hydro-pipeline route and dam, at the second mine site, various hut and house sites along the tram and at Watson’s mill, and the incline tram at Watson’s mill. With the passing of time the remains of these features will deteriorate and become obscured by bush.

Action:

Carry out further archaeological survey work at the site focusing on the places mentioned above. Work with TSO Historic to work out priorities for survey work. This will factor in issues such as gaps in knowledge, and potential to improve interpretation at the site.

Disasters

Threat:

Land subsidence and slips are a risk to the integrity of the tramway, especially in the Lower Ngakawau gorge, where rock falls and slips are common.

Action:

Monitor slips along the track. Assess historic tram features and formation in the vicinity of slip prone areas and record in detail. If a slip occurs, this information will be on record of what the tram was like and useful if track formation is to be re-instated to its original profile.

As a basic best practice principle an assessment of effects on heritage values must be carried out prior to any disaster management work being carried out.

Include disaster management in conservation planning.

Hazard Management

Threat:

Many historic sites do not comply with modern health and safety standards. Dangers posed by visitor hazards at a historic place may be used to justify major interventions, including demolition, creating a tension between preserving the historic integrity of a site and public safety.

Action:

Issues around visitor safety were not specifically included in the scope of this report. As part of the production of a conservation plan these issues must be addressed at the site. This could include procedure for repair work and regular maintenance at structures such as the bathhouse, monitoring of tunnels, reinstating tracks after landslips, or the management of hazards around places such as Papa Tunnel, or the first mine portal.

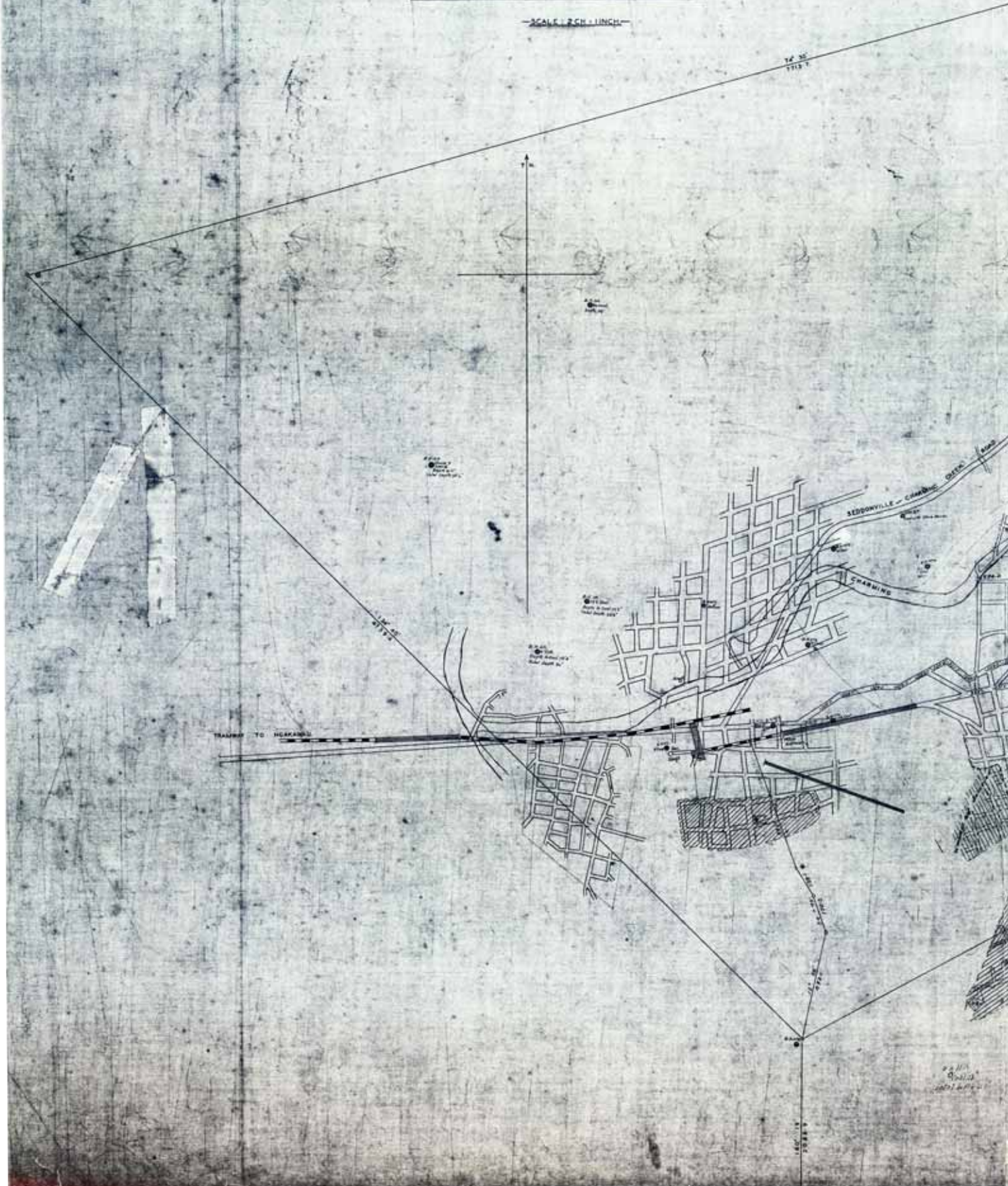
Where possible, alternatives should be sort to retain the historic values without compromising public safety. As a basic best practice principle an assessment of effects on heritage values must be carried out prior to any hazard management work being carried out (such as the installation of barriers).

Charming Creek Colliery

Showing workings from 4 December 1953 to 30 July 1982

—CHARMING CREEK COLLIERY—

—SCALE 2 CM = 1 INCH—





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Discussion and Recommendations

The two reports *Charming Creek Tramway, Milling, mining and walkway – a history* and this one *Charming Creek Walkway, Baseline Inspection Report* consolidate a plethora of existing information about Charming Creek. They record current historic fabric values as a baseline for future management, and provide fresh insight to its history. But they are not comprehensive, and many of the recommendations itemised within the reports concern continued research, oral history recording and site survey to provide a more complete picture of this important site.

The discussion and analysis of both reports demonstrate that features on and along the Charming Creek Walkway, combine to form a nationally significant historic heritage landscape. The tram stands out nationally as an exemplar of its type, and the ease of current visitor access provides the public with a unique opportunity to interact with the site. These considerations need to be factored into future management at Charming Creek.

This baseline inspection report deals exclusively with maintaining heritage fabric; future remedial work or appropriate levels of intervention for specific features (as per ICOMOS) have not been identified – they need to be addressed in a conservation plan. With such an important place, conservation planning will be an essential tool to preserve important aspects of the historic heritage at Charming Creek, while continuing to allow appropriate visitor access and appreciation.

Historic management and visitor assets work

There are specific historic work requirements mentioned in sections 1–10 of this report.

With regards to the tram, the general thrust of this work focuses on the maintenance of the tram's historic profile, the ultimate management goal of any historic track.

With regards to the Charming Creek Walkway this means maintaining:

- a) Original tram profile – benched or built up with embankment
- b) Original tram width – this varies along the length of the tram
- c) Original track alignment – where possible (pending slips) the original alignment must be maintained.
- d) Original tram grade
- e) Retention and maintenance of historic features – this includes rail, centre brake rail, check rail, and points as well as other features such as side drains, cuttings, and tunnels.
- f) For the mine sites, mill sites and Ngakawau bins most of the focus is on vegetation management to maintain the ‘open space’ around these sites to ensure fabric is preserved, and that visitors can appreciate the extent of these industrial sites. Also there is a significant amount of metal preservation work required at all these places.

Recommendations:

- Maintenance of the track to the general specifications outlined in this report should be mandatory on the historically significant sections of track with specific work carried out as per recommendations in sections 1–10 of this report.
- The historic values of the track and other features at Charming Creek must be considered when planning or undertaking any visitor assets upgrade or maintenance work. While the work on the track will not need an authority from the Historic Place Trust, a best practice model must be followed that assesses the impact (AEE) of all work on the historic values of the track.
- Have a conservation plan written to guide future historic heritage management at Charming Creek. This will:
 - outline appropriate levels of intervention for historic conservation the historic values
 - assist in steering joint recreation and historic management
 - discuss issues around hazard and disaster management, and
 - make recommendations for future interpretation.

Visitor use and impacts

The Charming Creek Walkway is listed in the draft West Coast Conservancy position paper on mountain biking as available for use by mountain bikers. This is reiterated in the draft West Coast Tai Poutini Conservancy CMS. Potentially mountain biking could have detrimental effects on historic features on the track, but to date no data has been collected regarding the effects of mountain biking. Given that the historic tram fabric on the walkway is nationally unique and significant, it is essential that this information gap be addressed.

Most international debate around impacts of mountain biking on tracks focuses almost exclusively on the physical impacts to tracks, be those impacts real or perceived. A reading of the small amount of literature on the topic highlights the fact that:

- 1) Mountain biking impacts to a typical track surface are no more than the impact of trampers;²⁴
- 2) Most degradation on tracks occurs through a combination of environmental factors (geomorphology, rainfall intensity, slope gradient) that is exacerbated by, not usually caused by, visitor use;²⁵
- 3) Most of these studies deal with impacts to track surface and width. There are also a few studies looking at the impacts on natural values. There are no studies that deal with impacts on historic values, specifically historic tramway track features — eg: rails and/or sleepers.

A conversation with Gordon Cessford (who has written extensively about mountain bike use on DOC tracks), about the scope of impact studies with regards to historic values confirms that here has been no specific work on the impact of mountain biking on historic features present on or across a track surface. He made the point that mountain biking because of wheel roll could be detrimental to historic tramway features like those at Charming Creek, while trampers were potentially less likely to impact on such features as they would step over them.²⁶

²⁴ C.f. Breen 2006:43-44; Cessford, Gordon R. 1995. Off-Road Impacts of Mountain Bikes: a review and discussion. Science and Research series no.92. Department of Conservation, Wellington .pp 10, 29; see also Weir, Donald V. 2000. Impacts of Non-motorized Trail Use. Donald V. Weir and Associates. Edmonton, Alberta, Canada.

²⁵ Cessford 1995:6.

²⁶ Cessford 2006 personal comment.

Recommendations:

- The best outcome for historic fabric protection would be a restriction of use to pedestrians only. In order to determine this course of action is warranted, a programme of monitoring a representative sample of historic features with regards to ongoing visitor use should be carried out with a view to determining what impact visitor use is having.
- Formalise a position on appropriate visitor use of the walkway as an outcome of the monitoring mentioned above. This may mean not promoting the track as a mountain biking opportunity.
- Use the opportunity to engage with concessionaire groups and provide user group education in order to encouraging 'mindful' visitor use of the track thus lessening negative impacts on historic values.
- Increase awareness of the historic values of the track by placing interpretation on the track, using the web site, or enhancing existing visitor information.

Interpretation and visitor information

The information compiled during this BLI and assessment should be used to produce updated interpretation and visitor information. This would need to be considered in a package of interpretation / visitor information material for the whole Charming Creek Walkway, but specifically this should include:

- The production of an interpretation plan for the Walkway that includes bigger picture themes (unionism; national context for coal mining and timber milling) and national historic significance of the historic fabric.
- Comprehensive information on the DOC web site about Charming Creek and its history.
- Enhance appreciation of the historic value of the track by highlighting historic track features - develop and install unobtrusive interpretation on the track itself, (model on the small scale plant labels used here on tracks on the West Coast).
- Consider incorporating the bathhouse at the mine site as part of an interpretation shelter.

Future research and survey work

The time constraints and drivers for this BLI report meant that the scope of this work was quite prescribed. Part of heritage management is maintaining good records and making information available to the public. There are a number of other pieces of historic survey work and research that should be carried out in the future that will add to what is known about Charming Creek and enable DOC to better interpret the site for the public.

Recommendations:

- Locate and record features such as the incline at Watson's mill, branch trams shown on early map associated with early logging at Watson's, the coal mine sites, branch trams associated with Mumm's mill, the dam used to facilitate hydro-mining.
- Continue research at Archives New Zealand investigating files that were not consulted as part of these reports, including restricted access files regarding labour disputes.
- Record oral histories of surviving miners, managers and saw millers.
- Use this information to inform future interpretation at the site.