greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Johnsonville 15 minute peak trial 20th September 2014

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Contents

1. Johnsonville Trial Plan

There were two objectives to the trial held on the 20 September 2014. The first was to investigate the possibility of running 4 trains an hour; this being what is required to achieve RS1. The second was to try and bring stability to the timetable to allow 100 percent on time performance to 5 minutes.

Three months' worth of RTI data was used to define the run and dwell times that reflected reality; the only issue was that the crossover below Wadestown, which isn't separated out of the run time, had to be collected manually. Austrics was used to construct a timetable giving a 15 minute frequency from Johnsonville to Wellington and at the same time building in 5minutes recovery time at Johnsonville and 7 minutes at Wellington.

GWRC meet with TranzMetro to discuss the proposal; Ian Robson developed modifications that built in recovery times at the crossovers for the trains going against the peak loading. That is the down trains get priority in the morning peak and the up trains get priority over the down train in the afternoon peak. The theory was to build resilience into the timetable.

From the meeting and the revised timetable it was decided to run a trial simulating a morning peak an off peak and an afternoon peak on a Saturday.

The trip times:

Morning Peak			
Up Old	Up New	Down Old	Down New
21mins	22mins	21mins	22mins
21mins	22mins	21mins	22mins
24mins	23mins	21mins	22mins
22mins	28mins	21mins	22mins
24mins	28mins	21mins	22mins
24mins	28mins	21mins	22mins
24mins	28mins	21mins	22mins
24mins	28mins	21mins	22mins
24mins	28mins	21mins	22mins
21mins	28mins	21mins	22mins

2. Operational Setup

Briefing was held 5.30am, this explained that there would be 4 car sets running at 15minute intervals from Johnsonville from 6.32am until 9.00am and the out bound units would be running with recovery time to support.

After 9.00am an off peak timetable would run until 10.47am then a simulated afternoon peak setting priority to the Wellington to Johnsonville outbound trains.

All stops would stop for 30 seconds to simulate peak passenger loadings and a supervisor would be on each train, timing to the second to ensure time was kept and record all times.

3. Actual Trial

For the trial we had showers at the start which caused the first train up to lose all of the recovery time on the way up to Johnsonville. The train down left 2 minutes late and even with priority was 3 minutes late into Wellington, but the next train up departed on time. We saw the same pattern through the peak with different drivers and bad weather, in each instance we recovered the lost time.

The off peak started on time and no issues encountered.

The afternoon peak had weather issues but the priority trains ran very well.

4. Outcomes

The on time performance at 97.5 % in the poor conditions was excellent. The use of recovery time on the trip with lest priority proved to add stability to the timetable. It proved that we can run a 15minute peak time service very successfully.

5. Recommendations

The next steps to ensure a robust process as well as timetable are run another weekend trial hopefully on a dry day to confirm what we have learnt so far. Secondly a live trial on Johnsonville peak on a week day.

If the above are successful have a joint plan to implement the new timetable with the limited EMUs that we have, to establish the pattern and build patronage

6. A brief History

The line was built in the 1880s as part of the private Wellington and Manawatu Railway Company line to connect Wellington to Longburn. Construction started in 1879, and the first section, to Paremata, opened on 24 September 1885. The line became part of the North Island Main Trunk when the government bought the WMR in December 1908.

The line was used by railway workers from the Tarikaka Settlement in Ngaio, including early shift workers who needed to fire up steam locomotives at the Wellington depot.

Two experimental RM class railcars were briefly used on the line as NZR sought to develop economically viable railcar technology. TheWestinghouse railcar was

introduced in 1914 and served through to 1917. The Thomas Transmission railcar was introduced in 1916 and operated sporadically into the early 1920s. Both railcars struggled on the steep grades and revealed that further advances were needed to make railcars suitable to New Zealand's conditions.

The line became a branch when the Tawa Flat deviation of the NIMT opened to passengers in 1937, and was sometimes called The Hill (inNZR jargon). The line was electrified at 1500 V DC overhead supply, and the first passenger train using the new English Electric DM/D classelectric multiple units ran on 2 July 1938. The units normal operate as two-car motor/trailer sets, four-car sets in peak hours. AdditionalDM/D class units were ordered for the line in 1942 and supplied in 1946.

The line was terminated in Johnsonville, about 100 m beyond the end of the current line: the State Highway 1 motorway on-ramp follows the route of the old line. Ngaio and Khandallah stations already had crossing loops, and a third crossing loop (without platform) at Wadestownplus new stations at Awarua Street and Simla Crescent were added.

Stations were added at Raroa (1940), Box Hill (1956) and Crofton Downs (1963). The line has four stations, Crofton Downs, Awarua Street,Box Hill, and Raroa on a curve.

The line was reviewed in 1984, 1993 and 2006–07 to consider either closing or upgrading it, without any significant changes being made.

Services

A half-hourly service runs daily, augmented to a 13/13/26-minute pattern at peak periods.

The line has been passenger-only since the termination of livestock trains for an abattoir in the Ngauranga Gorge. The livestock were originally driven on foot through Johnsonville streets, but after protests sidings near Raroa were opened on 2 February 1958. The livestock traffic ceased about 1973, though the sidings at Raroa were not lifted until about 1982. Because of the sharp curves on the line, EW class electric locomotives were used for livestock trains instead of the earlier ED class locomotives, which were hard on the track with their long rigid wheelbase.

Infrastructure

The line is single track through very steep terrain rising 150 m above sea level in its 10 km length, with the highest point (152 m) at the north end of Kaka Tunnel. The ruling grade is 1 in 36. There are seven narrow tunnels, six bridges, three passing loops and three level crossings with half-barriers, (at the Fraser Avenue crossing barriers were installed in 2009). There is a private rail crossing to a house immediately south of the Fraser Avenue crossing, and a pedestrian crossing to Poona Street,

Khandallah south of the Rangoon Street overbridge. In 2001, an estimated 1,043 passengers use the line on a working day.[2]

The Wellington City Council let a $1.7m tender to replace the Rangoon Street single-lane overbridge of c1906, which crosses the Johnsonville line, with a two-lane bridge.[3][4] Work commenced in June 2008 and was completed by December 2008.[5]

Upgrade in 2008–2009

The North Wellington Public Transport Study by GWRC and WCC considered four options for improved public transport: enhanced rail; bus on street; conversion to a guided busway; and conversion to light rail. On 16 November 2006 the GWRC Public Transport Committee[6]and the WCC Strategy & Policy Committee[7] accepted a "Do Minimum" option involving retention of the line and replacement of the current DM units with the same number of refurbished EM/ET class (Ganz Mavag) units;[8] this required enlarging the tunnels and increasing platform clearances and lengths.[9] GWRC have since had to change to using only the new Matangi units on this line because of the limited braking power of EM/ET class units on the steep grades[10]

GWRC envisaged (2007) that the track through the tunnels would need to be lowered by 120 mm, depending on the new units.[11]Lengthening of passing loops and platforms was also likely to be needed, and the estimated cost was $5 million. A programme of preparatory work for the tunnel upgrading commenced on 7 September 2008 and was completed in February 2009. Construction took place after 20:00 on Sunday – Thursday nights to minimise disruption to commuters, with services being replaced by buses.[12] The seven tunnels were upgraded in January 2009[13] [14] during a period in which the line was closed to all traffic.[15] The work included:

lowering the track and widening the side clearances in the seven tunnels

lengthening the three crossing loops, allowing longer trains

upgrading platforms by lengthening them and increasing clearances

increasing clearances under two bridges: Lower a rail bridge in Ngaio Gorge (between tunnels) and lower the level of the track under the Raroa Station footbridge[16]

new power substation at Ngaio

New rolling stock

A southbound DM class EMU just south of Raroa Railway Station on the Johnsonville Line. The last of the DM class EMUs was withdrawn from the line in February 2012.

Due to significant mechanical difficulties being experienced by Tranz Metro in keeping the DM/D EMUs in service, several units were withdrawn from service in February 2012. Buses were added to supplement the remaining service capacity pending the planned introduction of the FT/FP "Matangi" EMUs on 19 March 2012.[17] The first Matangi service was the 11:02 departure from Wellington, which passed the last English Electric service on the line at Ngaio station.[18]

Future

The proposed redevelopment of the Johnsonville Town Centre will include improvements to the rail and bus terminal at Johnsonville; the terminal is now referred to as the Johnsonville Hub.

The Broderick Road overbridge immediately south of the Johnsonville Railway Station is to be upgraded by widening and lengthening in late 2014 to include cycle lanes and extra road lanes over it. [19] Provision is made for dual tracks underneath (currently one track) into the station, as requested by the Greater Wellington Regional Council for future double-tracking. [20]