Guidelines for Realistic Traffic Workings
For the Blue Mountains – Steam Era Route V1.0 for MSTS

This document came about as a series of notes that I wrote for my own information when creating and running trains on the MSTS NSWGR Blue Mountains – Steam Era route V1.0. As more information came to hand, I decided to make it available to the general MSTS NSWGR community, to enhance their enjoyment of running trains in MSTS over this route. Please note that this document is considered a 'work in progress', and that in some sections there is currently little or no information to hand.

General Notes

The main western line over the Blue Mountains was double track throughout from the Sydney Metropolitan Area to beyond Wallerawang (single track only made its presence felt near Kelso on the approaches to Bathurst and on the Mudgee line which branched off to the north-west from Wallerawang).

In pre-electrification days the overhead wiring was contained to the Sydney Metropolitan Area and ended at Emu Plains. Note that this last section was only worked once a year for special trains attending the GPS Regatta on the Nepean River – all other Sydney suburban electric trains terminated or originated at Penrith. This section of line was electrified to Parramatta in 1929, but not electrified to Penrith until October 1955.

The original incentive for electrification over the Blue Mountains was the impending expansion of the vast coal reserves and other mining developments around Wallerawang. A fleet of forty 46 class electric locomotives was ordered from the UK to work this traffic, and a locally built prototype (initially 4501, later renumbered to 7100) was built for testing purposes and to train drivers prior to the arrival of the class 46 locomotives. The opportunity was also taken to build a fleet of new stainless steel electric multiple-unit Interurban cars (the so-called U-Boats) to replace the existing steam locomotive hauled commuter services over the Blue Mountains line.

However, the expected increase in coal production west of Lithgow failed to materialise, and the electrification works being undertaken in the west was curtailed at Bowenfels. The line from Hornsby to Gosford, was progressively electrified during 1958-1960, to better utilise the surplus electric locomotives. As the new 'U-Boats' proved to be a good investment, additional cars were ordered to work the Gosford passenger services.

Electrification from Penrith reached Valley Heights by November 1956, and the daily business train, 'The Chips', was then electric locomotive hauled between Valley Heights and Sydney. Electrification reached Katoomba by February 1957, and banking of all trains from Valley Heights to Katoomba was now done by 46 class locomotives. In March 1957, electrification reached Mt. Victoria and all trains commencing or terminating at Mt. Victoria were now electrified, including 'The Fish'. The final sections of electrification to Lithgow / Bowenfels were completed in June 1957.

However, passenger trains were still hauled by electric locomotives over the newly electrified sections until September 1958, when the first of the new Interurban sets were commissioned, and 'The Fish' and 'The Chips' converted to solely electric Interurban multiple-unit working.

Passenger Workings

Specific details of Passenger Train Formations, the type of passenger cars used and basic histories, as applied to MSTS, can be found in a supporting document, "NSWGR General Passenger Traffic Workings", which can be found accompanying this document.

Express and Fast Passenger
The principal express passenger train over this section of line was the 'Central West Express' from Sydney to Orange (and Parkes and Dubbo).

The main Fast Passenger train was the 'Sydney to Orange Day Train'.

Several important Mail Trains also passed over this section of line – the 'Through Mail' from Sydney to Dubbo, the 'Coonamble Mail' from Sydney to Coonamble via Dubbo, the 'Forbes Mail' from Sydney to Forbes (also serving Parkes and Cowra).

In pre-war days, the 'Caves Express' ran from Sydney to Mt. Victoria and Lithgow, where passengers transferred to road coaches for the onward journey to Jenolan Caves. The Caves Express used a specially painted set of corridor cars in Blue and Cream livery, but this train was discontinued during the war in 1942.

Ordinary Passenger
Various ordinary passenger trains served the intermediate stopping points between Penrith and Lithgow – these also included 'school trains' and 'worker's trains' between Katoomba and Cooerwull to serve the Lithgow Small Arms factory.

Commuter Trains
The Blue Mountains district served as an outer 'dormitory' region for workers within the Sydney Metropolitan Area – accordingly a number of specific semi-express commuter and business trains catering specifically for this traffic, worked over the mountains. The most well known one of these, 'The Fish' worked between Sydney and Mt. Victoria. In later years after electrification, a second commuter train, 'The Chips' ran between Sydney and Valley Heights.

Railmotor Services
Railmotors were not used over the Blue Mountains line, however, they were frequently worked over the Mudgee line north-west of Wallerawang, a dock siding being built at the country end of Wallerawang station to serve them.

Sporting Fixtures
Regular greyhound racing events were held at Lithgow, the 'Lithgow Dogs' had several specially scheduled trains in the Working Timetables for race days. It would seem appropriate that at least one RG racing greyhound car would be attached to these special trains.

Special Carriage workings
Westinghouse Email had two mobile exhibition carriages – it would seem appropriate that at some stage these could have been railed west under Special Traffic Notice (STN) to be exhibited in a suitable siding at Penrith, Katoomba, Mt. Victoria, Lithgow and other locations on the Main West and Mudgee lines.

There were also a number of special carriages which did not operate specifically within the Blue Mountains areas, but from time to time would pass over the mountains, attached to normal scheduled workings, on their way from 'The West' to the carriage workshops at Eveleigh for annual repairs or maintenance – these would include:

The Far West Children's Health Scheme – Baby Health Clinic cars
The NSW TAFE – Mobile Instructional Unit cars
The NSWGR Commissioners Train (usually ran as a separate train)

The Dynamometer Car could be occasionally seen attached directly behind the locomotive when running special Test Trains – these would also be run under STN's.

Apart from the small jail cells attached to local police stations and courthouses, there were no Prison facilities in the Blue Mountains District. Therefore any criminals convicted of serious crimes were taken to Sydney for processing, and in the case of criminals given long sentences, they would be more than likely moved to the large country Prisons, such as Maitland, Cessnock, Bathurst and Goulburn. The prisoners were moved in one of the bogie BKD Prison Vans – these were normally attached to any suitable Fast Passenger train serving Bathurst, and coupled directly behind the locomotive. In times of urgent or high-security prisoner transfer, the BKD could be attached to the Central West Express.

Traffic Deviations
Whilst the Main West line over the Blue Mountains was generally worked separately from the remainder of the NSWGR network, the connection over the Blue Mountains was sometimes used as an emergency alternative, when the Main South was blocked between Demondrille and Moss vale due to derailments, accidents, or other reasons. Affected trains would be re-routed at Demondrille, and worked through Cowra and Blayney onto the main West. For example, I have a photo of a double 44 hauled 'Southern Aurora' passing east through Glenbrook in March 1965, due to a derailment on the Main South. This occasional deviation, could lead to some interesting workings in MSTS from Wallerawang to Sydney, or vice versa.

Goods Workings

Firstly, it must be pointed out, that the normal method of working any goods trains on any line within NSW was to load the trains to their **maximum** loading tonnage for each section of line. Only a select few fast goods trains used a 75% loading factor. This meant that both locomotives and crews were worked to their limits, i.e. basically they were 'flogged'.

Lithgow was the principal division point on the Blue Mountains line, and served as the main changeover point for both locomotives and crews. For example a goods train ex-Enfield would arrive in the Down Sidings at Lithgow, the locomotive would uncouple and move over to the loco depot on the Down side of the yard for servicing, or the electric locomotive storage sidings. The crew, after their rostered 'grub break or barracks time', would then either return to their previous locomotive (if it had been serviced by then), or change to another Enfield based locomotive, which had already been serviced, and couple to any waiting eastbound train for return to Enfield.

The westbound traffic left in the Down Sidings by the Enfield locos, would be taken over by a locally based Lithgow locomotive and crew for working westward to the required destinations, to their divisional limits, then the loco and crew would return with any eastbound traffic, and leave it in the Up Sidings at Lithgow for onwards working by Enfield locos and crews returning home.

Prior to electrification, the goods train workings on the Blue Mountains were almost exclusively in the hands of the 'Standard Goods' classes, the 50's, 53's and 55's. Even in the later years, as steam was being phased out, the use of passenger locomotives (displaced by diesels) on goods train working was a rare occurrence. The only major variation from the use of the 'Standard Goods' was the principal fast through goods trains from Enfield to Lithgow, and return, regularly used the heavy D57 and D58 Class 4-8-2's. In the non-electrified sections west of Lithgow, the use of 36 class passenger locomotives on goods trains was common, and frequently a pair of 36's could be seen in charge of fast goods trains.

The large AD60 class Garratt locomotives were mostly worked from Lithgow to the west and back, and rarely travelled over the Blue Mountains section – however, if a 60 class was required to be returned to Enfield or Chullora for major overhaul, it could be 'light attached' to a scheduled goods train, and worked over the mountains. Overhauled locomotives were worked back over the mountains, in a similar manner. In fact, the whole question of major overhaul of locomotives meant that other classes of locomotives, not normally seen on the Blue Mountains sections, could be worked in a similar fashion to and from the west.

After electrification, most goods trains (westbound or eastbound) were worked either by 46 class electric locomotives or by diesel locomotives – goods train workings by steam locomotives became a very rare event.

The main grades affecting westbound trains were from:
Emu Plains to Valley Heights – the ruling grade generally being around 1 in 60 with easements around Glenbrook, Blaxland and Warrimoo.
Valley Heights to Katoomba – the ruling grade generally being around 1 in 33 with easements at most major stations between these two points – the severe 1 in 33 grade meant that all westbound trains, both passenger and goods, were assisted from Valley Heights to Katoomba – initially by 'standard' goods locomotives coupled in front of the train locomotive, but replaced by 46 class electric locomotives after electrification. The banker locomotives were based out of Valley Heights locomotive depot – in some cases the banker was returned light engine from Katoomba to Valley Heights after turning at Katoomba – in other cases, the banker was returned to Valley Heights coupled to selected Up goods trains to assist in providing additional braking power on the steep downhill section, and then removed at Valley Heights, turned and serviced ready for another westbound banking turn.
West of Katoomba – west of Katoomba the ruling grades were much shorter sections of 1 in 60 and 1 in 80 to just past Bell, where the line then dropped down into Lithgow. The lines west of Lithgow contained some shorter sections where the ruling grade was generally no greater than 1 in 60.

The main grades affecting eastbound trains were from:
West of Lithgow – west of Lithgow the ruling grades were generally around 1 in 80 from Wallerawang to Marangaroo, where the line dropped down into Lithgow.

Lithgow to Zig Zag Box – the ruling grade from the yards at Lithgow to Zig Zag Box was 1 in 42 – this meant all eastbound trains were assisted from Lithgow yards to Zig Zag Box. See also Special Note below.
Zig Zag Box to Blackheath – the ruling grades over this section were generally 1 in 90 or less to Mount Victoria, and 1 in 80 from Mount Victoria to Blackheath.
Blackheath to Katoomba – this section contained downhill grades generally in the order of 1 in 60 to 1 in 80.
Katoomba to Valley Heights – this section contained the steepest downhill grades on the line, and trains were worked carefully to avoid runaways on the long decent. Refer to the previous comment above, about some Up trains being assisted by Valley Heights bankers being returned to Valley Heights and providing additional braking power.
Valley Heights to Emu Plains – the ruling grade on this section decreased to an average of 1 in 60.

Special Note: the Lithgow to Zig Zag Box section was very interesting when worked in steam days.

The heaviest goods trains of around 1500 tons were worked from Lithgow to Zig Zag Box by triple locomotives at the head of the train, as well as a 'push-up' banker at the rear of the train. These were usually arranged as: standard goods – standard goods – D57 or D58 – 1500 ton goods train – standard goods. The train stopped adjacent to Zig Zag signal box, where the lead banker and the rear banker were removed and returned light engine to Lithgow. The train continued on with the remaining standard goods and the 57 or 58 class to Blackheath, where the standard goods locomotive was removed and returned to Lithgow, the train proceeding from there only with the 57 or 58 class.

The normal goods trains of 1000-1100 ton capacity, usually only had a single standard goods in the lead, with the 57 or 58 class, and a 'push-up' banker at the rear. The train stopped at Zig Zag Box, where both bankers were removed and returned to Lithgow, the 57 or 58 train engine continuing on alone to Sydney.

After electrification, most goods trains were worked by two 46 class locomotives from Lithgow to Enfield and return, the second 46 class providing both extra power to climb the grades, but also to provide extra regenerative braking on the downhill sections.

Major Goods facilities – Sydney Metropolitan Area

Enfield – Enfield was the principal goods marshalling yard for the whole NSWGR system. It acted as the central arrival / departure point for the majority of goods trains over the four main lines, Main North, Main West, Main South and Main Illawarra. Practically all goods went through Enfield yards, except for Perishables and Export goods, which usually went direct to Darling Harbour. Goods trains leaving Enfield went to further marshalling yards in other regions – to Goulburn in the South, Lithgow in the West, Broadmeadow in the North and Thirroul in the Illawarra.

Enfield Marshalling Yards was also the location of the principal locomotive depot for goods workings into/out of Sydney. A large depot was situated on the western flank of the yards with 3 'roundhouse' style loco sheds, and full servicing, watering and coaling facilities. A second depot was situated on the eastern flank of the yards to service the electric & diesel loco fleet (Delec). Enfield was also the source for a number of 'trip workings' within the Sydney Metropolitan Area.

Some timetabled coal trains from the west (Lithgow) and the south (Glenlee) passed through Enfield without stopping, on the Up and Down through roads, to Rozelle and Balmain / White Bay yards.

Rozelle / White Bay – Rozelle was another large goods yard, which was accessed from a secondary branch line off the Metropolitan Goods Lines at Wardell Road Junction, it swung round through suburban Dulwich Hill, Lewisham (passing under the Main West Lines), Leichhardt and Balmain to Rozelle. A further connection swung round the south of Rozelle bay through Glebe and connected to the north-western end of Darling Harbour / Darling Island. This connection substantially eased the flow of traffic to Darling Harbour / Darling Island causing congestion over the Main West lines through Strathfield - Newtown, Eveleigh, Redfern and Central areas.
The principal traffic working through Rozelle was grain, with a large silo complex to handle all types of grain – there was also an export coal loader situated here which was fed mainly from the western coalfields over the Blue Mountains. Other regular traffic through Rozelle / White Bay was – coal for White Bay Power Station, Atlantic Union oil traffic, Southern Blue Metal, Australian Roads, and traffic to Rozelle Bay timber wharf.

Most traffic over this line was worked to and from Enfield.

Darling Harbour / Darling Island – Darling Harbour / Darling Island was the principal yard serving the City area itself, including most perishables traffic, but its primary purpose was to serve the Import/Export traffic from the extensive shipping wharves situated adjacent. Other regular traffic through Darling Harbour / Darling Island was – coal for Ultimo and Pyrmont Power Stations, meat traffic to TA Field's Meat Market and Riverstone Meat, milk to Dairy Farmers, rice to the Rice Shed, and baled wool to the Wool Shed.

Cooks River / Botany – Cooks River Goods Yard opened in 1947, and initially was a prime loading point for cement, steel and cars. In later years, the yard became a principal container terminal. Large transport companies (like TNT) made common use of the Cooks River Goods Yard to transport their goods.

The Botany goods line served a considerable number of industries:

- just south of Cooks River yard on the northern bank of the Alexandria Canal, a siding and loop was installed to serve the Frome Lime Company . Later this passed ownership to BHP By Products Pty. Ltd. for tar and tar products, and later still passed ownership to BORAL. A siding was later extended off this for a Southern Portland Cement distribution centre.
- Between the canal and Mascot, there were other private sidings for A.G.Sims scrap metal merchant, A.C.I. glass manufacturers and J. Murray More steel wholesalers.
- Mascot goods siding was located on the northern fringe of Kingsford Smith Airport, just before the line crossed over Botany Road
- north of Bay Street a number of sidings were laid for Bayley's Leather works, 'The Commonwealth Sidings', a siding for Hardies and one for Stewart & Lloyds steel distributors.
- just south of Bay Street a loop siding, known as Gelco (for the Gelatine Company) served sidings for Kellogg's, Email, Ready Mixed Concrete, and the Total Oil Products depot.

- South of Gelco, other sidings served the I.C.I.A.N.Z. chemical works and Bates (Australasia)
- Botany yard served as the 'terminus' of the line, and served several local industries, however, there was also an exchange yard for private traffic from the Bunnerong Power Station and the adjacent Boral bitumen refinery, and several oil companies depots (Australian Oil Refineries, Golden Fleece, Esso), which were piped under Botany Bay from the oil refineries at Kurnell.

Alexandria – Alexandria Goods Yard served the inner south-eastern suburbs of Sydney, and was situated directly south of the vast Eveleigh locomotive facilities and workshops complexes. A number of parallel sidings were situated here and ended in a pair of large goods sheds. One of the more unusual workings from Alexandria, was the special train for Wirth Brothers Circus. I do not have much detail about Wirth's, but all the special trains carrying the Circus to country venues originated / terminated at Alexandria, so their 'home base' must have been somewhere nearby. I am presuming that when the Circus Train was not 'On-the-Road', the rolling stock must have been stored in one of the adjacent sidings.

Specific Goods Provisions at Stations

Next we look at the specific goods facilities at each station along the line:

Modelled sections of the Ropes Creek Line (after electrification in 1957):

St. Marys to Dunheved – a siding trailed to the Up line between Dunheved and St. Marys, for Heine Grant Industries and could only be worked by Up trains.

Dunheved – had four parallel loop marshalling sidings on the Down side, complete with a shunting neck at the Ropes Creek end. These could be worked by both Up and Down trains. A private single line branch extended from the western of the 'yard' to the Commonwealth Munitions 'Magazine' area. (During WW2 and prior to electrification, there were a number of sidings extending from this marshalling yard to the north into the 'Commonwealth High Explosives area', but these were removed at the time of electrification in 1957).

Cochrane – had no goods facilities

Ropes Creek – had two parallel sidings on the Down side of the line opposite the passenger platform, with four sets of crossovers to allow placement of wagons under three covered loading bays attached to the adjacent Munitions Factory. There was also a Loop siding on the eastern side of the passenger facilities.

Modelled sections of the Sydney Metropolitan Lines:

St. Marys – had both Down and Up relief lines around the back of the passenger platforms. On the Down side a pair of double-ended loop sidings served a Stock siding and a general Goods siding. Both sidings could be worked by Down or Up trains. On the Up side, a siding extended westwards and curved round to serve the A.E Goodwin Limited rolling stock manufacturing works (this was a conversion of existing facilities originally part of the Commonwealth Munitions Factory 'Fuse' section).

Note: A.E. Goodwins were a regular supplier of new rolling stock to the NSWGR. From time to time, NSWGR trains would collect new wagons or locomotives from Goodwin's sidings – amongst these could be LLV, PV, BSV, BD, BDL, WH, CH, HME, TW600 – Goodwin's also supplied 44 class, 48 class, and 45 class diesel-electric locomotives.

Werrington – had no goods facilities.

Between Werrington and Kingswood – a pair of sidings trailed to the Down Main for 'The Commonwealth', and could only be worked by Down trains.

Kingswood – a siding trailed to the Up line for general use, shunted only by Up trains, and a siding trailed to the Down line for general Goods, shunted only by Down trains.

Penrith – immediately east of Penrith was a Down Refuge loop – this was often used to hold westbound through goods trains awaiting a clear path to Valley Heights.

Penrith had a multi-siding marshalling yard on the Down side, west of the station – this could be worked by both Down and Up trains – (note: westbound goods trains could have loads 'staged' here if necessary – if westbound goods trains were overloaded for the following section to Valley Heights or Katoomba, part of the train could be left here for onward forwarding by later lighter-loaded westbound trains).

On the Up side of the line a locomotive yard with turntable was provided, along with a multi-siding marshalling yard – this yard could also be used to 'stage' eastbound goods trains, but after electrification was primarily used to store suburban electric trains prior to working back to Sydney.

At the western end of the Up yard, a siding extended to the Nepean Co-Operative Milk Company's dairy. [Note: Nepean Milk (NM) sourced most of its incoming product by road from various dairy farms along the Nepean River corridor to Richmond and Windsor. After processing, the milk was railed out – some to the Dairy Farmers Co-Op at Darling Harbour, but one regular working was the attachment of a privately owned NM (converted MBC van) van to an early morning train to Katoomba – after unloading at Katoomba, the empty van was returned to Penrith attached to the morning 'school train' – one photo shows a 46 class, the NM van, then a standard LOB set of end-platform cars].

<u>Modelled sections of the Blue Mountains Line:</u>

Emu Plains – was the location of a multi-siding quarry, privately owned by the Emu and Prospect Gravel Company, trailing to the Up main line. Emu Gravel had a small fleet of elderly steam locomotives for working their internal traffic within the quarry confines. A short NSWGR goods siding extended off the quarry headshunt to the back of the Emu Plains station Up Platform. The facilities could only be worked by Up trains.

Glenbrook – had a Down Refuge Loop, and a double-ended Goods siding on the Up side of the station, which could be worked by both Down and Up trains.

Blaxland – had a single Goods siding trailing to the Down line at the eastern end of the station – this could only be worked by Down trains.

Warimoo – had no goods facilities.

Valley Heights - had a short Up Storage Siding on the northern side of the station, and could be shunted only by Up trains. A pair of Down Refuge Loops was provided on the south side of the station, entered directly by crossovers from the Down line – this had a pair of dead-end shunting necks at the eastern end. After passing under a road bridge, these refuge sidings expanded into a Down Storage Siding as well as a Coal Storage Siding (for the adjacent locomotive depot). If required to refuge an Up train, it could run-through and clear the cross-overs at the eastern end of the yard, and then reverse into one of the two Down Refuge Loops.

Also feeding off the two Down Refuge loops and the Down Main, were direct connections to Valley Heights Loco Depot – this depot was a major divisional point for westbound trains – all westbound trains stopped here, on either the Down Main or in either of the Down Refuge Loops to have banking locomotives attached, for onward running to Katoomba, where the bankers were detached, turned and returned to valley Heights.

Springwood – had an Up Refuge Loop with a double-ended Goods siding on the northern side – facing and trailing cross-overs on the Main Line allowed this loop to be used by both Down and Up trains, and the Goods siding accordingly could be worked by Down or Up trains.

Faulconbridge – had no goods facilities

Linden – had an Up Refuge Loop – a trailing cross-over on the Main Line at the western end allowed Down trains to reverse in for refuge when necessary.

Woodford – had no goods facilities.

Hazelbrook – had no goods facilities.

Lawson – had an Up Refuge Loop, with two sidings extending from the western end, for the adjacent electricity substation. There was also a Down Refuge Loop, and a double-ended Down Goods siding with connections to both Down and Up lines and could be shunted by both Down and Up trains.

Bullaburra – had no goods facilities; however a short distance to the west, a siding trailed into the Down Main for use by the Main Roads Board.

Wentworth Falls – had an Up Refuge Loop – a trailing cross-over on the Main Line at the western end allowed Down trains to reverse in for refuge when necessary. There was also a double-ended Down Goods siding with connections to both Down and Up lines and could be shunted by both Down and Up trains.

Leura – had a double-ended Up Goods siding with connections to both Down and Up lines and could be shunted by both Down and Up trains.

Katoomba – had two short goods sidings trailing to the Down Main and could only be worked by Down trains. There was an Up Refuge Loop with a trailing turntable siding and a short repair siding with a trailing connection. Cross-overs in the Main Lines also

allowed the Up Refuge Loop to be used by Down trains when necessary. At the western end of the Up Refuge loop, a set of three sidings and a shunting neck were provided to store electric passenger stock. A short distance to the west of Katoomba, a trailing siding was provided for the Shell Oil Company, worked only by Down trains.

Medlow Bath - had a short Goods Siding on the northern side of the station on the Up side, and could be shunted only by Up trains. A short distance to the east, a trailing siding was provided for the Commonwealth Oil Refineries (COR), worked only by Up trains. On the eastern outskirts of Medlow Bath, a trailing connection to the Down Main was provided for Caltex, worked only by Down trains.

Blackheath - had a double-ended Goods Siding east of the station on the Up side, and could be shunted by both Up and Down trains.

Mount Victoria – on the eastern end of Mt. Victoria station, a Down Refuge Siding with trailing connection to the Down Main was provided – this also had an additional siding for the Atlantic Union Oil Company. On the western end of Mt. Victoria station a small yard on the Down side comprised a Goods Siding and three storage sidings with a shunting neck. On the Up side of the line, an Up Refuge Siding was provided, along with four storage sidings to store electric passenger stock and a shunting neck extending to the back of the Up platform. Running off these sidings was a small steam locomotive servicing facility with turntable, coaling and watering facilities.

Hartley Vale – had a Colliery Siding on the Down side of the line, and could be shunted only by Down trains.

Bell – had a Down Refuge loop and an Up Refuge Loop – a double-ended Goods siding extended off the Up Refuge Loop, but was only worked by Up trains.

Newnes Junction – had an Up Refuge Loop – two storage sidings extended to the west from this loop (remnants of the former Wolgan Valley Railway line to Newnes) – there was also a short Down siding with a facing connection from the Up Refuge Loop – this could only be worked by Down trains, by backing in to the loop.

Clarence - had a short Goods Siding just north-west of the station on the Up side, and could be shunted only by Up trains.

Lithgow – was a secondary division point, and the sidings on both the Up side and the Down side were primarily to hold through trains being ‘staged’ over the line’s summit.

The Down yard was split into two sections – on descending from Zig Zag signal box, a facing point lead into two long parallel Down reception loops to the Coal Stage signal box – a pair of electrified dead-end roads trailed into the end of these reception sidings for storage of electric locomotives, and a bi-directional engine road trailed in from the Lithgow Steam Locomotive Depot. Just past Coal Stage signal box, an additional Down through road was provided to allow Down steam locomotives to coal [see Special Note below], just past the coal stage another pair of long parallel Down Loops extended to the site of the old Lithgow Goods Station complete with facing connections from the Down Main. All these sidings could only be worked by Down trains, however, Down trains would normally ‘run through’ and reverse over cross-overs in the Main Lines to the Up Old Yard.

The Up yards were also split into two sections – on leaving Lithgow station, the Main Lines passed through the old Lithgow (Eskbank) station platforms [now called Lithgow Goods Station] where a facing connection lead to a series of parallel loops and storage sidings [now called Lithgow Old Yard]. An Up Through road extended from here under the Coal Stage and allowed Up steam locomotives to coal. Also off the Up Through line a facing connection lead to the Lithgow State Colliery. Just past the coal stage the Up Through road extended and became the Up New Yard with a series of long parallel Up Loops – these were used to marshal all eastbound goods trains before departure over the Blue Mountains. Coal from the local collieries was a major traffic - once loaded wagons were received here, they were amalgamated with other loaded coal wagons in the Lithgow New Yard to form complete coal trains, bound for Enfield. If other goods trains heading for Enfield were lightly loaded, they were 'built up' with loaded coal wagons, at the front of the train, to maximum tonnage capacity.

Special Note: Lithgow was one of only two locations (the other being at Demondrille) on the NSWGR network where 'on-train' coaling of steam locomotives took place.

Prior to electrification, the Lithgow Coal Stage extended, in an enclosed building, across the Main Lines, with several coal chutes on the Up Through road, a single coal chute above the Up Main and a single coal chute above the Down Main. Through trains on either the Up Main or Down Main drew to a stand with their locomotive tender directly beneath the coal stage chutes for coaling, whilst still attached to their trains. All other steam locomotives in service around the Lithgow yards would move to the Up Through Road, where they could be coaled without blocking the Main Lines. Lithgow Steam Locomotive Depot itself did not have any coaling facilities, all locomotives proceeding 'to shed' or proceeding 'to traffic' used the Up Through Road for coaling (later they used the new Down Coaling Road).

After electrification, the single coal chutes above the Up Main and the Down main were removed (for obvious reasons, due to the presence of 1500 volt DC overhead lines), but the several coal chutes on the Up Through Road were retained un-altered. A new 'hopper style' coal chute was erected above a new Down Coaling Road, extended from the Down Yard. The enclosed building above the Main Lines was cut back, and coal was taken from the main part of the coal stage using an internal-combustion-engine, rubber-tyred front-end loader and tipped into the hopper above the Down Coaling Road – a crude but effective method of coaling. The coal chutes on the Up Through Road and the Down Coaling Road were now only used for the local shunting engines and any 'visiting' engines in the Lithgow area – 'on-train' coaling on the Main Lines ceased.

Lithgow Station – a short locomotive siding, with cross-over connections between the Main Lines, was provided at both the Sydney end and the Bathurst end of the station platforms to temporarily store locomotives waiting to be 'relayed' on both Up and Down passenger trains.

Just to the west of Lithgow Station, trailing connections to the Up line were provided for Lithgow Valley Colliery and Hermitage Colliery. Both colliery lines could only be worked by backing in from the Up Main.

Modelled sections of the Main West Line:

Cooerwull – had no goods facilities.

Bowenfels – at the eastern end of Bowenfels, a trailing connection was provided for the Vacuum Oil Company, worked only by Down trains. At the western end of Bowenfels, a series of trailing connections served a long 'continuous' siding, which served as the Stock Siding, the Goods Siding and the Dock Siding. This could be worked by both Down and Up trains. A dead-end Up Refuge Siding had a trailing connection to the Up Main just to the west of the station platforms.

Marrangaroo – had no goods facilities. However, a facing junction allowed special trains to proceed to the Marrangaroo Army Camp, via a 'private' branch line.

Wallerawang – had a small Down marshalling yard comprising four parallel loop roads, accessed by facing connections from the Down Main. Another two dead-end sidings, trailing to the Bathurst end of the marshalling yard were used for wagon storage, and to serve a small Stock Siding. On the Up side, a small steam locomotive serving facility had a turntable, and coal and water facilities, along with several storage roads. Two general Goods Sidings extended towards the east of the locomotive facilities, and the longest of these was extended into two dock sidings behind the Bathurst end of the Up platform – this was used by the local Mudgee line passenger trains as well as the railmotors. A second pair of dock sidings was located behind the Lithgow end of the Up platform.

At the eastern end of Wallerawang, a single line branch veered off to serve the four collieries to the north and north-east of Wallerawang, as well as the Wallerawang Power Station – two sidings had a facing connection off the colliery line for Wallerawang Power Station use. Empty wagons to the collieries, and loaded wagons from the collieries, were 'staged' through the Down Marshalling Yard. However, in later days a direct line was taken from the colliery branch to a trailing connection to the Up Main adjacent to Wallerawang Power Station - this was to facilitate loaded trains, from Wallerawang Colliery in particular, to have better direct access to Lithgow Up Yards, without having to 'run-around' in Wallerawang Down Marshalling Yard.

At the western end of Wallerawang, the single line branch to Mudgee, and beyond, veered off to the north-west – a dead-end Up Refuge Siding was placed just to the Bathurst side of the junction, with a trailing connection to the Up Main.

Colliery Traffic Workings

Colliery traffic was worked either by 'dedicated' timetabled train between the two points (where detailed below), or the empty and loaded wagons were picked up / dropped off by any passing scheduled Up / Down pickup goods train.

Loads and empties were 'staged' through Lithgow:-

Eastbound loads from any colliery west of Lithgow were worked by any scheduled or pickup train to Lithgow only, for forward working by another eastbound goods or pickup train from Lithgow. Similarly, westbound empties for any colliery west of Lithgow were worked by any goods train from Enfield only, the wagons being forwarded to the appropriate colliery from any westbound goods or pickup train terminating at Lithgow.

Note, the term 'Operational Timeframe' refers only to the 1955-1960 era depicted by this route.

Lithgow State Colliery, Lithgow
Operational Timeframe: 1955-1960
Output sent to: Sydney
Types of wagons: NSWGR 4-w hoppers LCH and CCH, NSWGR bogie hoppers BCH – departmental coal in NSWGR S-trucks and K-trucks
Types of Locomotives: This colliery was worked exclusively by local 'Trip Trains' worked by the local Lithgow shunters – usually a class 26 saddle-tank engine, however 20 and 30 class tank engines, and 19 and 30T tender engines, as well as 'Standard Goods' engines could be seen from time to time.
Method of Working: Local 'trip trains' were worked to and from this colliery from the Lithgow Old Yard – loaded wagons were then passed onto the New Yard for onward forwarding to Sydney.
MSTS Paths –
MSTS Consists – D50-5236-CoalLD-22mix+PHG.con, D50-5236-CoalMT-22mix+PHG.con

Lithgow Valley Colliery, Lithgow
Operational Timeframe: 1955-1960
Output sent to: Sydney
Types of wagons: NSWGR 4-w hoppers LCH and CCH, NSWGR bogie hoppers BCH – departmental coal in NSWGR S-trucks and K-trucks
Types of Locomotives: This colliery was worked exclusively by local 'Trip Trains' worked by the local Lithgow shunters – usually a class 26 saddle-tank engine, however 20 and 30 class tank engines, and 19 and 30T tender engines, as well as 'Standard Goods' engines could be seen from time to time.
Method of Working: Local 'trip trains' were worked to and from this colliery from the Lithgow Old Yard – loaded wagons were then passed onto the New Yard for onward forwarding to Sydney. However, this colliery only had a trailing connection to the Up Main, so Down inbound empty wagons had to be 'carried on' to either Bowenfels or Wallerawang, for reversal – to facilitate reversal, these trains often had brake vans at both ends of the train. Once reversed, the trip train would continue back on the Up line and stop clear of the trailing connection on the Up Main, and then reverse back into the colliery sidings. The empty wagons were dropped off and the loaded wagons picked up for forwarding to Lithgow Old Yard (and subsequently, the New Yard).
MSTS Paths –
MSTS Consists -

Hermitage Colliery, Lithgow
Operational Timeframe: 1955-1960
Output sent to: Sydney
Types of wagons: NSWGR 4-w hoppers LCH and CCH, NSWGR bogie hoppers BCH – departmental coal in NSWGR S-trucks and K-trucks
Types of Locomotives: This colliery was worked exclusively by local 'Trip Trains' worked by the local Lithgow shunters – usually a class 26 saddle-tank engine, however 20 and 30 class tank engines, and 19 and 30T tender engines, as well as 'Standard Goods' engines could be seen from time to time.
Method of Working: Local 'trip trains' were worked to and from this colliery from the Lithgow Old Yard – loaded wagons were then passed onto the New Yard for onward

forwarding to Sydney. However, this colliery only had a trailing connection to the Up Main, so Down inbound empty wagons had to be 'carried on' to either Bowenfels or Wallerawang, for reversal – to facilitate reversal, these trains often had brake vans at both ends of the train. Once reversed, the trip train would continue back on the Up line and stop clear of the trailing connection on the Up Main, and then reverse back into the colliery sidings. The empty wagons were dropped off and the loaded wagons picked up for forwarding to Lithgow Old Yard (and subsequently, the New Yard).
MSTS Paths –
MSTS Consists –

Wallerawang Colliery, North of Wallerawang
Operational Timeframe: 1955-1960
Output sent to: Sydney
Types of wagons: NSWGR 4-w hoppers LCH and CCH, NSWGR bogie hoppers BCH – departmental coal in NSWGR S-trucks and K-trucks
Types of Locomotives: This colliery was worked exclusively by local 'Trip Trains' worked by the local Lithgow shunters – usually a class 26 saddle-tank engine, however 20 and 30 class tank engines, and 19 and 30T tender engines, as well as 'Standard Goods' engines could be seen from time to time.
Method of Working: Local 'trip trains' were worked to and from this colliery from the Lithgow Old Yard – loaded wagons were then passed onto the New Yard for onward forwarding to Sydney. The Down empty 'trip trains' would shunt into Wallerawang Down Marshalling Yard, the locomotive would 'run-around' the train, and then it would cross-over the main Lines and enter the colliery branch line, and run to the colliery. The empty wagons were dropped off and the loaded wagons picked up – the Up full train would then run back to Wallerawang Down Marshalling Yard, the train would be 'run-around' again, and then depart for Lithgow Old yard.
MSTS Paths –
MSTS Consists –

Angus Place Colliery, North of Wallerawang
Operational Timeframe: 1955-1960
Output sent to: Sydney
Types of wagons: NSWGR 4-w hoppers LCH and CCH, NSWGR bogie hoppers BCH – departmental coal in NSWGR S-trucks and K-trucks
Types of Locomotives: This colliery was worked exclusively by local 'Trip Trains' worked by the local Lithgow shunters – usually a class 26 saddle-tank engine, however 20 and 30 class tank engines, and 19 and 30T tender engines, as well as 'Standard Goods' engines could be seen from time to time.
Method of Working: Local 'trip trains' were worked to and from this colliery from the Lithgow Old Yard – loaded wagons were then passed onto the New Yard for onward forwarding to Sydney. The Down empty 'trip trains' would shunt into Wallerawang Down Marshalling Yard, the locomotive would 'run-around' the train, and then it would cross-over the main Lines and enter the colliery branch line, and run to the colliery. The empty wagons were dropped off and the loaded wagons picked up – the Up full train would then run back to Wallerawang Down Marshalling Yard, the train would be 'run-around' again, and then depart for Lithgow Old yard.
MSTS Paths –
MSTS Consists –

Cal Colliery, North of Wallerawang

Operational Timeframe: 1955-1960
Output sent to: Sydney
Types of wagons: NSWGR 4-w hoppers LCH and CCH, NSWGR bogie hoppers BCH – departmental coal in NSWGR S-trucks and K-trucks
Types of Locomotives: This colliery was worked exclusively by local 'Trip Trains' worked by the local Lithgow shunters – usually a class 26 saddle-tank engine, however 20 and 30 class tank engines, and 19 and 30T tender engines, as well as 'Standard Goods' engines could be seen from time to time.
Method of Working: Local 'trip trains' were worked to and from this colliery from the Lithgow Old Yard – loaded wagons were then passed onto the New Yard for onward forwarding to Sydney. Working of this colliery was limited, as it only comprised a short single trailing siding facing towards Wallerawang – this traffic would be performed by trip trains serving either Wallerawang Colliery or Angus Place Colliery. Empties would be 'carried on' and reversed at either colliery – on arrival back at Cal Colliery, the Up train would stand on the colliery branch, uncouple the locomotive, reverse into the siding, and draw out the loaded wagons, return to the train and collect the empty wagons, reverse back into the siding and leave them, then couple back to the train and proceed to Wallerawang Down Marshalling yard, for further reversal, as described above.
MSTS Paths –
MSTS Consists –

Commonwealth Colliery, North of Wallerawang
Operational Timeframe: 1955-1960
Output sent to: Sydney
Types of wagons: NSWGR 4-w hoppers LCH and CCH, NSWGR bogie hoppers BCH – departmental coal in NSWGR S-trucks and K-trucks
Types of Locomotives: This colliery was worked exclusively by local 'Trip Trains' worked by the local Lithgow shunters – usually a class 26 saddle-tank engine, however 20 and 30 class tank engines, and 19 and 30T tender engines, as well as 'Standard Goods' engines could be seen from time to time.
Method of Working: Local 'trip trains' were worked to and from this colliery from the Lithgow Old Yard – loaded wagons were then passed onto the New Yard for onward forwarding to Sydney. Working of this colliery was limited, as it only comprised a pair of short sidings and trailing headshunt facing towards Wallerawang – this traffic would be performed by trip trains serving either Wallerawang Colliery or Angus Place Colliery. Empties would be 'carried on' and reversed at either colliery – on arrival back at Commonwealth Colliery, the Up train would stand on the colliery branch, uncouple the locomotive, reverse into the headshunt, and draw out the loaded wagons, return to the train and collect the empty wagons, reverse back into the headshunt and leave them, then couple back to the train and proceed to Wallerawang Down Marshalling yard, for further reversal, as described above. Moving of empty and loaded wagons between the headshunt and the two colliery sidings was performed by a farm tractor and tow-rope.
MSTS Paths –
MSTS Consists –

Weighbridge Siding, North Of Wallerawang
A short loop line was built along the colliery branch line, between the four collieries and Wallerawang. A weighbridge was placed on one of these loops, where inbound empties and outbound loads could be weighed if required – wagons not requiring weighing could be run past the weighbridge on the second loop line. When using the weighbridge

(travelling at max 2-3 mph), the weigh machine was locked until the locomotive passed over the bridge, then it was unlocked again to weigh the individual wagons.

Special Traffic

Ore Concentrates – Broken Hill to Sulphide Junction

The ore concentrate train was known under two different train numbers - W44 from Broken Hill to North Strathfield - once it ran around the North Strathfield curve onto the Main North, it became N645 to Cockle Creek/Sulphide Junction. The return empty ore wagons to the west were worked as W349.

Diesels were used from Broken Hill to Parkes, but the second part of the journey from Parkes to Molong was run with a single Garratt (chimney first), piloted by a 36 Class - once it reached Molong the train required heavier assistance over the steep grades to Orange East Fork. In many cases the assist engine was a second Garratt (cab first) coupled in front of the original train engine - photo evidence also shows use of 36 class in front as assist engine, and one photo even shows a non-streamlined 38 class as assist engine. [Side comment - photos show Garratt hauled heavy normal goods trains from Molong to Orange were mainly 36 class assisted].

When using two Garratts nose-to-nose, after arrival at Orange East Fork, the original train engine (chimney first) was cut out of the train, and the Molong-Orange assist engine then became the sole train engine for the next sections of the journey to Lithgow. This was done to relieve the loco crews (but not the poor Guard!!!) of smoke and heat through the Marangaroo Tunnel.

Whilst I do not have any photo evidence specifically of W44 over the Blue Mountains area – other evidence points to the use of double-headed 46 Class electric locomotives. Once W44 reached Homebush/North Strathfield the train would become N645.

At Gosford, the electric locomotives gave way to a Garratt engine as the main train engine used over the undulating sections (Hawkmount and Fassifern) to Sulphide Junction. In many cases the assist engine was a second Garratt (but this time also running chimney first), but the use of the 36 class was common, and other photos show a 38 or in some cases a Standard goods assisting N645.

In the earlier years, GP wagons were used, without tarpaulin covers, but in later years the newer CG wagons were used, and tarpaulins were fitted to minimise any dust from the ore, or rain contaminating the load. The return empties generally only used a single locomotive, but sometimes an extra locomotive was attached to save a ‘traffic path’ over the heavily congested mains. The return empties were generally worked by 36 class locomotives, which had a match truck (often a TRC or CCH) between the hook fitted locomotive and the auto fitted GP or CG wagons.

Ore Concentrates – Cobar to Port Kembla

There was a lesser known ore concentrate working; however this did not require a dedicated train like W44. A single-line branch extended out to the west of Cobar to the CSA mines. The local goods train locomotive would run out to the mines and attach a number of GP wagons loaded with ore (usually four or six in number - although I have one photo of a 32 class, and water gin, on the Cobar branch with around 10-12 loaded GP’s in tow). These wagons would be worked via the normal scheduled goods trains along the line to Dubbo, where they were put into a main goods train going to Enfield. At Enfield the loaded GP’s were shunted into a main goods train heading down the

Illawarra line. At Thirroul they were shunted into a local goods train serving Port Kembla, where they were then shunted into the ERS sidings for unloading. The return empties were worked back to Cobar in a similar fashion.

Therefore, there is the possibility that any goods train working over the Blue Mountains, could have a set of 4 to 6 GP wagons in loaded or unloaded condition, as part of that train.

Other Traffic Workings

General Goods Traffic
Specific details of general Goods Trains, the type of goods vehicles used and basic histories, as applied to MSTS, can be found in a supporting document, “NSWGR General Goods Traffic Workings”, included with this route.

Ballast, Blue Metal and Minerals
The two main sources of ballast for track use on the NSWGR, were at Bombo on the Illawarra line, just north of Kiama, and at Martin's Creek, approximately half-way between Maitland and Dungog, on the North Coast line.

Prior to building the BBW bogie ballast hoppers, NSWGR used 16T MH 4-wheel hoppers; a total of 105 MH's were built in 1931 and 1938 (metal bodied equivalents to the typical wooden LCH wagons used by most coal mines), for transporting ballast.

Photos showing Ballast Trains in use on NSWGR, generally show a typical consist of six or nine bogie ballast hoppers and a bogie Ballast Plough Van, which would be within the typical 550 ton loading capacity for a Superheated Class D50 2-8-0.

Another common ballast train consist would comprise a set of six BBW bogie ballast hoppers, then a bogie plough van, following behind these would be a small number of S-Trucks (maybe 4 or 5) loaded with `fines' for use on pathways and other paved areas around yards and stations, all this was then tailed by a normal LHG goods brake van.

The Bogie Ballast Plough Vans, as well as having normal accommodation for the train Guard, also had additional seating accommodation for the Ballast Train crew. The twin centre-mounted ploughs under the floor would be wound down to track level by a set of winding gear inside the van. The plough van had two sets of ploughs, so that track ballasting activities could be carried out in either direction to suit conditions at the work-site.

Normally, loaded ballast trains would be worked over the Down (outbound) lines to all parts of the state, with the return empties being worked in Up (inbound) trains. However, ballast from Bombo was normally worked directly to Enfield Marshalling Yard, where it would be re-marshalled for required ‘work trains’ throughout the West and South regions. Ballast trains in transit, not forming an STN scheduled ‘work train,’ would be trailed by a normal brake van, although a Ballast Plough Van would still be included in the consist, ‘taking the plough to the work area’.

Petroleum Products
The only two oil refineries in NSW were both in Sydney. One was at Kurnell (using an under-water pipeline to the oil terminals at Matraville) and the other one at Clyde. A constant stream of loaded and empty tank wagons performed a regular cyclic flow between the oil terminals and the local fuel suppliers in the country centres.

The vast rural lands west of the Great Dividing Range required a constant supply of petrol, oil and other lubricants to maintain all the rural farming machinery and localised industries. Most rural towns had at least one siding for use by various oil companies to store these commodities. Nearly every westbound goods train had one or more loaded tank wagons, or S-trucks loaded with 44-gal drums to serve these local sidings – often

the tank and drum wagons would be positioned in groups throughout the train to suit the shunting order at each wayside yard.

Details of other oil and petroleum traffic workings, as applicable to this route, can be found in the document "NSWGR General Goods Traffic Workings".

Milk
At the western end of the Penrith Up Yard, a siding extended to the Nepean Co-Operative Milk Company's dairy. Nepean Milk (NM) sourced most of its incoming product by road from various dairy farms along the Nepean River corridor to Richmond and Windsor. After processing, the milk was railed out – some to the Dairy Farmers Co-Op at Darling Harbour, but one regular working was the attachment of a privately owned NM (converted MBC van) van to an early morning train to Katoomba – after unloading at Katoomba, the empty van was returned to Penrith attached to the morning 'school train' – one photo shows a 46 class, the NM van, then a standard LOB set of end-platform cars. Milk supply to most areas west of the Blue Mountains was by local dairy, mostly carried by road – rail transport of milk in these areas was not a regular traffic.

Fruit and Vegetables
There were only a number of small local industries growing fruit and vegetables, mostly for local area consumption, throughout the lands west of the Blue Mountains. Significant quantities of fruit and vegetables grown in other parts of the state (or interstate) were railed to The West for sale in the local markets, particularly tropical fruit from northern NSW and Queensland (ie bananas, pineapples, mangos, paw paws, etc.) and stone fruit and vegetables from the Riverina District and the Murrumbidgee Irrigation Area. This traffic was worked as a number of refrigerator vans or louvre vans in normal scheduled goods trains over the Blue Mountains.

Other traffic – wheat, wool, livestock, timber, etc.

Wheat – there were no wheat farms within the Blue Mountains districts - however the lands west of the Blue Mountains sourced huge quantities of wheat for milling in the Sydney Metropolitan Area or for export from Darling Harbour or Rozelle. This vast flow of wheat during the Harvest Season was railed over the Blue Mountains in covered wheat wagons, either 4-wheel RU wagons or bogie BWH wagons, often in block loads, or significant parts of general goods trains. The resulting flow or return of empty wagons was just as huge. Sometimes, in peak demand, when no other wagons were available, surplus coal hopper wagons were cleaned and seconded for wheat transport, being covered by tarpaulins to keep the weather out.

Wool – there was no woollen industry within the Blue Mountains districts - however the lands west of the Blue Mountains sourced huge quantities of wool for processing in the Sydney Metropolitan Area or for export from Darling Harbour or Rozelle. This vast flow of baled wool during the Shearing Season was railed over the Blue Mountains in open wagons or flat wagons covered by tarpaulins to keep the weather out, usually in block loads, or significant parts of general goods trains. The resulting flow or return of empty wagons was just as huge.

Livestock – there was no livestock industry within the Blue Mountains districts - however the lands west of the Blue Mountains sourced huge quantities of livestock for the Saleyards or Abattoirs in the Sydney Metropolitan Area. This vast flow of livestock for

the regular Stockyard Sales days was railed over the Blue Mountains in sheep or cattle wagons, often in block loads, or significant parts of general goods trains. The resulting flow or return of empty wagons was just as huge.

Timber – some timber cutting and logging was carried out in the forestry areas in the far north-west of NSW – however most of this was only transported within local precincts and mostly by road. Some sawn timber was brought in by rail over the Blue Mountains to supply the local timber yards, and any manufacturing and housing construction industries that required timber.

Cement – To the west of Lithgow, powdered cement for building services was manufactured along the Mudgee line at large cement plants at Portland and Kandos.

Special trip trains were run from Lithgow, along the Mudgee line to both Portland and Kandos. Cement was railed out, in both bagged form in tarpaulin covered open wagons or in covered vans, or in bulk powder form in covered cement hopper wagons. On reaching Lithgow, the wagons were marshalled into goods trains proceeding to Enfield.