# Kangaroo Valley Historical Railway

# OPERATOR'S MANUAL

6th Edition

# KVHR OPERATOR'S MANUAL

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# *KVHR* OPERATOR'S MANUAL

# Introduction

Welcome to Kangaroo Valley Historical Railway.

*KVHR* is an operational railway. Railways by their very nature need to run trains. Many model railways address the modelling aspects well and neglect the operational aspects and end up with trains simply being run, often in circular 'chase-your-tail' fashion. This manual outlines an operational procedure for *KVHR* so as to increase the pleasure of running trains. It attempts to introduce simplified prototypical-like operational procedures.

Visitors to *KVHR*, as well as regular operators, are encouraged to make comments and suggestions to improve its working, increase safe-working and expand on enjoyment. In the meantime, enjoy.

# Setting the Scene

*KVHR* has been imagineered on the Great Coastal Railway (formally known as the Illawarra Line) that now links Sydney and Melbourne via the coast. The time is 1955 just a short time after the final section of track has been opened between Bega and Eden that now allows a standard gauge coastal route between the two major cities.

The real Kangaroo Valley is one of the most picturesque valleys on the southern coast of New South Wales, home to dairy farming and a few reclusive residents. Towering cliffs of sandstone that are topped by level plateaus surround it.

Imagine if you will, what might have happened if coal had been discovered in the hills. You might have what you see before you. The small yard services both the village of Kangaroo Valley and the mine. Regular passenger services take workers to the steel mills in Wollongong. Fast goods and passenger trains run between Sydney and Melbourne.

The first of the new-era diesels have just been introduced (4001 and 4002 are still in Royal Blue livery following Queen Elizabeth's visit), but steam still rules and the upgraded line allows the train-spotter to spy most classes of NSW steam locomotives at some time or other.

# KVHR OPERATOR'S MANUAL

# Operational Overview

KVHR was originally designed as an exhibition layout. It aimed to offer the general public the following features:-

- A general perspective of a small main line station in a moderately busy NSWR setting in 1955.
- As broad a range of period NSWGR locomotives and rolling stock as possible.
- same train chasing its own tail. Ideally an observer will only see each train once in any 'day' (about four hours).

KVHR was also designed with the operator in mind. It aims to offer operators the following features:-

- A variety of operational activities
- A range of degrees of difficulty.
- Operating tasks included driving trains (Drivers) and yard controlling (Stationmasters). When a large number of Drivers and Stationmasters are used, a Principal Operator oversees and directs the entire affair.

Over time the model began to show its age and had been exhibited many times. The opportunity to develop the hay loft at Old Linton into a large 10m x 7.5m train room presented itself and the decision was made to establish a permanent home for KVHR and to expand it to allow for more operation. The model now extends over five scale miles and has a two scale mile branch line with two other shorter branches to specific facilities. This being said, the main operating objectives, as detailed above, remain.

# Geographical Description

KVHR operates in a point-to-point manner.

***Sydney*** is the origin of the system. It is the largest yard capable of storing numerous passenger and goods trains.

Immediately adjacent to Sydney Yard is ***Newtown Coal Services*** which provides furnace coal for many industries throughout the system as well as loco coal to all the various locomotive depots. This facility is essentially part of the ***Sydney Yard*** and is immediately to the east of the yard. It consists of two stub ended tracks.

As Sydney Yard is left behind, on the right is ***Enmore Locomotive Depot***, the largest locomotive facility on the railway. It has a 90-foot turntable with its associated five stall roundhouse and four additional open stalls. Also off the turntable is the steam locomotive service area with coaling, ash sanding and watering facilities and a diesel refuelling stage.

The line from Sydney Yard is double track. It quickly enters a tunnel that passes under the inner suburb of Newtown.

On emerging from the tunnel a train passes **Enmore Coal Stage** on the right hand (up) side. A trailing crossover and point on the up line allow entry into the facility.

The island platform of ***Adamstown Station*** is reached after crossing a girder bridge. This is a simple suburban station that services the inner city suburb. Many people travel daily into the city for work, but there is a fair population of retirees who seem to have nothing better to do than train watch. The terrace house that provides employment for several ladies of the night provides something else to watch. There are no goods facilities.

Within walking distance of Adamstown, a train passes the ***Coca Cola*** bottling plant and the ***City Gasworks***. These two industries are serviced by a single stub siding that is reached by a trailing point on the up line. The gasworks, which uses a large quantity of coal from Newtown Coal Services, has been lobbying for years to have a crossover to ease the work of trains servicing it, but has so far not had any sympathy from the railway lords.

After passing through a long tunnel a train enters ***Osport Station*** and port complex. This is the main port for the system with wool and coal being the main exports and a variety of imports. Wool is stored at ***Tyler & Son's Wool Store*** while waiting for a suitable ship for export. ***Tooheys*** also has that all important brewery here and somehow seems to have cornered the market for the entire system. In addition to all the usual railway equipment associated with a port, the NSWGR has erected a large power station in anticipation of the needs of the catenary for its suburban services.

After leaving Osport another short tunnel is entered that emerges at Violet. **Violet Station** is the terminus for suburban services. There is a single mainline platform, at which all down trains must stop for safeworking purposes, and a short platform for the Limestone branch line.

North of the platform is a crossover that allows northbound trains departing from the platform to cross to the up line and just before the platform there is a trailing point for the Down Refuge.

At the southern end of the platform is a water tower normally used to service local passenger locomotives.

Just south of the platform is a trailing point the allow access to the Limestone branch line and the ***Mothers Choice Flour Mill*** which has its own siding.

A facing crossover a little further south allows up trains to enter either the main platform or the branch line. Up passenger trains that are to stop at Violet Station will use this crossover and the return to the up line by the Up Crossover.

The up line between the two crossovers can function as an up loop.

As a train leaves Violet it will be noted that the automatic light signals used in the city and suburban areas has given way to lower quadrant semaphore signalling.

The short branch line that departs from Violet up to the isolated village of Limestone. The main industry is the Limestone Quarry, but as time has progressed a small village has grown up around it. As there are no roads into Limestone, all required goods and passenger travel is, of necessity, conveyed by rail. ***Limestone Station*** has a short 50-foot platform, a goods loop with a loading bank, goods shed and loco coal stage and a run-around loop between the two. A stub siding from the platform has a carriage shed to accommodate the CCA that provides the sole passenger service for the village. Just beyond the station another stub siding services the main reason for the town's existence.

After passing ***Violet Station*** the line passes the ***Mother's Choice flour mill*** before crossing a gauntlet bridge followed by a steep climb through heavily wooded territory, to the ***Southern Cementworks*** factory that is located on the up side of the line. A short unattended island platform constitutes ***Cementworks Station*** and is provided for the workers at the factory. It will be seen that OHS & S has not yet reached the factory as workers must take care when crossing the mainline on foot to the factory.

Southern Cementworks is a private facility with its own shunter (an old ex-government M Class that still carries its old departmental number of 45). There are two sidings for the acceptance of raw materials and dispatch of bagged cement. Two more sidings for loading of bulk cement are situated adjacent to the cement silos. A siding used for the unloading of raw materials is only used by the private shunter.

The limited nature of the work involved means that the M class has no fireman appointed and all firing is done by the driver. However, the independence of the position and its light duties means that the position of driver is a highly sought-after assignment.

Another short tunnel is negotiated before entering ***Kangaroo Valley Station. It*** is the end of the double track main line. From here the single track main line continues to Eden and a branch line leaves for Alabmob.

There are three platforms. No1 and No2 are on the down and up tracks respectively. The back of No2 platform is No3 which is used for local passenger services to ***Mt Hope Mine*** and the meatworks complex to the south. The third track also allows run-around of trains standing on the main line and is a direct link between ***Kangaroo Valley Yard*** and ***Mt Hope Mine***.

To the north of ***Kangaroo Valley Platform No3*** is a short branch to ***Mt Hope Mine***. It has two switchbacks that climb steeply into the hills before arriving at the mine. At the first switchback there are plans afoot to erect a coke plant that will eventually provide the Gasworks with coke rather than the less efficient coal that it is currently using. At the mine there is a coal loading siding and a short platform.

There is a small yard immediately south of the station that has four stub sidings and direct access to ***KV Loco*** and ***KV Goods Shed***. A short loop allows the locomotive that services the mine to run-around without fouling the main line and also provides de-ashing and watering services to the local locomotives.

Adjacent to the KV Signal Box is a small milk shed. Up trains regularly pick up milk churns from the shed.

To the south of the yard is an abattoir complex that includes the ***Valley Meatworks*** ("*You stock 'em, we shock 'em*"), its stockyard, the ***Union Ice Plant***, a boiler house and ***Tan's Tannery*** (*"We've got a Hide"*). It is situated in the fork created by the branch that proceeds westward to Alabmob.

Raw hides from the meatworks are moved with an old S truck that shuttles between it and the tannery. An old F class locomotive, still with it's pre 1924 number, normally does the honours. Despite its lowly duty, it is the pride of Kangaroo Valley Loco that had restored it to original condition and keeps it in peak condition. It is the oldest locomotive still in regular work anywhere on the system. Its normal location means that it is regularly admired by passengers on the passing passenger services.

A sixty-foot turntable marks the most southern point of the Kangaroo Valley district.

The steep, two-mile long branch line to ***Alabmob*** also departs just south of Kangaroo Valley Station. After leaving Kangaroo Valley the branch line climbs to an unattended passing loop that is automatically operated.

The line climbs further to ***Ethel*** which is a small village dominated by its wheat silos. The unattended Ethel Station is a single platform to take two end platform cars. There are no locomotive facilities. Infrastructure includes a loading bank, a small goods shed and a stock race.

A further climb crosses Two Mile Creek on the ***John Harvey Bridge*** and ends at ***Alabmob***, the terminus of the branch. There is an unattended platform for 4 end platform cars, the usual goods shed, loading bank on the goods siding, stock yards and a run around siding. A stub siding off the main platform serves the ***Oak Dairy Factory***, the main industry in the town.

***Alabmob Loco*** is an outpost of ***KV Loco*** and has only basic servicing facilities. These are a 60ft turntable, small single stall engine shed, coaling facility, watering and train crew barracks. There is normally a pair of 30T Class locomotives assigned to ***KV Loco*** that are stationed at ***Alabmob***.

Returning to the now single track main line south of Kangaroo Valley, the line passes the large stock saleyards, before reaching ***Museum Station*** with its associated Railway Historical Museum.

The station itself is a single platform for four end platform carriages situated on a loop. Immediately to the south of the station is the entrance to the extensive rail museum facilities that lies on the eastern side of the line. The museum contains a great variety of preserved rolling stock. It is a matter of pride that several original 1855 pieces of rolling stock, that were purchased by the Sydney Railway Company, are on display.

From time to time an excursion train consisting of historic carriages is organised.

The traverser table offers great interest to the spectator.

At the north end of the museum are the restoration sheds in which all manner of heavy works is done on locomotives and rolling stock.

After crossing a bridge, the line passes the junction to the coal line and then proceeds through a developing industrial complex. The coming of the railway to Eden has encouraged the growth of industry in the district. Although Osport remains the main port on the route south and Eden does have port access for its oil terminal. Several other factories are passed on both sides. All are demanding rail sidings into their factories but will have to wait until the capital resources are available.

Further south is Eden which is a stub terminal on a peninsular. This is the closest station to the NSW, Victorian border and most NSWGR trains terminate here. Whether returning north to Sydney, or proceeding south to Melbourne, trains always depart in the direction from which they arrived. ***Eden Yard*** is similar to a reduced Sydney Yard. It has two passenger platforms, six goods sidings and two passenger sidings and an 'exchange' siding on which Victorian Railways locomotives and guards vans are stored while waiting for trains departing south from Eden. A four-track locomotive storage facility is accessible from the turntable.

Close by the terminal is ***Bega Cheese Factory***, ***Tempe Sand & Gravel***, and the ***Way & Works Depot***.

After a locomotive and crew change, trains now hauled by Victorian Railways locomotive power can proceed to ***Melbourne Yard***; a storage yard which represents all points south of Eden. It has seven tracks each capable of storing a full-length train. There is a balloon loop that allows locomotives (only) to be turned before being reattached to the up end of a train and also a run around loop to allow locomotives to change ends of a train without turning.

## Operators

Full operation of KVHR requires seventeen operators. Good operation requires a minimum of nine operators.

Overall co-ordination of operations is controlled by the Principal Operator (often called the Increasingly Fat Controller) who is guided in his duties by the operating schedule, but has the discretion to vary operations as he might see fit in light of actual events.

There are three stationmasters situated at Sydney, Eden and Kangaroo Valley. Additional stationmasters can be situated at Violet, Osport and Alabmob if required.

Drivers, who constitute the entire crew of every train, include up to three mainline drivers, two pick-up train drivers and those allocated to specific duties including Sydney shunter, Eden shunter, two Kangaroo Valley local drivers, Limestone driver, Cementworks driver and the Alabmob Branch driver and a Hostler at Enmore Loco.

## Equipment

KVHR uses a Lenz (ver 3.6) operating system. There are four power zones; Sydney, Eden, Osport & Kangaroo Valley. The Alabmob Branch line will also soon have its own power zone. The different zones improves error handling in that if there is a short circuit in one zone, it does not affect the others.

Depending on their personal preference, Drivers have the option of using Lenz LH90 (rotary knob) handsets, Lenz LH100 (push button) handsets, CVP T5000 wireless handsets or personal Android devices (mobile phones). Android devices using the free app 'Engine Driver' can be linked to the Lenz system via JMRI. To link to the network, Android users firstly network to the 'KVHR' WiFi network and then open Engine Driver. After a few seconds the app should 'see' the system and allow the operator to connect. Connection details are PC185582706413 code 10101.

Drivers are referred to the various instruction manuals for details of handset operation, but simplified instructions for the LH90 & LH100 handsets are written on cards included in every Driver's instruction package.

LH90 www.lenzusa.com/1newsite1/Manuals/lh90v36.pdf
LH100 www.lenzusa.com/1newsite1/Manuals/lh100-v36.pdf
T5000 www.cvpusa.com/doc_center/r2_Airwire_T5000_User_Guide.pdf

Each of the handsets allows a Driver to both control a locomotive or guards van or to control points.

In addition to the main Lenz system, KVHR has numerous independent control systems that operate specific functions.

There are switchboards that interface with the Lenz system at Sydney and Eden. These control the points and signals at Sydney Yard and Eden Yard respectively.

Kangaroo Valley has a 30 lever mechanically interlocked signal box.

Ethel has a small experimental, electronically interlocked signal box that uses Arduino technology.

Gasworks, Osport, Limestone and Cementworks have simple switchboards to control the points.

Violet, Mt Hope Mine, Saleyards, Museum and Alamob points are all controlled by the Lenz system only and must be operated by Driver's handsets.

The coloured light signals in the suburban district are fully automatic and are controlled by an independent Arduino driven system.

The semaphore signals are not yet fully installed. Most are not yet working. Drivers need to treat them all as set at STOP and to take local advice as to movement permissions.

The four turntables and the transfer table all have their own controls.

An LED lighting system has been installed throughout most of the system and is capable of simulating different types of day.

### Locomotive Control

All mainline locomotives are limited to a maximum of a scale 60 mph. As a general rule trains passing though KV district should be restricted to 25mph. This corresponds to half a turn on an LH90 or step 14 on an LH100 or T5000. Track side signs of the NSWGR type advise drivers of speed limits that must be observed.

Shunting locomotives are limited to 25 scale mph.

Most locomotives on KVHR have Lenz Gold chips installed, but a number now have QSI, Tsunami or WOW chips. Where ever possible the main functions have been standardised. Every locomotive has a card that indicates what functions are installed. Drivers are to be given the appropriate Locomotive Card by the Stationmaster when a locomotive is allocated to the Driver.

## Point (Turnout) Control

Each of the Stationmasters have a district they control.

The Sydney Stationmaster controls the points and the turntable for Loco and also all the points in Enmore Coaling Stage.

At Kangaroo Valley, the Stationmaster controls a mechanically interlocked (Modratec) signal box for all mainline points (and signals). The four crossovers and the southernmost point can only be operated by the stationmaster.

The Eden Stationmaster controls the turntable.

In the normal course of events, Shunters in Sydney and Eden will throw the points in the yard while shunting but only after they have permission from the stationmaster to do so.

Other than the abovementioned points, all of the systems points can (and sometimes must) be controlled by Drivers.

In Sydney, Kangaroo Valley and Eden, all points other than those specifically mentioned above can also be operated by driver's handsets. (NB. T5000 handsets are not able to operate points in Sydney and Eden.) However, Drivers must be granted permission by the appropriate Stationmaster before proceeding.

If no stationmaster is in attendance Osport, Violet and Alabmob are also controlled by the driver.

Elsewhere points are only controlled by the Drivers. This simulates those situations, not controlled directly by a stationmaster, in which it would be normal for the fireman or guard to get down and use ground throw levers. The point number is written on the track between the moving blades or on a small upright post immediately adjacent to the point. Many of the points can be controlled by the driver handset. All of the driver handsets are able to be used to change these points (see below). All other points can be switched by levers located on nearby panels.

Melbourne storage yard is entirely controlled manually.

**SPECIAL NOTE**

*It is a requirement that a locomotive be brought to a complete stop before a Driver operates a point. This is because when in point operation mode the braking function (F7) is not accessible and a Driver will be unable to stop his train if needed.*

*LH90 Point Operation Instructions*

1. Press **Up**, then **O** repeatedly until **Sch** shows on display
2. Press **A**
3. Press **2**, **3** & **4** as required until point number shown
4. Press **A**
5. Press **1** or **4** to change point.

To select a different point while still in Sch mode

1. Press **A**
2. Change number using **2**, **3** & **4**
3. Press A
4. Press **1**or **4** to change the point

To return to normal train control press **Up**.

*LH100 Point Operation Instructions*

1. Press **F**, then **5**, then **Enter.**
2. Enter the number of the point, then **Enter**.
3. Press + or – to change the point.

To select a different point while still in S/T mode

1. Press **Cl**.
2. Enter the number of the point, then **Enter**.
3. Press + or – to change the point.

To return to normal train control press **Esc**.

*T5000 Point Operation Instructions* (Points 1 – 99 only)

1. Briefly press **Acc** (yellow button)
2. Enter the number of the point, then **Ent** (green button)
3. Press **1** or **3** to change the point.

To select a different point while still in Acc mode

1. Press **Ent**
2. Enter the number of the point, then **Ent** (green button)
3. Press **1** or **3** to change the point.

To return to normal train control press **Esc** (red button)

## Timekeeping

KVHR uses a sequential event stepping program rather than a strict timetable. This allows for more flexibility on the Principal Operator's part.

The Kangaroo Valley Stationmaster (under the direction of the Principal Operator) manages a control panel that keeps track of the various actions of the other operators. Connected to the PO's control panel is a large two digit annunciator that shows numbers ranging from 00 to 95. There is a repeat of the annunciator display on the Eden, Sydney & Kangaroo Valley control panels.

In rough terms each number in the sequence represents approximately 2 - 3 minutes in real time, but the annunciator is incremented automatically after a minimum time (90sec) has elapsed AND each of the three stationmasters have pressed the 'Stage Completed' button on their respective control panels. The minimum time ensures that drivers outside of the districts controlled by a stationmaster have time to complete their tasks.

At the other end of the spectrum, the annunciator is programmed to advance the clock after 4 ½ minutes have elapsed regardless of whether or not the stationmasters have pressed the 'Stage Competed' button. Thus, there is the possibility of 'running behind time' if the time advances before a district has completed its tasks.

In addition to the above the Kangaroo Valley Stationmaster can override the system at his discretion.

Each time the Annunciator is advanced there is a beep to alert the operators.

## Working Timetable Cards

At the commencement of each session, Drivers (other than Pick-up train drivers) are given cards; one green and usually a number of white. The green card (the working timetable for that driver) lists, in sequence, the trains to be driven and the white cards details the operation of each of those trains.

Down the left hand side of each card is a column of numbers that are the sequence numbers ranging from 00 to 95. On the green card, next to each sequence number is listed the train number, train name and the track on which the train should be standing.

Drivers need to be alert to the sequence number. When the number equals the sequence number on the green card, they need to refer to the white card for the particular train they are to drive for detailed instructions on operation. In the normal course of events drivers may not commence an instruction for a particular sequence number before that number is shown, however an appropriate stationmaster or the Principal Operator may instruct the Drivers otherwise.

### Stationmaster's Cards

Similar cards to the Working Timetable Cards are also given to the Stationmasters. These cards list the sequence number at which trains arrive and depart, which routes are to be set and, where applicable, which signals and points are to be changed.

### Control Rack

Each Driver may choose to use a Control Rack. These hold the Lenz controllers, the Working Timetable Cards and the Locomotive card. There is also a slot for holding rolling stock and consignment cards when a Driver is operating a goods train.

### Rollingstock Cards

- Each Locomotive has a small card showing the Locomotive Number, locomotive class, maximum load in weight units, maximum speed, a small picture of the locomotive to ease identification. The reverse side of the car has a list of its operating functions.
- Each passenger carriage has a small yellow card showing the carriage number, carriage code, weight and maximum speed. However, as passenger trains are normally worked in fixed sets that are well within the capacity of assigned locomotives, these cards are not normally issued to a Driver.
- Each goods guards van has a small blue card showing the van number, van code, weight and maximum speed.
- Each goods wagon has a small white card showing wagon number, wagon code, weight, maximum speed and a brief

wagon description. At the back of the card is a pouch to hold a Consignment Card.

### Consignment Cards

- Each goods wagon has a consignment card placed in its back packet.
- These cards show a load and destination for the wagon.
- Some wagons are assigned a particular job. For example, these include 16 **S** wagons that are assigned permanently to the ***Osport Ore Train*** or the wagons assigned to the ***Express Goods Trains*** that shuttle between Sydney and Melbourne.
- Some cards can show up to four destination, numbered 1 to 4.
- Before each session the card is rotated to the next number and the job of the various Drivers and Stationmasters is to move that wagon to the new location.
- *See the section on goods management.*

### Card Racks

Each yard has a rack with several pockets. The pockets are variously labelled as 'Arrivals', 'Locomotives and Guards Vans', 'Loads waiting', and the names of the various storage tracks.

### Chance Cards

The Principle Operator holds a stack of Chance Cards. About half these cards detail special events that add operating interest to the layout, such as trackwork that causes delays.

# Safeworking

Before any person operates a train or manages a yard, that person should familiarise themselves with safeworking procedures.

There are two main rules for drivers. These are;-

1. obey any signals. If a driver is in any doubt as to the meaning or aspect of any signal, he is to bring his train to a stop before passing the signal and request directions from the stationmaster.
2. obey the directions of the stationmaster for the district in which they are operating.

There are two main rules for stationmasters. These are:-

1. ensure the drivers in their district are aware of what they are supposed to be doing. This particularly refers to, within the constrictions of safeworking, keeping to the timetable.
2. follow the maxim of "Set Safe - Change - Permit". This means **set safe** any signals to danger to cover any **change** in track alignments or train movements before **permit**ing any movement.

# Signal Types

There are four different signal types in use on the system.

High level light signals all default to red and can have four different indications:-

- red means stop. In a district controlled by a Stationmaster, Drivers may only pass a red signal with specific permission from the Stationmaster. Elsewhere, a Driver must completely stop his train before the signal and then may proceed at no more than 15 mph being ready to stop his train immediately if the track is obstructed.
- flashing red means proceed with caution the next signal ahead may be at stop. Drivers must reduce speed to a maximum of 25 mph.
- yellow means the facing point ahead is reversed. Drivers are to reduce speed to a maximum of 15mph.
- green means proceed the next signal ahead is cleared. Drivers may proceed at normal speed.

Ground level light signals all default to red and can have three different indications:-

- red means stop. These signals may only be passed on specific instructions from a Stationmaster.
- yellow means proceed at low speed (usually to or from the locomotive facility),
- green means proceed at low speed as far as the next high level signal which may be at stop.

Lower Quadrant Semaphore Signals have two aspects.

- When the arm is horizontal (danger) it means stop. These signals may only be passed on specific instructions from a Stationmaster.
- When dropped at 45 degrees or more (clear) it means proceed with the limitations of the signal type.

i. A red arm with a broad white stripe across the arm is a home or starting signal. The home signal permits entry into a controlled district. The starting signal permits a train to leave a controlled area. In both cases a clear signal allows a train to proceed at normal speed.

ii. A red arm with a narrow stripe along the blade is a shunting signal and allows entry into a stub siding. A clear signal allows a train to proceed at slow speed.

iii. A signal with a large white 'S' on the arm is a shunt ahead signal and allows a train to pass a home signal. A clear signal allows a train to proceed at slow speed provided the entire train remains within the yard limits.

iv. There is a wrong road (bow-tie) signal at the down end of #3 platform at KV Station. This signal is fixed at danger and protects the Branch. This signal may only be passed on verbal permission from the KV Stationmaster. (This signal is a hangover from earlier signalling arrangements. Eventually it will be replaced by a starting signal for the Branch line.)

v. When multiple starting, wrong road and siding signals are arranged on a single mast, the uppermost arm refers to the left most track and are read progressively top to bottom arm refers to left to right track. Thus the signal at the down end of #3 platform of Kangaroo Valley station reads; upper arm - starting signal onto the Main; middle arm - wrong road signal onto the Branch; lower arm - siding signal entry into KV Yard.

Landmarks are a yellow triangle on a mast. These indicate to a driver that he is to bring his train under control and be prepared to stop at the next (home) signal. Maximum speed between the landmark and the home signals is 25mph.

# General Operating Procedure

At the commencement of each session, operators are given a number of Working Timetable cards. These cards tell the operator what is to be done and in what sequence. Drivers are given one green card which lists the trains to be driven and a number of white cards that details the operation of each of those trains. Stationmasters also receive cards detailing their duties. The Principal Operator also has a number of cards that lists which operators are normally expected to perform tasks.

Down the left hand side of each card is a column of numbers ranging from 0 to 95. These are the sequence numbers. The Annunciator also shows the numbers ranging from 0 to 95. When the number on the Annunciator corresponds to the number on the left hand side of the operator's cards, the operator is to perform the task(s) listed next to that number. When in a controlled district Drivers advise the Stationmaster of the district in which they are operating when they have completed their assigned task(s). Each Stationmaster advises the Principle Operator when all the tasks for their district are completed. Each Stationmaster's control panel has a push button to advise the PO that their tasks are complete. When all Stationmasters have completed their tasks and a minimum period of time has elapsed or the maximum period of time has elapsed, the Annunciator will advance to the next number and the procedure is repeated.

It is important that operators advise the Principal Operator promptly when they have completed their tasks. Failure to do so will lead to unnecessary delays and cause frustration to other operators.

*The most important aspect of the sequence is that scheduled passenger trains must not leave a station until the appropriate number is displayed. Subject to the orders of a stationmaster and safeworking rules, it is possible that trains, once departed, can get ahead of schedule, but if they are scheduled to depart a station at a particular time they must do so if at all possible.*

As a rule, all regular passenger trains are scheduled as are most goods and mixed trains. Special passenger trains and goods trains may be run as an Extras provided they do not interfere with scheduled trains.

Pick-up goods and some goods trains run as required and to no specific schedule. It is important that they do not interfere with scheduled trains.

Coal Drags are required to give way to all other trains.

Pick up goods, Mixed, Special, Extra and Coal Drugs will need particular permission from the appropriate Stationmaster before they will be able to run.

It is up to the Stationmasters and Drivers to ensure that the mainlines are clear at the necessary times.

Shunters (one each at Sydney and Eden and two at Kangaroo Valley) are required to stay clear of all trains.

## Sydney Yard Operation

All Sydney Yard points are digitally operated via Lenz LS150 units and are numbered in the range 100 to 125. These units are controlled either by the Sydney Yard Control Panel that is operated by the Sydney Stationmaster, or (with the Stationmaster's express permission) by a train handset. Please note that T5000 handsets are not able to control Sydney points.

As a general rule only the Stationmaster and the Sydney Shunter have authority to change points.

The three-aspect coloured light starting signal (Sydney Starting) is controlled jointly by the Sydney Stationmaster and the suburban automatic signalling system.

- Red (stop) is the default. Only the Sydney Stationmaster can clear the signal with a switch on his panel. Once a road has been set, he may clear the signal.
- Once cleared the signal is under the control of the automatic system which, depending on track conditions can set the signal to Stop, Caution or Clear.

**SPECIAL NOTE**
*At this time there is no interlocking at Sydney. Operators must remain especially vigilant to ensure that their track is clear and the points set correctly before they proceed.*

### Locomotive hauled passenger trains

As a rule an arriving locomotive hauled passenger train follows the following sequence:-

- route is set for arrival platform (usually Platform 1).
- the train arrives at platform and stops over uncoupling ramp
- locomotive uncouples and moves forward to the locomotive escape road
- route is set to the loco facility
- locomotive sets back around its train, turns on the turntable (if required) and then serviced. Before being used on another duty, all steam locomotives must be serviced for a minimum of three time units and all diesel units must be serviced for at least one time unit.
- After passengers have had one time unit to detrain, the Sydney Shunter now pulls the train into it storage siding.
- route is reset for arrival of next train.

As a rule departing locomotive hauled passenger trains follow the following sequence:-

- At least three time units before the train is due for departure, the Sydney Shunter relocates the train onto platform.
- At least two time units before the train is due for departure, the Driver logs onto his locomotive in Loco and then couples to the train.
- Passengers have one time unit to entrain.
- Departure route is set.
- The train departs on the clearing of the ground signal and the Sydney Starting signal.

### *Railmotors and Electrics*

As a rule an arriving railmotor follows the following sequence:-

- route is set for arrival at platform (usually Platform 2)
- a train arrives at platform and stops
- Passengers have one time unit to detrain.
- route is set for Syd-RM
- Driver relocates the train onto Syd-RM and shuts down
- route is reset for arrival of next train

As a rule a departing railmotor follows the following sequence:-

- Two time units before departure the Driver relocates the railmotor to platform (usually Platform 2).
- One time unit is allowed for passengers to entrain.
- The departure route is set.

- The railmotor departs on the clearing of the ground signal and Sydney Starting signal.

### Goods Trains

As a rule an arriving goods train follows the following sequence:-

- Route is set for arrival one of the two goods tracks. (If the goods sidings are occupied a passenger platform may be used, but the track must be cleared as quickly as possible by the Sydney Shunter.)
- the train arrives and stops over an uncoupling ramp
- locomotive uncouples and moves forward to the locomotive escape road
- route is set to the loco facility
- locomotive sets back around its train, turns on the turntable (if required) and then serviced. Before being used on another duty, all steam locomotives must be serviced for a minimum of three time units and all diesel units must be serviced for at least one time unit.
- Sydney Shunter now, using unmarshalling rules breaks up train onto the goods sidings.

As a rule a departing goods train follows the following sequence:-

- At any time up to two time units prior to departure, the Sydney Shunter makes up the train according to the requirements of the loads to be shipped and the marshalling rules. The train can be made up on any available siding.
- One time unit before departure, a locomotive is allocated to a Driver who couples up to the train.
- Departure route is set
- The train departs on clearing of the ground and Sydney Starting signal.

## Kangaroo Valley Operation

The points and signals associated with mainlines (Up, Down and Up Loop) and most of the secondary tracks are controlled by a Modratec 30-lever mechanically interlocked frame that is operated by the Kangaroo Valley Stationmaster.

The points in the Kangaroo Valley Yard (#41 to #46) are also be controlled by the KVSM, using blue switches located on a separate

control panel adjacent to the main frame. These points are, with the KVSM's permission, able to be controlled by Drivers using the LH90, LH100 or T5000 hand controllers.

All signals are lower quadrant and are controlled by the KV Stationmaster using the Modratec frame.

The two electric uncouplers on the mainlines at KV station are controlled by Lenz LS150s. #31+ and #31- operate the up and down uncouplers respectively. Once triggered, each uncoupler will operate for 5 seconds giving drivers time enough to move away from their train.

### *Down Main Line*

When approaching KV from Cementworks, a train first meets a Landmark signal that warns of the approaching controlled district. Drivers are required to bring their trains under control and reduce speed to a maximum of 25mph.

The Down Home signal is next. If the signal is at danger or the indication not clear the train must stop at the signal and wait for further instructions. The driver may signal the stationmaster, if necessary, by sounding a long blast on the train's whistle.

On entering the controlled district a train passes a trailing crossover and then approaches the 700 ft long No1 platform followed immediately by a level crossing and then the Down 2nd Home signal with an auxiliary Shunt Ahead arm.

The down uncoupler is operated by #31-.

The Down Shunt Ahead signal permits train movements at reduced speed as far as the entry into the Up Refuge point.

There is no direct entry into the Up Loop from the Down Main. To enter the Up Loop the train must Shunt Ahead of the Down 2nd Home signal and then set back across both the Down Main Crossover and the Down Loop Crossover. Alternatively a Driver may uncouple from his train at the station, run around and then propel the train past the Down 2nd Home signal before lifting the train into the Up Loop. This latter method is preferred if the train is later to return to Sydney.

Normal speed may be resumed after passing the Down Main crossover.

### Up Main Line

When approaching KV from Museum, a train first meets a Landmark signal that warns of the approaching controlled district. Drivers are required to bring their trains under control and reduce speed to a maximum of 25mph.

The Up Outer Home/Up Refuge Home is next. If the signal is at danger or the indication not clear the train must stop prior to entering the controlled district. The driver may signal the stationmaster, if necessary, by sounding a long blast on the train's whistle.

Just past the Up Outer Home Signal is a facing point to the Refuge.

In normal operation a train will proceed past the refuge junction point to the Inner Home Signal, and take the Down Main Crossover onto Platform 2. (If necessary a train can take the Down Main Crossover and the Down Loop Crossover onto Platform 3.)

The up uncoupler on No2 platform is operated by #31+.

At the up end of No2 platform is the Up Starting signal with an auxiliary Shunt Ahead arm.

The Up Shunt Ahead signal permits train movements at reduced speed as far as the tunnel mouth.

Normal speed may be resumed on clearing the Up Starting signal.

### Mt Hope Mine Branch Line

This short branch line starts at No3 platform at KV Station. It is extremely steep (1:30) with very tight curves. Normal locomotive power is an 18 Class or a Climax. A CPH railcar can make it slowly. No other classes of locomotive are authorised to operate on the line.

For an 18 Class locomotive a maximum load of 4 x CCH hoppers, 3 x 4wh wagons or a single short (less than 41') bogie wagon or car is permitted. A Climax is limited to 3 x CCH hoppers, 2 x 4wh

wagons or a single short bogie wagon. All wagons and cars must be propelled up the hill. A powder van (PV) must be taken up by itself with an empty S wagon between it and the locomotive.

Two switchbacks (co-acting points #21) are made before entering either the Mt Hope Coal Loader or the Mt Hope platform via point #22. The points can only be controlled by the Driver using a hand control. Only CCH hoppers may enter the loader. All other traffic must terminate at the platform.

On the return journey, KV Station is protected by the Mine Home signal and its associated catch point. Care must be taken not to overrun the signal or the locomotive will be derailed by the catch point.

### *KV Yard and Loco*

KV Yard has 4 short sidings, a goods shed, an ash pit, a coal loading platform and locomotive watering and sanding facilities. There is also a single track engine shed.

Entry into the yard is south from No3 platform at KV Station on permission from the lowest arm of the three arm signal at the down end of the platform.

Sidings 'a' & 'b' (points #42 & #43) are normally reserved for CCH coal hoppers operating between Mt Hope Mine and Osport. Maximum capacity of these sidings is 12 CCH wagons plus a CHG.

Siding 'c' (point #44) is normally reserved for wagons waiting to be taken by an up pick-up goods. Maximum capacity of this siding is 20 axles.

Siding 'd' (point #45) is normally reserved for wagons waiting to be taken by a down pick-up goods. Maximum capacity of this siding is 16 axles

The Goods Shed platform has a maximum capacity of 8 axles.

KV Loco services the local locomotives. It has the facilities for a light overhaul, but if extensive repairs are required locomotives must attend the Enmore Locomotive Works

# Alabmob Branch Operation

This branch leaves the mainline at Kangaroo Valley, via point #51 between Tan's Tannery and the Meatworks. Most trains for the branch will depart from Platform 3 after the lowest arm on the signal at the south end of the platform clears.

Immediately after point #51, point #52 allows entry to the meatworks, the iceworks and finally the 50ft turntable.

Shortly thereafter point #53 allows entry into the meatworks stockyard and beyond that the Saleyards.

After a tunnel the track briefly re-enters the scene to pass the Up Branch Outer Home Signal before once again re-entering a tunnel.

Inside the tunnel is Halfway, an automatic passing loop.

After re-emerging there is a steep climb to Ethel. This has a short platform on the mainline. Wheat, stored in the Silos, is the main export from Ethel, but there is a passing loop, a loading bank and stockyards. There are no locomotive facilities.

After departing Ethel a train crosses the John Harvey Bridge before arriving at Alabmob. This is a small country terminus consisting of a short platform that can hold a railmotor and trailer or a small tank locomotive (eg 30 class) and single carriage, a goods siding and run-around and short stub siding. The goods siding can hold a maximum of 12 axles. The stub siding for the Oak Factory can also hold 12 axles.

Trains on the branch are limited to 16 axles plus the locomotive.

## Kangaroo Valley to Ethel

Before entering the branch or proceeding up from Ethel, Drivers must acquire a permission. At KV the KVSM has a red request button and an adjacent green LED. There is a similar set up at Ethel.

To request permission the red button first must be pressed. The LED will begin to flash indicating that the request has been received.

When permission is granted (and this may be almost immediately) the LED turns solid green and the Driver then has a short time to enter the block.

If for some reason the Driver is slow to enter the block the LED will begin a double blink for about 15 seconds after which it will go dark.

Once the LED has gone dark, permission has been withdrawn and the request process will need to be started again.

The system is fully automatic. If there is a train coming from both Ethel and KV, they will cross at Halfway. Drivers are to be patient, not touch their controls and wait until their trains from the tunnel.

## Ethel

As a train approaches Ethel from either direction, a train will first pass a landmark. Drivers will need to bring their train under control and be prepared to stop at the next (Home) signal.

As a train approaches the Home signal, it will clear automatically if the road is set to the platform and the track is clear.

If a Driver wishes to place his train in the loop, he must stop his train at the Home signal, then activate the signal box by switching from 'Thru Running' to 'Shunting', set points appropriately, the lift his train past the Home signal (at Stop) into the loop.

While the signal box is set to 'Shunting' the train must be kept within the yard limits as defined by the two Home signals.

Prior to departing Ethel, the signal box must be reset to 'Thru Running'.

## Alabmob

Alabmob is the branch line terminus. It is normally unattended with Drivers operating all the points. Apart from the usual terminus facilities of Station, Goods Shed, loading bank, locomotive servicing and stock yards, there is also the Oak Factory which is the main industry in the town. It provided most of the dairy products of the system.

At this time, there is no signalling at Alabmob, though this is planned for the near future. Once installed, a Driver will need to acquire a staff to enter the block between Ethel and Alabmob. Similar to Ethel there will be a landmark followed by a Home signal.

All points in Alabmob are DCC controlled with points numbers in the range 94 to 99.

## Eden Yard Operation

All Eden Yard points are digitally operated via Lenz LS150 units and are numbered in the range 900 to 925. These units are controlled either by the Eden Yard Control Panel that is operated by the Eden Stationmaster, or (with the Stationmaster's express permission) by a train LH90 or LH100 handset. Please note that T5000 handsets are not able to control Eden points.

SPECIAL NOTICE
*At this time there is no signal and point interlocking. It is therefore very important that even if a signal has been cleared, both the Stationmaster and Drivers must be extra vigilant to confirm the correct alignment of points.*

The coloured light starting signal is controlled by the Eden Stationmaster. Red (Stop) is the default. Only the Stationmaster can clear the signal with the isolated red handled switch on his panel. Once a road has been set, the Stationmaster may clear the signal. The Yard Limit is the north end of the lift up bridge.

The 11 red signal switches control the 11 ground signals in Eden Yard. These can only be controlled by the stationmaster.

### Locomotive hauled passenger trains

As a rule an arriving locomotive hauled passenger train follows the following sequence:-

- *route is set for arrival at one of the platforms*
- the train arrives and stops over uncoupling ramp
- locomotive uncouples and moves forward to the engine escape road

- *route set to the loco facility*
- locomotive sets back around its train, turns on the turntable (if required) and then stables. All steam locomotives must be stabled for a minimum of three time units for servicing. All diesel units must be stabled for at least one time unit for servicing.
- *After passengers have had one time unit to detrain, the shunter moves the train into its storage siding.*
- route is reset for arrival of next train.

As a rule departing locomotive hauled trains follow the following sequence:-

- At least two time units before the train is due for departure, the shunter relocates the train to one of the platforms.
- *Passengers have one time unit to entrain and during that time the train locomotive is allocated and coupled up.*
- The train departs on the clearing of the Starting signal
- *route is reset for arrival of next train.*

### *Goods Trains*

As a rule an arriving goods train follows the following sequence:-

- *Route is set for arrival at any available goods siding.*
- the train arrives and stops over an uncoupling ramp
- locomotive uncouples and moves forward to the locomotive escape road
- *route set to the locomotive facility.*
- locomotive sets back around its train, proceeds to Loco, turns if required and shuts down.
- shunter now breaks up train onto the goods sidings according to the unmarshalling rules.

### *Trains to and from Melbourne*

- Trains travelling south from Eden or arriving from Melbourne will need to have a change of locomotive, guard van and crew at Eden.
- Victorian Railways rolling stock are normally stored on the VR Siding at Eden.

# Marshalling Rules

## Passenger trains

Most passenger trains on KVHR are hauled by steam locomotives. (In 1955 very few trains were powered by diesel locomotives.) If marshalled in accordance with the '*Train Composition'* list, no consideration needs to be given to weight or speed.

## Goods trains

It is the Stationmaster's responsibility to allocate consignments to appropriate wagons and to direct the marshalling of goods trains.

The sequence of marshalling is as follows:-

- Using the Consignment Cards, the Stationmaster is to take note of the loads and destination of each wagon in his yard., allocate consignments to available wagons.
- Where applicable, place loads are placed into any open wagons.
- Determine the destination of each wagon and allocate the wagons to an appropriate train.
- Direct the Shunter in marshalling trains, as required, and in accordance with these rules.
- Prior to departure, Drivers are to be handed the appropriate wagon and consignment cards along with the appropriate locomotive card and guards van card.
- Pick-up Goods and Mixed Drivers are to be provided with a switch list for the various locations on their route.

### Arrangement of wagons

- Bogie wagons (other than guards vans and match trucks) are to be marshalled ahead of any 4 wheel wagons.
- A powder van (PV) must have an empty S wagon on either end.
- Any wagon with an overhanging load at an end (eg timber loads) must have an empty S wagon attached to the overhanging end(s).
- All goods trains, other than a Mt Hope Mine train, are to have a guards van as the trailing vehicle. (As a general rule mainline

goods traffic will use an MHG, stock trains will use an SHG or HG and short haul coal trains will use a CHG.)

## Coupling Rules

- On KVHR the following couplers are imagined:-
  a) All steam locomotives are imagined as fitted with link couplers.
  b) All diesel locomotives are fitted with transition couplers front and back.
  c) All passenger stock is fitted with link couplers.
  d) All goods wagons, except S wagons, are fitted with auto couplers.
  e) S wagons and guards vans are fitted with transition couplers, allowing them to link to both auto and link couplers.
- A steam locomotive must have a 'match truck' between it and most goods wagons but may couple directly to a guards van or an S wagon. A match truck can be any S wagon. Diesel locomotives can couple directly to any wagon or van.

## Weight Calculation

- Stationmasters must calculate the weight of a train to ensure that it does not exceed the maximum load applicable to the locomotive assigned to the train. (See '*Locomotive Loads and Speeds*' table.)

## Terminating Goods Trains

- When a train arrives at its terminus, the retiring Driver is to hand his wagon and consignment cards to the Stationmaster. The Stationmaster then:-
  a) Directs the removal of the wagons from the arrivals track and places them on an available goods siding.
  b) The consignment cards are then removed from the wagon card, rotated to the next number and reinserted into the wagon card.
  c) The wagon cards are placed in the appropriate pockets in the Card Racks.

# Train Composition

The following lists the composition of trains but this can be changed at short notice by authority of the Principle Operator.

## Passenger Trains

**#1 Melbourne Daylight Limited**

38 or 42 Class, RUB set

**#2 Sydney Overnight Limited**

38 or 42 Class, RUB set

**#3 Melbourne Overnight Limited**

35 or 36 Class, BS, FS, FS, BS, MHO

**#4 Sydney Daylight Limited**

35 or 36 Class, BS, FS, FS, BS, MHO

**#5 Down South Coast Paper**

35 or 36 Class, LLV, LFX, LFX, LFX, LFX, HCX, FJ, LHO
The FJ, LHO are detached at KV for the Alabmob Passenger

**#6 Up South Coast Milk**

35 or 36 Class, HCX, LFX, LFX, LFX, LFX, BMT
Attach the LHO, FJ at KV

**#7 & 8 South Coast Passenger**

32 Class, HFO, FO, FO, HFO

**#9 Down South Coast Mail**

35 or 36 Class, FP, LFX, LFX, LFX, LFX, HCX, ACX, LHO
The ACX, LHO are detached at KV for the Alabmob Passenger

**#10 Up South Coast Mail**

35 or 36 Class, HCX, LFX, LFX, LFX, LFX, FP
Attach the LHO, ACX at KV

**#11 to 26 City Commuter**

CPH, CTH or 620/720

**#31 to 33 KV Local Passenger**

CPH or Climax, LFX

**#34 & 35 Silver City Comet**

Silver City Comet set

**#40 to 42 Limestone Passenger**

13 Class locomotive, CCA

**#75 & 76 Alabmob Passenger**

30T Class locomotive, FJ, LHO

### # 77 & 78 Alabmob Mail

30T Class locomotive, ACX, LHO

## Goods Trains

### #47 & 48 Alabmob Goods

30T Class locomotive, various up to 16 axles including guards van

### #60 Kangaroo Valley Goods Turn

Any tank locomotive, various up to 16 axles

### # 61 Gasworks Turn

4 x S (no guards van)

### # 62 Osport Ore

Any available locomotive, 16 x S, MHG

### # 63 to 66 Coal Stage Turn

2 x L (no guards van)

### # 74 & 79 Up Alabmob Milk Train

30T Class locomotive, 3 x MLK, MHG

### # 81 & #83 Melbourne Express Goods (southbound)

### # 82 $ #84 Sydney Express Goods (northbound)

Any mainline locomotive, various wagons as per goods rules, MHG.

### # 90 Cementworks Turn

50 Class, 2 x BRH, BRH, RSH, S, S, S, S, MHG

### # 91 Wheat Turn

50 Class, 8 x BWH, MHG

### # 98 & 99 Limestone Turn

13 Class, 5 x CCH, CHG

### Pickup Goods (Up & Down)

41 Class or 50 Class locomotive, various wagons as per goods rules, MHG. Limited to 36 axles.

### Coal Drags (northbound – laden, southbound - empty)

60 Class, 16 x BCH, MHG

### Kangaroo Valley Coal

19 Class, 12 x CCH, CHG

### Stock Train

30 or 48 Class, 6 CW or GSV, HG or SHG

### Mt Hope Mine

18 Class or Climax, various as required, no guards van.

# Working Timetable

In the normal course of events, KVHR runs to a timetable.

Time is displayed on the large annunciator and on the control panels of each of the Stationmasters as a two- digit number ranging from 00 to 95. Each number represents a 15 minute period with the 96 steps representing a 24 hour period. The time is advanced automatically by a variable stepper mechanism. After a period of 1.5 minutes has elapsed, the timer checks to see if each stationmaster has completed his allotted tasks. When all have done so the time is incremented to the next number. If a period of 4.5 minutes has elapsed, the time is incremented regardless of whether or not all the stationmasters have completed their tasks. Thus it will be understood that the time will be incremented after a period of between 1.5 and 4.5 minutes depending on circumstances.

Below is the Working Timetable for KVHR. All numbered trains are included in the timetable. Some trains do not work to the timetable but must be fitted into the schedule as and when appropriate as Specials. These include, Pick Up Goods, Coal Drags, Stock Trains and Way & Works Trains

## Interpretation of the Working Timetable

- Stations are listed down the left hand column. Many have a 'a' (arrival) row and a 'd' (departure) row.
- Train numbers are listed across the top row.
- Times are listed down a column against the station at which point the train should be.
- Where a number is listed against a 'd' row, the train must not depart before that time.
- Where a number is listed against an 'a' row, the train is expected to pass at that time.
- Where a number included a '.5', a train is expected to arrive some time in that time interval.

| | | #91b | #79 | #81 | #60a | #61a | #35 | #40a | #31b | #63a | #5 | #98a | #75 | #11 | #64a | #1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sydney** | d | | | **00** | **04** | | 14 | | | | **20** | | | **26** | | **29** | |
| Newtown Coal Service | d | | | | | **06** | | | | **15** | | | | | **27** | | |
| Enmore Coal Stage | | | | - | - | - | - | | | - | - | | | - | - | - | |
| Adamstown | | | | - | - | - | - | | | **15.5** | - | | | 26.5 | **27.5** | - | |
| Gasworks | | | | | | | | | | | | | | | | | |
| **Osport** | a | | | - | - | 06.5 | 14.5 | | | | 20.5 | | | 27 | | - | |
| | d | **95** | | | | **07** | | | | | 21 | | | | | | |
| **Violet** | a | | | - | - | | - | | | | - | | | **27.5** | | - | |
| | d | | | | | | | | | | | | | | | | |
| Limestone | d | | | | | | | **16** | | | | **25** | | | | | |
| Cementworks | | | | - | - | | - | - | | | - | - | | | | - | |
| Mt Hope | d | | | | | | | | **19** | | | | | | | | |
| **Kangaroo Valley** | a | 00 | | 02 | **04.5** | | 15 | 17 | 19.5 | | 21.5 | 26 | | | | 30 | |
| | d | | **95** | | | | | **19** | 20 | | 23 | **28** | **25** | | | | |
| Meatworks | a | | | | | | | | **20.5** | | | | | | | | |
| Ethel | a | | - | | | | | | | | | | 27 | | | | |
| | d | | | | | | | | | | | | | | | | |
| Alabmob | a | | **04** | | | | | | | | | | **29** | | | | |
| Saleyards | | | | - | | | - | | | | - | | | | | - | |
| **Museum** | a | | | - | | | - | | | | 23.5 | | | | | - | |
| | d | | | | | | | | | | 24 | | | | | | |
| **Eden** | a | 01 | | **03** | | | 16 | | | | **24.5** | | | | | 32 | |
| | d | 05 | | | | | 18 | | | | | | | | | 34 | |
| **Melbourne** | a | **06** | | | | | 19 | | | | | | | | | **35** | |

| | | #82 | #61b | #34 | #61c | #60b | #75 | #31a | #40b | #63b | #31c | #12 | #98b | #14 | #98c | #4 | #76 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Melbourne** | d | **01** | | **05** | | | | | | | | | | | | **30** | |
| **Eden** | a | 01.5 | | 06 | | | | | | | | | | | | 31 | |
| | d | 04 | | 08 | | | | | | | | | | | | 33 | |
| **Museum** | a | - | | - | | | | | | | | | | | | - | |
| | d | | | | | | | | | | | | | | | | |
| Saleyards | | - | | - | | | | | | | | | | | | - | |
| Alabmob | d | | | | | | **11** | | | | | | | | | | **31** |
| Ethel | | | | | | | - | | | | | | | | | | 32 |
| Meatworks | d | | | | | | | | | | **21** | | | | | | |
| **Kangaroo Valley** | a | 05 | | 08.5 | | **10** | **15** | | | | **21.5** | | | | | 33.5 | **35** |
| | d | | | | | | | **18** | **19** | | | | **28** | | | | |
| Mt Hope | a | | | | | | | **18.5** | | | | | | | | | |
| Cementworks | a | - | | - | | - | | | 19.5 | | | | **29** | | | - | |
| | d | | | | | | | | | | | | | | **32** | | |
| Limestone | a | | | | | | | | **20** | | | | | | **33** | | |
| **Violet** | a | - | | - | | - | | | | | | | | | | - | |
| | d | | | | | | | | | | | **24** | | **28** | | | |
| **Osport** | a | - | **6.5** | 09 | | - | | | | | | 24.5 | | 28.5 | | - | |
| | d | | 07 | | | | | | | | | | | | | | |
| Gasworks | | - | **07.5** | - | | - | | | | | | - | | - | | - | |
| | | | | | **10** | | | | | | | | | | | | |
| Adamstown | | - | | - | - | - | | | | | | 25 | | 29 | | - | |
| Enmore Coal Stage | a | - | | - | - | - | | | | | | - | | - | | - | |
| | d | | | | | | | | | **21** | | | | | | | |
| Newtown Coal Services | a | | | | **10.5** | | | | | **21.5** | | | | | | | |
| **Sydney** | | **06** | | **10** | | **11** | | | | | | **25.5** | | **29.5** | | **34** | |

| | | #15 | #41a | #17 | #47 | #83 | #99a | #32b | #19 | #65a | #21 | #90b | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sydney** | d | **34** | | **44** | | **49** | | | **52** | | **60** | | | | | | |
| Newtown Coal Service | d | | | | | | | | | **58** | | | | | | | |
| Enmore Coal Stage | | - | | - | | - | | | - | **-** | - | | | | | | |
| Adamstown | | 34.5 | | 44.5 | | - | | | 52.5 | **58.5** | 60.5 | | | | | | |
| Gasworks | | | | | | | | | | | | | | | | | |
| **Osport** | a | 35 | | 45 | | - | | | 53 | | 61 | | | | | | |
| | d | | | | | | | | | | | | | | | | |
| **Violet** | a | **35.5** | | **45.5** | | - | | | **53.5** | | **61.5** | **66** | | | | | |
| | d | | | | | | | | | | | | | | | | |
| Limestone | d | | **40** | | | | **50** | | | | | | | | | | |
| Cementworks | | | | | | - | | | | | | - | | | | | |
| Mt Hope | d | | | | | | | **50** | | | | | | | | | |
| **Kangaroo Valley** | a | | 41 | | | 50 | 51 | 50.5 | | | | 67 | | | | | |
| | d | | **43** | | **47** | | **53** | 51 | | | | | | | | | |
| Meatworks | a | | | | | | | **51.5** | | | | | | | | | |
| Ethel | a | | | | 49 | | | | | | | | | | | | |
| | d | | | | 51 | | | | | | | | | | | | |
| Alabmob | a | | | | **53** | | | | | | | | | | | | |
| Saleyards | | | | | | - | | | | | | - | | | | | |
| **Museum** | a | | | | | - | | | | | | - | | | | | |
| | d | | | | | | | | | | | | | | | | |
| **Eden** | a | | | | | 51 | | | | | | **68** | | | | | |
| | d | | | | | 53 | | | | | | | | | | | |
| **Melbourne** | a | | | | | **54** | | | | | | | | | | | |

| | | #16 | #4 | #6 | #18 | #8 | #41b | #64b | #84 | #20 | #32a | #32c | #99b | # 2 | #99c | #22 | #90a |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Melbourne** | d | | **30** | | | | | | **43** | | | | | **51** | | | |
| **Eden** | a | | 31 | | | | | | 43.5 | | | | | 52 | | | |
| | d | | 33 | **36** | | **40** | | | 46 | | | | | 54 | | | **59** |
| **Museum** | a | | - | 36.5 | | 40.5 | | | - | | | | | - | | | - |
| | d | | | | | | | | | | | | | | | | |
| Saleyards | | | - | - | | - | | | - | | | | | - | | | - |
| Alabmob | d | | | | | | | | | | | | | | | | |
| Ethel | | | | | | | | | | | | | | | | | |
| Meatworks | d | | | | | | | | | | | **52** | | | | | |
| **Kangaroo Valley** | a | | 33.5 | 37 | | 41 | | | 47 | | | **52.5** | | 55 | | | 60 |
| | d | | | 39 | | | **43** | | | | **49** | | **53** | | | | |
| Mt Hope | a | | | | | | | | | | **49.5** | | | | | | |
| Cementworks | a | | - | - | | - | 43.5 | | - | | | | **54** | - | | | 61 |
| | d | | | | | | | | | | | | | | **56** | | 65 |
| Limestone | a | | | | | | **44** | | | | | | | | **57** | | |
| **Violet** | a | | - | 39.5 | | 41.5 | | | - | | | | | - | | | 65.5 |
| | d | **32** | | | **40** | | | | | **48** | | | | | | **56** | **66** |
| **Osport** | a | 32.5 | **-** | 40 | 40.5 | 42 | | | - | 48.5 | | | | - | | 56.5 | |
| | d | | | | | | | | | | | | | | | | |
| Gasworks | | - | | - | - | - | | | - | - | | | | - | | - | |
| Adamstown | | 33 | - | - | 41 | - | | | - | 49 | | | | - | | 57 | |
| Enmore Coal Stage | a | - | - | - | - | - | | **44** | - | - | | | | - | | - | |
| | d | | | | | | | | | | | | | | | | |
| Newtown Coal Services | a | | | | | | | **44.5** | | | | | | | | | |
| **Sydney** | | **33.5** | **34** | **40.5** | **41.5** | **43** | | | **48** | **49.5** | | | | **56** | | **57.5** | |

| | | #42a | #9 | #23 | #77 | #3 | #33b | #25 | #66a | #62b | #79 | #91b | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sydney** | d | | **67** | **68** | | **76** | | **77** | | | | | | | | | |
| Newtown Coal Service | d | | | | | | | | **88** | | | | | | | | |
| Enmore Coal Stage | | | - | - | | - | | - | - | | | | | | | | |
| Adamstown | | | - | 68.5 | | - | | 77.5 | **88.5** | | | | | | | | |
| Gasworks | | | | | | | | | | | | | | | | | |
| **Osport** | a | | 67.5 | 69 | | - | | 78 | | | | | | | | | |
| | d | | 68 | | | | | | | **90** | | **95** | | | | | |
| **Violet** | a | | - | **69.5** | | - | | **78.5** | | - | | - | | | | | |
| | d | | | | | | | | | | | | | | | | |
| Limestone | d | **64** | | | | | | | | | | | | | | | |
| Cementworks | | | - | | | | | | | - | | - | | | | | |
| Mt Hope | d | | | | | | **77** | | | | | | | | | | |
| **Kangaroo Valley** | a | 65 | 68.5 | | | 76.5 | 77.5 | | | 91.5 | | 00 | | | | | |
| | d | **67** | 70 | | **73** | | 78 | | | | **95** | | | | | | |
| Meatworks | a | | | | | | **78.5** | | | | | | | | | | |
| Ethel | a | | | | 76 | | | | | | - | | | | | | |
| | d | | | | | | | | | | | | | | | | |
| Alabmob | a | | | | **78** | | | | | | **4** | | | | | | |
| Saleyards | | | - | | | - | | | | - | | - | | | | | |
| **Museum** | a | | 70.5 | | | - | | | | - | | - | | | | | |
| | d | | 71 | | | | | | | | | | | | | | |
| **Eden** | a | | **71.5** | | | 77 | | | | 93 | | **01** | | | | | |
| | d | | | | | 79 | | | | 95 | | | | | | | |
| **Melbourne** | a | | | | | **80** | | | | **96** | | | | | | | |

| | | #48 | #24 | #65b | #42b | #26 | #33a | #33c | #78 | #62a | #91a | #10 | #66b | xxxxx | xxxxx | xxxxx | xxxxx |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Melbourne** | d | | | | | | | | | **81** | | | | | | | |
| **Eden** | a | | | | | | | | | 82 | | | | | | | |
| | d | | | | | | | | | 84 | **86** | **88** | | | | | |
| **Museum** | a | | | | | | | | | - | - | 88.5 | | | | | |
| | d | | | | | | | | | | | 89 | | | | | |
| Saleyards | | | | | | | | | | - | - | - | | | | | |
| Alabmob | d | **61** | | | | | | | **81** | | | | | | | | |
| Ethel | a | 61.5 | | | | | | | 82 | | | | | | | | |
| | d | 66 | | | | | | | 83 | | | | | | | | |
| Meatworks | d | | | | | | | **79** | | | | | | | | | |
| **Kangaroo Valley** | a | **66.5** | | | | | | **79.5** | **87** | 85 | 86.5 | 89.5 | | | | | |
| | d | | | | **67** | | **76** | | | | | 91 | | | | | |
| Mt Hope | a | | | | | | **76.5** | | | | | | | | | | |
| Cementworks | a | | | | 67.5 | | | | | - | - | - | | | | | |
| | d | | | | | | | | | | | | | | | | |
| Limestone | a | | | | **68** | | | | | | | | | | | | |
| **Violet** | a | | | | | | | | | - | - | - | | | | | |
| | d | | **64** | | | **72** | | | | | | | | | | | |
| **Osport** | a | | 64.5 | | | 72.5 | | | | **86** | **87** | - | | | | | |
| | d | | | | | | | | | | | | | | | | |
| Gasworks | | | - | | | - | | | | | | | | | | | |
| Adamstown | | | 65 | | | 73 | | | | | | - | | | | | |
| Enmore Coal Stage | a | | - | | | - | | | | | | - | | | | | |
| | d | | | **66** | | | | | | | | | **94** | | | | |
| Newtown Coal Services | a | | | **66.5** | | | | | | | | | **94.5** | | | | |
| **Sydney** | | | **65.5** | | | 73.5 | | | | | | **92.5** | | | | | |

# KVHR OPERATOR'S MANUAL

# Locomotive Loads & Speeds

| **Class** | **Max Load** tons | **Max Load** weight units | **Max Speed** mph | **Max Length** (axles) Main | Alab | Mine |
|---|---|---|---|---|---|---|
| **Train Engines** | | | | | | |
| 12, 13, 18 | 130 | 10 | 25 | 20 | 16 | 8 |
| 19, 20, 24, 25, 27, 30 & 30T | 190 | 14 | 25 | 28 | 16 | 4 |
| 26 | 215 | 16 | 25 | 32 | 16 | 4 |
| 32 | 280 | 21 | 50 | 42 | 32 | - |
| 34 | 265 | 19 | 60 | 38 | - | - |
| 35 & 36 | 300 | 21 | 60 | 42 | - | - |
| 38 | 360 | 27 | 60 | 54 | - | - |
| 40 | 400 | 30 | 60 | 60 | - | - |
| 40 (double) | 800 | 60 | 60 | 80 | - | |
| 41 | 510 | 37 | 40 | 74 | 16 | 8 |
| 50 (sat) | 310 | 22 | 50 | 44 | 16 | - |
| 50 (sup), 53, 55 | 360 | 27 | 50 | 54 | 16 | - |
| 60 | 75 | 43 | 40 | 80 | - | - |
| 79 | 200 | 15 | 25 | 30 | 16 | 8 |
| **Bank Engines** (if required) | | | | | | |
| 26 | +80 | +6 | - | - | - | |
| 32 & 34 | +110 | +8 | - | - | - | |
| 35 & 36 | +120 | +9 | - | - | - | |
| 50, 53 & 55 | +130 | +10 | - | - | - | |

NB

All loads are indicated in weight units on the wagon cards.

# KVHR OPERATOR'S MANUAL

# Initial Set Up

Locate each train at the yard required by the table below. Place each goods wagon as desired. Place the goods wagon cards in the card racks as appropriate.

Initial Placement of trains as at 00

**Sydney**

| | |
|---|---|
| RUB set 140 for # 1 | Sydney Passenger Store 1 |
| LLV, 4 x LFX, HCX, FJ, LHO for # 5 | Sydney Passenger Store 3 |
| goods express set A, LHG for # 81 | Syd Goods Departure Track 1 |
| various Good wagons, HG for # 60 | Syd Goods Departure Track 2 |
| Goods wagons as required | Sydney Goods Store |

**Enmore Locomotive Works**

19 Class (95) for # 60
26 Class (2609)
32 Class for # 5
38 Class (3830) for # 1
40 Class for # 81
41 Class (4101) for Down Pick Up Goods
50 Class for # 60

**Enmore Coal Stage**

| | |
|---|---|
| 2 x L (empty) | top of coal stage |
| 2 x L (ash) | ash pit |

**Newtown Coal Services**

| | |
|---|---|
| 4 x S (coal) (# 61 *Gasworks Turn*) | Siding 1 |
| 2 x L (coal) (Coal Stage Turn) | Siding 1 |

**Violet**

| | |
|---|---|
| CPH, CTH (6); 620, 720 (624) | Violet Refuge |

**Limestone**

| | |
|---|---|
| 13 Class (1307), CCA (Down) | Limestone Platform |
| 5 x LCH | Mine siding |
| Goods wagons as required | Goods shed |

**Mother's Choice Flour Mill**

| | |
|---|---|
| Goods wagons as required | Mill siding |

**Cementworks**

| | |
|---|---|
| M Class (45) | Cementworks headshunt |
| 4 x S (empty), RSH | Siding 1 |
| 5 x LCH (empty) | Loading siding |

| | |
|---|---|
| 2 x BRH | Silo loading siding |

**Kangaroo Valley**

| | |
|---|---|
| 2 x 18 Class (1803, 1806) | |
| 30T Class, 3 x MLK, MHG (# 79) | Platform 3 |
| CPH (8) | Goods shed |
| 12 x CCH, CHG | siding a |
| Goods wagons as required | |

**Tannery**

| | |
|---|---|
| F Class (354), S (hides load) | Tannery siding |

**Meatworks, Iceworks**

Goods wagons as required

**Ethel**

Goods wagons as required

**Alabmob**

| | |
|---|---|
| 30T Class | Engine shed |
| Goods wagons as required | |

**Coal Drag Loop**

| | |
|---|---|
| 60 Class (6030), 16 x BCH, MHG | Up Coal Drag Loop |
| 60 Class (6040), 16 x BCH, MHG | Down Coal Drag Loop |

**Eden**

| | |
|---|---|
| HFO, FO, FO, HFO | Eden Passenger Store 1 |
| set 109 | Eden Passenger Store 3 |
| 2 x BRH, RSH, 4 x S (coal), MHG (# 90) | Eden Goods Store 1 |
| 8 x BWH (# 91) | Eden Goods Store 2 |
| 41 Class (4109) | Eden Loco |
| 50 Class for #v82 | Eden Loco |
| Goods wagons as required | |

**Melbourne**

| | |
|---|---|
| 16 x S (loaded), ZF | Melbourne Track 3 |
| HUB set | Melbourne Track 4 |
| Silver City Comet (101) | Melbourne Track 5 |
| T Class (321), goods express set B, LHG | Melbourne Track 6 |
| B Class (72), MHO, BS, FS, FS, BS | Melbourne Track 7 |

Initial placement of trains as at 32

**Sydney**

| | |
|---|---|
| CPH, CTH (8) | RM Store |
| BS, FS, FS, BS | Sydney Passenger Store 2 |
| goods express set B, LHG for # 83 | Syd Goods Departure Track 1 |
| Goods wagons as required | Sydney Goods Storage |

**Enmore Locomotive Works**

35 Class
36 Class
41 Class (4109) for Down Pick Up Goods
50 Class for # 83

**Enmore Coal Stage**

| | |
|---|---|
| 26 Class (2609) | |
| 2 x L (coal) | |
| 2 x L (empty) | top of coal stage |
| 2 x L (ash) | ash pit |

**Newtown Coal Services**

| | |
|---|---|
| 4 x S (coal) (# 61 *Gasworks Turn*) | Siding 1 |

**Violet**

| | |
|---|---|
| 620, 720 (624) | Violet Platform 1 |

**Limestone**

| | |
|---|---|
| 13 Class (1307) | |
| 5 x LCH | Mine siding |
| CCA | Carriage shed |
| Goods wagons as required | Goods shed |

**Mother's Choice Flour Mill**

| | |
|---|---|
| Goods wagons as required | Mill siding |

**Cementworks**

| | |
|---|---|
| M Class (45) | Cementworks headshunt |
| 4 x S (empty), RSH | Siding 1 |
| 5 x LCH (empty) | Loading siding |
| 2 x BRH | Silo loading siding |

**Kangaroo Valley**

| | |
|---|---|
| 2 x 18 Class (1803, 1806) | |
| CPH (8) | Goods shed |
| 12 x CCH, CHG | siding a |
| Goods wagons as required | |

**Tannery**

| | |
|---|---|
| F Class (354), S (hides load) | Tannery siding |

**Meatworks, Iceworks**

Goods wagons as required

**Ethel**

Goods wagons as required

**Alabmob**

| | |
|---|---|
| 30T Class, LHO, FJ | Alabmob Platform |
| 30T Class | Engine shed |
| Goods wagons as required | |

**Coal Drag Loop**

| | |
|---|---|
| 60 Class (6030), 16 x BCH, MHG | Up Coal Drag Loop |
| 60 Class (6040), 16 x BCH, MHG | Down Coal Drag Loop |

**Eden**

| | |
|---|---|
| 38 Class (3830), RUB set 140 | Eden Platform 1 |
| 36 Class, MHO, BS, FS, FS, BS | Eden Platform 2 |
| HFO, FO, FO, HFO | Passenger Store 1 |
| BMT, HCX, 4 x LFX | Passenger Store 2 |
| set 109 | Passenger Store 3 |
| B Class (72), C | VR Storage |
| 2 x BRH, RSH, 4 x S (coal), MHG (# 90) | Eden Goods Store 1 |
| 8 x BWH (# 91) | Eden Goods Store 2 |
| 32 Class (for # 6) | Eden Loco |
| 40 Class (for # 84) | Eden Loco |
| 41 Class (4101) | Eden Loco |
| 50 Class for (# 90) | Eden Loco |
| Goods wagons as required | |

**Melbourne**

| | |
|---|---|
| 16 x S (loaded), ZF | Melbourne Track 3 |
| HUB set | Melbourne Track 4 |
| Silver City Comet (101) | Melbourne Track 5 |
| T Class (321), goods express set A, LHG | Melbourne Track 6 |

Initial placement of trains as at 64

**Sydney**

| | |
|---|---|
| 4 X LFX, HCX, ACX, LHO | Sydney Platform 1 |
| CPH, CTH (8) | RM Store |
| RUB set 140 | Sydney Passenger Store 1 |
| BS, FS, FS, BS | Sydney Passenger Store 2 |
| set 109 | Sydney Passenger Store 3 |
| goods express set A, LHG | Syd Goods Departure Track 1 |
| Goods wagons as required | Sydney Goods Store |

**Enmore Locomotive Works**

26 Class (2609)
35 Class
40 Class (4010)
41 Class (4101) for Down Pick Up Goods

**Enmore Coal Stage**

| | |
|---|---|
| 2 x L (empty) | top of coal stage |
| 2 x L (ash) | ash pit |

**Newtown Coal Services**

| | |
|---|---|
| 4 x S (coal) (# 61 *Gasworks Turn*) | Siding 1 |
| 2 x L (coal) (Coal Stage Turn) | Siding 1 |

**Violet**

| | |
|---|---|
| 620, 720 (624) | Violet Platform 1 |

**Limestone**

| | |
|---|---|
| 13 Class (1307) | |
| 5 x LCH | Mine siding |
| CCA | Carriage shed |
| Goods wagons as required | Goods shed |

**Mother's Choice Flour Mill**

| | |
|---|---|
| Goods wagons as required | Mill siding |

**Cementworks**

| | |
|---|---|
| M Class (45) | Cementworks headshunt |
| 4 x S (empty), RSH | Siding 1 |
| 5 x LCH (empty) | Loading siding |
| 2 x BRH | Silo loading siding |

**Kangaroo Valley**

| | |
|---|---|
| 2 x 18 Class(1803, 1806) | |
| CPH (8) | Goods shed |
| 12 x CCH, CHG | siding a |
| Goods wagons as required | |

**Tannery**

| | |
|---|---|
| F Class (354), S (hides load) | Tannery siding |

**Meatworks, Iceworks**

Goods wagons as required

**Ethel**

| | |
|---|---|
| 30T Class, various goods, MHG (Up) | Ethel Loop |

Goods wagons as required

**Alabmob**

| | |
|---|---|
| 30T Class, LHO, FJ | Alabmob Platform |
| 30T Class | Engine shed |

Goods wagons as required

**Coal Drag Loop**

| | |
|---|---|
| 60 Class (6030), 16 x BCH, MHG | Up Coal Drag Loop |
| 60 Class (6040), 16 x BCH, MHG | Down Coal Drag Loop |

**Eden**

| | |
|---|---|
| 38 Class (3830), RUB set 140 | Eden Platform 1 |
| 36 Class, MHO, BS, FS, FS, BS | Eden Platform 2 |
| HFO, FO, FO, HFO | Passenger Store 1 |
| BMT, HCX, 4 x LFX | Passenger Store 2 |
| B Class (72), C | VR Storage |
| 2 x BRH, RSH, 4 x S (coal), MHG (# 90) | Eden Goods Store 1 |
| 8 x BWH (# 91) | Eden Goods Store 2 |
| 32 Class (# 6) | Eden Loco |
| 40 Class (# 84) | Eden Loco |
| 41 Class (4109) | Eden Loco |
| 50 Class for (# 90) | Eden Loco |

Goods wagons as required

**Melbourne**

| | |
|---|---|
| 16 x S (loaded), ZF | Melbourne Track 3 |
| HUB set | Melbourne Track 4 |
| Silver City Comet (101) | Melbourne Track 5 |
| T Class (321), goods express set B, LHG | Melbourne Track 6 |