

# **A BASIC GUIDE TO NSW SIGNALLING AND THE NSW SIGNAL PACK**

## **INTRODUCTION**

Signalling a layout can be a daunting task. Choosing the wrong signal for a location or not understanding a signal's aspect can turn an enjoyable Trainz session into a very frustrating and hair pulling experience. With this document and the NSW Signal Pack we hope to lift the fog from signalling NSW style, providing you with the correct signal for the task and information on what signal to put where and what they mean.

The first chapter will explain the use of the signals within the pack, explaining the aspects and what they mean, and how to configure the signals to your layout. The aspects shown by the signals are the same used within NSW.

The second chapter will discuss signalling and safe working methods used in NSW. It's not meant to be an in depth paper on the subject (I'm sure the document may become the biggest book in your bookcase) but rather provide you with enough information to help you plan your layout better.

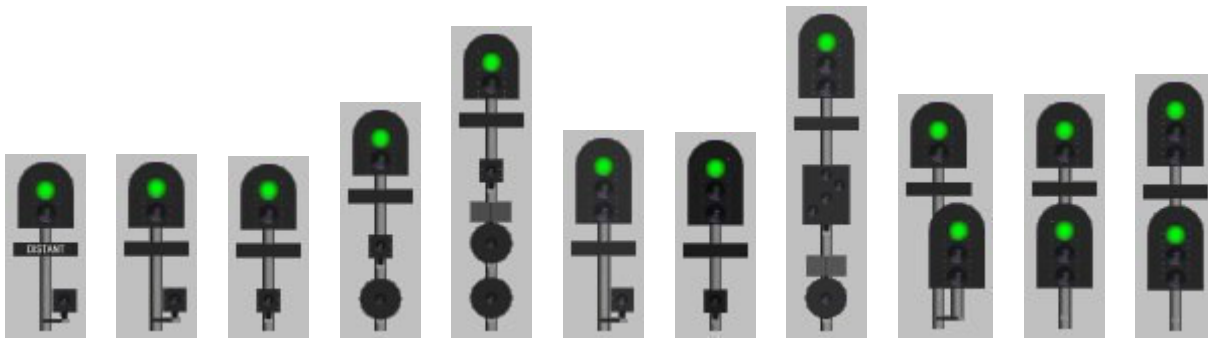
## THE SIGNALS IN THE PACK AND HOW THEY WORK

### ASPECTS

Before digging into the pack and using the signals, it will probably be helpful to know the signal aspects used in NSW and what they mean.

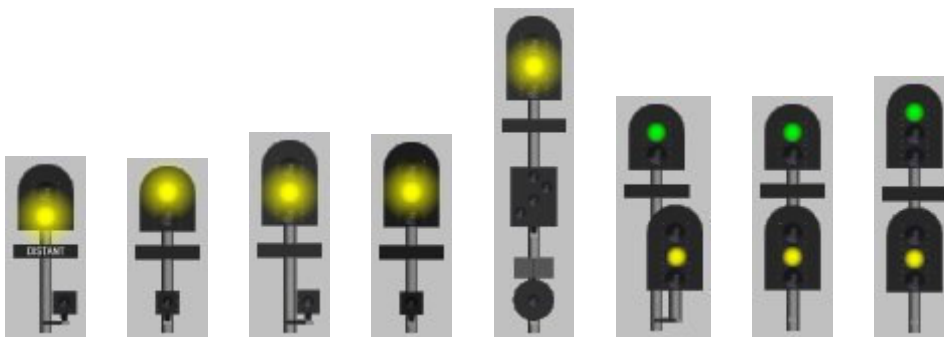
#### **CLEAR**

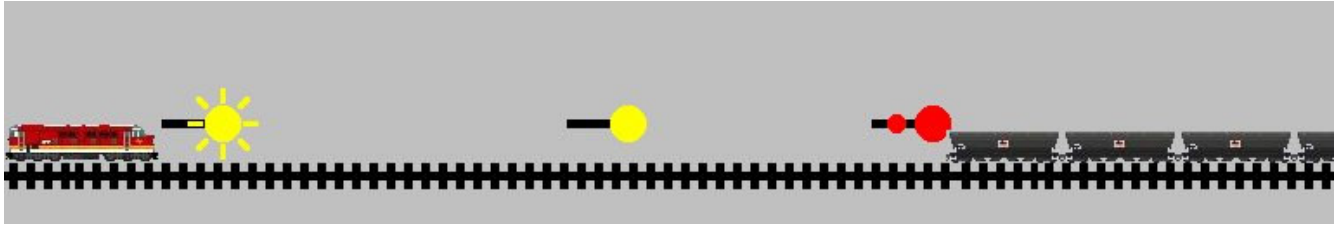
The next signal is displaying a proceed indication and train may proceed at normal speed.



#### **MEDIUM**

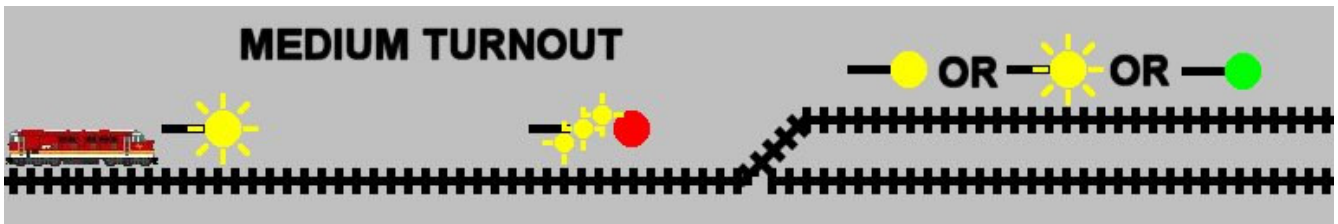
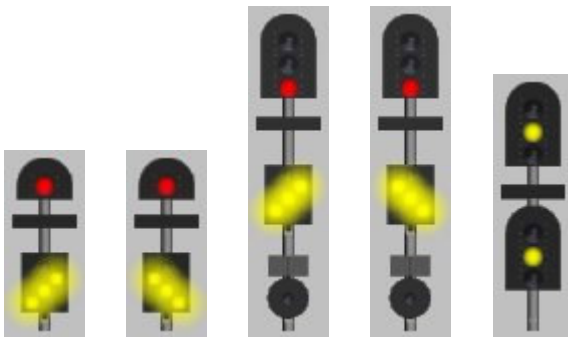
A medium aspect indicates that the next signal is displaying a proceed indication (normally caution), however the driver must be prepared to stop at the second signal ahead.





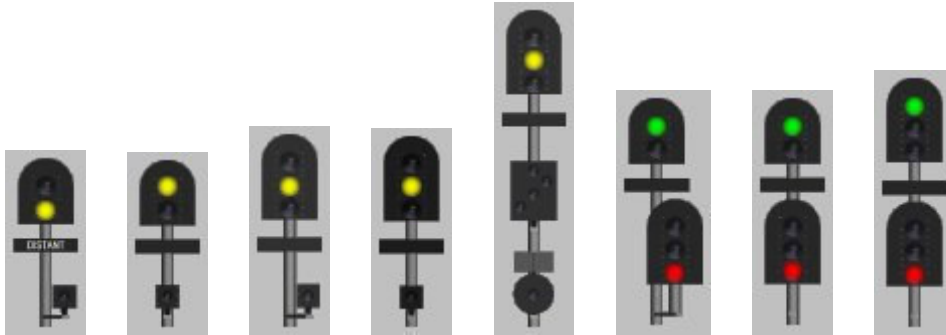
## MEDIUM TURNOUT

The next signal on the turnout route is displaying a proceed indication (either clear, medium or caution). Driver may proceed on the turnout route at normal turnout speed, but be prepared to stop at the 2<sup>nd</sup> signal ahead, depending on the aspect of the next signal.



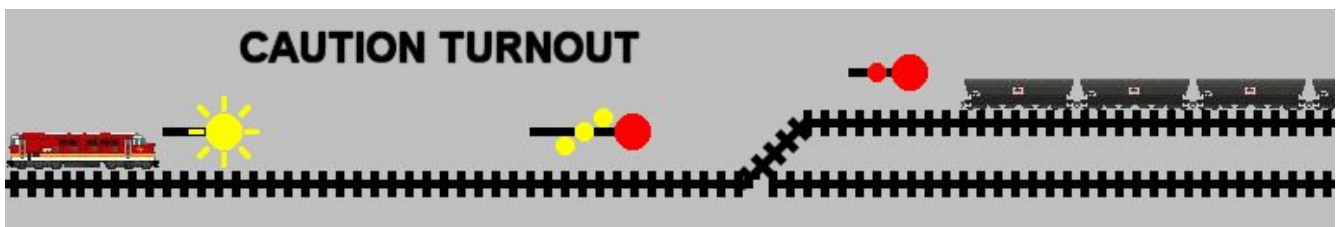
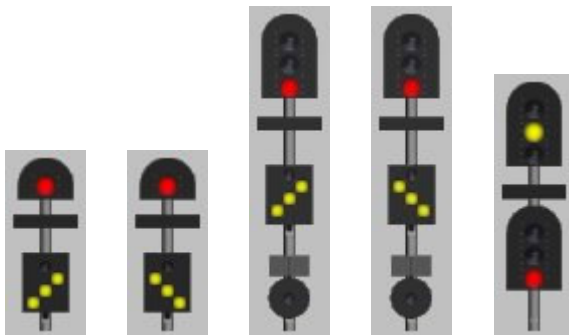
## CAUTION

The next signal may indicate stop. Proceed, being prepared to stop at the next signal.



## CAUTION TURNOUT

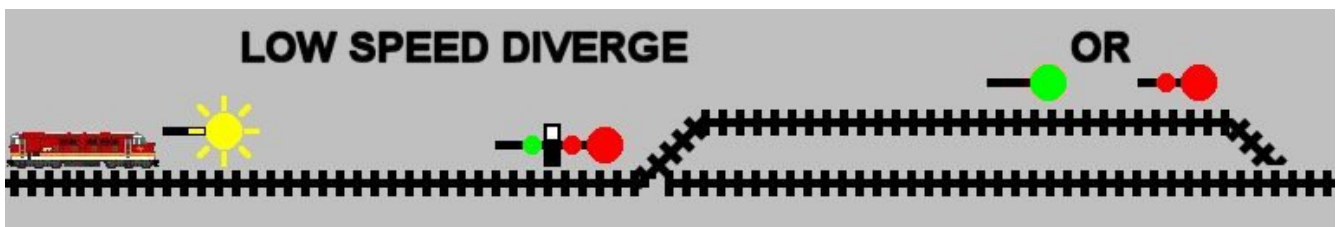
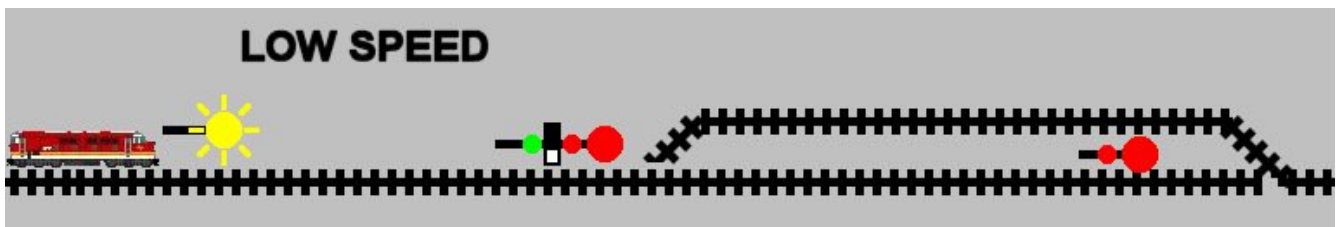
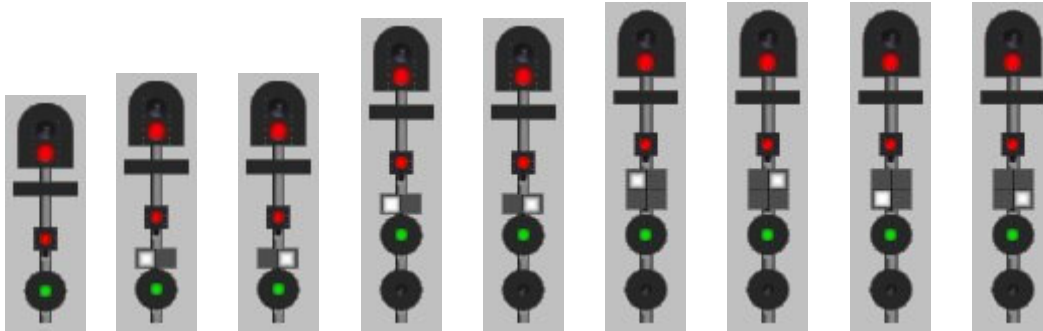
The next signal on the turnout route may indicate stop. Proceed on the turnout route, prepared to stop at the next signal.



## LOW SPEED

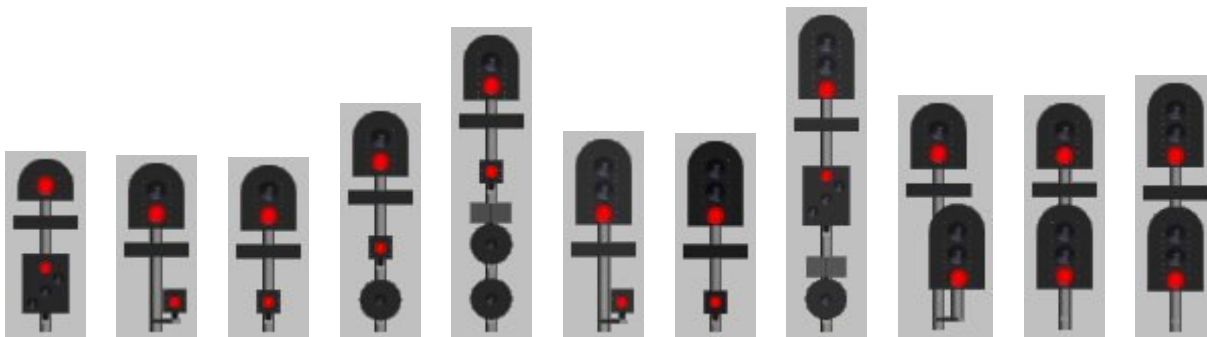
The next signal on the main or turnout route may indicate stop. Proceed on the main or turnout route, prepared to stop at the next signal. Do not exceed 25 km/h.

Where provided, a stencil will indicate the set route.



## STOP

Stop



## **SIGNALS**

The signals within the NSW Signal Pack are prototypical at the time of writing this document, in both aspect and dimension. We have taken great care to provide you with signals that are both realistic and easy to use.

Before describing the individual signals, some information is needed on how they are named. We have used abbreviations to make their names relatively understandable and manageable.

#Asp -	number of aspects (main lights)
Home -	Home or controlled signal (all diverge signals are controlled signals)
Auto -	Automatic signal
LD -	Left Diverge
RD -	Right Diverge
LS -	Low Speed
(S) -	Signal has a shunting light (*not yet operating)
RH -	Signal for right hand side of the track
Adv -	Advanced Caution
Dist -	Distant
G -	Gantry Signal

As an example...

### **NSW3Asp\_Home**

NSW - 3 Aspect - Home (controlled) signal

### **NSW2Asp\_LD(S)**

NSW - 2 Aspect - Left Diverge - Shunt light equipped

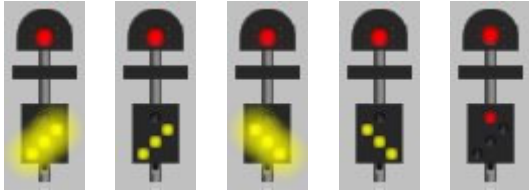
### **NSW5Asp\_Auto\_(G)**

NSW - 5 Aspect - Auto signal - Gantry signal

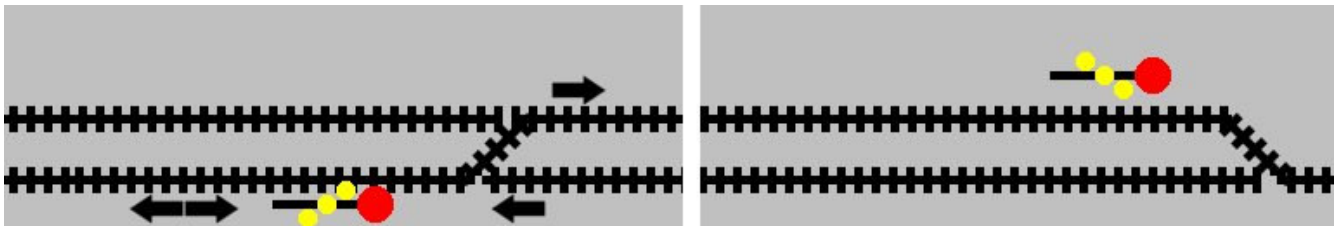
## 1 Aspect Left and Right Diverge

1Asp_LD	1Asp_LD_RH	
1Asp_LD(S)*	1Asp_LD(S)_RH*	1Asp_LD(S)_G*
1Asp_RD	1Asp_RD_RH	
1Asp_RD(S)*	1Asp_RD(S)_RH*	1Asp_RD(S)_G*

(\* not pictured)

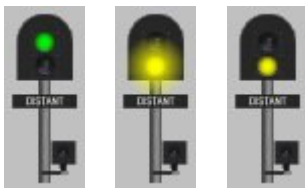


Probably the first thing you'll notice about these signals is...how to they show proceed? Well...they can't (except during shunting operations). These signals are used when a train cannot proceed without diverging e.g. at the end of a bi-directionally signalled section of double track. In this example, a train travelling on the opposite track will come across a 1 aspect diverge signal because the train is not permitted to travel beyond that signal. It must cross over onto the correct track.



## 2 Aspect Signals

2Asp_Dist	2Asp_Dist_RH
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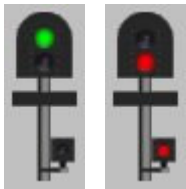


(2 Aspect Signals cont.)

2 Aspect Distant signals are used to warn the driver of a train of the aspect of the next signal or signals at an approaching location. A CAUTION aspect means the train is approaching a signal set at STOP, or DIVERGE. Because a distant signal cannot be set at stop, they should not be used to protect a junction. They are commonly used on single track lines and are normally preceded by a “Landmark” or “Location” sign (see Signs).

2Asp\_Auto

2Asp\_Auto\_RH



2 Aspect Auto signals are normally used on single track lines between loops that are far apart so a train may follow another train travelling in the same direction. Auto signals are known as “permissive” signals and a train may pass that signal after stopping the train and contacting “Train Control”. 2 Aspect Auto signals are preceded by a signal that can display CAUTION (e.g. a Distant signal).

2Asp\_Home

2Asp\_Home\_RH

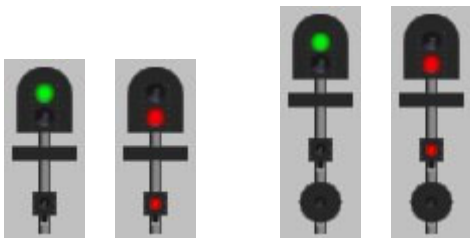
2Asp\_Home\_G\*

2Asp\_Home(S)

2Asp\_Home(S)\_RH

2Asp\_Home(S)\_G\*

(\* not pictured)



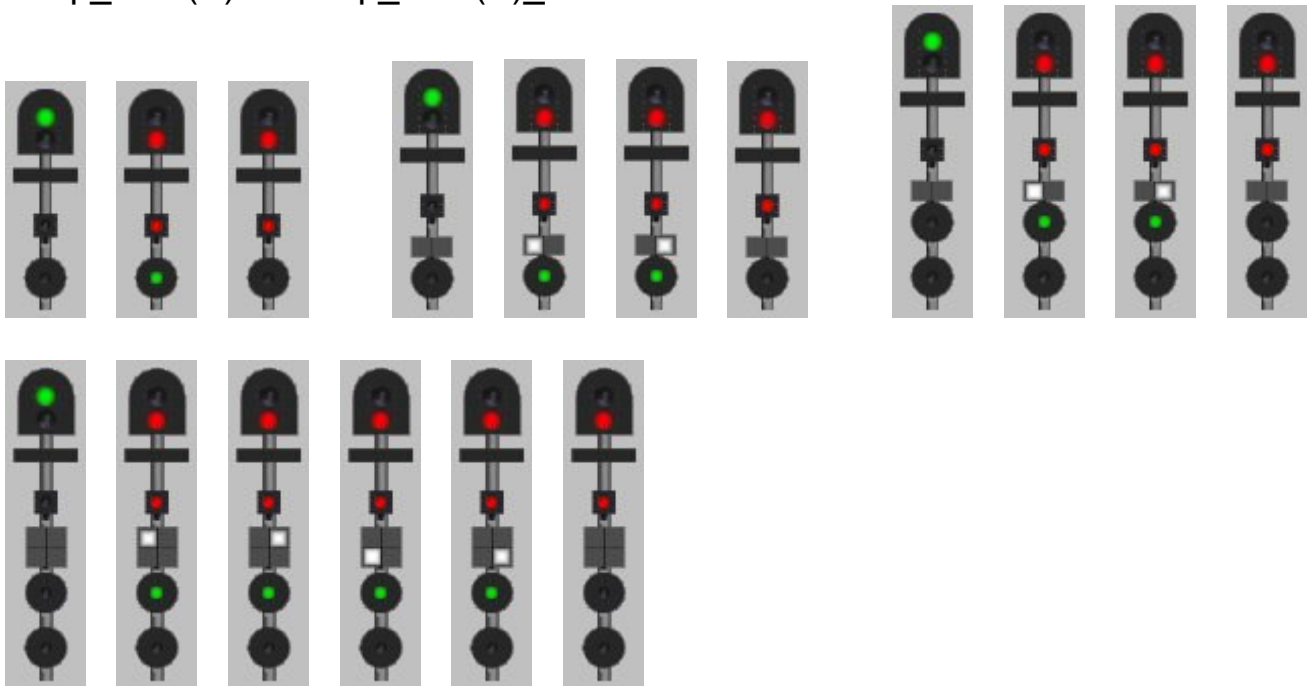
2 Aspect Home signals are commonly used on single track lines to protect such things as junctions (e.g. at the end of a loop), possible shunting movements, and control the entry and exit of a train into a block. They are known as

2 Aspect Cont.



“absolute” signals, meaning they cannot be passed at stop. The NSW Signal Pack has versions both with and without shunting signals, however at the time of writing the shunting signals are inactive.

2Asp_LS	2Asp_LS_RH
2Asp_LD	2Asp_LD_RH
2Asp_LD(S)	2Asp_LD(S)_RH
2Asp_RD	2Asp_RD_RH
2Asp_RD(S)	2Asp_RD(S)_RH
2Asp_LRD(S)	2Asp_LRD(S)_RH



These signals are used wherever low speeds are required, such as when the next signal is a short distance away. A train must not pass a low speed indication faster than 25 km/h.

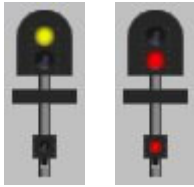
The signals with stencils are normally used on single track lines to protect such locations as crossing loops. The stencil is only lit when the signal shows a low speed indication and indicates to which route the points are facing. Signals with 4 stencils are used to protect 2 or 3 points.

There is more information on stencils later in this chapter.

*(2 Aspect Signals cont.)*

2Asp\_RY

2Asp\_RY\_RH



These signals are used if the driver must always pass that signal prepared to stop at the next signal. They are used in areas where trains are required to always stop for safe working purposes (e.g. to exchange a staff in staff and ticket territory).

### 3 Aspect Signals

3Asp\_Auto

3Asp\_Auto\_RH

3Asp\_Home

3Asp\_Home\_RH

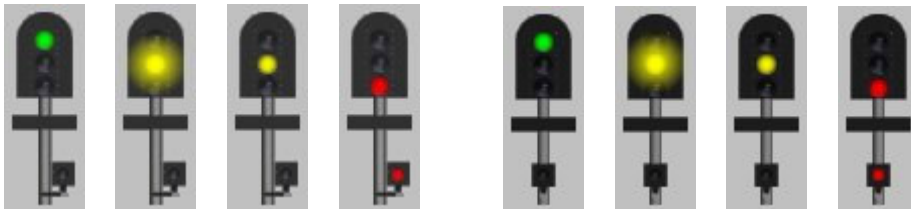
3Asp\_Home\_G\*

3Asp\_Home(S)

3Asp\_Home(S)\_RH

3Asp\_Home\_G\*

(\* not pictured)



These are the most commonly used signals in Trainz and probably need little introduction. We have added the MEDIUM aspect (flashing yellow) that warns the driver he is approaching a caution signal. This aspect is commonly used in areas where the braking distance between signals may not be adequate. A CAUTION aspect is also used to warn a driver he is approaching a junction set at diverge.

Like the 2 Aspect signals, these are available as both auto (permissive) and home (absolute) signals and the same rules for their operation apply. An auto signal differs from a home signal by having the red marker light offset to the

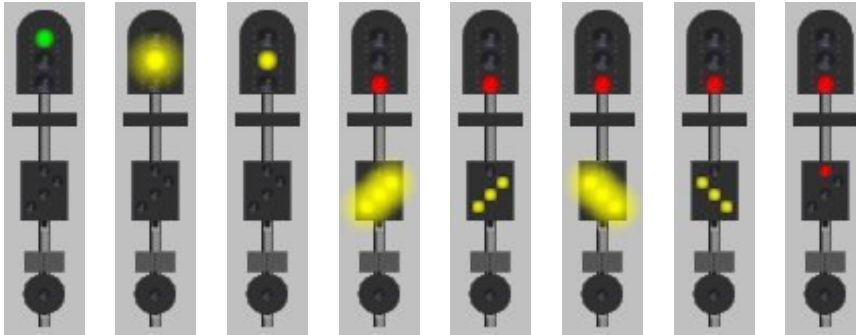
*(3 Aspect Signals cont.)*

right of the main signal lights.

3Asp\_LD  
3Asp\_RD

3Asp\_LD\_RH  
3Asp\_RD\_RH

3Asp\_LD\_G\*  
3Asp\_RD\_G\*



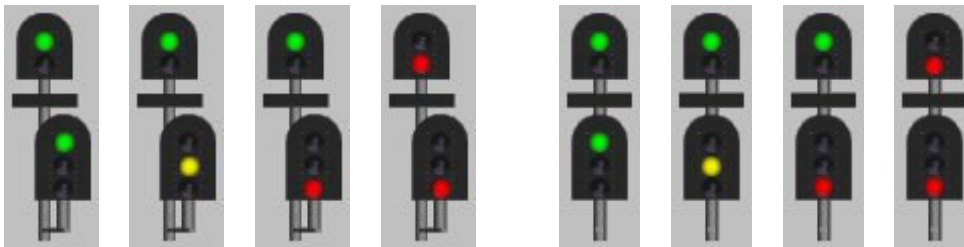
The diverge signals, in addition to sharing the main aspects above, also indicate a diverge route with a diagonal line of yellow lights. Flashing lights indicates MEDIUM TURNOUT and solid lights indicate CAUTION TURNOUT.

### 5 Aspect Signals

5Asp\_Auto  
5Asp\_Home  
(\* not pictured)

5Asp\_Auto\_RH  
5Asp\_Home\_RH

5Asp\_Auto\_G\*  
5Asp\_Home\_G\*



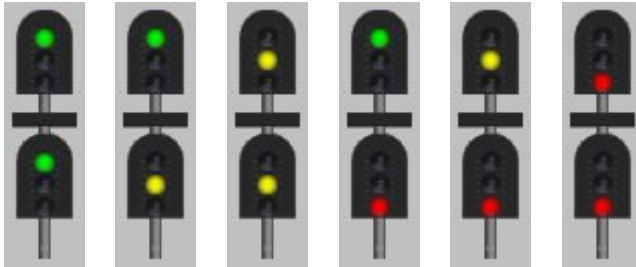
5 Aspect Signals are commonly used within the Sydney area, where there is high volumes of rail traffic and relatively short distances between signals. These (and the 6 aspect) signals differ from the others in that they use 2 light heads. The top lighthouse tells the driver what he can do - PROCEED or STOP. The second lighthouse tells the driver the indication of the next signal - in effect how to proceed. Auto signals differ from home signals by having the bottom lights offset from the top lights.

### 6 Aspect Signals

6Asp\_LD  
6Asp\_RD  
(\* not pictured)

6Asp\_LD\_RH  
6Asp\_RD\_RH

6Asp\_LD\_G\*  
6Asp\_RD\_G\*



Like the 5 aspect signals, 6 aspect signals use 2 lightheads to tell the driver what to do. As they are used as diverge signals, they are not available as auto signals and are therefore absolute signals.

The indications are identical to the 5 aspect signals, except for the diverge aspects, which are identified with the yellow light appearing in the top lighthouse.

## Stencils

For those signals using stencils, here is a list of commonly used stencils in NSW. Normally signals on single track use a single letter while signals on double track use 2 letters.

M - Main (line)  
L - Loop  
S - Siding  
P - Platform or Perway Siding  
B - Branch (Line) or Back Platform  
R - Refuge  
N - North  
E - East  
S - South or Shunting Neck  
W - West

UM - Up Main (Line)  
DM - Down Main (Line)  
US - Up Siding  
DS - Down Siding  
UR - Up Refuge  
DR - Down Refuge  
PL - Platform  
BP - Back Platform  
PW - Perway Siding  
GS - Goods Siding  
SN - Shunting Neck  
LL - Loop Line

The stencil appears in the box on the same side as the set route.

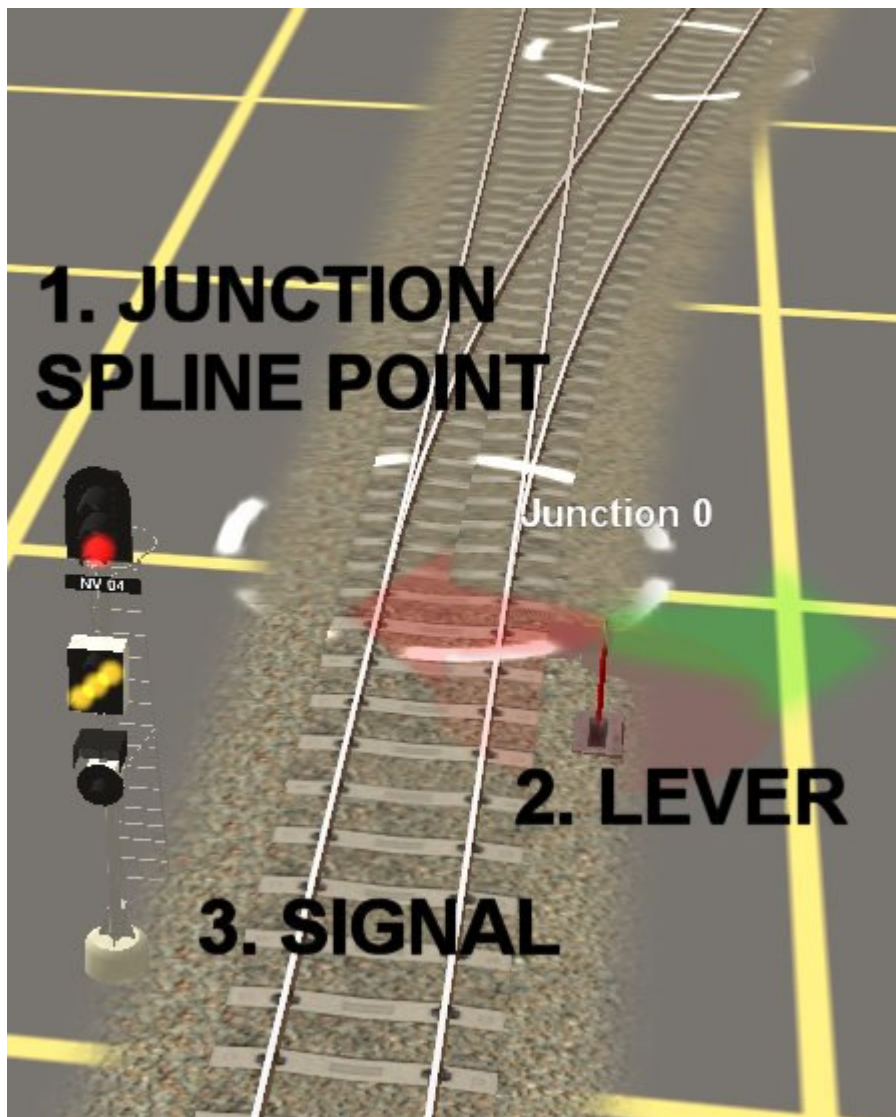
## **HOW TO EFFICIENTLY USE THE SIGNALS**

How the signals work (or don't work) depends largely on how they are placed on your layout. By following a few simple rules, you'll find your signals will operate correctly, saving the frustration of watching your signals display incorrect aspects.

When placing the signals, consider the speed of the track and the braking distance of all trains running at that speed. You must ensure that all trains can come to a stop from the first time the driver sees a signal at **CAUTION** (or **MEDIUM**) to when he approaches the signal at **STOP**. Obviously heavy trains and high speeds require a considerable distance between signals (sometimes over 2km). You can counter this by adding signals that can display a **MEDIUM** aspect as this effectively allows you to halve the distance required between signals. Be aware, however, that trains running under AI control do not recognise a **MEDIUM** aspect and will only slow down for a **CAUTION** aspect. The up side of this is that AI trains use DCC control which allows a train to stop much quicker than a train under cab control. Likewise, the distance you use will depend on if you intent your layout to be used in cab or DCC mode.

How you signal your junctions depends on whether you want your layout to be signalled prototypically or for best AI operation. Trains under AI control will not enter a section of track that's unsignalled, no matter how much you plea, coerce or threaten the driver. This means that each and every "trailing" junction (where 2 tracks come together) must be protected by a signal - good for AI but not prototypical.

When placing your signals for junctions, the signal and junction lever must be placed in the following order for the signal to operate properly:



Ensure you don't have the lever after the junction spline point, or the lever before the signal.

## **CONFIGURING THE SIGNALS FOR YOUR LAYOUT**

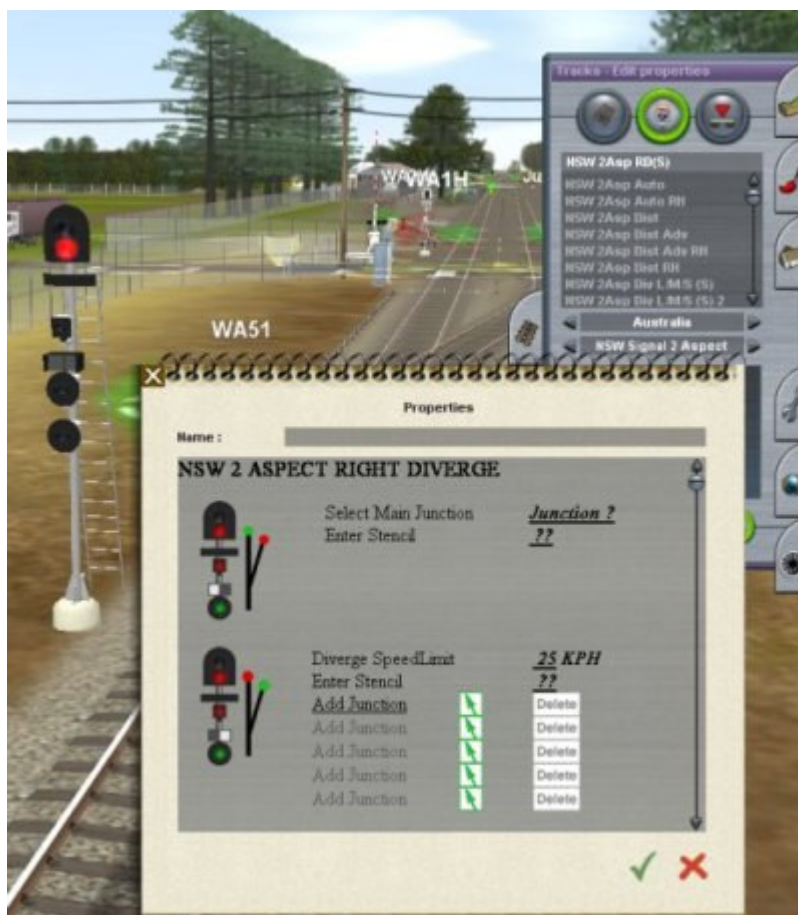
Signals in the NSW Signal Pack can be configured to a junction (or series of

junctions) and to other signals. With minimal effort, you can run your layout with a prototypical signalling system, showing the correct aspect for the correct condition.

This chapter will explain how to configure the signals.

## 2 Aspect Diverge

1. Place the signal (following the guidelines above). Open the signal's properties panel (using the “?” tool). Here's where you specify the signal's name, the junction/s that affect the signal's aspect, stencils to be shown and at what speed a train will travel through the junction.





2 aspect diverge cont.

2. Enter the signal's name in the name box (more on prototypical names for signals later). Then select the Main Junction. This is the first junction that diverges, and activates the stencil that appears when the signal is at low speed. The list of junctions is in alphabetical order. It pays to name your junctions in a logical manner (for instance, abbreviate the location the junction's in and then give it a number - WA51 is Wadalbavale junction 51. More on prototypical naming of junctions later). Then enter the stencil for the main line.





2 aspect diverge cont.

Next, enter the speed limit of the junction (in NSW, junctions are speed limited to 25km/h unless otherwise signposted) and the stencil for the diverging loop. Then, like the main junction, add all the junctions that activate the diverge aspect, and the respective junction directions. You must start with the main junction as it will be the first junction to activate the aspect. You can have from 1 to 6 junctions per signal aspect. Click “delete” to remove a junction from the list.



Finally, place a loco in front of the signal in Surveyor to test if it works.