



# North London & Goblin Lines



<b>1 ROUTE INFORMATION .....</b>	<b>5</b>
1.1 Background – North London Line .....	5
1.2 Background – Goblin Line .....	6
1.3 Background – West London Line.....	7
<b>2 ROLLING STOCK – CLASS 378 CAPITALSTAR .....</b>	<b>8</b>
2.1 Description.....	8
2.2 Design & Specification.....	8
2.3 Class 378/1 DMSO .....	9
2.4 Class 378/2 DMSO .....	9
2.5 Class 378/1 MSO.....	10
2.6 Class 378/2 MSO.....	10
2.7 Class 378/1 PTSO .....	11
2.8 Class 378/2 PTSO .....	11
<b>4 ROLLING STOCK – CLASS 172 TURBOSTAR.....</b>	<b>12</b>
4.1 Description.....	12
4.2 Design & Specification.....	12
4.3 Class 172 .....	12
<b>5 DRIVING THE CLASS 378 CAPITALSTAR .....</b>	<b>13</b>
5.1 Class 378 Cab Controls .....	13
5.2 Locomotive Keyboard Controls .....	14
5.3 General Keyboard Controls.....	14
<b>6 DRIVING THE CLASS 172 TURBOSTAR .....</b>	<b>15</b>
6.1 Class 172 Cab Controls .....	15
6.2 Locomotive Keyboard Controls .....	17
6.3 General Keyboard Controls.....	17
<b>7 SCENARIOS .....</b>	<b>18</b>
7.1 [172] 01. Cruising the Goblin: Part 1.....	18
7.2 [172] 02. Cruising the Goblin: Part 2.....	18
7.3 [172] 03. One Time Only: Part 1 .....	18
7.4 [172] 04. One Time Only: Part 2 .....	18
7.5 [172] 05. A Turbulent Shift.....	18
7.6 [172] 06. The Goblin's Going Blind .....	19

7.7 [378] 07. Business As Usual .....	19
<b>8 RAILFAN MODE SCENARIOS .....</b>	<b>20</b>
8.1 [RailfanMode] Gospel Oak.....	20
8.2 [RailfanMode] South Tottenham.....	20
8.3 [RailfanMode] Barking .....	20
<b>9 SIGNALS.....</b>	<b>21</b>
9.1 Main Signal Head Aspects.....	21
9.2 Theatre Type Signals .....	21
9.3 Feather Type Signals .....	21
9.4 Ground Signals and Position Light Signals.....	22
9.5 Entering an Occupied Section of Track .....	22
9.6 Repeater Signals.....	23
<b>10 SPEED SIGNS .....</b>	<b>24</b>
10.1 Permissible Speed Indicators .....	24
10.2 Permissible Speed Warning Indicators .....	24
<b>11 SAFETY SYSTEMS .....</b>	<b>25</b>
11.1 AWS (Automatic Warning System).....	25
<b>12 CREDITS .....</b>	<b>26</b>

Whilst we do our utmost to reproduce sounds that are accurate and true-to-life, sometimes these sounds may not completely tally with the user's expectation. Due to the nature of the simulation, it is often not possible to reproduce a completely accurate soundscape for a variety of reasons such as limitations with our current technology and occasional inability to gain meaningful access to the locomotives being created. You should therefore regard the audio reproduction for our locomotives as authentic interpretations rather than perfect recreations.

# 1 Route Information

## 1.1 Background – North London Line

The North London line spans about 17 miles between Richmond and Stratford and is part of the London Overground network. It is used as a commuter route connecting the inner suburbs North of London. This makes the route a rough semi-circle shape from the south west to the north east of the capital, avoiding the city centre. Built over the course of 25 years in 5 connecting sections, the 1st portion of the line was opened as the Eastern Counties and Thames Junction Railway in 1846/7 between Stratford and North Woolwich, and the last portion opened was between South Acton and Richmond in 1869 by the London & South Western Railway.

The 1980s started to see some closures across the line, the most notable being the closure of Broad Street station, a once major terminus for the City of London that became a dwindling station with very few passengers, it was closed and demolished in 1986. Other closures on the line include the Tottenham Hale – Stratford link and more recently the section between Stratford and North Woolwich in 2006. Where that track once stood is now used by the Docklands Light Railway and will also become part of the Crossrail branch to Abbey Wood in 2018.

Today the line is populated by Class 378/2 Capitalstars forming the London Overground services, D78 Tube Stock for the District Line services between Richmond and Gunnersbury. The route also sees a lot of freight usage hauled by Class 66's, 70's, 90's, 92's etc. You will also find loco/multiple unit drags on part of the route; Class 375/3's being dragged by DRS Class 57/4's for refurbishment in Derby is a recent example. The line is electrified mostly with 25kV AC overhead catenary between Stratford and Acton Central, and 3<sup>rd</sup> rail from Acton Central to Richmond. This was done because the class 313's that were used at the time were dual voltage and it also proved advantageous for electric freight locomotives. However, between Gunnersbury and Richmond there is also a 4th rail as the London Overground and District line shares this 2.5 mile stretch of track.



## 1.2 Background – Goblin Line

The Gospel Oak to Barking Line (sometimes unofficially called the GOBLIN) is part of the Network Rail network of railway lines. It carries both through goods trains and London Overground passenger trains, connecting Gospel Oak station in north London and Barking station in east London. For much of its existence the line has played a minor role in London's transport system; however, it is now receiving significant investment to increase its capacity, which will include full 25 kV AC overhead electrification, due to be completed in June 2017.

The line has existed in its current form since 1981, and is mostly an amalgamation of lines built in the 19th century. The main section, between South Tottenham and Woodgrange Park, was built as the Tottenham and Forest Gate Railway, a joint project between the Midland Railway and the London, Tilbury and Southend Railway. This opened on 9 July 1894, linking the Midland and Great Eastern joint line at South Tottenham and the Forest Gate and Barking line at Woodgrange Park.

The line was considered for closure to passengers in 1963 as part of the Beeching Axe, but as Beeching's proposals for London were not implemented for the most part, the line remained open. The situation began to improve in 1981 when electrification and upgrades to the line out of St. Pancras) displaced the line from Kentish Town. A new link to Gospel Oak was built and the hourly service from Kentish Town was replaced by the current route from Gospel Oak with two trains per hour. The service remained very unreliable due to the age of the trains, which were initially Class 115 and 108 units, replaced in the early 1990s by class 117 and 121 units.

Initially part of British Rail Network SouthEast, the line was privatised in 1994, the track being owned by Railtrack (subsequently Network Rail) with the passenger service provided by the North London Railways franchise. This passed to National Express in 1997, which operated the line under the brand name Silverlink until November 2007. Under Silverlink, the slam door trains were replaced by class 150 units in 2000, which improved reliability significantly. There were minor improvements in station facilities (such as CCTV and information points) but no major investment to upgrade the line and boost capacity, and the stations remained unstaffed.

In 2010 eight new Class 172 Turbostar diesel trains replaced the Class 150 units, with two 23-metre coaches and the option to introduce a third coach. The service frequency was increased to four trains per hour in January 2011.



### 1.3 Background – West London Line

The West London Line is a short railway in inner West London that links Clapham Junction in the south to Willesden Junction in the north. It has always been an important cross-London link especially for freight services. Regular passenger services on it, detailed below, are provided by Southern and by London Overground.

The core operation of the West London Line is the metro/commuter rail operated by London Overground. Four trains per hour run between Clapham Junction and Willesden Junction, with alternate trains continuing on the North London Line to and from Stratford. The West London Line forms the western section of the Overground's orbital rail route which was completed in December 2012 when the East London Line was extended to Clapham Junction via the South London Line, linking it to the West London Line.

Along with the Thameslink and the East London Line routes, the West London Line presently forms part of one of three National Rail routes which run across London instead of terminating in the central area. This regional rail service operated by Southern connects the West Coast Mainline in the north to the Brighton Main Line in the south. Hourly trains run between East Croydon and Milton Keynes Central, with additional peak services between Shepherd's Bush and Clapham Junction. Southern services follow the same route as London Overground, but pass through Willesden Junction without stopping as the mainline platforms were removed in 1962. However, there are plans for these services to stop at Willesden Junction in the future which will mean building new main line platforms at Willesden Junction.

This regional service previously ran from Brighton to Watford Junction. It was originally conceived as a Brighton-Birmingham service, and until December 2008 a twice-daily Cross Country service ran from Brighton via Kensington (Olympia) and Reading to Birmingham New Street. The service was curtailed due to the difficulty in securing train paths in the congested West Midlands, and operated only as far as Rugby. With engineering works on the upgrade of the West Coast Main Line, the service was shortened to terminate at Watford, and was discontinued, then later revived as a shorter regional route as part of the South Central franchise in 2008. Due to congestion on the West Coast Main Line, the service will not extend north of Milton Keynes Central.

## 2 Rolling Stock – Class 378 Capitalstar

### 2.1 Description

Built by Bombardier as part of the Electrostar family and derived from the Class 376, the Class 378 was introduced to replace a variety of ageing multiple units (Class 313, 508, 456 and A60/62 stock) on the growing London Overground network. Originally delivered in September 2008 as 3 car units, the Class 378/0s cost some £223 million and were based at the recently built New Cross Gate depot.

After a 14 week test on the North London line, Transport-for-London ordered 36 more carriages at a cost of £36 million, this was to add 3 more 4 car units to the fleet and upgrade the original 24 Class 378/0s to 4 cars long. The addition of the fourth car saw the 378/0s reclassified as 378/2s.

Today, there are 57 Class 378s in service, there are 20 378/1s which are 750V DC third Rail only, and there are 37 378/2s which are dual voltage, sporting the third rail shoe and a pantograph for the 25kV AC catenary. An ongoing extension to the fleet is underway with 57 new carriages, allowing for all the Class 378s to be increased to 5 cars, this was complete by the end of 2015.

As of June 2015, it was announced that another 45 units have been ordered; 30 to replace the Class 315/317s on the recently acquired services from Greater Anglia, one unit for the service between Romford and Upminster, 6 will be used to strengthen the existing fleet and the final 8 will be used to replace the Class 172/2s on the Gospel Oak to Barking line once it has been electrified.

With a top speed of 75mph, wide sliding doors instead of the typical plug style and open plan gangways, much like an articulated bus, the Class 378 is perfect for start-stop commuter services in and around London.'

### 2.2 Design & Specification

Total Built: 57 Trainsets

Weight: 159.5t

Length: 20.4m

Vehicle Power: 800hp

Max Speed: 75mph



### 2.3 Class 378/1 DMSO



### 2.4 Class 378/2 DMSO



## 2.5 Class 378/1 MSO



## 2.6 Class 378/2 MSO





## 2.7 Class 378/1 PTSO



## 2.8 Class 378/2 PTSO



## 4 Rolling Stock – Class 172 Turbostar

### 4.1 Description

The Class 172 multiple units were built at Derby by Bombardier Transportation and introduced in July 2010. Each vehicle is powered by a 483 Horsepower diesel engine providing a maximum unit speed of 100MPH. These new Turbostars make use of a manual transmission instead of hydraulic and are also lighter due to their redesigned bogies.

Replacing the Class 150 on inner-suburban passenger services, the 172s have a larger capacity despite having less seats. This increased capacity comes from wider aisles, along with larger spaces for passengers to stand. A total of thirty-nine trainsets were made:

8 - London Overground.  
27 - London Midland.  
4 - Chiltern Railways.

Adding to the popularity of the Turbostar, these units are able to work with older locomotives; such as the Class 15x Sprinter and Class 16x networker Turbo, as well as units from the same class, making them more flexible.

### 4.2 Design & Specification

Total Built: 39 Trainsets  
Weight: 83.2t (2-Car unit)  
Length: 23.62m  
Vehicle Power: 483hp  
Max Speed: 100mph

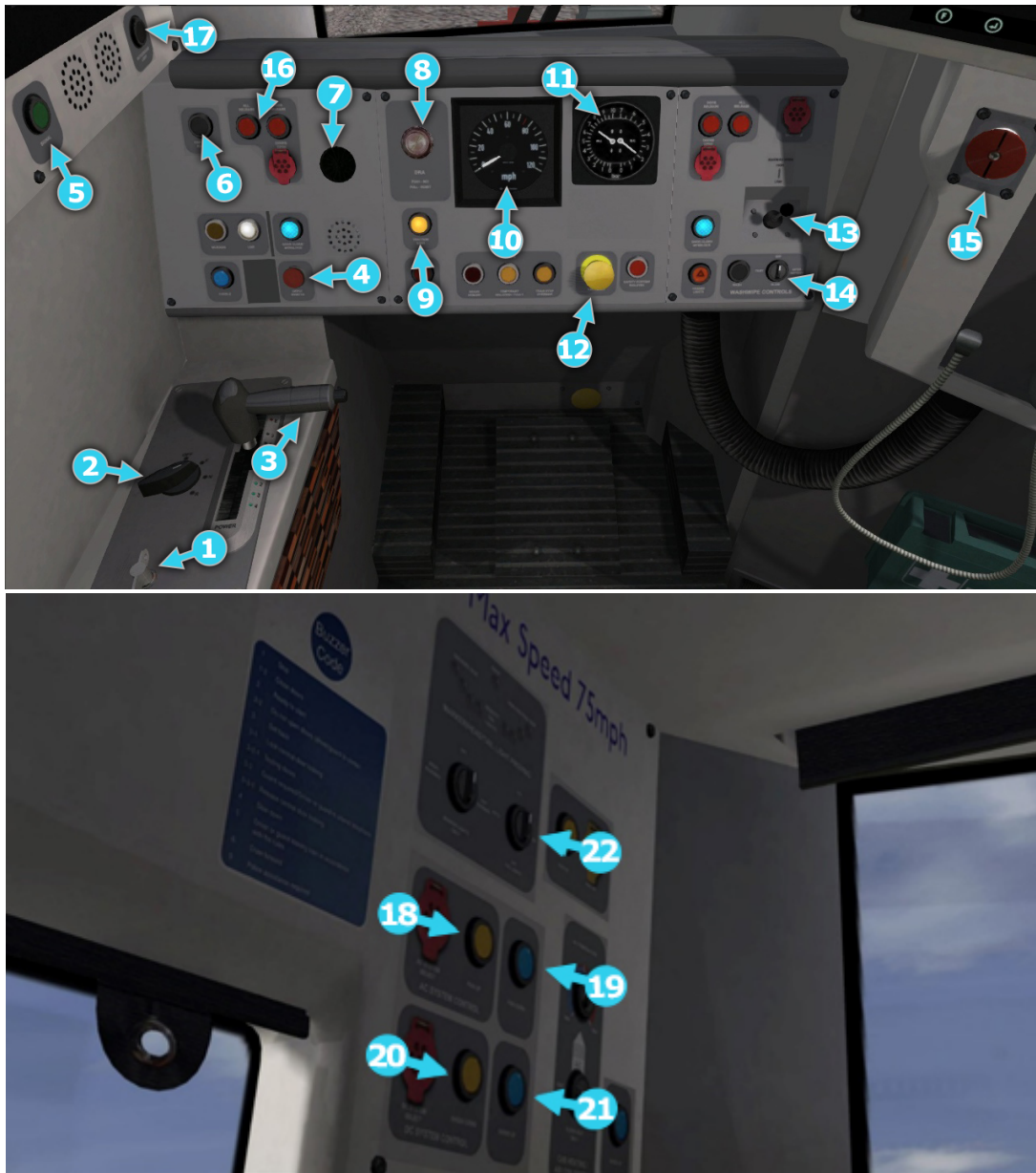
### 4.3 Class 172





## 5 Driving the Class 378 *Capitalstar*

### 5.1 Class 378 Cab Controls



1	Master Key	12	AWS Reset
2	Reverser	13	Horn
3	Combined Train Brake and Throttle	14	Windscreen Wipers
4	Depot Whistle	15	Emergency Brake
5	Signal Button	16	Door Release
6	Cab Light	17	Noticeboard Light
7	AWS Sunflower	18	Pantograph Up
8	DRA	19	Pantograph Down
9	Manual Sander	20	Shoes Down
10	Speedometer	21	Shoes Up
11	Brake Gauge	22	Headlight/Taillight Switch

## 5.2 Locomotive Keyboard Controls

Key Equivalent	Action
D / A	Decrease or Increase Combined Train Brake and Throttle.
S / W	Move Reverser Forward or Backward.

## 5.3 General Keyboard Controls

Key Equivalent	Action
T	<b>Load/Unload</b> passengers or freight.
H	<b>Headlights.</b> Repeatedly pressing will cycle through headlight states where appropriate.
V	<b>Windscreen Wipers.</b> Press once to switch on and again to switch off.
Z	<b>(Expert) Engine Stop/Start.</b> By default engines will already be running at the start of a scenario. Press this button to stop and then again to restart the engine.
Q	<b>(Expert) Alerter.</b> The Alerter is a system used on some trains to ensure that the driver has seen a signal. If the alert sounds (a black/yellow striped symbol is shown on the Driver's display), this must be acknowledged by pressing the Alerter button or the emergency brakes will be applied.
X	<b>(Expert) Manual Sander.</b> Causes sand to be laid on the rails next to the wheels to assist with adhesion. Press once to apply sand and again to stop.
Space	<b>Horn.</b> Sound the horn's low tone.
B	<b>Horn.</b> Sound the horn's high tone.
Shift + Ctrl + C	<b>Couple manually.</b>

## 6 Driving the Class 172 *Turbostar*

### 6.1 Class 172 Cab Controls





1	Reverser	11	Brake Gauge for Main Reservoir and Brake Cylinder pressures (in BAR)
2	Combined Train Brake and Throttle	12	AWS Acknowledge Button
3	Door Close / Interlock light	13	Windscreen Wipers Switch
4	Signal Buzzer	14	Sander
5	Engine Start Stop	15	Horn
6	Cab light	16	Emergency Brake Button
7	AWS "Sunflower" Display	17	Headlights Switch and Proving Lights
8	DRA	18	Glare Screen
9	Brake Demand Lamp		
10	Speedometer		



## 6.2 Locomotive Keyboard Controls

Key Equivalent	Action
D / A	Decrease or Increase Combined Train Brake and Throttle.
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## 6.3 General Keyboard Controls

Key Equivalent	Action
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Space	<b>Horn.</b> Sound the horn's low tone.
B	<b>Horn.</b> Sound the horn's high tone.
Shift + Ctrl + C	<b>Couple manually.</b>

## 7 Scenarios

***\*\*For driving tutorials, please visit the Academy from the main TS2017 menu screen\*\****

### 7.1 [172] 01. Cruising the Goblin: Part 1

Welcome to North London on the Goblin Line! In this scenario, you will be in charge of a Class 172 Turbostar on a full length westbound run between Barking and Gospel Oak.

**Duration:** 40 Minutes

**Difficulty:** Easy

### 7.2 [172] 02. Cruising the Goblin: Part 2

Continuing from the first scenario, you will now be in charge of the return eastbound service between Gospel Oak and Barking.

**Duration:** 40 Minutes

**Difficulty:** Easy

### 7.3 [172] 03. One Time Only: Part 1

Take on the first part of a once-a-day service from Woodgrange Park to Willesden Junction. For now, you will be in charge of the controls between Woodgrange Park and Hampstead Heath.

**Duration:** 35 Minutes

**Difficulty:** Easy

### 7.4 [172] 04. One Time Only: Part 2

It's time to take on the second part of this daily service. After having arrived at Hampstead Heath, you will now be continuing the service to Willesden Junction, where your journey will end.

**Duration:** 25 Minutes

**Difficulty:** Medium

### 7.5 [172] 05. A Turbulent Shift

In the thick of the stormy morning rush hour, you will be taking this passenger service from Barking to Upper Holloway. You will then proceed to take the empty unit to Willesden Depot for a maintenance check. A delayed service has been pathed in front of you, so keep an eye on the signals!

**Duration:** 60 Minutes

**Difficulty:** Hard

### **7.6 [172] 06. The Goblin's Going Blind**

Track work east of South Tottenham has taken over the Goblin Line this evening and a special timetable has been put in place. You will be in charge of this passenger service as far as South Tottenham, before heading back in the opposite direction to Willesden Depot.

**Duration:** 45 Minutes

**Difficulty:** Extreme

### **7.7 [378] 07. Business As Usual**

The weather has dictated what happens today! The conditions have caused a lot of delays on the line and temporary speed restrictions have been put in place, but our services are battling through. You'll be at the controls of this Class 378 passenger service from Clapham Junction to Willesden Junction.

**Duration:** 25 Minutes

**Difficulty:** Hard

## 8 Railfan Mode Scenarios

Railfan Mode provides a unique chance to observe and enjoy the operations of trains without the pressure and involvement of driving them. Railfan Mode scenarios are positioned at various key points along the route and provide camera functionality to sit back and watch the action unfold.

These scenarios are located on the **Drive** screen under the **Career** tab.

### 8.1 [RailfanMode] Gospel Oak

Duration: 10 Minutes

Difficulty: Very Easy

### 8.2 [RailfanMode] South Tottenham

Duration: 10 Minutes

Difficulty: Very Easy

### 8.3 [RailfanMode] Barking

Duration: 10 Minutes

Difficulty: Very Easy

## 9 Signals

### 9.1 Main Signal Head Aspects



Colour light signals are used for controlling running movements. They display aspects by means of red, yellow and green coloured lights.

Signal Aspect	Description	Instruction to Driver
Red light	Danger	Stop.
Single yellow light	Caution	Proceed: be prepared to stop at the next signal.
Double yellow lights	Preliminary caution	Proceed: be prepared to find the next signal displaying one yellow light.
One flashing yellow light	Preliminary caution for a diverging route	Proceed: Be prepared to find the next signal displaying one yellow light with feather junction indicator for diverging route(s).
Double flashing yellow lights	Indication of diverging route ahead of the next but one signal	Proceed: Be prepared to find the next signal displaying one flashing yellow light.
Green light	Clear	Proceed: The next signal is displaying a proceed aspect.

### 9.2 Theatre Type Signals

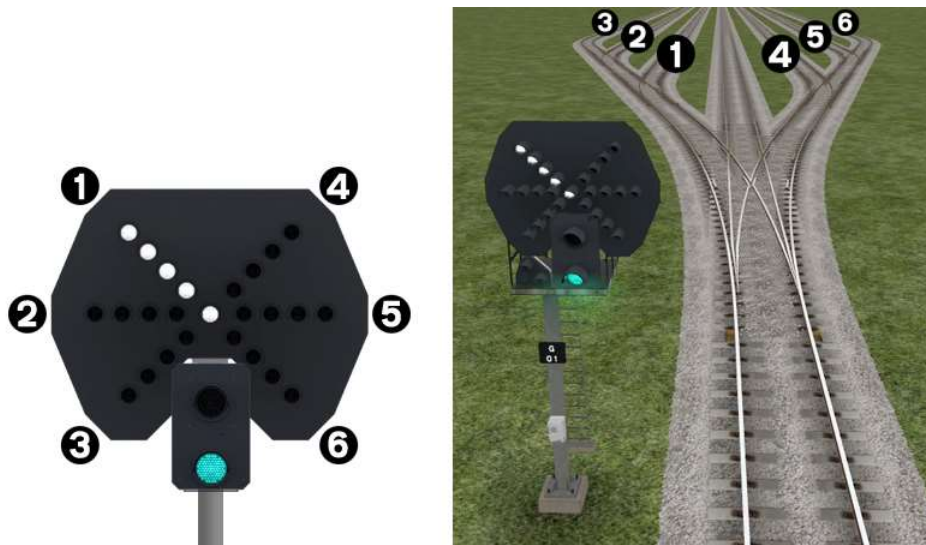


A Theatre alphanumeric route indicator indicates the route to be taken using numbers or letters (or a combination of numbers and letters).

A Theatre indicator is often used to show the arrival platform number.

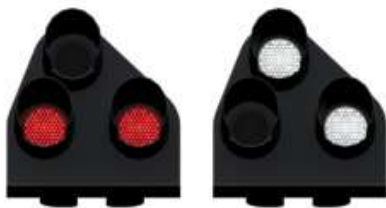
### 9.3 Feather Type Signals

A Feather junction indicator indicates a diverging route to be taken by the angle at which a line of five white lights is displayed. (*Position 1 shown*)



Feather Indication	Instruction to Driver
No Feather Indication	Obey main aspect, straight-ahead route is set
Position 1 indication	Obey main aspect, expect divergence to left
Position 2 indication	Obey main aspect, expect divergence to left more extreme than that for position 1
Position 3 indication	Obey main aspect, expect divergence to left more extreme than that for position 2
Position 4 indication	Obey main aspect, expect divergence to right
Position 5 indication	Obey main aspect, expect divergence to right more extreme than that for position 4
Position 6 indication	Obey main aspect, expect divergence to right more extreme than that for position 5

## 9.4 Ground Signals and Position Light Signals



Ground Signals and Position Light Signals (PLS) display their aspects by means of the position and colour of lights. Ground Signals are always illuminated and can have miniature theatre indicators attached whereas PLS only illuminate to allow a train to pass in to an occupied section of line and are mounted as an addition to a main signal head.

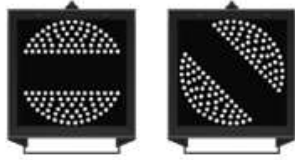
## 9.5 Entering an Occupied Section of Track

Signal Aspect	Description	Instruction to Driver
Two red lights	Danger	Stop.
No aspect (located on a main aspect)		Obey main aspect.
Two white lights	Caution	The line ahead may be occupied. Proceed cautiously towards the next stop signal, stop board or buffer stops. Be prepared to stop short of any obstruction. The associated main aspect (where provided) may be passed at danger

During a scenario your train may be scheduled to enter a platform or section of track that is already occupied by another train or rolling stock. In this situation you should stop at the red

signal protecting this section of track as normal. Once your train has stopped press the TAB key on your keyboard to request permission from the signalling centre to enter the occupied section of track. When your train movement is approved the signal will illuminate the two white lights on the position light signal if it has one.

## 9.6 Repeater Signals



A banner repeater signal indicates whether the signal ahead is displaying a proceed aspect or is at danger. Modern fibre optic banner repeating signals, as shown opposite, consist of a rectangular unlit black background displaying a white circle with a black bar.

Signal Display	Instruction to Driver
Horizontal arm	Be prepared to find the related signal at danger
Arm at an upper quadrant angle of 45°	Related signal is exhibiting a proceed aspect

Repeater signals are intended to provide a driver with advance information of a signal that may be obscured on approach. A train does not need to stop at a repeater signal, only at the related signal if it is at danger.

Splitting banner signals provide two banner signal heads combined to form a splitting banner repeating signal. These are used to indicate the aspect of a signal with a feather junction indicator. If the related junction signal is displaying an illuminated feather then the lower banner head displays an arm at an upper quadrant angle of 45°. Alternatively, if the related junction signal is not displaying an illuminated feather and is indicating a straight ahead route then the higher “main” banner head displays an arm at an upper quadrant angle of 45°.

## 10 Speed Signs

### 10.1 Permissible Speed Indicators



These signs display the permissible speed in M.P.H. applicable to the section of line beyond the sign up to the commencement of any subsequent permissible speed section.

Remember to wait for the complete length of your train to pass these signs before accelerating if the permissible line speed is increasing. If the permissible line speed is decreasing then you must reduce your speed before passing these signs.

### 10.2 Permissible Speed Warning Indicators



These signs provide advance warning of a reduction in permissible speed ahead. Permanent AWS Ramps (Automatic Warning System) are often installed in conjunction with these signs. In these cases the driver must cancel the AWS warning when triggered on approach to these signs.



## 11 Safety Systems

### 11.1 AWS (Automatic Warning System)



AWS is provided to give train drivers in-cab warnings of the approach to signals, reductions in permissible speed and temporary/emergency speed restrictions, and to apply the brakes in the event that a driver does not acknowledge cautionary warnings given by the system.

As a train approaches a signal, it passes over AWS track equipment (magnets) which are fixed to the sleepers between the running rails. The magnets

are sensed by a receiver mounted under the leading end of the train.

If the signal ahead is displaying a clear aspect (green), a bell (or an electronic ping) sounds in the driver's cab, and the AWS Sunflower indicator displays "all black". No action in respect of the AWS is required of the driver.

If the signal is displaying a caution or danger aspect (yellow, double yellow or red), a horn sounds in the driver's cab and the display shows "all black". The driver has to acknowledge the warning by pressing the "AWS Acknowledgement" push button. When the driver operates the push button, the horn is silenced and the AWS Sunflower changes to a segmented yellow and black circular display. If the driver fails to acknowledge the warning horn within a set time period, the brakes are applied automatically.

Where AWS equipment is provided on the approach to reductions in permissible speed and temporary/emergency speed restrictions, the cab equipment always operates in a manner equivalent to the approach to a signal displaying a caution or stop aspect. The driver receives a warning and has to respond to it accordingly; otherwise the brakes are applied automatically.

## 12 Credits

Dovetail Games would like to thank the following additional contributors for their input in the creation of the North London & Goblin Lines route:

Beta Testing Team

