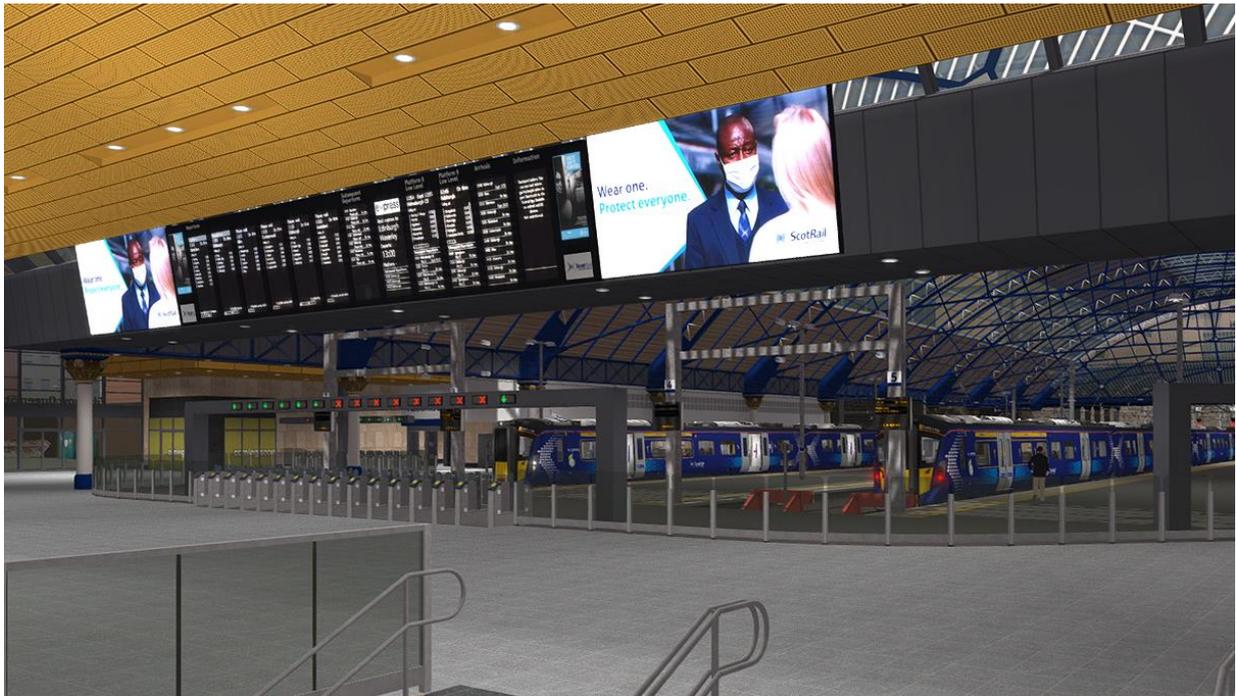


Glasgow to Dunblane and Alloa



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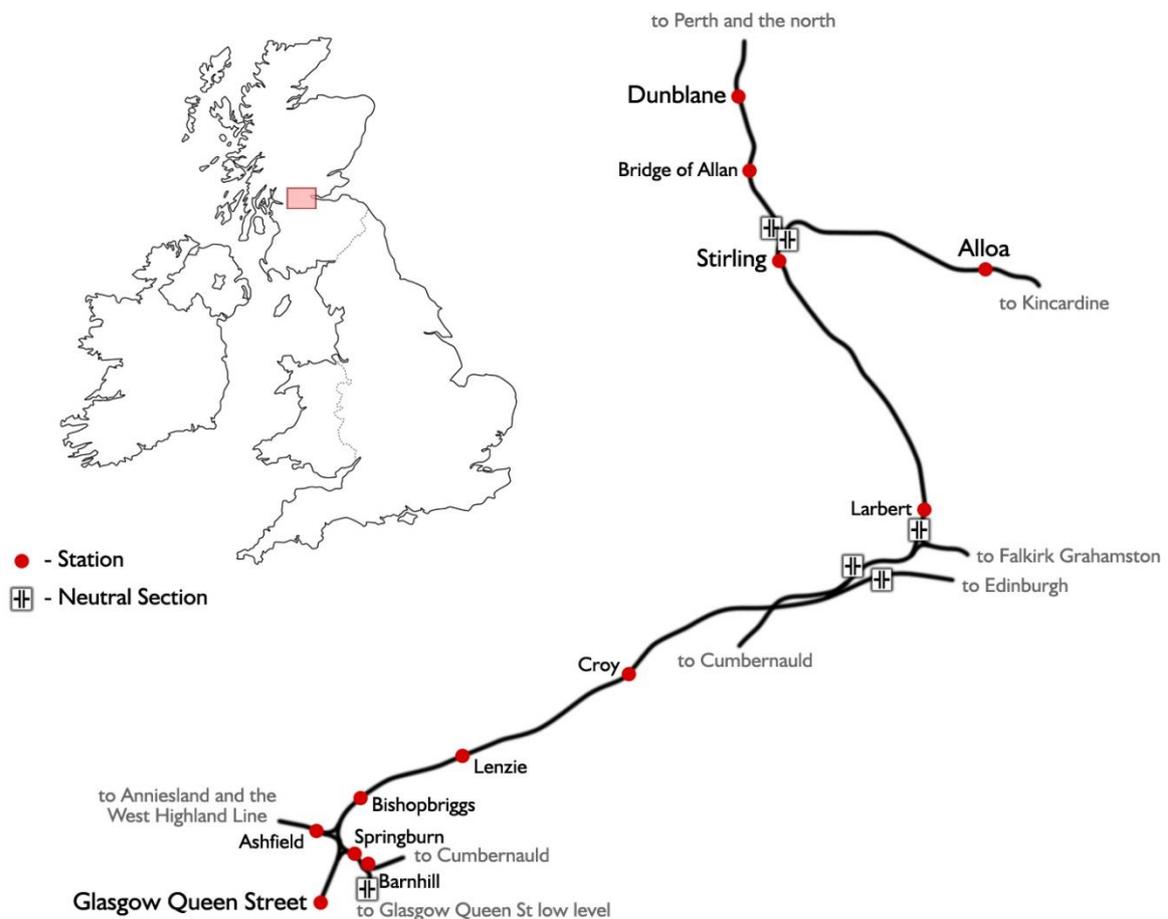
I Route Information

I.1 Overview

The first half of the route from Glasgow to Dunblane runs along the Glasgow to Edinburgh main line as far as Greenhill Upper Junction where it diverges to the left. The route then continues through Greenhill Lower Junction where the line from Cumbernauld joins, then through Carmuir to Larbert and onwards to Stirling. The line splits after Stirling to both Dunblane and Alloa where the electrification of the routes currently ends. From Dunblane the main line continues to Gleneagles and Perth for services to the north of Scotland.

Electrification of the 35 mile route from Glasgow Queen Street high level station to Dunblane was completed in 2019. The 7 mile branch line from Stirling to Alloa was also electrified as part of the Network Rail improvement programme (EGIP). Class 385 Hitachi electric multiple units now provide commuter services to both Edinburgh and Glasgow.

I.2 Route Map



1.3 Route Features

- 35 mile electrified route between Glasgow Queen Street high level station and Dunblane
- 7 mile electrified branch line from Stirling to Alloa
- 12 highly detailed stations including off-route locations at Springburn, Barnhill and Ashfield
- Over 70 uniquely modelled bridges
- New “Series 2” overhead catenary system featuring accurate mast placement and prototypical overlap locations
- Functional catenary neutral sections
- New high speed signal approach control with aspect release and approach from red aspect with location based release function
- Dynamic Passenger Information Systems (PIS) with platform departure screens featuring destination, passenger stops and late running information
- Dynamic platform and on-train audio announcements confirming late running
- Includes Class 385 Electric Multiple Unit in 3 car and 4 car formations



Forthside footbridge at Stirling station

2 Class 385 Electric Multiple Unit

2.1 Train History

The Class 385 is an electric multiple unit built by Hitachi Rail for ScotRail. A total of 70 units have been built, divided into 46 x three car and 24 x four car sets. The trains were built for operation of services on newly electrified lines in the central belt of Scotland. Ordered by ScotRail during April 2015, the first trains entered service during late July 2018.

Based on the design of the Hitachi A-train, they are part of the Hitachi AT200 product range and this was the first order for these aluminium units. The trains are designed for a maximum speed of 100 mph (160 km/h). Sets are formed of two powered driving cars and one or two unpowered intermediate cars. Four-carriage trainsets feature four powered bogies per set and the three-carriage trainsets have three powered bogies per set. Due to a requirement to support at-seat catering for all passengers, it was necessary to include a front-end corridor connection.



The included Class 385 models feature:

- 6 vehicles including DMCI, TPSI, TSI, DMS1, DMS2 and DTMS1
- Highly detailed driver cabin with functional driver only doors
- Moveable cabin walls to isolate cabins after coupling units together
- Operational Train Management System (TMS) with the following features:
 - Train overview screen with dynamic graphics and car set number information
 - Selectable low speed mode for coupling and depot movements
 - Saloon lighting control
 - Destination selection for control of coach displays and audio announcements
 - Driver Advisory System providing current permissible line speed, advance line speeds ahead with estimated time of encounter and announcements of low speed, emergency brake and station approach
- Audio cabin system prompts for AWS and TPWS self-test and DRA use
- Functional TPWS cabin panel with accurate emergency routines for “fail to acknowledge AWS”, TPWS Overspeed and SPAD situations (also with audio voice feedback)

2.2 Design & Specification

TOPS Number Range	Class 385001 – 385046 and 385101 – 385 124
Weight	122 tonnes (3 car) and 158 tonnes (4 car)
Length	70m (3 car) and 93m (4 car)
Traction Motors	250 kW (335 hp) each
Electric System	25 kV 50 Hz AC overhead
Max Speed	100 mph (160 km/h)
Safety Systems	AWS and TPWS
Braking	Electro-pneumatic (disc)



2.3 Cabin Controls - Refer to the illustrations on pages 7 and 8

1	Master Key	19	Train Doors Locked Indicator Lamp
2	Reverser	20	Wheelslip Indicator Lamp and Sanding Button
3	CPBC Lever (Combined Power Brake Controller)	21	Emergency Brake Plunger
4	AWS Acknowledge Button	22	Signal Bell
5	AWS Sunflower Display	23	Train Doors Open Indicator Lamps
6	DRA (Driver's Reminder Appliance)	24	Brake Cylinder Pressure Needle
7	Warning Horn	25	Main Reservoir Pressure Needle
8	Speedometer (mph)	26	Main Cabin Lights (on/off)
9	Main Windscreen Wiper Switch	27	Cabin Doors Down Lighting (toggle)
10	TMS Monitor (Train Management System)	28	Pantograph Raise (push and hold)
11	TPWS – AWS Fail to Cancel Lamp	29	Pantograph Lower (push and hold)
12	TPWS – Overspeed Lamp and Button	30	Vacuum Circuit Breaker Open Lamp
13	TPWS – SPAD Lamp and Button	31	Driver's Reading Lamp Switch
14	TPWS – Brake Release Button	32	Driver's Door Open Switch
15	Train Fault Lamp and Acknowledge Button	33	Driver's Door Close Switch
16	Instrument Lighting Dimmer Switch	34	Right Hand Cabin Reading Light Switch
17	Exterior Lights Control Switch	35	Right Hand Windscreen Wiper Switch
18	Exterior Lights Proving Panel		





2.4 Keyboard Controls

Control	Key	Control	Key
Master Key	Z (toggle)	DRA	Y
CPBC Lever	A D	Train Fault Acknowledge	K
Reverser	W S	Pantograph	P
Exterior Lights	H shift+H	AWS Reset	Q
TMS Home Button	E	Sander	X
TMS DAS Button	J	Bell	B
Train Destination	C shift+C	Wipers	V (toggle)
Main Cabin Lights	L (toggle)	Wipers Right	Shift+V (toggle)
Saloon Lighting	F (toggle)	Emergency Brake Plunger	Backspace
Instrument Lighting	I shift+I	Horn High Tone	Spacebar
TPWS Overspeed Button	O	Horn Low Tone	Shift+Spacebar
TPWS SPAD Button	M	Handbrake	/
TPWS Brake Release	R	Configure Cabin Walls	F8 (toggle)
Low Speed Mode	N		

2.5 TMS

The TMS (Train Management System) monitor activates when the master key is inserted. It has three main screens with the following functionality:



TMS Home Screen

The current configuration of the train is displayed here by the consist illustration and the car number confirms the vehicle count in the train. Saloon lighting can be turned on and off by clicking on the monitor buttons. Low speed mode can also be toggled on and off for use when performing coupling operations and travelling through the train washer at depots. When low speed mode is active it limits the train speed to 5 km/h (3 mph) and is shown by a white icon on the lower left of the monitor.

Driver Advisory Screen

This screen provides information to the driver about the line ahead and the current train status. Station stops are announced on-screen and emergency stop activations are also confirmed here. At speeds above 28 mph the current permissible speed limit is displayed along with any upcoming speed limit changes. The estimated time to the next speed limit is displayed in minutes or seconds. At lower speeds this advice is unavailable and this is confirmed on-screen.

TMS Journey Screen

From here you can select a train destination by using the up, down and confirm monitor buttons. The destination that is currently being displayed throughout the train is confirmed in the top left of the TMS screen.

2.6 Master Key

To activate the desk controls you must first insert the master key. To insert or remove the master key, the reverser switch must be in the "OFF" position, otherwise the key is locked in place. You must ALWAYS shut down the driver desk controls and remove the master key before moving to another driver cabin on the train.

2.7 Reverser Switch

The reverser switch has four positions. It selects the direction of travel and also de-activates the driver desk when in the "OFF" position. "OFF" should be selected before leaving the cabin. A self-test routine is activated the first time the reverser switch is moved after inserting the master key. You must then acknowledge this by pressing the AWS button.

2.8 Automatic Warning System (AWS)

The AWS acknowledge button must be pressed immediately when an AWS warning alert is sounded. If this is not pressed within a few seconds then the emergency brakes are automatically triggered. An AWS alert is triggered by a track magnet on approach to signals displaying a yellow, double yellow or red aspect. An alert is also triggered on approach to advance permissible speed warning signs. After acknowledging an alert the AWS sunflower display shows a yellow warning pattern to remind the driver that they are proceeding under caution, this clears again after approaching a signal at green.

2.9 DRA (Driver's Reminder Appliance)

The DRA can be manually enabled by pushing the button in. When enabled it glows red and prevents traction power from being applied. It can be manually disabled by pressing it once more.

The DRA should be enabled when:

- the train is stopped at a red signal.
- the train is stopped after passing a signal displaying a single yellow (caution) aspect.
- leaving the driver cabin.

2.10 Door Interlock

The Train Doors Locked "Interlock" lamp in the cabin illuminates with a blue light to indicate that all passenger doors are currently closed and locked. If any door is open then this blue interlock light is extinguished and the train brake is automatically held on.

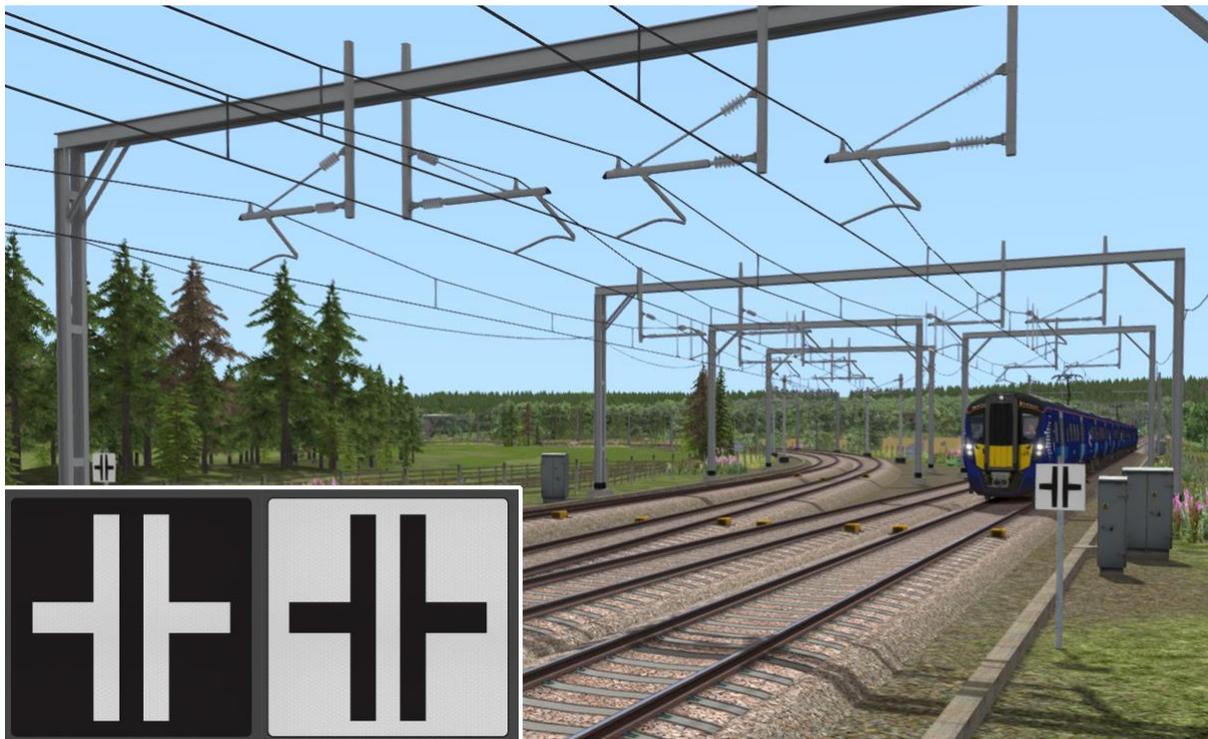
2.11 Train Fault Acknowledge Button



The train fault acknowledge button will illuminate and a claxon will sound when a train fault occurs. For example this alarm is triggered when either the CPBC lever is pushed fully forward to the emergency notch or when one of the emergency stop plungers is pushed. To cancel and reset the alarm push the train fault acknowledge button.

2.12 Neutral Sections

Roughly every 15 miles it is necessary to switch the electric supply to a different phase of the National Grid, in order to balance the load of the railway network across the three electrical phases. To avoid the possibility of bridging two phases, short Neutral Sections are used to separate electrified sections. Older AC electric locomotives can require special driving techniques on approach to neutral sections, however modern multiple units automate the transition through these sections.



Neutral sections are marked for drivers with signs as shown above. A white-on-black sign marks the approach to the neutral section (approx. 1 km), giving the driver time to prepare the train to pass it. A black-on-white sign marks the beginning of the neutral section itself.

Track magnets automatically open and close the train's main circuit breaker either side of the neutral section. Entering a neutral section under power is permitted but discouraged. Power will be instantly cut off, jolting your passengers. Do not stop your train within a neutral section.

Neutral section locations are also marked on the route map on page 3.

2.13 Passenger Information System (PIS)

The driver can cycle through available PIS destination displays using the TMS monitor in the train cabin. When active these destinations are shown on the train displays and associated on-board audio announcements are played at stations.

On station platforms the PIS display boards show the train destination, calling points and whether the service is on time or how many minutes late the train is running. Audio announcements also confirm the status of the service for passengers.

This system has been developed by Thomson Interactive for this product and full PIS system technical information is provided at the end of this document for scenario writers.



Passenger information system in operation at Dunblane station

3 Signals

3.1 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.

3.2 Theatre Type Signals

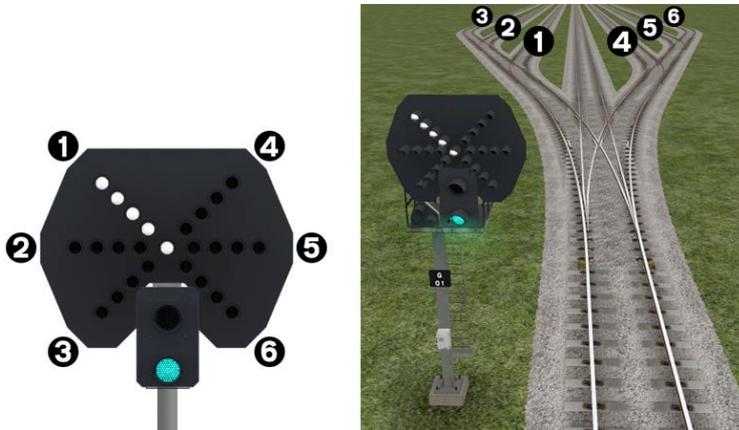


A Theatre alphanumeric route indicator indicates the route to be taken using numbers or letters (or a combination of numbers and letters).

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

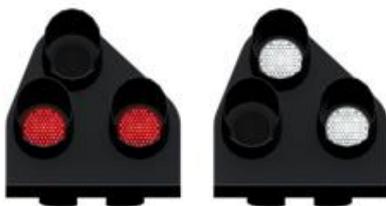
3.3 Feather Type Signals

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

3.4 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.

Signal Aspect	Description	Instruction to Driver
Two red lights	Danger	Stop.
No aspect (where associated with 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

3.5 Repeater Signals and “OFF” Indicators



Standard banner repeater signals indicate whether the signal ahead is displaying a proceed aspect or is at danger. Modern fibre optic banner repeating signals, as shown above, consist of a rectangular unlit black background displaying a white circle with a black bar. In certain situations they can also illuminate in green to show that the signal ahead is also displaying a green (clear) aspect.

Signal Display	Instruction to Driver
Horizontal arm	Be prepared to find the next signal at danger
White arm at an upper quadrant angle of 45°	Next signal is exhibiting a proceed aspect
Green arm at an upper quadrant angle of 45°	Next signal is exhibiting a green (clear) 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.



Another type of repeater is an “OFF” platform indicator.

Signal OFF indicators are provided to assist train dispatch staff. An OFF indicator displays the illuminated word ‘OFF’ only when the signal to which it applies is displaying a proceed aspect. No indication is shown when the signal is at danger.

4 Stopping Points



Dynamic stopping points are provided at some station stops and during reversing maneuvers. These trackside signs designate the point where you should stop your train based on the number of vehicles in your consist. The correct stopping point is also indicated on the F4 HUD using a red arrow as shown above.

A maximum of 25 extra “Accuracy Points” can be scored by stopping exactly at the correct position. This bonus reduces the further away you stop from the target and you can even lose points if you stop completely in the wrong place.

If you are not directed to stop at a specific point on a platform then you can stop anywhere as long as the full length of your train is in the platform and no accuracy points will be added or deducted.

5 Speed Signs



5.1 Permissible Speed Indicators

These signs display the permissible speed in miles per hour 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.

If there is an arrow provided in conjunction with the main sign then the permissible speed only applies to the diverting line indicated by the arrow.

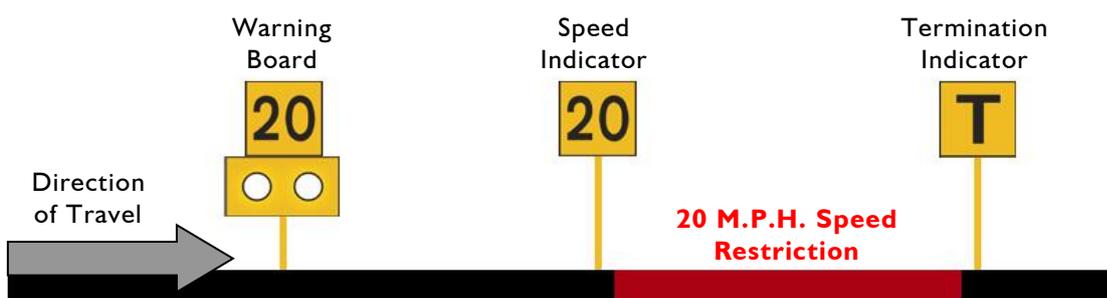


5.2 Permissible Speed Warning Indicators

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

If there is an arrow provided in conjunction with the sign then the permissible speed warning only applies to the diverting line indicated by the arrow.

5.3 Temporary Speed Restrictions



Temporary speed restrictions are normally put in place when engineering works and track maintenance is taking place. These temporary speed restrictions are advised in the drivers' weekly operating notice and in this simulation are advised in your scenario briefing. The normal sequence of trackside signage is shown above. A temporary AWS track magnet is used prior to the warning board.

However, when line speeds need to be reduced at short notice they are referred to as an "Emergency Speed Restriction" and are additionally protected by providing an "Emergency Indicator" prior to the temporary speed restriction warning board. The emergency indicator has two synchronous flashing white lights.

Temporary Sign	Description	Instruction to Driver
	Emergency Indicator	This sign warns that there is a warning board ahead for an emergency speed restriction that has not been previously advised.
	Warning Board	This sign provides warning of a restriction speed indicator ahead.
	Repeater Warning Board	This sign provides a reminder of a restriction speed indicator ahead. It is normally used where a driver has set off from a platform after passing a warning board
	Restriction Directional Arrow	This sign is always associated with either a warning board, a speed indicator or a spate indicator.
	Restriction Speed Indicator	This sign indicates the start of a temporary speed restriction with the value shown in M.P.H. You must reduce your speed before passing these signs.
	Restriction Termination Indicator	This sign identifies the end of a temporary speed restriction. Remember to wait for the complete length of your train to pass this sign before accelerating back to normal line speed.
	Restriction Spate Indicator	This sign identifies that the temporary speed restriction, at that location as previously advised, is now not in force.

6 Safety Systems

6.1 AWS (Automatic Warning System)



AWS is provided to give train drivers in-cab warnings on 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.

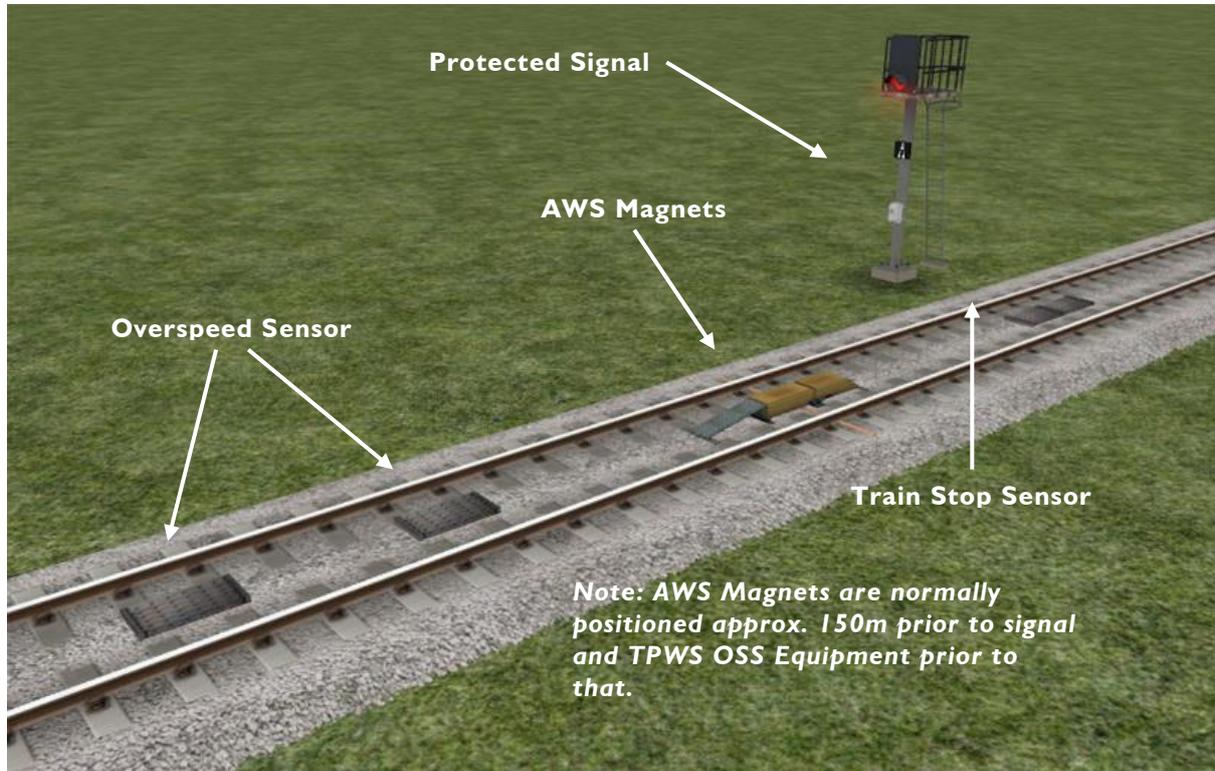
As a train approaches a signal or track sign, it passes over AWS track equipment (magnets) which are fixed to the sleepers between the running rails. The magnets are sensed by a receiver mounted under the leading end of the train.

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 emergency brakes are applied automatically.

Where permanent warning AWS equipment is provided on the approach to reductions in permissible speed, fixed warning boards and 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 emergency brakes are applied automatically.

6.2 TPWS (Train Protection and Warning System) – General Overview



TPWS (Train Protection & Warning System) provides additional protection for trains approaching a signal at danger and buffer stops. TPWS track equipment is placed adjacent to, and on approach to signals that pose a higher risk if passed at danger. If a train passes the signal at danger then the TPWS "Train Stop" sensor at a signal will cause the train emergency brakes to be applied automatically. At the "Overspeed" sensor an emergency brake application takes place if a train approaches the signal at danger too quickly (usually above 20mph). When approaching buffer stops the overspeed sensor equipment is set to activate at a speed higher than 12mph.



This cabin panel alerts the driver to the following emergency brake situations:

- 1) AWS Fail to Cancel - The driver has failed to press the AWS Acknowledgement button within the allowed time.
- 2) Overspeed - The train has passed over a TPWS speed trap too quickly on approach to a signal at danger.
- 3) SPAD - The train has passed a signal at danger without authority.

6.3 Recovering from an Emergency Brake Application

If the emergency brakes are triggered then the recovery process is as follows:

- 1) Acknowledge the brake application by pressing the flashing TPWS Overspeed button, TPWS SPAD button or the AWS Acknowledge button if you failed to cancel in the allowed time.
- 2) Return the CPBC lever to the step 2 brake position.
- 3) Once the train comes to a stop you will then need to wait for 60 seconds before you can press the TPWS Brake Release button to reset the system.

The key thing to remember is that when you are approaching a signal at danger you must be very careful about your train speed.

Red signals - keep it under 20 mph

Buffer stops - keep it under 12 mph

7 Scenario Creation

7.1 Train Formations

The Class 385 was built in 3 car and 4 car variants. The vehicle number tables below will help you to number your custom consists correctly:

3 Car Sets			
Set Number Class 385/0	Vehicle Number DMS2	Vehicle Number TPSI	Vehicle Number DTMSI
385 001	441 001	442 001	444 001
385 002	441 002	442 002	444 002
385 003	441 003	442 003	444 003
385 004	441 004	442 004	444 004
385 005	441 005	442 005	444 005
385 006	441 006	442 006	444 006
385 007	441 007	442 007	444 007
385 008	441 008	442 008	444 008
385 009	441 009	442 009	444 009
385 010	441 010	442 010	444 010
385 011	441 011	442 011	444 011
385 012	441 012	442 012	444 012
385 013	441 013	442 013	444 013
385 014	441 014	442 014	444 014
385 015	441 015	442 015	444 015
385 016	441 016	442 016	444 016
385 017	441 017	442 017	444 017
385 018	441 018	442 018	444 018
385 019	441 019	442 019	444 019
385 020	441 020	442 020	444 020
385 021	441 021	442 021	444 021
385 022	441 022	442 022	444 022
385 023	441 023	442 023	444 023
385 024	441 024	442 024	444 024
385 025	441 025	442 025	444 025
385 026	441 026	442 026	444 026
385 027	441 027	442 027	444 027
385 028	441 028	442 028	444 028
385 029	441 029	442 029	444 029
385 030	441 030	442 030	444 030
385 031	441 031	442 031	444 031
385 032	441 032	442 032	444 032
385 033	441 033	442 033	444 033
385 034	441 034	442 034	444 034
385 035	441 035	442 035	444 035
385 036	441 036	442 036	444 036
385 037	441 037	442 037	444 037
385 038	441 038	442 038	444 038
385 039	441 039	442 039	444 039
385 040	441 040	442 040	444 040
385 041	441 041	442 041	444 041
385 042	441 042	442 042	444 042
385 043	441 043	442 043	444 043

385 044	441 044	442 044	444 044
385 045	441 045	442 045	444 045
385 046	441 046	442 046	444 046

4 Car Sets				
Set Number Class 385/I	Vehicle Number DMCI	Vehicle Number TPSI	Vehicle Number TSI	Vehicle Number DMSI
385 101	441 101	442 101	443 101	444 101
385 102	441 102	442 102	443 102	444 102
385 103	441 103	442 103	443 103	444 103
385 104	441 104	442 104	443 104	444 104
385 105	441 105	442 105	443 105	444 105
385 106	441 106	442 106	443 106	444 106
385 107	441 107	442 107	443 107	444 107
385 108	441 108	442 108	443 108	444 108
385 109	441 109	442 109	443 109	444 109
385 110	441 110	442 110	443 110	444 110
385 111	441 111	442 111	443 111	444 111
385 112	441 112	442 112	443 112	444 112
385 113	441 113	442 113	443 113	444 113
385 114	441 114	442 114	443 114	444 114
385 115	441 115	442 115	443 115	444 115
385 116	441 116	442 116	443 116	444 116
385 117	441 117	442 117	443 117	444 117
385 118	441 118	442 118	443 118	444 118
385 119	441 119	442 119	443 119	444 119
385 120	441 120	442 120	443 120	444 120
385 121	441 121	442 121	443 121	444 121
385 122	441 122	442 122	443 122	444 122
385 123	441 123	442 123	443 123	444 123
385 124	441 124	442 124	443 124	444 124

When numbering the 4 driving vehicles in-game (DMCI, DMSI, DMS2 and DTMSI) it is essential to use the following format:

SSSVVVVV where SSS is the last 3 digits of the set number and VVVVVV is the vehicle number.

For the TSI vehicle simply use the 6 digit vehicle number. Then for the TPSI vehicle use the 6 digit vehicle number prefixed by a single uppercase destination activation letter. The valid activation letters include the following:

A	Not in Service	K	Glasgow Queen St
B	Airdrie	L	Helensburgh
C	Alloa	M	Lanark
D	Balloch	N	Larbert
E	Cumbernauld	O	Lenzie
F	Dunblane	P	Milngavie
G	Edinburgh	Q	Motherwell
H	Falkirk Grahamston	R	Springburn
I	Glasgow Airport	S	Stirling
J	Glasgow Central	T	Special

If your train formation uses multiple Class 385 sets coupled together then ensure all TSI vehicles use the same destination activation letter.

In the example below this 4 car unit number 385 118 is configured to display “Alloa” as the destination when the scenario begins. The system works for both player and AI trains. If AI trains have been set to display “Not in Service” then the passengers are removed automatically from the vehicles.

DMCI	TPSI	TSI	DMSI
118441118	C442118	443118	118444118



7.2 Onboard PIS Train Announcements

On approach to station stops during scenarios you can trigger onboard audio announcements for the Class 385 by placing special track linked triggers on the track prior to each station. Make sure you place these triggers and configure them in the Scenario Editor and NOT in the Route Editor! You can confirm that you are currently in the Scenario Editor by checking that you see the vehicle icons on the left hand menu.

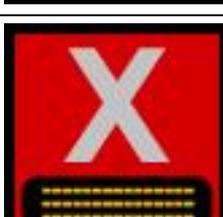


Once the "PIS Trigger Onboard" asset has been added and track linked you then need to enter one of the following PIS codes to select the announcement you require (they are case sensitive).

obGLQTERM	Terminating at Glasgow Queen Street
obBBG	Approaching Bishopbriggs
obLNZ	Approaching Lenzie
obLNZTERM	Terminating at Lenzie
obCRO	Approaching Croy
obLBT	Approaching Larbert
obLBTTERM	Terminating at Larbert
obSTG	Approaching Stirling
obSTGTERM	Terminating at Stirling
obBEA	Approaching Bridge of Allan
obDBLTERM	Terminating at Dunblane
obALOTERM	Terminating at Alloa
obSPR	Approaching Springburn

7.3 PIS Platform Departure Displays

The system we have designed to control departure displays and platform audio requires careful placement of additional triggers at very specific locations on the route. It is important to understand that some required triggers are already placed in the route. These should not be moved or changed in any way otherwise the system will fail to operate as intended. These required route triggers consist of three types and are explained below.

	<p>PIS Trigger Approach</p> <p>Used to message the arrival of a new train to the PIS platform displays ahead. Must be used in conjunction with a PIS Trigger Filter. This also functions as a PIS Trigger End when the train travels over it in the opposite direction.</p>
	<p>PIS Trigger Filter</p> <p>Used in conjunction with the other two main triggers to prevent unwanted signal message cascades out with the station area.</p>
	<p>PIS Trigger End</p> <p>Used to reset the PIS platform displays after the train has departed from the station. Must be used in conjunction with a PIS Trigger Filter.</p>

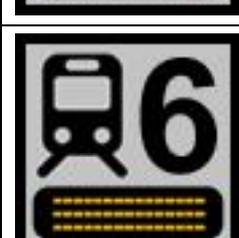


Main PIS route triggers south of Croy station

When main triggers are installed in pairs the track links of the Trigger Approach and Trigger End should point in the direction of travel. The paired Trigger Filter links must then point in the opposite direction.

If the station platform is bi-directional then a pair of Trigger Approach and Trigger Filter assets need to be installed at both ends of the station platform and a Trigger End is not required.

These route triggers then provide the location for you to install stacked train triggers in your scenarios using the Scenario Editor. These include the following six options:

	<p>PIS Trigger 1st Train</p> <p>Activated only when the first train in the scenario travels over it. Needs to be configured as shown on the next page.</p>
	<p>PIS Trigger 2nd Train</p> <p>Activated only when the second train in the scenario travels over it. Needs to be configured as shown on the next page.</p>
	<p>PIS Trigger 3rd Train</p> <p>Activated only when the third train in the scenario travels over it. Needs to be configured as shown on the next page.</p>
	<p>PIS Trigger 4th Train</p> <p>Activated only when the fourth train in the scenario travels over it. Needs to be configured as shown on the next page.</p>
	<p>PIS Trigger 5th Train</p> <p>Activated only when the fifth train in the scenario travels over it. Needs to be configured as shown on the next page.</p>
	<p>PIS Trigger 6th Train</p> <p>Activated only when the sixth train in the scenario travels over it. Needs to be configured as shown on the next page.</p>

These train triggers need to be stacked after the route approach trigger pair ensuring that the track links match the direction of train travel as shown below.



You do not need to use these train triggers consecutively, they can be used either individually or in groups. Each train trigger also needs to be configured by entering a text string in the asset dialog box (in the same way as the “PIS Trigger Onboard” asset has been) as described on page 25. The structure of this text string needs to be carefully followed as specified below.

CTTTTdddddddddddddddd

- C** - a single case sensitive character for the station stop list as detailed below.
- TTTT** - the scheduled departure time from the station with the departure information screen.
- dddddddddddddddd** - text for the train destination up to 18 characters.

It is critical that destination text is entered exactly as shown otherwise audio announcements on the platform will not operate. They are also case sensitive. The destinations that include audio are:

Glasgow Queen St	Inverness	Cumbernauld
Dunblane	Milngavie	London Kings Cross
Alloa	Falkirk Grahamston	Anniesland
Stirling	Helensburgh	Springburn
Edinburgh	Balloch	Lenzie
Dundee	Larbert	Terminates Here
Aberdeen	Perth	

Train Simulator Classic – Glasgow to Dunblane and Alloa

Valid station stop list characters are:

a	Calling at:Lenzie, Croy, Larbert, Stirling & Bridge of Allan	q	Calling at: All Stations <i>* blank *</i>
b	Calling at:Lenzie, Croy, Larbert, & Stirling	r	Calling at: Stirling, Larbert, Croy, Lenzie & Bishopbriggs
c	Calling at:Lenzie, Croy & Larbert	s	Calling at: Stirling & Glasgow Queen Street only
d	Calling at:Croy, Larbert, Stirling & Bridge of Allan	t	Calling at:Larbert, Croy, Lenzie & Bishopbriggs
e	Calling at:Croy, Larbert & Stirling	u	Calling at:Larbert, Camelon, Falkirk Grahamston & Haymarket
f	Calling at:Croy & Larbert <i>* blank *</i>	v	Calling at:Croy, Lenzie & Bishopbriggs
g	Calling at:Falkirk High, Polmont, Linlithgow & Haymarket	w	Calling at:Camelon, Falkirk Grahamston & Haymarket
h	Calling at:Falkirk High, Polmont, Edinburgh Park & Haymarket	x	Calling at: Lenzie & Bishopbriggs <i>* blank *</i>
i	Calling at:Stirling & Bridge of Allan	y	Calling at: Bishopbriggs only <i>* blank *</i>
j	Calling at:Stirling only <i>* blank *</i>	z	Calling at: Glasgow Queen Street only
k	Calling at:Dunblane, Gleneagles, Perth & Invergowrie	A	Calling at: All stations via Cumbernauld
l	Calling at:Perth, Dundee, Arbroath & Montrose	B	Calling at: All stations via Yoker
m	Calling at:Perth, Dunkeld, Pitlochry, Kingussie & Aviemore	C	Calling at: All stations via Singer
n	Calling at:Bridge of Allan only <i>* blank *</i>	D	<i>* blank *</i> Please do not board this train
o	Calling at:Dunblane only <i>* blank *</i>	E	Calling at: Lenzie & Croy <i>* blank *</i>
p	Calling at:Alloa only <i>* blank *</i>	F	Calling at: Croy <i>* blank *</i>

G	Calling at: Larbert only <i>* blank *</i>
H	Calling at: Lenzie only <i>* blank *</i>
I	Calling at: Larbert, Stirling & Bridge of Allan
J	Calling at: Larbert & Stirling <i>* blank *</i>
	Blank

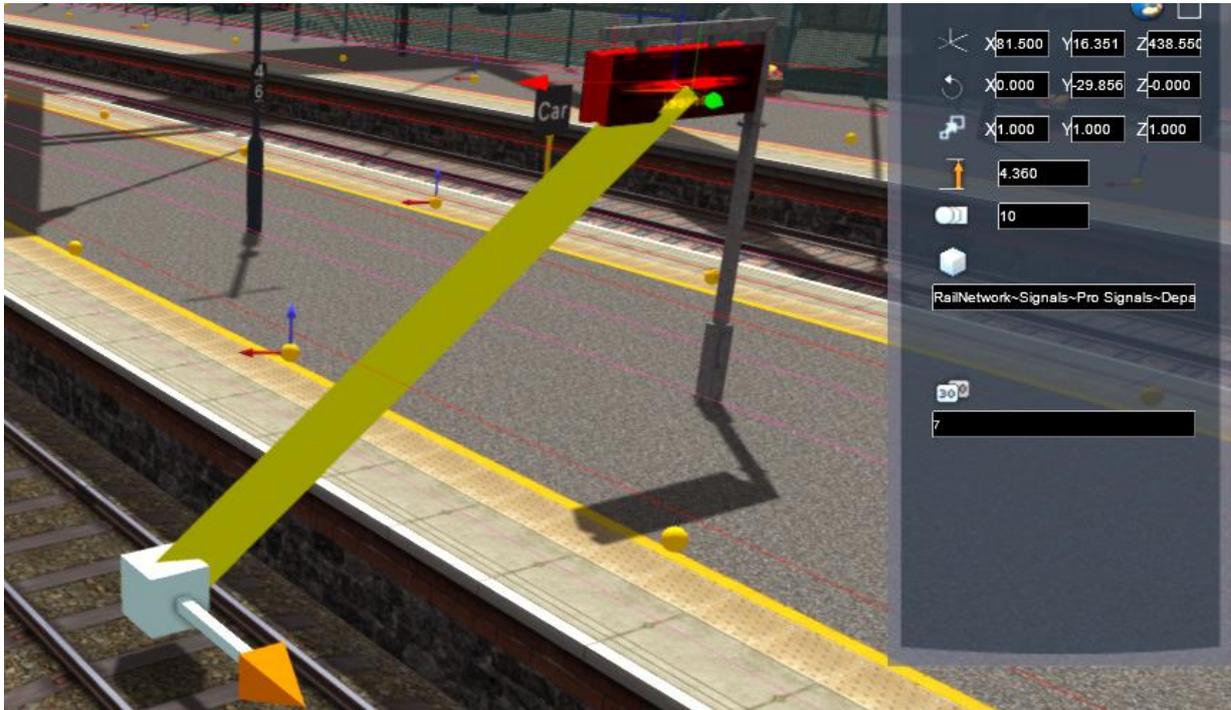
There is also a “PIS Trigger Auto” asset that can be used within a station platform zone to initialise the departure information screen when starting a scenario. This uses the same text string format as the train triggers.

In the example illustration shown on page 28 the string entered was - **E1121Larbert**

This configures the three lines of the departure information screen ahead to display the following text:

1121 Larbert
Calling at: Lenzie & Croy
** blank **

8 Route Creation



8.1 PIS Departure Display Installation

Installation of the actual departure display assets is straightforward. The assets are listed in the track infrastructure section of the route editor. The single track link should be placed adjacent to the display and the link can point in either direction as these assets operate in both directions of train travel. The platform number must be entered in the asset dialog box for the display by double clicking the placed asset. This must be done to enable the correct audio announcements (platform numbers 1 to 10 are supported). If multiple displays are required on a single platform then the first display can use either the standard, “Mini” or “No Post” version. Any additional displays must then be of the “Slave” type to avoid multiple audio playing simultaneously.

8.2 Development Notes

If you do create your own route using these new passenger information system assets then there are a few important things to remember. These new assets only operate correctly when installed with the signal assets from this same product. You cannot mix signals from other products as our messaging scripts have been updated to enable this new functionality.

Quick Drive scenarios are also catered for as the included “PIS Trigger Quick Drive” asset works the same as a normal train trigger except the scheduled departure time is dynamically updated based on the player's time choice. When entering the text string for this asset it is best to use 0000 as the departure time.

We hope you enjoy this new functionality in Train Simulator Classic and look forward to seeing some player created scenarios.

9 Content Creators - Terms and Conditions

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9.3 Workshop Scenarios

We encourage the non-commercial creation of scenarios and information has been provided in this document to assist that process.

10 Acknowledgements

We would like to thank our beta testers and the Dovetail Third Party team for their help and assistance.

- end -