



# Western Lines of Scotland



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## 1 Route Information

### 1.1 History

Western Lines of Scotland features a collection of railway lines representing the journey from Carlisle via Dumfries to Stranraer in the early 1960s, just before the Beeching axe when the majority of the lines were closed or cut back.

Carlisle Station was originally built in 1847 and then extended around 1875 upon the arrival of the Midland Railway.

Dumfries station was opened in 1848 by the Glasgow, Dumfries and Carlisle Railway where it was originally a terminus. Around 1850, two years later, the line was extended to Kilmarnock and Glasgow to the north and then, between 1859 and 1861, Dumfries was to become the junction for the Castle Douglas and Dumfries railway.

The Castle Douglas and Dumfries Railway was incorporated on 21st July 1856, with the railway first opened on 7th November 1859. It was later, in 1861, that the Portpatrick Railway completed the connection from Castle Douglas to Portpatrick and Stranraer.

The Glasgow, Dumfries and Carlisle Railway amalgamated with the Glasgow, Paisley, Kilmarnock and Ayr Railway to form the Glasgow and South Western Railway in 1850, and the Castle Douglas and Dumfries Railway was acquired by the Glasgow and South Western Railway on 1 August 1865.

The Caledonian Railway gained running rights over the line between Dumfries and Castle Douglas allowing it to run Irish boat trains from Carlisle to Stranraer without having to go via Ayrshire.

In 1923, the Glasgow and South Western Railway, the Caledonian Railway and the Portpatrick and Wigtownshire Joint Railway became part of the London, Midland and Scottish Railway at the Grouping. When the railways were nationalised in 1948, the section of the route between Carlisle and Gretna junction became part of the London Midland Region of British Railways and the remainder of the route became part of the Scottish Region.

The viaduct crossing the Little Water of Fleet was destroyed in an Army training exercise shortly after the line was closed in 1965.

Stranraer Harbour, situated on the shores of Loch Ryan, was opened on 1st October 1862 by the Portpatrick Railway, and remained the primary port for Scottish ferries to Ireland for the next 150 years.

### 1.2 The Route

The route combines the old Caledonian Railway from Carlisle up to Gretna, and then branches off to join the Glasgow, Dumfries and Carlisle Railway towards Dumfries. At Dumfries the line branches again and continues along the Castle Douglas and Dumfries Railway towards Castle Douglas. Once the line reaches Castle Douglas, the Portpatrick and

Wigtownshire Railway continues the journey to Stranraer. Additionally, from Castle Douglas there is a branch to the south-west to Kirkcudbright.

There are numerous yards and sheds along the route including Carlisle Kingmoor and Dumfries, together with a large shed and yard at Stranraer.

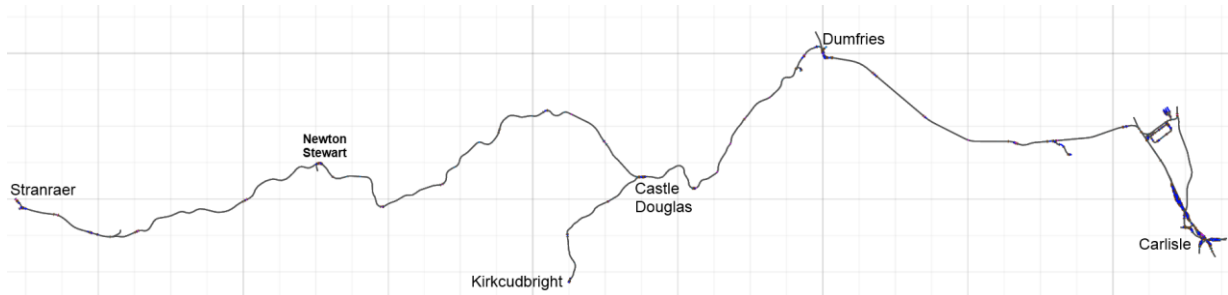


Figure 1. Overall Route Map

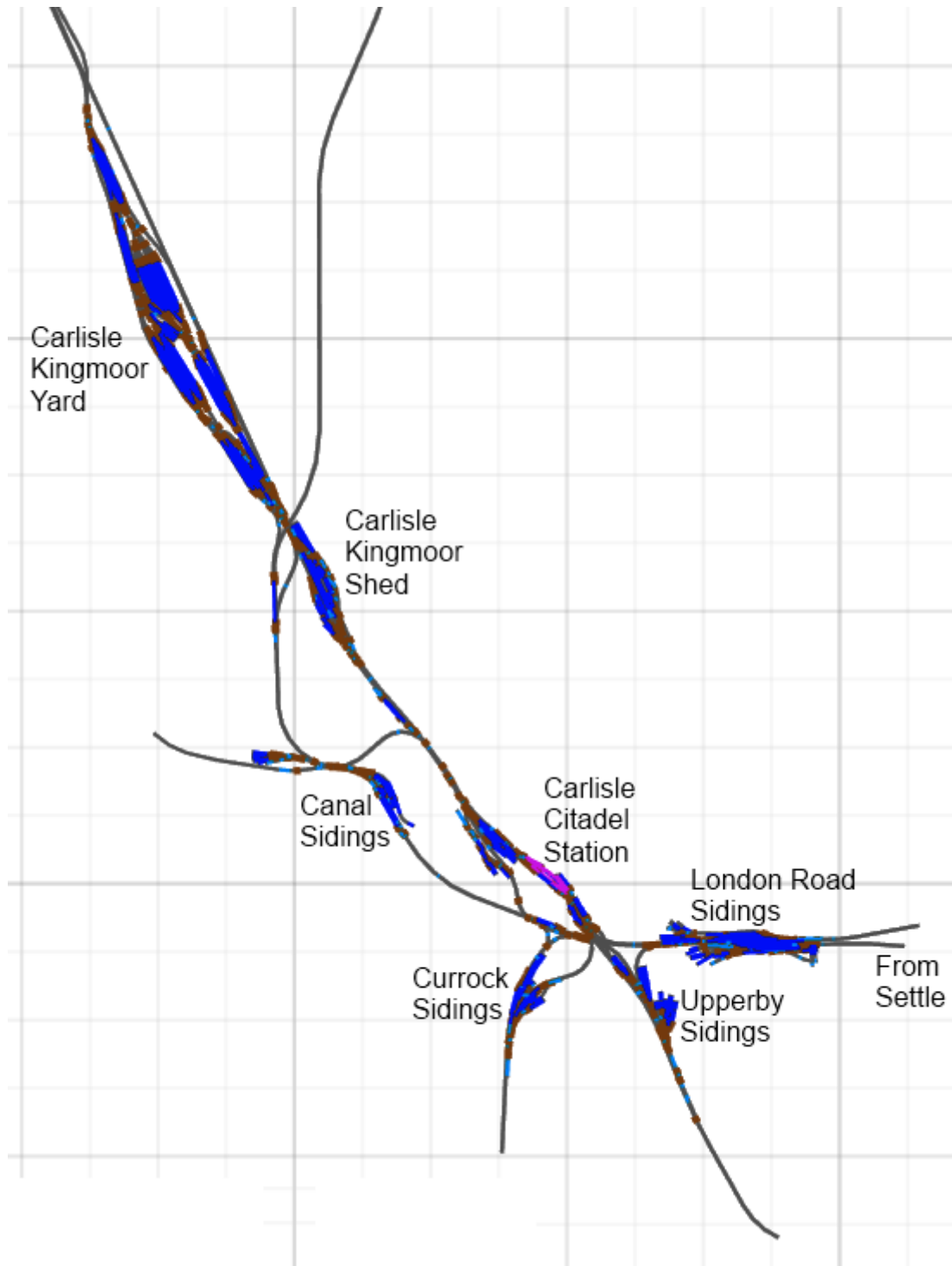


Figure 2: Carlisle Area

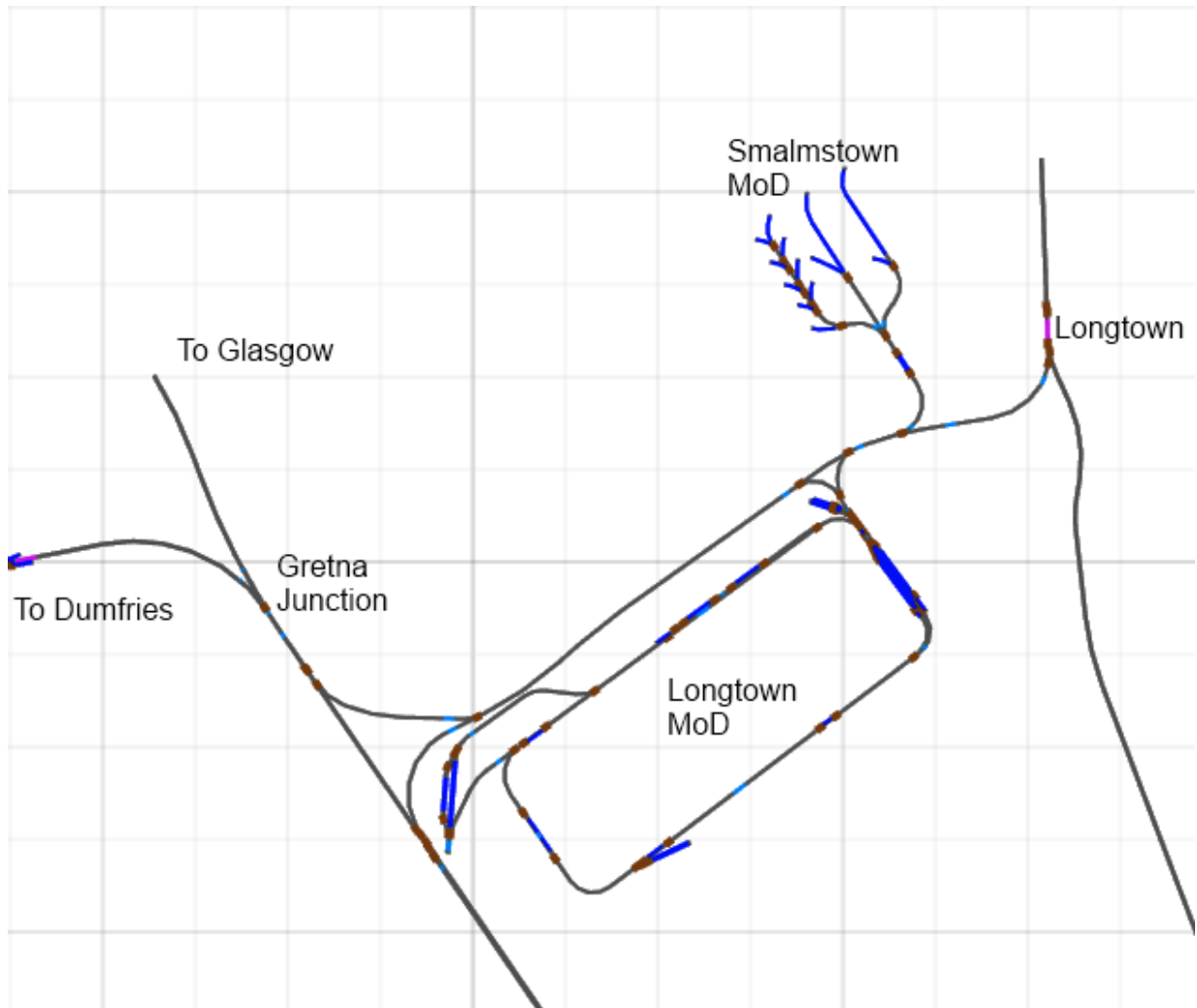


Figure 3: Longtown and Smalmstown MoD

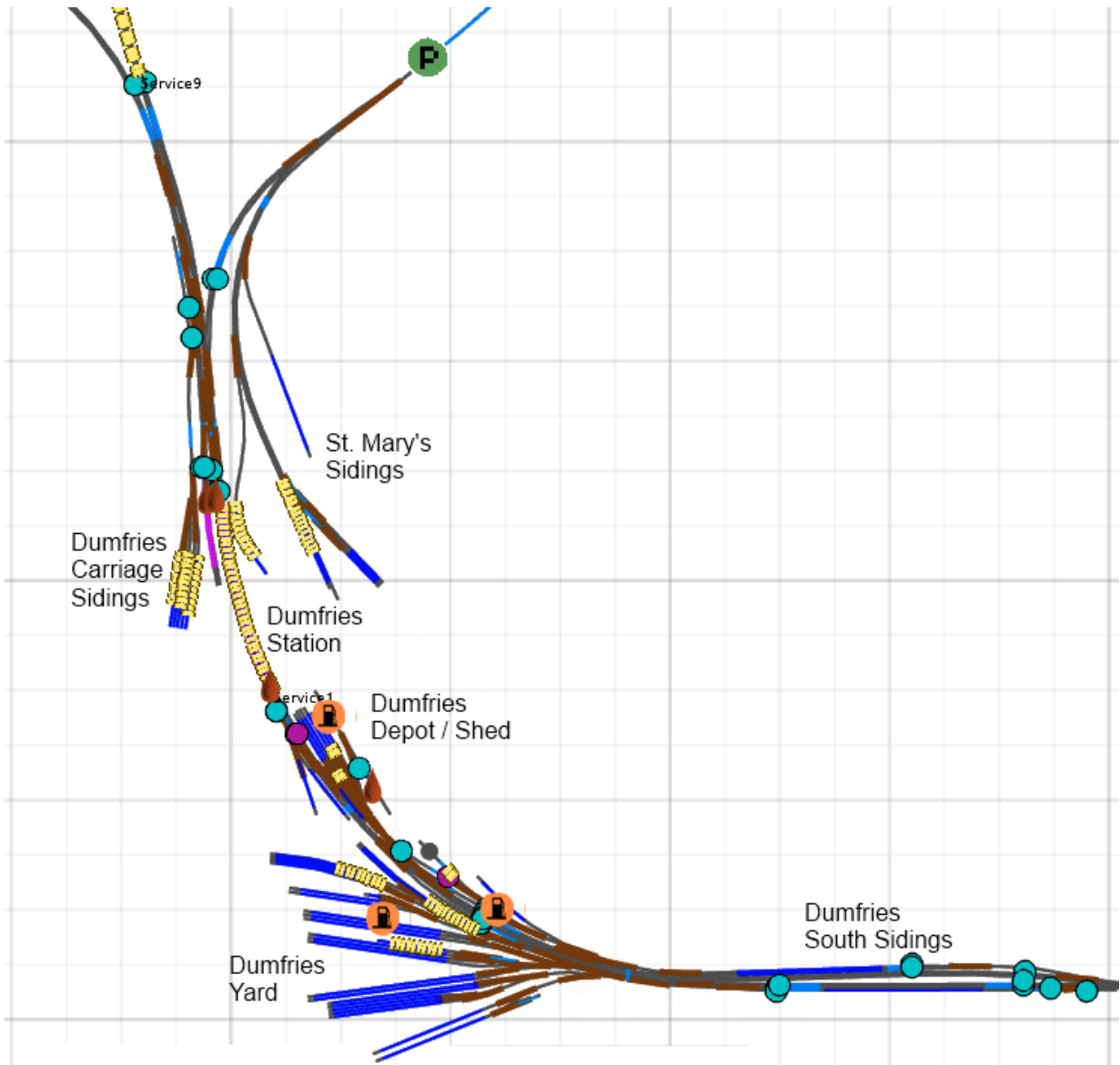


Figure 4: Dumfries



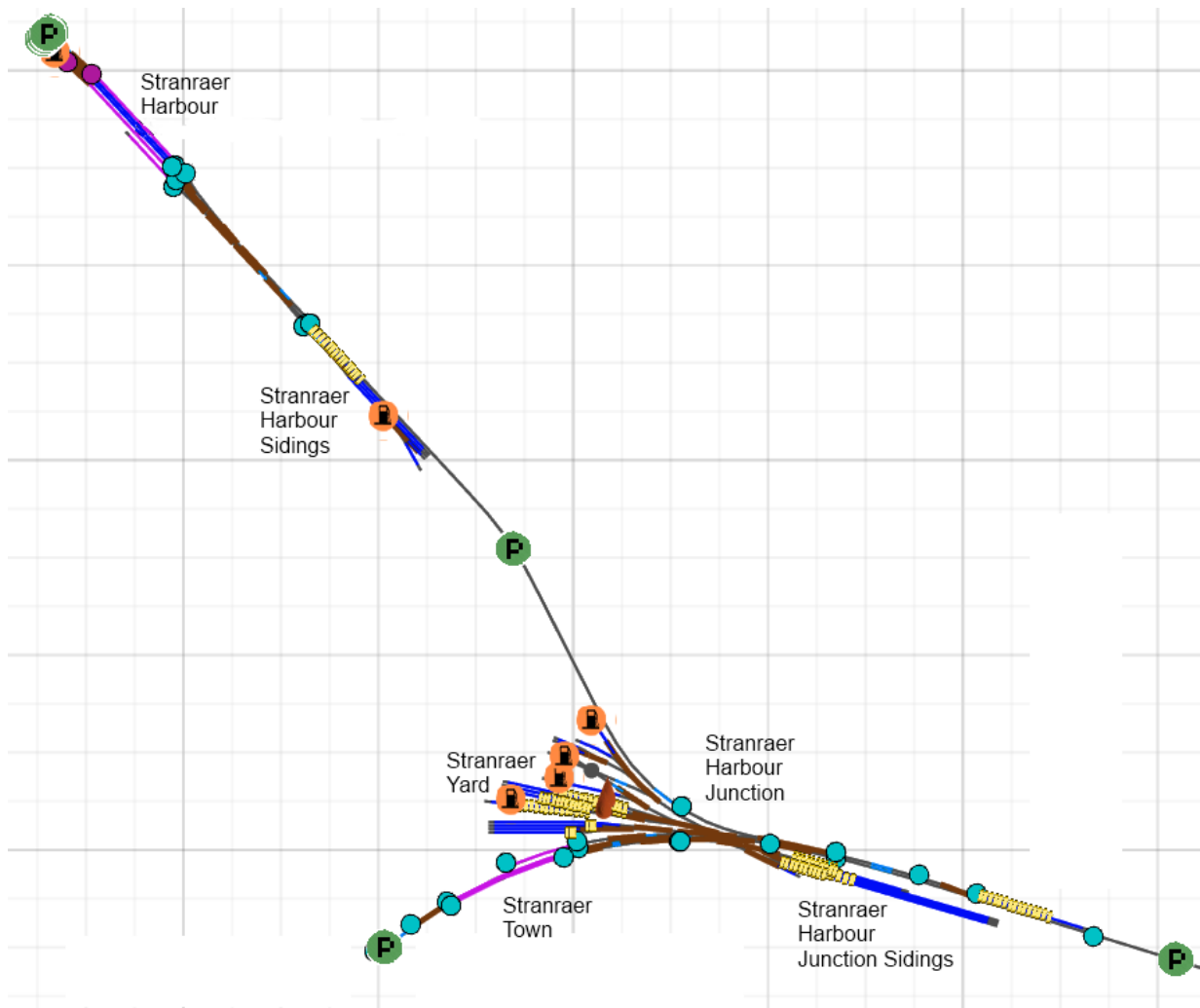


Figure 5: Stranraer

### 1.3 Rolling Stock

The vast majority of locomotives running on the line would have been late BR steam and included the Black 5s and also the BR Standard Class 6 "Clan" locomotives.

### 1.4 Focus Time Period

This Train Simulator simulation represents the early 1960s, shortly before the line was closed in 1965.

## 2 Getting Started

### 2.1 Recommended Minimum Hardware Specification

The Western Lines of Scotland route is highly detailed and feature-rich and incorporates detailed night lighting. It will thus benefit from a higher PC specification. The following is the minimum recommended specification:

- Windows XP with latest service pack installed/Windows Vista/ Windows 7/Windows 8
- Processor: 2.8 GHz Core 2 Duo (3.2 GHz Core 2 Duo recommended), AMD Athlon MP
- RAM - 2.0GB
- GFX - 512 MB with Pixel Shader 3.0 (AGP PCIe only)
- SFX - Direct X 9.0c compatible

## 3 Driving a Steam Train

Included with Western Lines of Scotland are variations of the BR Black 5 4-6-0 steam locomotive. With some tough gradients on the line and long journeys, it will be beneficial to understand in more depth how to get the best out of your locomotive.

Steam engines are very different beasts to drive than diesels or electrics. Before you start, it's important to get some idea of how they work - what components there are and how they interact. Some of this might seem basic and you'll be tempted to skip it and move on but I would encourage you to read carefully.

There are two fuels needed to make a steam engine work - coal and water. Coal is used to make fire; the fire is used to heat water turning it into steam and the steam pushes the cylinders that drive the wheels.

Let's split it into four parts - Fire, Steam, Moving and Stopping.

### Fire

Your goal here is to create a fire that will provide the right amount of steam at the right time. That's the key here. It's not simply a case of "as much as possible all the time", but let's get into that detail as we go. To start with, if you can get it creating as much steam as possible then the worst that can happen is you're continually blowing the safety valves and that's just noisy and a waste of steam. As you get more proficient you'll learn to cut back your steam generation at the right times.

Creating a Fire - Train Simulator offers a number of controls here, these are:

Stoking  
Blower  
Damper

**Stoking** - This is really the simple act of adding more coal to the fire in the firebox. This controls the "fire mass". In a real steam engine there is a fine art to loading coal on the fire, such as the size of the coal lumps and where on the fire to put them. In Train Simulator it's a simple fire mass value. As you stoke coal on the fire, the fire mass goes up and as you run the engine it goes down. That's complex enough for us at the moment. The fire mass has an "ideal" value. At this ideal value, the fire is most effective. If you are above or below the ideal value, the fire becomes less effective. What does effective mean? It means steam generation. How do you know what the ideal value is? The technical way is to look at the engine blueprint as it's in there. The non-technical way is to experiment. I usually go with whatever the \*starting\* value is, so on the coal button it says "2.5 tons, 66%". The 2.5 tons is how much coal is in the bunker/tender and the 66% is the size of your fire mass. If the fire starts at 66% then I will usually go with running the fire from, say, 62% to 70%. As far as I can tell, there is no "cost" to you for stoking at any point so you can simply keep an eye on the fire mass percentage and stoke up if you need to at any point.

**Blower** - When the blower is turned on, it will force air up the chimney. This has the effect of drawing air up through the fire and feeding it. Starting the blower will give you a steam generation boost.

**Damper** - Below the fire there is a grate, and below that there is a door (or two in the case of the J94) known as the damper. Opening the damper allows air to flow up from underneath the fire and through it - which is a great benefit in feeding the fire. If the damper(s) are open then you will get a steam generation boost.

That's basically the fire covered. When you want to be clever, you can learn to turn off the blowers and dampers and cut back your steam generation rate to allow the boiler to decrease in pressure as you come in to stations - nobody likes it when the safety valves blow off in a platform!

Another great trick to help avoid blowing the safety valves in the station is to lower the boiler water level gradually as you come in, and then while you're standing in the station you can use the injectors to reduce the boiler pressure. If it looks like you're going to blow the safety valves then you can simply start the injectors.

## **Water and Steam**

It starts out as water and we need to convert it into steam. Water starts in the tank (or the tender) and we use something called an injector to take water at normal atmospheric pressure and inject it into the very high pressure environment inside the boiler. Injectors work by using steam to force the water in - there's lots of information on the web about how they work. The key is that you need steam for the injectors to work. For information, at low boiler pressures when you have no steam to use, real steam engines have mechanical pumps to get water in, then they use the injectors once steam is available. In Train Simulator you never get that low (hopefully) and mechanical pumps aren't generally implemented.

If we start out with a boiler with plenty of high pressure hot steam in it and we start injecting cold water, the steam starts to condense and the boiler pressure is reduced. This is something to be very aware of as you proceed.

There are generally two kinds of injector. LIVE steam injectors use LIVE steam from the boiler. This is steam that's available all the time but it will cost you boiler pressure.

EXHAUST steam injectors make use of the exhaust steam after it has been through the cylinders, which is helpful as it wasn't going to do anything else anyway except come out of the chimney - but of course this is only available once you're running at enough speed to actually have exhaust steam. There are four controls - two for each injector. One set of controls turns on the steam, and the other turns on the water. Therefore, to inject water in via the live steam injector, you'd start the live steam injector and then start the live water feed.

If you are manually firing using the cab controls or the keyboard you have full control over the four controls covering the two kinds of injectors, if you're using the HUD you've just got a single simple button that does it all for you and it works out the best way to proceed.

On the HUD, there is a value at the top of the water gauge indicating how much water is in the tank/tender, and a value at the bottom indicating the percentage in the boiler itself.

Note that in a real steam engine, there are serious consequences for overfilling the boiler (it's called priming and results in water getting in to the cylinders which is very bad because water, unlike steam, is incompressible) but this is generally not simulated in steam engines in Train Simulator. The 56xx however does simulate it. Similarly, if you let the boiler water level get too low then the "fusible plugs" get uncovered, melt because of the higher temperature of the steam, and the steam in the boiler evacuates rapidly to stop the boiler from exploding. These effects are generally not modelled but the game will terminate if you let the boiler water level get too low. The other important effect that is not simulated is the gradient. If you imagine the side view of the boiler with the locomotive on level ground with water at some given level and then imagine the same locomotive going up or down a hill, you can see that the water level apparently in the boiler will be seen to change. In a real engine if you fill up to an apparently sensible level on the flat and then start going up a steep gradient, you might find yourself suddenly priming. Not to worry, the simulator doesn't currently worry about this so you can just focus on keeping it filled up. Unlike the fire mass, there is no "ideal" value - just keep water in the boiler.

## Moving

We've got a fire, we've got steam - now we need to do something with it.

The steam is held in the boiler by the regulator. As you open the regulator it lets steam out into the cylinders at the front of the loco. If the brakes are off you will soon be moving.

While the locomotive is standing, condensation will build up in the cylinders. Water is a serious problem in cylinders because it can't be compressed like steam. If it gets bad enough and you try to move off you could seriously damage the cylinders and put the locomotive out of action (In many cases, TS engines don't simulate this behaviour, but the 56xx again does). Open the cylinder cocks for the first few wheel rotations to allow the steam to blow any water out of the cylinders and then close them again to preserve your steam.

Note: in the description below I'm going to use the name "cut-off" but you can interchange it reasonably with "reverser" in the context of the simulator. It is controlled by the W/S keys on the keyboard.

To start moving forwards you need to put the cut-off in the full forward position (usually 75%). This is essential, as if you try to move from stationary with less than full forwards cut-off the locomotive will not move at all. As you start to move and accelerate you then want to start fairly quickly moving the cut-off back towards the centre.

Without getting into diagrams of how the cylinders work (there are many on the web) I'll just explain this by saying the cut-off controls how LONG you are letting steam in to the cylinders for each cycle. As the train speeds up you will find it is a) losing boiler pressure rapidly, and b) stops accelerating and seems unable to go any faster. This is because you've reached a balance point and the energy required to evacuate the steam from the cylinders in the last half cycle is as much as is being put in during this time. The solution is to put the steam in for less of the cycle by bringing the cut-off back to a lower setting.

How you set the cut-off is different for each engine and not just by class. It is different on each engine because of variations in the wear and tear on it. This is where you will really want to practice and learn to feel the engine.

Don't reduce the cut-off below a minimum setting of around 15%. You might find that different locomotives have different minimum settings below which they are no longer able to put enough steam into the cylinders to do any useful work.

The same principle applies when driving in reverse. You should start at -75% cut-off and bring it back towards -15% as you accelerate.

### **Steam Chest Pressure Simulation**

A new feature of the Black 5 in this product is a more realistic simulation of the steam chest. The way that you will notice this is in the way that the regulator responds.

In the new simulation, when you open the regulator, steam will begin to flow in to the steam chest after a short delay. As the steam chest fills there will be more force against the pistons. The key difference between this and normal behaviour is that under normal circumstances the regulator will directly influence the force on the pistons, but in the new simulation you are simply letting more or less steam in to the steam chest.

This change in the behaviour means that you now need to drive the locomotive in a slightly different way. For example, if you are trying to move slowly (perhaps shunting) then you will want to open the regulator to let some steam into the steam chest, and then close it off again fairly quickly. A moment later the loco will start moving and will continue moving until the steam chest has evacuated. It takes a little practice to get used to how much regulator to use and when!

Another change with the new simulation is that the cylinder cocks now play a more useful role in driving the engine. On a real steam engine, the cylinder cocks are opened to vent steam through them and flush out any water that might have condensed in them, perhaps while standing. In the simulation, a key side-effect of opening the cylinder cocks is that it will cause steam to be vented from the steam chest more quickly. This can be very useful if you're moving at low speeds, perhaps while shunting. You should ensure that if heading to a destination some distance away, you close the cylinder cocks once your locomotive is moving in order to preserve steam.

When you're under way on the main line and maintaining speed, the regulator will essentially work in the same way that it has done previously in other steam engines, with the important difference that there is a delay in the reaction of the locomotive to the regulator.

### **Continuing the Drive**

Finally, as you slow down going up a steep gradient (for example, in 25% forwards cut-off, your locomotive might not be able to maintain speed on a 1:33 gradient, depending on the train weight) remember the appropriate times to move the cut-off back out again. So, as I'm going up a 1:40 gradient, I'm slowing down. Once I get to about 7 or 8 mph, I need to put the cut-off back out to 50% to enable the train to maintain its speed more easily. If you balance the regulator appropriately, you should find you're able to maintain your speed

without losing (too much) boiler pressure. If you keep trying to push as hard as you can in 50% cut-off, you'll quickly find you're speed will no longer increase (remember you already found out you can't go up this hill at 25% cut-off!) and worse, your boiler pressure is plummeting and before long you won't have enough pressure left to keep going. When this happens, you need to stop and let the boiler pressure build back up again before continuing. The problem is that sometimes you might find yourself unable to start again on the gradient and will need to go all the way back down to try again - so focus on keeping going, even if you're going slower than you'd like.

Finally, don't forget it's ok to lose boiler pressure if you need to - know your gradient and work out whether losing boiler pressure now to maintain speed is a wise thing or whether you're better letting your speed drop to keep boiler pressure up (perhaps because it's about to get even worse).

## **Stopping**

Ok so we're moving. Now we need to stop, but first when we started off I assumed the brakes were off so let's fix that and go back to the beginning again because you most likely started out with the brakes ON.

For this I'm going to focus on the main vacuum and air brakes most trains have. Locomotive brakes are different again and will be covered later.

Brakes have three main stages - RELEASE, RUNNING and APPLY.

Sometimes you'll find there's no RUNNING position. Instead you'll find it called SELF-LAPPED, but the principles are the same.

Vacuum and air brakes work differently to the way the brakes on your car might work, or how they work on most diesel or electric locos. On a car, bike or diesel loco, you are using automatically lapped brakes. Set the brake to 20% and it'll just sit there slowing down gently at the same rate. Brakes on a steam engine are MANUALLY lapped.

RELEASE makes the brakes come off.  
RUNNING holds the brakes where they are.  
APPLY makes them go on.

If you set it to APPLY 20% it will gradually apply the brakes more and more until they are fully on and you're screeching to a halt.

## **STARTING**

Move the brakes to RELEASE and watch the brake gauge go up. When the gauge shows 0 your brakes are fully on. When the gauge shows 21 your brakes are fully OFF. That value may differ among steam engines but you'll be able work it out pretty quickly. Most UK steam engines have the brakes fully off at either 21 or 25 (inches of mercury).

Once the brakes are off, move them back to RUNNING. If they don't have a running position, you can probably put them to the most minimal Apply setting; just make sure the brake gauge isn't going down. Why do this? Because releasing brakes uses some more of that precious steam from the boiler - so while they're in the release position you're losing more

steam. Put the brakes in the running position and that steam is conserved.

This is the single biggest mistake most users make when operating a steam engine.

#### STOPPING

To stop the train, move the brakes to the apply position, drop the value on the gauge down to say 12 and then move back to RUNNING to hold it there. Now the speed will drop steadily and evenly. This requires practice and experience. It's too easy to brake too hard and then stop short of your stopping place. Once you learn the loco and how it behaves on the track with the load behind it, you'll learn to know what to set the brake to and be confident that it will stop at the right point. This just comes from practice.

If you find you're stopping too short, move the brake to the release position and then back to the running position again when it's at the new value (say 18) and you'll slow down less quickly. If you aren't slowing down quickly enough, move the brake to the apply position and then back to running when you're at a lower value, say 6.

If you want to be absolutely perfect, then the best drivers stop on a "rising needle" for the most comfortable stop. This means that as the train comes to a stop you are releasing the brake (and the needle on the brake gauge in the cab is rising, hence the name). Try this in your car. Put your foot on the brake to stop and keep it at the same point all the time and you'll get a jerk as you finally stop. Now try it by gently lifting off the brake as you stop and you'll find it far smoother. This requires a LOT of practice though on a steam loco.

### Conclusion

Steam engines are hard to drive, but they are tremendous fun and a great challenge.

In addition to all the fun above, as both driver and fireman you need to learn the route itself, learn the gradients and learn the signals and speed limits. All this helps you to make the right decisions at the right times. For example, if you're going up a gradient to a lower speed limit, why use your brakes? Ease off on the throttle and let gravity help you slow down.

If you're going along a level stretch and approaching an up-hill gradient, it's tempting to get up as much speed as possible and lose boiler pressure. Instead you might be better off preserving boiler pressure rather than gaining speed and then when you reach the gradient you'll have the power to get up it.



## 4 Legacy or Realistic Driving Modes

If you find that you are not comfortable with the new realistic driving mechanism, then it is possible to disable it and return to the legacy driving mode.

By clicking on the Bell icon on the HUD (or pressing B on the keyboard) it is possible to toggle between Legacy or Realistic driving modes.

In Legacy mode, the regulator works as it always has previously in Train Simulator, with no lag.

In Realistic mode, the loco will simulate a realistic steam chest and this creates the effect of lag and a slightly different effect of using the regulator.

### 4.1 External Hardware Controls

If you are using 3<sup>rd</sup> party external hardware controls you may also find that legacy driving mode is required for them to work correctly. Simply ensure that you operate the Bell icon/key. Press once the scenario has loaded and before you begin to drive, and you should find that the controller will work as expected (although without the realistic steam chest simulation).

## 5 Quick Drive

Western Lines of Scotland comes with a full Quick Drive configuration that offers a wide range of locations to start from and drive to. Some of the paths are intended for passenger operations and some are intended for freight operations.

The start location of a Quick Drive determines the general path and then the list of destinations determines where along that path you wish to end the Quick Drive.

The following table provides an overview of the available routes and suggestions for the kind of trains you might wish to run on them. Using Quick Drive you can of course select any kind of train and choose any termination point anywhere along the line you wish. Use this guide to help pick the journey you would like to drive today!

Start Location	Direction	Comments
Carlisle Platform 3	West	Passenger/Freight. Bound for Stranraer Harbour.
Carlisle Platform 7	West	Passenger/Freight. Bound for Longtown Platform 2 via Longtown MOD link line.
Castle Douglas Platform 1	West	Passenger/Freight. Bound for Stranraer or Kirkcudbright.
Castle Douglas Platform 2	East	Passenger/Freight. Bound for Carlisle.
Dumfries Centre Road	East	Freight. Bound for Kingmoor.
Dumfries Platform 1	West	Passenger. Starting in the bay platform, will branch to Kirkcudbright at Castle Douglas.
Dumfries Platform 3	West	Passenger Freight. Starts on main platform, can go as far as Stranraer.
Dumfries Platform 4	East	Passenger. Bound for Carlisle.
Dumfries Yard CE Siding 4	East	Freight. Starts in a siding in Dumfries and uses goods loops to ultimately go to Kingmoor Up Recessing 2.
From Settle	West	Passenger/Freight. Starts south east of Carlisle and diverts around Citadel station via the various yards and back lines before returning to the main line in the Kingmoor Area. Normal journey from there to Stranraer. You may need to TAB through red signals on this path!
Kirkcudbright Platform	East	Passenger/Freight. Bound for Carlisle.
Longtown Platform 1	East	Passenger/Freight. Goes via Longtown MOD link line on to WCML and heads south to Carlisle Citadel.
Newton Stewart Goods Loop	West	Passenger/Freight. Bound for Stranraer.
Newton Stewart Platform 3	East	Passenger/Freight. Bound for Carlisle.
Stranraer Harbour	East	Passenger/Freight. Bound for Carlisle.
Stranraer Harbour Stabling 1	East	Freight. Bound for Kingmoor Up Recessing.
Stranraer Town	East	Passenger/Freight. Bound for Carlisle.

## 6 Consists

A wide selection of consists is supplied with Western Lines of Scotland. One type of locomotive is supplied (BR Black 5 4-6-0); however this is presented in three different forms.

Light Weathering	Intended to show a locomotive that is used regularly but is cleaned. Generally used for passenger trains as it presents a better image to customers.
Intermediate Weathering	Somewhat of a workhorse locomotive that's been used and abused and is teetering on the brink of more serious body problems (rust, dirt etc). Would be seen on both passenger and freight services.
Heavy Weathering	Abused to the brink of the scrap heap. Rusty, dirty and unloved. Generally seen on freight services.



In addition, each of the above locomotives is also available with a BR Type 06 Snow Plough fitted under the front buffer beam.

When selecting consists in Quick Drive you will see that there is a selection of trains for each style of Black 5 locomotive, along with light engine consists and also a "back to back" snow plough consist where two locomotives have been coupled together tender-to-tender for snow clearing operations.

## 7 Industries along the line

Stranraer Harbour	Ferry terminal, automotive, parcels/mail, livestock
Stranraer Town	General goods
Dunragit	Petroleum (former MoD), aggregates
Dunragit Creamery	Milk and cream
Glenluce	General goods sidings
Kirkcowan	Permanent way sidings
Newton Stewart	General goods, timber
Creetown	General goods sidings
Castle Douglas	General goods, livestock
Tarff	General goods sidings
Kirkcudbright	Fish, petroleum, livestock, general goods
Dalbeattie	Aggregates, building stone
Dalbeattie Creamery	Milk and cream
Drungans/Cargenbridge	ICI plastics, petroleum/oil products
Maxwelltown	Petroleum/oils, general goods
Maxwelltown Carnation	Dairy products
Dumfries	General goods, coal, timber, livestock, aggregates, building stone, parcels/mail, agricultural machinery, textiles
Annan	General goods, fish, engineering
Eastriggs	MoD
Gretna Green	General goods
Longtown	MoD
Carlisle Kingmoor	All goods, trunk goods
Viaduct (Carlisle)	General goods
Crown Street (Carlisle)	General goods
Canal (Carlisle)	General goods/foodstuffs, Carr's Biscuits siding
London Road (Carlisle)	General goods, coal
Petteril Bridge (Carlisle)	Livestock, petroleum
Upperby (Carlisle)	Cement
Willowholme (Carlisle)	Coal, power station
Dentonholme (Carlisle)	General goods

## 8 The BR Black 5 4-6-0 Steam Locomotive



### 8.1 BR Black 5 4-6-0 Steam Locomotive

The LMS Class 5 4-6-0 steam locomotive was almost universally known as the Black 5. It was originally introduced by William Stanier in 1934, with 842 of the class constructed by 1951. 18 locomotives still remain in preservation.

Originally classed as 5P5F in LMS days and then later in BR days as a 5MT (Mixed Traffic), the locomotive was able to perform any duty very well indeed.

### 8.2 Specifications

Class Number	Class 5MT 4-6-0
Wheel Arrangement	4-6-0
Weight:	76.2t
Length:	63ft (19.5m)
Max Boiler Pressure:	225psi
Water Capacity:	4000 imperial gallons
Cylinders:	2, outside cylinders
Cylinder Size:	18.5" by 28"
Valve Gear:	Most were Walschaerts
Axle Load Class:	Route Availability 7
Tractive Effort:	24,455lbf (113.23kN)

### 8.3 Keyboard Guide

Increase / Decrease Throttle	A / D
Increase / Decrease Cut-off	W / S
Increase / Decrease Train Brake	` / ;
Increase / Decrease Locomotive Brake	] / [
Whistle	Space
Open Passenger Doors	T
Request Permission to Pass Signal Ahead	Tab
Request Permission to Pass Signal Behind	Ctrl-Tab
Headlamps On / Headlamps Off	H / Shift + H
Change state of Junction Ahead / Behind	G / Shift + G
Couple Manually	Ctrl + Shift + C
Cylinder Cocks toggle	C
Handbrake	/
Blower	N / Shift-N
Live Injector Steam Control	O
Live Injector Water Control	L / Shift-L
Firebox Door	F / Shift-F
Toggle between Legacy and Realistic Driving Mode	B
Toggle Head Lamp 1 (top centre)	Ctrl + Shift + 1
Toggle Head Lamp 2 (bottom left)	Ctrl + Shift + 2
Toggle Head Lamp 3 (bottom middle)	Ctrl + Shift + 3
Toggle Head Lamp 4 (bottom right)	Ctrl + Shift + 4

## 9 Scenarios

### 9.1 Ayr Line

**Time of Day:** 11:00

**Weather:** A gathering storm, Autumn

**Loco:** Black 5 Heavily Weathered

**Description:** Short passenger run coming off the Ayrshire Coast Line, heading to Stranraer Harbour.

### 9.2 Be Prepared

**Time of Day:** 08:00

**Weather:** Cloudy, Autumn

**Loco:** Black 5 Heavily Weathered

**Description:** Pick up some empty coaching stock and take it into Carlisle Citadel in readiness for a trip to Scotland.

### 9.3 Border Hop

**Time of Day:** 16:00

**Weather:** Cloudy, Autumn

**Loco:** Black 5 Heavily Weathered

**Scripting:** Speed Limiter

**Description:** A simple goods trip working between Dumfries and Carlisle.

### 9.4 Border Raider

**Time of Day:** 08:30

**Weather:** Cloudy, Autumn

**Loco:** Black 5 Intermediate Weathered

**Description:** Stopping passenger service from Carlisle to Dumfries.

### 9.5 Coals to Carlisle

**Time of Day:** 06:00

**Weather:** Stormy Rain, Summer

**Loco:** Black 5 Intermediate Weathered

**Description:** Pick coal up from the east side of Carlisle and transport it to the city's power station.

### 9.6 Defensive Moves

**Time of Day:** 15:00

**Weather:** Overcast Rain, Autumn

**Loco:** Black 5 Intermediate Weathered

**Scripting:** Speed Limiter

**Description:** Ministry of Defence working between Longtown and Eastriggs.

### 9.7 Fishing Trip

**Time of Day:** 04:00

**Weather:** Night Overcast, Autumn

**Loco:** Black 5 Heavy Weathered

**Scripting:** Speed Limiter

**Description:** Long distance goods run from Kirkcudbright to Carlisle in the early hours.

### **9.8 Ice Cream Man Part 1**

**Time of Day:** 07:00

**Weather:** Cloudy, Winter

**Loco:** Black 5 Intermediate Weathered

**Scripting:** Speed Limiter

**Description:** Part 1 of a freight trip along the Port Road. Gather your train and proceed to Dalbeattie with some milk tanks.

### **9.9 Ice Cream Man Part 2**

**Time of Day:** 08:30

**Weather:** Cloudy Snow, Winter

**Loco:** Black 5 Intermediate Weathered

**Scripting:** Speed Limiter

**Description:** Part 2 of a freight scenario, continue to Newton Stewart with empty milk tanks from Dalbeattie Creamery. The weather has taken a turn for the worse.

### **9.10 Ice Cream Man Part 3**

**Time of Day:** 10:00

**Weather:** Clear, Winter

**Loco:** Black 5 Intermediate Weathered

**Scripting:** Speed Limiter

**Description:** The final part of this freight scenario takes your train of milk tanks to the creamery at Dunragit.

### **9.11 Milk and Cookies**

**Time of Day:** 02:00

**Weather:** Cloudy, Spring

**Loco:** Black 5 Heavily Weathered

**Description:** A short goods trip around Carlisle in the early hours to collect milk tanks and Carrs biscuits.

### **9.12 Oil See You Later**

**Time of Day:** 02:00

**Weather:** Clear, Winter

**Loco:** Black 5 Heavily Weathered

**Scripting:** Speed Limiter

**Description:** A short freight run to Newton Stewart with oil tanks from Dunragit in Galloway.



### 9.13 Solway Trader

**Time of Day:** 11:58

**Weather:** Cloudy, Summer

**Loco:** Black 5 Intermediate Weathered

**Description:** Run the full length of The Port Road between Stranraer Harbour and Dumfries with a stopping passenger train. It's a beautiful Summer afternoon; you will be expected to stick to the timetable.

### 9.14 Sunset Shift

**Time of Day:** 20:00

**Weather:** Cloudy, Summer

**Loco:** Black 5 Light Weathered

**Description:** Take charge of a semi-fast passenger service between Dumfries and Kirkcudbright on a fine summer evening.

### 9.15 Thames Clyde Express

**Time of Day:** 12:00

**Weather:** Cloudy Snow, Spring

**Loco:** Black 5 Light Weathered

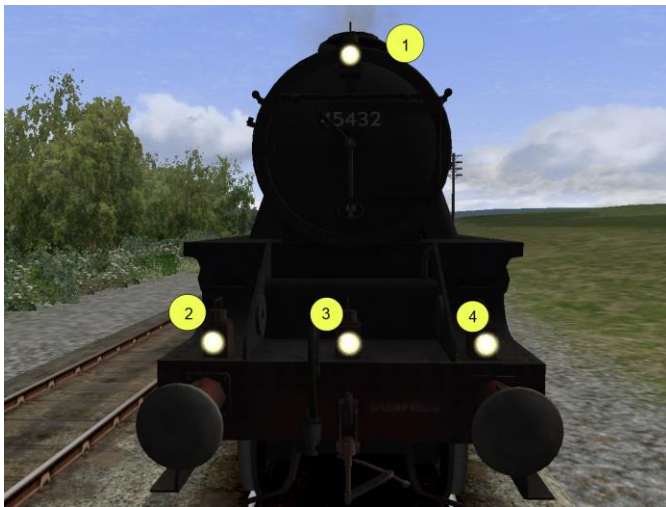
**Description:** A simple limited-stop passenger run from Dumfries to Carlisle.

#### Speed Limiter Scripting

On a number of the scenarios included in this pack, it is important that you adhere to a lower train speed limit because of the nature of the consist that you are hauling. In order to provide an extra challenge to these scenarios, you will find that the guard and fireman are particularly fussy about your adherence to these limits!

For example, in "Oil See You Later" the maximum speed is 35mph. If you exceed 35mph then you will get a warning in the top right corner of the screen from the fireman. While you are exceeding this speed, he will start keeping a kind of score - the more you are over the limit, the faster the score goes up. If you drop back under the limit, he resets the score to zero but remembers how many times he had to do that. If you remain over the speed limit and he reaches a certain "penalty score" then the guard will put on the emergency brakes and stop the train. Once it's stopped, you receive a warning and can continue. You can only be warned a certain number of times before the scenario is ended and you can only have an emergency stop a certain number of times (usually 3) before the scenario is ended. At the end of the scenario, if successful in all other aspects, you should be given either a full congratulations (you didn't exceed the limit at all, no warnings given) - or a grumbly acceptance that you finished it, but badly, and some figures detailing some of your speeding violations.

## 10 Locomotive Head Lamp Codes



In steam days, the lamps on the front of the locomotive weren't used to shine the way ahead for the driver as they were far too dim. Instead, they were used to indicate to others both the presence of the train and the nature of the train (was it a fast passenger or a slow unfitted freight for example).

The Black 5 locomotives in this product contain lamps on the front of the locomotive that can be toggled on and off by using the key combinations **CTRL+SHIFT+1** thru **CTRL+SHIFT+4**.

The number corresponds to the lamp position as shown in the image on the left.

As you change your head lamp configuration, the game will report back in the top right corner to let you know what your new configuration represents if you have currently got a valid lamp configuration.

For those creating their own scenarios, it is also possible to set the head code formation by prefixing the locomotive number with the appropriate letter within the scenario editor.

For example, if the locomotive is to be numbered 45432 and it is a class H train, then the value to set in the loco number is H45432.

Note: if you do not set the class, then the loco number will not appear, as six characters must be specified in the number field. The original (and only) class for the older Black 5's included in previous versions of Train Simulator was Class B – so if you are unsure, you can simply number your trains as you wish but put a letter B at the front to get the same behaviour that was present previously.

These codes can be set up for both AI (computer controlled) trains and for the player train. The player will still be able to change their lamp configuration using the above key combinations during the scenario if they wish; the setting in the loco number only affects the initial lamp configuration.

If you wish a train to start with no lamp configuration at all, use Class X – i.e. prefix the number with an X instead of one of the other letters, and the loco will start with no lamps visible at all.



## 10.1 Valid Head Lamp Codes

### **Class A**

Express Passenger, Breakdown Train or Snow Plough en-route to a job



### **Class B**

Stopping Passenger, Rail Motor or a Breakdown Train returning from a job



### **Class C**

Parcels, fish, livestock, milk, fruit or perishables, all fitted stock.



### **Class D**

Express freight or livestock with at least 30% fitted stock connected to the loco.



**Class E**

Express freight with at least four fitted vehicles connected to the loco, or a short unfitted express freight.



**Class F**

Express freight all unfitted stock.



**Class G**

Light engine, or engine with one or two brake vans attached.



**Class H**

Through freight or ballast train



**Class I**

NOT USED

**Class J**

Through mineral or empty wagon train



**Class K**

Pick-up or branch freight, or mineral or ballast train on a short haul run



## 11 Semaphore Signalling

Semaphore signalling is a straightforward block control mechanism.

A single signal can only give you an indication of the state of the next block so you must be constantly on the watch for signals. Where you see distant signals this will enable you to put the brakes on in good time to come to a stop if the following signal is going to be red.



### Signal Type: Stop Signal

This is signal protects entry to a block.

Down/Red – Do not proceed

Up/Green - Proceed



### Signal Type: Distant

This reflects the state of the next stop signal.

Down/Yellow – Caution, next stop signal is Down/Red.

Up/Green – Next stop signal is green, proceed.



### Combined Signal Type: Junction Signal

This is an example of one kind of junction signal. In practice you may see other combinations. Generally, the higher the signal is, the more important or faster that route is. In this case, the right hand signal signifies the main line, the left hand signal signifies a branch or junction to the left.



### **Signal Type: Combined Home and Distant**

Where signals need to be placed close together it is often simpler to put them on to the same post. In this case the stop signal (red one at the top) is giving permission to enter the next block, this is absolute – if it is red, then you cannot proceed past the signal. The distant (yellow one at the bottom) is giving you advance warning of the *next* stop signal along your journey.



### **Signal Type: Ground Disc Shunting Signal**

This operates like a stop signal. When it shows a white light with a slanted red bar you may proceed. If it shows a red light and a horizontal red bar you may not proceed.



### **Signal Type: Large combined gantry**

This is an example of a large combined signal gantry. On the left are a stop and distant for a branch (lower signals) and on the right are a stop and distant for the main line. Note that the distant is significantly higher, this is most likely because of some obstruction previously such as a foot or road bridge and allows the signal to be sighted at the appropriate distance.

## 12 Colour Light Signalling



### Signal Type: Three-aspect Stop Signal

This signal shows the state of the next two blocks in front of you.

Green – The next two blocks are clear. Your next signal will either be green or yellow.

Yellow – The next block in front of you is clear, your next signal is currently a red.

Red – Do not proceed.



### Signal Type: Stop Signal with Feather

This operates exactly like a standard stop signal however it has an array of white lights. If this array of lights is on then it indicates that you are set to take a left at a coming junction; not necessarily the next one!



### Signal Type: Stop Signal with Feather

Slightly more complex than the previous example but actually showing very similar information. It simply has three right hand feathers indicating that from this point there are four possible routes – straight on (no feathers lit) or three possible right hand routes which would be indicated by each feather. Route knowledge would teach you what means what.



### Signal Type: Ground Frame

This signal type is like a simple two-aspect signal. If it's showing two whites then you may proceed, if it's showing any reds then you may not proceed.





### **AWS Ramp**

The route has been built with AWS ramps. If you are driving a locomotive fitted with AWS equipment then when you run over this ramp an alarm or bell will sound in the cab depending on the state of the next signal. If the next signal is green you will get a bell, if it is red or yellow then you will get an alarm. If you get an alarm you will have a limited time to acknowledge it by pressing Q or the emergency brakes will apply.



### **Speed Limit**

This is a simple speed limit post indicating a 90mph speed limit from this point.



### **Speed Limit via Route**

This sign indicates that if your train is heading to the right at the next junction then a 15mph speed limit applies.

## 13 Advanced Developer Note: Consists

If you wish to create your own consists (note: it is beyond the scope of this document to describe the process for doing so) then you may wish to use the following Consist Type information to allow your consists to appear correctly and appropriately in the supplied Quick Drives.

<b>Consist Type</b>	<b>Usage</b>
Custom 1	Loco Hauled Milk Tanks
Custom 2	Loco Hauled Mixed Wagons
Custom 3	Loose (no Loco) Passenger Stock
Custom 4	Loose (no Loco) Freight Stock
Custom 5	Light Locomotives
Passenger Fast	Longer Passenger Trains (8/10 coaches)
Passenger Regional	Shorter Passenger Trains (4/5/6 Coaches)
Freight Livestock	Loco Hauled Cattle Wagons
Freight Coal	Loco Hauled Mineral/Plank Wagons

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### Head lamps

<http://myweb.tiscali.co.uk/gansg/3-sigs/bellhead.htm>

### Wikipedia

[http://en.wikipedia.org/wiki/Portpatrick\\_and\\_Wigtownshire\\_Joint\\_Railway](http://en.wikipedia.org/wiki/Portpatrick_and_Wigtownshire_Joint_Railway)

[http://en.wikipedia.org/wiki/Castle\\_Douglas\\_and\\_Dumfries\\_Railway](http://en.wikipedia.org/wiki/Castle_Douglas_and_Dumfries_Railway)

[http://en.wikipedia.org/wiki/Glasgow,\\_Dumfries\\_and\\_Carlisle\\_Railway](http://en.wikipedia.org/wiki/Glasgow,_Dumfries_and_Carlisle_Railway)