Formartine and Buchan Railway

dovetail GAMES

SUBURBAN GLASGOW

Release Version 1.0

1 Route Information

1.1 Background

The Buchan Line, or to give it its full title, The Formartine and Buchan Railway, was a railway line that opened in 1862 between Aberdeen and Peterhead, with an extension to Fraserburgh opening in 1865. This railway operated for 100 years before being closed to Passengers in 1965, and freight in 1979. The railway saw a very wide variety of traffic like fish and cattle, along with the pick-up freight that was common at the time, and of course, plenty of passenger services

1.2 The Route

The route for Train Simulator faithfully recreates the route as it was between 1950 and its closure in 1965. Recreating over 40 miles of highly detailed route between Aberdeen and Peterhead.

The first 7 miles of the route run along the Aberdeen to Elgin Main Line as far as Dyce before the Buchan Line branches off to the right, meandering through the Aberdeenshire countryside as far as Maud. From there it branches off to the right again to the coastal town of Peterhead.

2 Scenarios

For the best experience, please ensure "Dynamic Clouds" is switched on in your Train Simulator settings prior to running these scenarios. We also recommend restarting the simulator between scenarios.

2.1 [25] Buchan Odyssey

This is the Odyssey "flagship" scenario, which depicts the most typical service found on the line - in this case a standard afternoon passenger service from Aberdeen to Peterhead. Included are delays for fish traffic, and witnessing some freight marshalling along the way. For first time users of the route, this is a good starting point.

2.2 [2MT] Cod of Conduct

Pun fully intended! This is the main scenario related to fish traffic. Given the perishable nature of the cargo, there are strict time constraints on this scenario. Coupled with the complexities surrounding driving a steam engine, this results in a challenging drive!

2.3 [25] The Bovine Express

Maud Market was the centre of livestock operations north of Aberdeen and was a key part of the Buchan Line! This scenario involves a typical day of loading livestock in to wagons and then taking them south.

2.4 [105] Fit Wye the Caul?

It's a freezing cold winter's day in the north-east, and you will be taking a Cravens DMU from Peterhead the full length of the route to Aberdeen.

2.5 [2MT] Steam to Maud

The north-east is known for it's dry, cold and crisp weather, but it's not always like that! Take a Standard Class 2MT from Aberdeen to Maud in fairly miserable conditions.

2.6 [105] Feeling Blue Toon

Take a Cravens DMU for the short hop from Maud to Peterhead, stopping at all stations.

2.7 [25] A Local Pick-me-up

Take charge of a pick up freight locomotive for a short run from Udny to Maud, picking up and dropping off freight along the way.

2.8 [2MT] The Nicht is Young

See 1960s Aberdeen at night! This scenario involves taking the Standard Class 2MT from Peterhead to Aberdeen after dark.

2.9 [08] Marshall Creosote

Perform some basic marshalling duties at Dyce Creosote Factory. Take vats of creosote around the factory, and then reposition the completed sleepers, ready for distribution across the network.

2.10 [25] Through the Haar

Something a bit different! Deal with the infamous Scottish Haar, a very thick fog that comes in off the North Sea and causes havoc on the railway network.

3 Class 105 DMU

3.1 Loco

Originally manufactured by Cravens Limited of Sheffield between 1956 and 1959 the British Railways Class 105 diesel multiple units shared the same body profile as the British Railways Mk1 coaches.

They were operated around Newcastle, Scotland, Cumbria, Manchester, North London, East Anglia and Lincolnshire and the last vehicles were withdrawn from service in 1988.

The Norwich depot was the last to use the units, returning set 30 to its green livery, and even gaining some celebrity status towards the end of its service life. Although it was discovered that the unit was contaminated with asbestos and was consequently scrapped.

The class 105 has fared rather badly in preservation. 51485 and 56121 were preserved by the West Somerset Railway but moved to the East Lancashire Railway in 1997, where they are being restored after being stripped from the asbestos contamination. 56456 is based on the Llangollen Railway, working with a Class 127. The National Railway Museum had intended to preserve 53812, which had been de-contaminated, but a lack of space prevented the car and the Class 100 coupled to it from being moved to York, and they were vandalised beyond repair at Crewe.

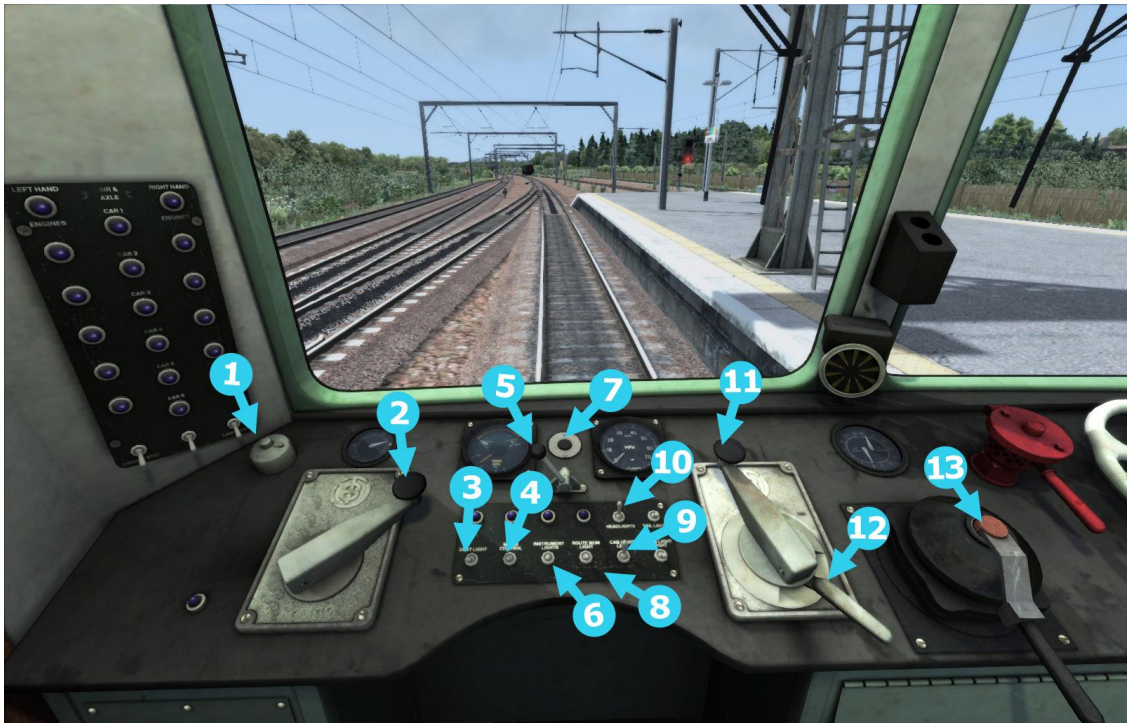
3.2 Design & Specification

Power Type	Diesel
Operator	British Rail
Vehicle Length	57ft 6 in (17.53m)
Build Date	1956-1959
Total Produced	302 Total Cars
Power Output	150 bhp (112 kW)
Maximum Speed	70 mph (113 km/h)

3.3 BR Class 105 DMBS

3.4 BR Class 105 DTCL

3.5 Cab Controls



1	AWS Reset	9	Cab Light Switch
2	Throttle	10	Headlight Control
3	Destination Lights	11	Gear Lever
4	Wiper Control	12	Reverser
5	Horn Control	13	Train Brake Control
6	Instrument Lights	14	Parking Brake
7	Signal Buzzer	15	Destination Handle
8	Route Number Lights		

3.6 Locomotive Keyboard Controls

Key Equivalent	Action
	Decrease or Increase the Regulator.
	Decrease or Increase the Reverser.
	Decrease or Increase the Train Brake.
	Decrease or Increase the Locomotive Brake.

3.7 General Keyboard Controls

Key Equivalent	Action
	**Load/Unload.** Press once to load/unload passengers or freight.
	**Lights.** Repeatedly pressing will cycle through headlight states.
	**(Expert) Alerter.** The Alerter is a system used to ensure that the driver has seen a signal. If the alert sounds (a black/yellow striped symbol is shown in the cab) it must be acknowledged by pressing the Alerter button or the emergency brakes will be applied.
	**(Expert) Sander**. 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.
	**Horn.** Sound the locomotive horn.
	**Handbrake On/Off.** This icon is displayed in the Coupling view
	**Couple Manually.**

3.8 Driving Technique

Starting the Train

Move the Reversing Handle into the Forward position and set 15” vacuum in the Brake Pipe by moving the Brake Valve into the Release position until the gauge shows 15”. Move the handle back into the Hold sector to maintain the vacuum level.

If the guard gives a 'Right Away' signal (two buzzes), acknowledge him by pressing ‘B’ twice and move the Gear Selector into 1st gear. Release the brake fully by moving the handle fully to the right and leave it there. Move the Power Controller to the Full position and let the train accelerate.

Changing Gear

The change up into 2nd gear needs to happen at around 15 mph. When you reach that speed bring the Power Controller back to Idling and wait a few seconds for the engine speed to fall, move the Gear Selector to the 2nd gear position wait 2 seconds for the gearboxes to respond and then apply full power again.

The speeds at which the other gear changes should be made are in the table below:

Speed Range (MPH)	Gear Ratio
0 - 15	1st
15 - 27	2nd
27 - 41	3rd
41 - 70	4th

When you’ve reached the desired speed (maximum permitted is 70 mph) ease back on the Power Controller. When coasting (Putting the Power Controller back to Idle), you must be in 4th gear to prevent damage occurring to the gearbox.

Gradients

If you come to an adverse gradient and speed can’t be maintained with full power then it will be necessary to change down to a lower gear, for example if you’re running in 4th gear and the speed drops below about 40 mph. To change down bring the Power Controller back to idling and immediately select the next lower gear, pause for 2 seconds and then re-apply power. The speeds for down changes in other gears can be deduced from the table show above.

Stopping the Train

To stop the train, return the Power Controller to Idle, select 4th gear, and apply the brake by moving the Brake Valve into the Apply sector. The vacuum will start to drop and the brakes will apply. The further you move into the Apply sector the faster the vacuum will drop and therefore the faster the brakes will come on. To hold the desired vacuum move the valve back into the Hold sector.

Keep 4th gear selected until you’re almost stopped and then select Neutral.

3.9 Destinations

The following destinations are available for the Class 105:

Code	Destination
a	Aberdeen
b	Banff
c	St Combs
d	Dyce
e	Ellon
f	Fraserburgh
g	Elgin
h	Huntly
i	Inverurie
j	Turriff
k	Keith
l	Cullen
m	Maud
n	Aboyne
o	Boat of Garten
p	Peterhead
q	Possil
r	Maryhill Central
s	Banchory
t	Ballater
u	Macduff
v	Inverness
w	Dalmuir Riverside
x	Glasgow Central
y	Portsoy
z	Not in Service

4 Class 25 BR Green

4.1 Class 25 BR Green

The British Rail Class 25 diesel locomotives were also known as Sulzer Type 2. In total, 327 locomotives of this type were built between 1961 and 1967.

The Class 25 locos were primarily designed for freight work, but a significant number were fitted with boilers for heating passenger trains. Throughout the 1970s they could be found at work across the whole of the British Rail network although the Eastern and Southern Regions never had an allocation. Though regular performers into the early 1980s on Crewe–Cardiff passenger trains, they are best known in that respect for their use on the summer Saturday trains to Aberystwyth, a task they relinquished in 1984. The final Class 25 locomotive was withdrawn from service in March 1987.

4.2 Design & Specification

Builder	British Railways and Beyer, Peacock & Co.
Total Built	327
Operator	British Rail
Weight	71 tonnes
Height	3.86m
Length	15.39m
Engine Power	1,250hp
Transmission	Diesel Electric
Max Speed	90mph
Gauge	1,435mm

4.3 Cab Controls

1	Instrument Lights
2	Cab Light
3	Train Brake
4	Engine Brake
5	Sander
6	Wipers
7	Engine Stop
8	Engine Start
9	Horn
10	Reverser
11	Throttle
12	Handbrake
13	AWS Reset

4.4 Headcodes

You can change the headcode of the Class 25 with the following key combinations:

Ctrl+Shift+5
Ctrl+Shift+6
Ctrl+Shift+7
Ctrl+Shift+8

5 Class 08 Shunter

5.1 Background

The story of diesel shunting traction begins right back in the early 1930s, by designers at the London, Midland & Scottish Railway Company. They were however quickly followed by other competitors that made up the 'Big Four' companies on the railways at the time.

With the advent of Nationalisation, diesel shunting technology was far from established with vast amounts of work being spent on design and technology. However, despite a plethora of designs, modifications, and variations, the diesel shunting locomotives found around the country today are all descendants from the LMS design of the 1930s.

In a much refined form, the accepted design became standard when in the 1950s British Railways ordered and had built well over 1000 of the 0-6-0 diesel electric units by various workshops around the country.

These locomotives measured 29ft 3in in length with cab at one end and a full height bonnet at the other. This compartment houses the engine, generator, control equipment, and radiator at the very front. Access to this various equipment is via hinged panels on either side and on the roof.

Forward visibility from the cab is very restricted, but at the time was accepted by the drivers whose previous experience had been obstructed by the boilers of their steam locomotives.

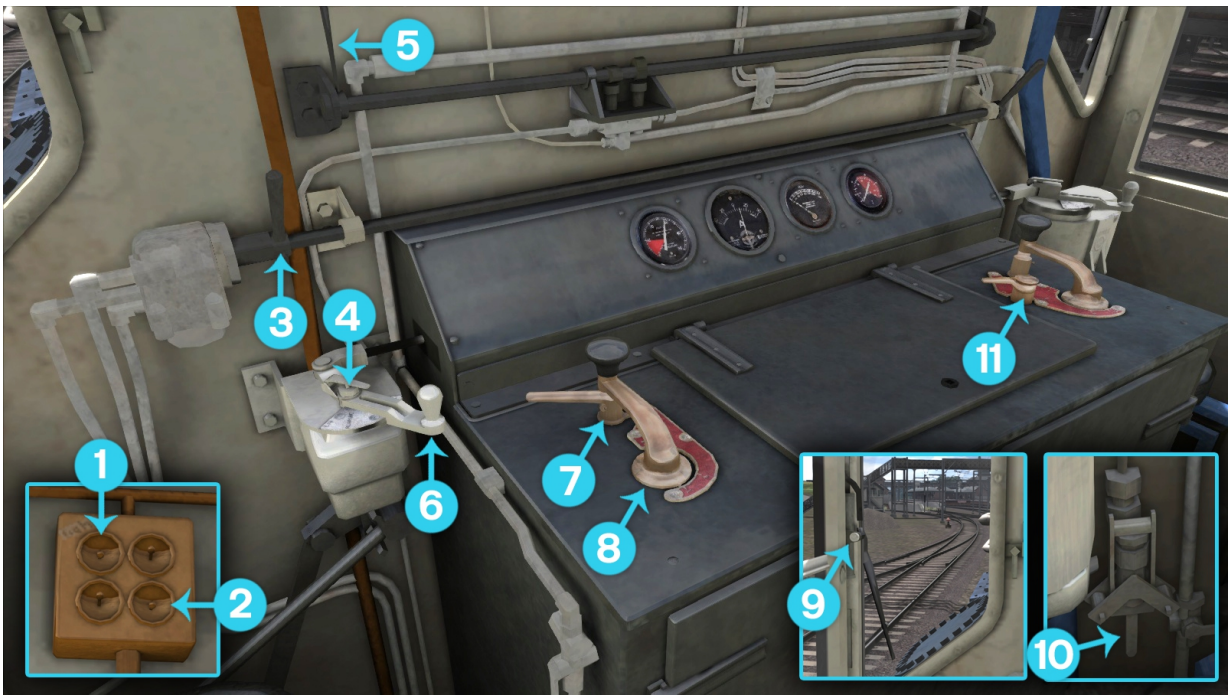
Most of the initial machines were delivered in BR Black, before changing to BR Green in the late 1950s. Further builds began carrying BR standard blue from 1966 until privatisation commenced. By the end of 2003, it would be hard to find a shunting unit not in their owner/operator colours.

Although there is no present plan to replace this work horse of the railway, companies such as EWS who hold a vast number of the remaining fleet still in operation, are initiating various refurbishment programmes to further modernise these almost 60 year old locomotives.

5.2 Overview

Year Introduced:	1953-59	**Cylinder Bore:**	10in
Wheel Arrangement:	0-6-0	**Cylinder Stroke:**	12in
Height:	12ft 8 5/8in	**Brake Type:**	Dual (originally vacuum)
Length:	29ft 3in	**Brake Force:**	19 tons
Width:	8ft 6in	**Min Curve neg:**	3 chains
Weight:	48-49 tons	**Engine Output:**	400hp
Wheelbase:	11ft 6in	**Power at Rail:**	260hp
Wheel Diameter:	4ft 6in	**Tractive Effort:**	35,000lb
Fuel Capacity:	668 gal	**Maximum Speed:**	15-20 mph

5.3 Cab Controls



1	Headlights (H / Shift+H)	**7**	Reverser (W / S)
2	Cab Light (L)	**8**	Power Handle (A / D)
3	Loco Brake ([/])	**9**	Wipers (V)
4	Exhauster Speed-up (P)	**10**	Air Release Valve (Ctrl+I)
5	Sander (X)	**11**	Engine On / Off (Z)
6	Train Brake (; / ')	**12**	Brake Mode (Page Up / Page Down)

5.4 Driving Notes

- Max Speed 15mph
- Brake Modes
  - Unfitted or light engine with vac bag off dummy coupling.
  - Unfitted,light engine or unbraked shunting.
  - Wagons with vacuum brake and no D.A. valves.
  - Wagons with vacuum brake and D.A. valves.
  - Passenger coaching stock with vacuum brake and D.A. valves.

6 LMS Standard Class 2MT

A steam locomotive, the LMS Standard Class 2MT is distributed with the route. Please note that this loco has its own manual and will not be covered in this document.

Driving a steam locomotive can be challenging and will almost certainly take some practice! Remember to set the brakes to "Running" once you get going and not "Release". This allows further pressure to build up in the boiler and prevents running out of steam on long inclines.

7 Signalling

7.1 Signalling Overview

Mostly upper Quadrant Signalling is used on the route, but there were still some leftover lower quadrant distant signals left at decommissioning. Below are the key aspects seen on the line.

HOME CLEAR

With the arm raised, and a green light illuminated, the line ahead is clear for you to proceed.

HOME STOP

With the arm horizontal and a red light illuminated, the line ahead is occupied and you must stop without passing this signal.

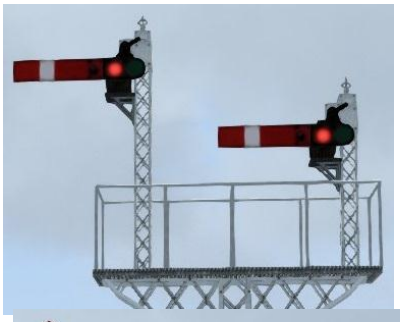
DISTANT CLEAR

With the arm raised and a green light illuminated, the **HOME** signal ahead is displaying **CLEAR**.

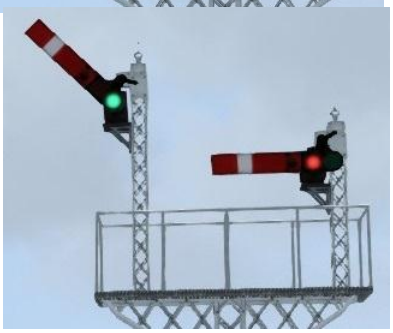
DISTANT WARNING

With the arm horizontal and a yellow light illuminated, you should reduce speed and be prepared to stop at the next **HOME** signal.

It's not unusual to see a combined home and distant signal on the same post. In this case, the red bar indicates you must not pass the current signal, and the yellow bar indicates the next signal is also at danger.



For junctions, both arms horizontal and both displaying red illuminated lights, no route through the junction is clear so you must **STOP** before this signal.



With the taller arm raised and a green light illuminated next to it, the **MAIN** route through the junction is **CLEAR** and you may proceed.

If the shorter arm(s) are raised and a green light illuminated, the **DIVERGING** route through the junction is **CLEAR** and you may proceed.

Be aware of any possible speed limit changes in relation to a change of direction.

A **DIAGONAL** line and **WHITE** light, the route ahead is **CLEAR** to proceed.

A **HORIZONTAL** line and **RED** light, the route ahead is blocked and you must **STOP** before the signal.

These are **SPEED** indicators.

A **WHITE ARROW** indicates a speed in relation to a direction. These appear at junctions.

Your speed must not exceed the white number.

7.2 Non-standard Signals

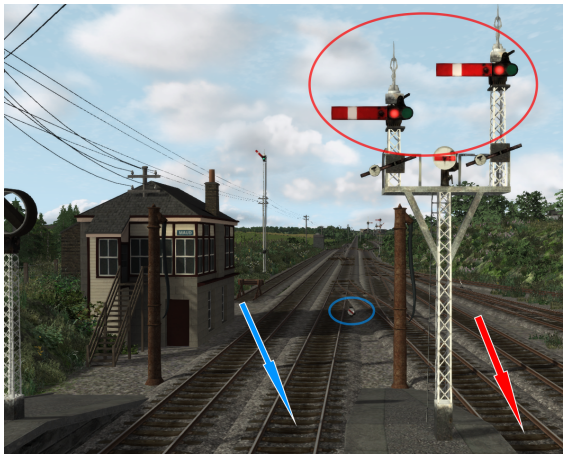
Most signals follow the logic above and are straightforward to read. However, there are several signals at various points throughout the route that require some knowledge beforehand in order to interpret them correctly. The most unusual ones are listed below, although you might find unusual cases all over the place!

This signal on the Waterloo tracks at Kittybrewster actually corresponds to the track second from the right, marked with the red arrow. There are some similar signals all along the main line between Aberdeen and Dyce that appear to be on the opposite side of the track. You can usually tell as the signal will appear offset slightly.

Of course, the exception is on the main line "down" platform at Dyce. Given what I said about the signal looking "offset", you would expect the same here, but no, this offset signal corresponds to the track marked with the arrow!

At Udny, the signal you see here looks like it should correspond to the goods yard, but this is actually the starter signal for the southbound, or "Up" platform. as marked. You will see many cases of this throughout the route.

Similarly, the starter signal for Ellon northbound, or "Down" platform is located on the opposite side of the track, on the "up" side.



And then you have Maud! This signal (circled in red) is really quite misleading, as it looks like the left arm corresponds to the platform marked with the blue arrow, and the right arm corresponds to the platform with the red arrow. However, both arms correspond to the red arrow (Fraserburgh) platform, just indicating that different tracks are set!

The blue arrow platform is actually protected by the little ground signal you see circled in blue. This is due to the fact that this platform is normally used for northbound services, with southbound trains departing from the leftmost platform. The exception to this is the case where a train from Peterhead joins with a train from Fraserburgh, which will use the blue arrow track.

8 Transfer Points

The Buchan Line comes with extensive logic for loading and unloading goods, due to the wide variety of freight operations on the route. This section outlines the different transfer points available.

Overall, the logic for loading an unloading freight is the same for all transfer points, although the sounds and visual representations vary greatly. The procedure is as follows:

To load/unload freight:

- Align the wagon you want to load or unload with the transfer point.

- Click on the transfer point to start the process. Typically, if the wagon is already empty then this will start the process of loading. If it is already loaded then this will start the process of unloading. There are some examples where freight can only be loaded or only unloaded. These are outlined in the individual descriptions below.

- You will either see a short animation signifying the activity, or hear a sound, or both. This is outlined in the individual descriptions below. Generally, something on the wagon will indicate it is loaded - either a small sign, or where the cargo is visible, you will see it in place.

Individual Transfer Points are now outlined below:

8.1 Livestock Transfer Points

There are three different livestock transfer points for cows, pigs and sheep. They all follow the same logic.

If not in use, the transfer point will look like a pen with a small amount of animals in it.

If you trigger loading or unloading, the pen will become filled with the appropriate livestock and you will hear the appropriate sounds. This indicates activity in the transfer point.

Once loading is complete, the livestock will transfer in to the wagon and the transfer point will return to its original state. If unloading, the process will happen in reverse.

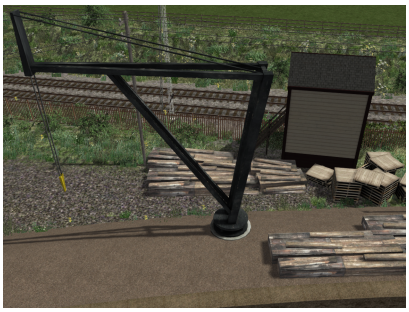
The logic is the same for all three livestock types.

8.2 Cranes

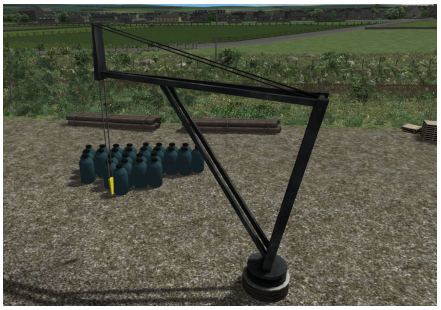
Cranes in the route work similarly to other routes in Train Simulator Classic. There are three types of cargo can be loaded by each crane. Although the cranes themselves look alike, you can generally tell which type of cargo can be loaded by each crane by seeing what is lying around.. The types are:

Containers

Creosote Coated Sleepers



Vats of Creosote



You can also offload vats of creosote at the platform in the Dyce Creosote Factory.

8.3 Fish

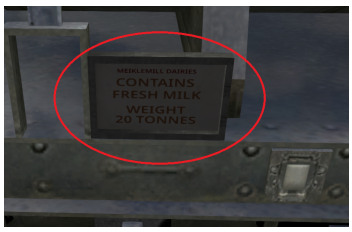
One of the primary cargoes in the route is fish. The fish transfer point is a pile of crates of fish on the platform in Peterhead. Click on it to start the loading process. Note, you will not see any cargo animation during the loading process, but you will hear crates being dragged along the ground.

You can tell loading is complete as a sign will appear on the side of the wagon indicating the contents are perishable. Note, you cannot unload fish cargo at this transfer point.

8.4 Other Transfer Point Types

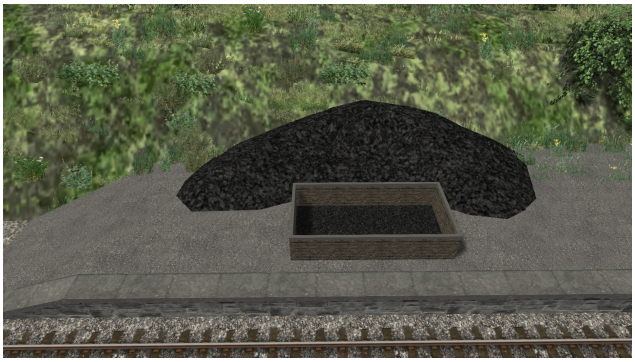
Although not used in any of the scenarios included with the route, there are many other types of transfer point available to use for anyone wishing to create their own scenarios. A brief description of each one is as follows:

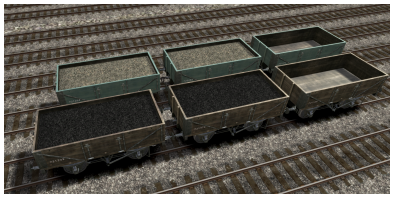
A milk transfer point is a small hut with a sign for a dairy on the top. A loaded wagon will display a "Contains Milk" sign, and the weight of the wagon will increase significantly.



You can process oil at the hut with the "North Oil" sign. Loaded wagons will contain a sign warning contents flammable and the weight of the wagon will increase significantly.

Bulk loads, coal and gravel, are usually represented by a wooden box with a pile of coal or gravel at the side. Note that coal in this case is a cargo and not a fuel. Coal fuel points for steam locomotives will be described later.





A loaded wagon will contain the cargo visibly.

It is also possible to unload coal in to the back of the Kittybrewster Coaling Stage.

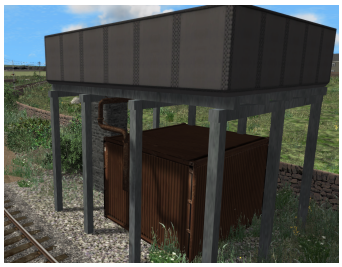
Note that you can load coal as fuel for steam locomotives from the shoots at the front, as described later.

8.5 Refueling Points

As the route is based during the transition from steam to diesel, a wide selection of refueling points are provided. A brief description of each of them is as follows:

Diesel locomotives and units can be refueled at the tank in Kittybrewster Depot.

Steam locomotives can take on coal at the Kittybrewster coaling stage or the coal piles just south of Dyce.



There are various water points scattered around the route. These are either water towers or water swans.

9 INFORMATION FOR DEVELOPERS

The Buchan Line comes with some features that some developers may find useful in other routes and content. The following sections outline some of these features.

Note, that you can generally assume permission is granted for any purpose, including reuse, reskinning and changing features, as long as the route remains a prerequisite at all times. However, I cannot promise to support any issues that may arise from using the features here in any context outwith the Buchan Line.

9.1 Creating Scenarios for the Buchan Line

As has previously been outlined, the Buchan Line comes with some new logic to allow for creating more immersive freight and goods scenarios. If you are planning to create freight scenarios for this route, then the following information should be noted.

- All freight types are logically considered "containers" in the internals of the game, even if they appear to represent something completely different. This applies to everything from fish, to even things that should be bulk loads, like coal and gravel. This technically means it's possible to unload any freight type at any transfer point. It is important to use other logic within the scenario editor to ensure users of the scenario do not attempt to do this! For example, you can set a destination instruction prior to a load/unload instruction to ensure the user is in the right place.

The reason for this is to allow the animation of the goods appearing to be used across all freight types.

- It should be noted that the "level" the freight displays at in the wagons themselves is set to floor level inside the wagon. This is not in keeping with some other wagon DLC, meaning that if you include wagons in your scenario that are not provided with the Buchan Line, you may see the goods floating above the wagon, or appearing to fall through it. Of course, the wagon itself needs to be considered a "container" wagon, meaning most 5 plank or tank wagons will simply not work in this context. You can of course include them in trains, you are just unlikely to be able to load and unload them at the provided transfer points.

Those proficient with the blueprint editor can get around this by creating an alternative wagon blueprint defining the cargo as a container. This does not require a change to the geometry, meaning most DLC can be made to work. Remember to set the cargo to floor level in the "Matrix" section of the Cargo Component if you attempt this.

9.2 Aberdeen Station Asset

Aberdeen station has been recreated as it generally was in the 1960s. At this point, the nothern platforms were still present, but in a state of dereliction and decline, as was in fact common across much of the network at the time.

As Aberdeen station has never been created in Train Simulator before, it is possible that someone may want to include it in a more modern route where the station would look completely different. Therefore, a second station asset titled "FBR Aberdeen Alt" has been provided which can potentially be used as a starting point for a more up-to-date version of the station. This shouldn't be considered complete - more as something to build on.

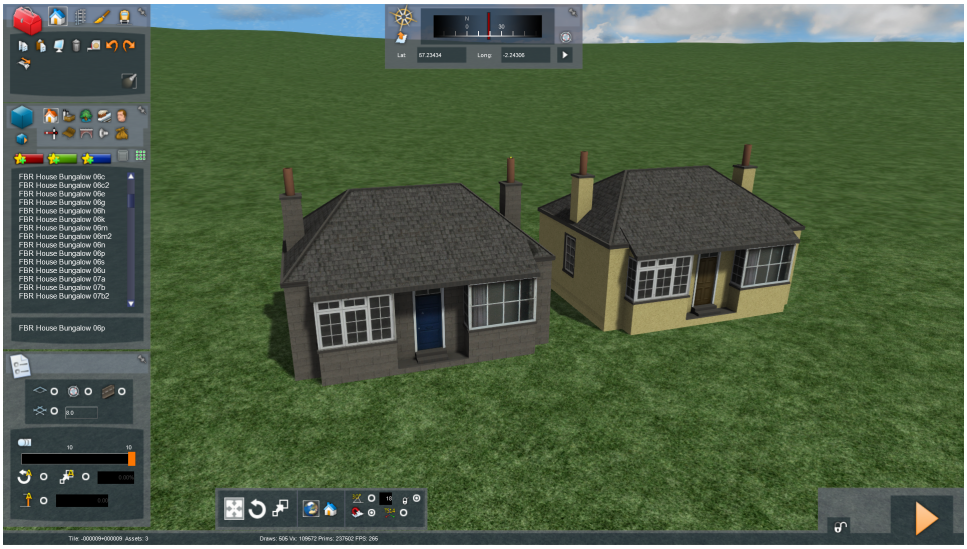
9.3 Buildings

A lot of new buildings have been created for use in the route, typical of the north-east of Scotland. There are dozens of building shapes, from houses to factories to general use buildings, all with a variety of wall textures.

The following table outlines the various wall texture types:

Code	Wall Type
a	Smooth Aberdeen Granite
b	Rough Aberdeen Granite
c	Smooth Peterhead Granite
d	Rough Peterhead Granite
e	Rough Varied Granite
f	Red Brick
g	Uneven Grey Stone
h	White Brick
i	Low Quality
j	Smooth Grey Stone
k	Brown Rough Cast
l	Uneven Peterhead Stone
m	White Rough Cast
n	Dirty Grey Rough Cast
o	Darker Red Brick
p	Lemon Rough Cast
q	Uneven Tinted Stone
r	Bare Wooden Walls
s	Reddish Rough Cast
t	Dirty Cream Rough Cast
u	Smooth Blonde Sandstone
v	Darker Red Rough Cast
w	Prefab
x	Cream Wooden Walls
z	From another route and uses original texture

For example, FBR House Bungalow 06a is a small Scottish style bungalow made out of Smooth Aberdeen Granite, whereas FBR House Bungalow 06p is the same house with lemon coloured rough cast.



10 Credits

We would like to thank those listed below for their contribution to the development of this route. This is including but not limited to:

Friends of Maud:

Alistair Robertson
Jim Gibb
Roger Berl

Great North of Scotland Railway Association:

Graham Maxtone

Alan Thomson of Thomson Interactive for extensive help throughout the entire build process.

Everyone at Dovetail Games.