# Track Builder Tool – CGI Editor

A unique and high performance modelling tool for the creation of virtual reality models of railway. Recently imported for use in the UK by Track Access Services Limited, from the well known German simulation providers KMW.

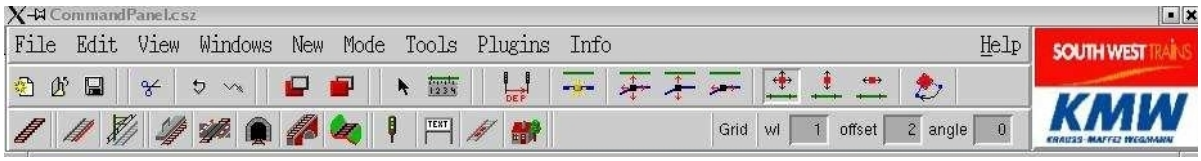
This toolset allows creation of completely functional railway, with the engineering precision required for track building and re-modelling projects. The track builder allows for precise simulation of all track assets and signalling systems and provides an excellent base for desktop signal sighting activities. Finished systems can be transferred to desktop or full cab simulators or simulation environments, where driving scenarios may be examined and adjusted. This information leaflet is accompanied by a demonstration DVD which shows the tool in action.

## KMW-TDE User Interface

The Graphical User Interface for the KMW-TDE (Track Data Editor) is separated into three graphic-windows. The following images illustrate the fundamental principal of the layout. The three windows show from top to bottom the Command Panel, the Viewer Panel and the Height Profile Panel.


*By way of example: User Interface for the TDE for South West Trains Ltd.*

## Command Panel




*By way of example: Command Panel of the TDE for South West Trains Ltd.*

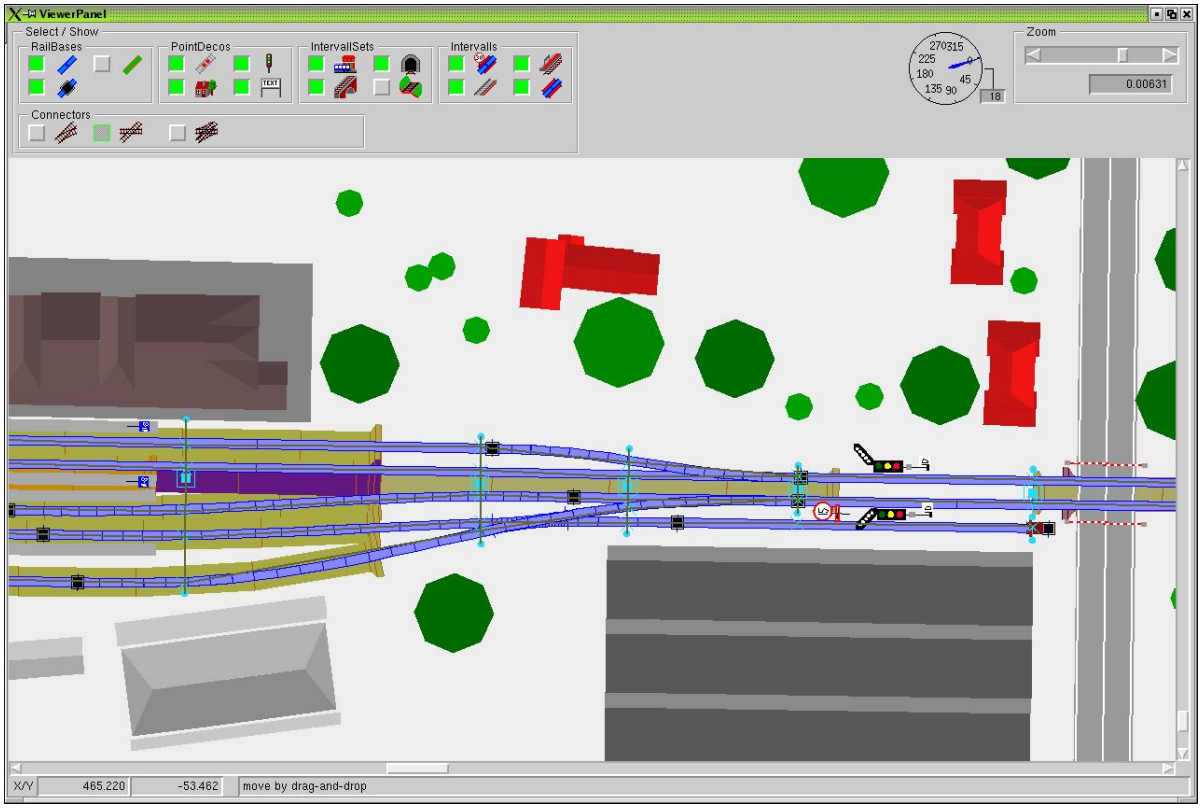
The Command Panel consists of pull-down-menus and some buttons for immediate actions. The following buttons are included:

- Clear the workspace to create a new route
- Load an existing route into workspace
- Save the current database to disk
- Save the current database to disk with a new filename
- Generate database
- Undo and Redo functions
- Switch the Viewer- and the height-panel.
- The “Plugging” menu is the hook for further extensions.
- The “Info” menu shows message-logs for error tracing.

The buttons give shortcuts and additional actions to the menus.

The powerful Undo/Redo function allows to cancel the previous actions the user has done during the current editor-session. In case of a user-mistake it is easy for him to go back through his previous work steps and continue working at an earlier work state. After some Undos the Redo function allows the user to proceed again.

## Viewer Panel

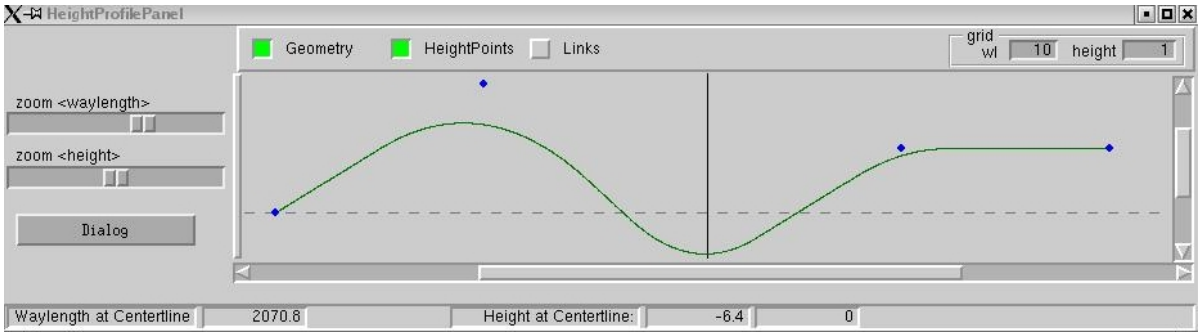



*By way of example: Viewer Panel of the TDE for South West Trains Ltd.*

The main contents of the viewer panel is the orthogonal top view of the route. The upper part of this panel contains buttons to steer the select and show (visibility) mode of database components in the top view. The top view shows all components of the route database in a schematic representation.

All components can be selected with a mouse click; the selected parts are marked as white points representing their bounding box. With a double click the attributes of the selected parts can be modified in an input mask.

## Height-profile Panel




*By way of example: Height Profile Panel of the TDE for South West Trains Ltd.*

With this panel the user will be able to modify the height profile of the entire railway line (“route”). The green line represents the height-geometry of the route; the blue points are base-points at certain positions. Controlled by a dialogue the selected height point can be moved to the desired position.

## Work Cycle

The typical work cycle for modelling a route database consists of the following steps:

- Define route-geometry
- Create tracks
- Define line features like tunnel, station, third rail etc.
- Place signals and magnets
- Define relations
- Define environment
- Place additional objects
- Start generation process

## Object Library

The Track Data Editor comes with an extensive KMW-library with UK-typical objects to be placed into the route database by the user. (please refer to annex A Object Library of the Track Data Editor).

**Tracks, Curvatures, Gradient and Vertical Curvatures**

The KMW-TDE will permit to develop the customers own specific databases with 1 to 8 parallel tracks. The instructor will get the possibility to create the environment of certain training contents depending on the route. Furthermore it is possible to modify and extend exiting geo-typical route databases with new signalling, tracks and other library-components.

**Track Geometry**

The route describes the base-geometry of a database. This is the way the user wants to lay the tracks. The route is defined as a chain of different route elements, which can be one of the following types:

- Straight with length
- Arc with length and radius
- Clothoid (transition curve) with length and start- and end-radius

After creating the route, the user will be able to create new tracks. The maximum number of parallel tracks will be eight.

**Points**

Points are created automatically wherever the end/beginning of track meets another track. The radius depends on the geometry of the sidetrack. This is easily done by one mouse click.

**Point Features**

Point features are objects, whose origin is defined by its position and orientation. They can be placed and moved relatively to the railway line. Their appearance and meaning are defined in the object library (please refer to annex A Object Library of the Track Data Editor).

### Grounds

Background scenery will consist of typical suburban English countryside. The ability to place routes in cuttings or on embankments will be provided. Typical railway features such as tunnels, over and under bridges, viaducts etc will be provided. All railway lines will have line side fencing on both sides of the tracks (please refer to annex A Object Library of the Track Data Editor).

The following different types of environment beside the railway line can be arranged:

- Embankment
- Cuttings
- Flat
- Tunnel
- Over Bridges
- Under Bridges
- Viaducts
- Formation
- Ballast

The KMW-TDE automatically generates a convenient transition from one environment to another.

### Passages

All requirements of section 9.5 of the FCC tender specification will be considered.

### Stations

All requirements of section 9.6 of the FCC tender specification will be considered.

### Other Scenery

All requirements of section 9.7 of the FCC tender specification will be considered, except different types of trains as described in section 8.4.

**Buildings**

Following buildings are available:

- 14 types of large/city houses
- 8 types of small houses
- 7 types of apartment houses
- 4 types of villas
- 15 types of industrial buildings
- 15 types of station buildings
- 2 types of churches
- School
- Pub
- Station bridge
- Station roof

**Vegetation**

- 20 different types of trees and bushes
- 15 different types of 2D bush- and tree-facades
- Moorland
- Grass
- Woodland

**Others**

- Mileposts
- Signal plates
- Plates with station-names
- Platform number plates
- Buffer stops
- Vehicles

**Line features**

Line features are necessary to describe an attribute (e.g. appearance) of a railway line or a rail. It can be defined as an interval with a kilometre-position at the beginning and the end.
The line features can be combined with all tracks.

**Tunnel**

With the tunnel-feature it is possible to define the beginning and end of a tunnel, the shape of the tunnel entrance and its appearance.

**Signals and Signs**

All signals and signs included in the object-library can be placed and moved using the Graphical User Interface of the KMW-TDE. Please refer to annex A Object Library of the Track Data Editor.

**Railway Accessories**

The following types of magnets are available:

- APC
- TPWS_0 testing for 0 miles/h
- TPWS_10 testing for 10 miles/h
- TPWS_20 testing for 20 miles/h
- TPWS_30 testing for 30 miles/h
- TPWS_40 testing for 40 miles/h
- TPWS_50 testing for 50 miles/h
- TPWS_60 testing for 60 miles/h
- TPWS_70 testing for 70 miles/h
- AWS.