



Runway Redeclaration Tool: User Manual

1. General Overview

The application is broken down into:

- The **Toolbar Menu**, displayed on the upper bar of the application;
- The **Application Menu**, displayed on the left side of the application;
- The **Display Area**, which presents the airfield from different views (**Top View** / **Side View**) using the settings selected by the user from the available menus.

When starting the application, the user is presented with a welcome window in which they have options to:

- Start with a new airfield;
- Load a previously created **XML file** of the preferred airfield;
- Choose from demo **XML** configurations;
- Open help;
- Exit application.

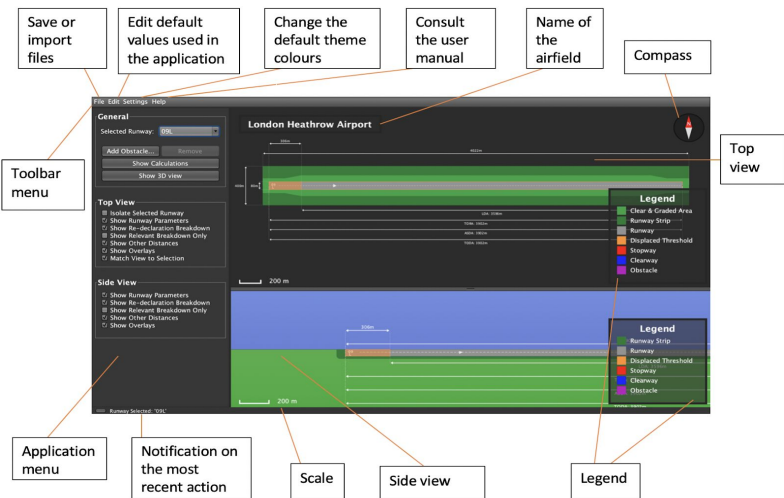


Figure 1. Main window keywords.

2. Application Menu

The application menu has three sections:

1) General

Provides actions related to the selection of a specific runway, adding or removing runway obstacles, showing the calculations for the current parameters and displaying the 3D View;

2) Top View

The menu includes settings related to the display of the top view. These include a set of toggle buttons for:

- ☐ **Showing Runway Parameters:** Displaying TORA, TODA, ASDA, LDA;
- ☐ **Showing Redeclaration Breakdown:** Redeclaration related values such as the RESA, the ALS/TOCS value distance, the Blast Protection distance, the redeclared strip end;
- ☐ **Showing Relevant Breakdown Only:** Displaying only the parameters which were involved in the calculation of the redeclared parameters of the runway;
- ☐ **Showing Other Distances:** Displaying the runway length and width, the length and width of the clearway and the stopway;
- ☐ **Isolating a Runway:** Selecting this would remove all the runways in the top view display but the one that is currently selected;
- ☐ **Showing the Overlay Features:** Displaying the axis, the compass, the legend and the scale;
- ☐ **Showing Background Image:** Displaying the background if one has been configured;
- ☐ **Matching View to Selection:** Rotating the runway into a horizontal position upon selection. The real orientation of the runway would then be displayed by the compass.

3) Side View

The menu includes settings for the display of the side view. These include a set of toggle buttons for:

- ☐ **Showing Runway Parameters:** Displaying TORA, TODA, ASDA, LDA;
- ☐ **Showing Redeclaration Breakdown:** Redeclaration related values such as RESA, the ALS/TOCS value distance, the Blast Protection distance, the redeclared strip end;

- ☐ **Showing Relevant Breakdown Only:** Selecting this means that only the obstacle parameters that were used in the calculation of the redeclaration of the runway will be shown;
- ☐ **Showing Other Distances:** Displays the lengths of the runway, the stopway and the clearway if the latter two are present;
- ☐ **Showing the Overlay Features:** Includes displaying the legend and the scale.

Functionalities the user can find in the application menu

Selecting a runway

To select a runway, the user has to navigate to the **Application Menu**, to the **General** section and click on the drop-down menu marked as **Selected Runway** where they can choose the runway needed.

Isolating a runway

To isolate a runway, the user has to navigate to the **Application Menu**, to the **General** section and select a runway, then navigate to the **Top View** section and click the **Isolate Selected Runway** option if this is not selected.

Adding an obstacle to a runway and removing an existing one from a runway

To **add** an obstacle, a runway must be selected. Afterwards, the user has to click the **Add Obstacle** option which will open a pop-up window that will let the user select the type of obstacle they want to place and insert the necessary distances in order to place the obstacle on the runway.

These distances are:

- ☐ **Distance From Runway Start:** this distance refers to the distance of the obstacle from the edge/beginning of the logical runway with the smaller designator of the pair¹;
- ☐ **Distance From Centerline:** this distance refers to the distance of the obstacle from the centerline of the runway.

When the user has inputted the values for the two distances, the **Confirm** button should be clicked and the obstacle will then show up on the specified runway. This would trigger a redeclaration of parameters if the obstacle is placed close enough to the runway.

When the obstacle is added at more than 75m from the centreline and 60m from the runway start then the runway will not be redeclared. In this instance, the obstacle will still be added on the top and side views but no parameters will be redeclared and the parameters specific for the obstacle will not be available.

To **remove** an obstacle, the user has to select a runway that already has an obstacle placed on it and click the **Remove Obstacle** button in the **General** section of the **Application Menu**.

Note: If incorrect values will be inputted for the necessary distances when adding an obstacle, such as: strings, special characters, numbers starting with a leading zero, these values will be automatically corrected by resetting them to zero or by removing the leading zero.

Displaying the breakdown of the calculation of the parameters for a runway

If the user wants to check how a value of a parameter for a specific runway was obtained they can navigate to the **Application Menu**, under the **General** options and select **Show Calculations**. This button will be unavailable if no runway is selected, as the parameters are specific for runways. Selecting the button will trigger a pop-up window where the user can browse through the different parameters and view how they were calculated, their initial value and their redeclared one (if applicable).

Notifications

The application shows notifications on the bottom of the window regarding the most recent action taken.

Selecting between the three available types of views

The **Top Down View** is always displayed. In order to access the **Side View** display, the user has to select a runway which will open it up. To access the **3D View**, the user has to navigate to the **General** section and click **Show 3D View**. The 3D View will display the current configuration of the top view in 3D.

3. Toolbar Menu

The **Toolbar Menu** contains the following: **File**, **Edit**, **Settings** and **Help**.

¹ NB: this distance does not refer to the distance from the displaced threshold, if any, of the runway

File

The user can select options related to importing and exporting airport configurations, saving the runway parameters and the views of the displayed airfield.

1. **Exporting and Importing Airport Configurations:** The configuration refers to the structure of the runways including names, positions and dimensions, obstacles that might be present on different runways, a list of predefined obstacles and distance values specific for the current airfield. The user can both export and import such a configuration with an **XML** format;
2. **Saving Parameters:** The user can save the current parameters (initial and redeclared) for all the runways present within the airfield in a text file;
3. **Exporting the Top View:** This feature allows the user to save an image of the top view in a **PNG** format file (with the current pan and zoom);
4. **Exporting the Side View:** This feature allows the user to save an image of the side view in a **PNG** format file (with the current pan and zoom).

Edit

The user can choose options for editing distances specific for the airfield, editing the list of predefined obstacles and editing the background of the top view by adding an image to it.

1. **Configuring the Airfield:** The user can edit or remove runways in the current airfield;
2. **Configuring the Background Image:** The user can add an image from their computer and set it up to fit the background of the airfield by panning, zooming and rotating the image;
3. **Configuring the Predefined Obstacle List:** The user can modify the list of predefined obstacles by adding or removing obstacles or by changing the dimensions of an existing obstacle;
4. **Editing the Airfield Name:** The user can change the name of the airfield with this functionality;
5. **Editing the Blast Protection:** The user can modify this value which is by default 300 with a value between 100m and 1000m;
6. **Editing the Minimum Angle of Decent:** The user can modify this value which is by default 50m with another value between 1m and 500m.

Settings

The user can choose between different colour themes (Default, Red-Green Colourblind, Blue-Yellow Colourblind), which provides greater accessibility to colour-blind users and their needs.

Help

The user can consult the user manual.

4. FAQ

- ❑ **How do I add an obstacle to the west of the runway start (threshold) or south of the centerline?** Negative numbers should be used for inputting distances to the west of the runway start (threshold) or south of the centerline and positive numbers for east and north, respectively. For example, if an obstacle is 500m west of the runway and 20m south, then the user should input -500 for the "Distance From Runway Start" and -20 for the "Distance From Centerline".
- ❑ **How do I open up the side view?** The side view automatically shows when a runway is selected.
- ❑ **Is it possible to isolate a runway in the 3D view?** The 3D view renders the runways using the settings the user has configured for the top view. If the **Isolate Selected Runway** checkbox has been ticked, then only the selected runway will be rendered in 3D as well.
- ❑ **From which point of the obstacle should the distance from edge be defined?** When inputting obstacle distance from the edge, the user should consider the distance of the point used for redeclaration calculations. For example, when from the direction of the logical runway with a smaller designator landing and take-off would take place away from the obstacle, then that point should be the furthest point of the obstacle from the start of the runway. Should landing and take-off take place towards the obstacle in that direction, the user should use the point closest to the start of the runway.

5. Known Issues

- ❑ **Loading a new airport after configuring an overlay image for the previous one.** If the user has configured an image overlay for the airfield and decides to load a new airport configuration after doing that, the old image overlay remains for the new airport as well. This may not be the result the user expects. The user would have to clear the overlay image manually by going to **Edit > Configure Background Image...**, then click **Clear Image** and **Confirm**.