

# Runway Redeclaration Tool User Guide

## Group 30

1/5/2022

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## ➤ 1. Introduction

This tool can be used on commercial UK airport runways by Air Traffic Control, providing the user with the revised parameters, a breakdown of calculations along with a two-dimensional view of the runway in the event of an obstacle obstruction. This acts as an aid in deciding whether operations on the given runway may continue.

## ➤ 2. Initial Screen

### Start with example parameters

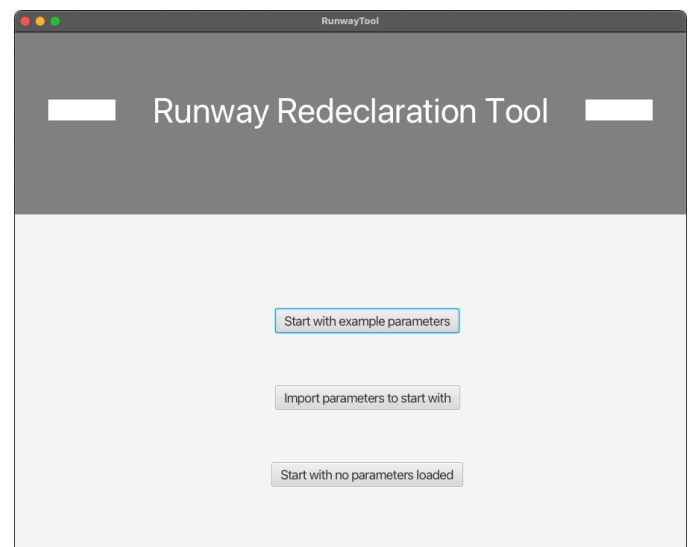
If selected, Heathrow is chosen by default as the airport. Likewise, 9R/27L is set as the default runway and the 'large box' is defined to be the obstacle.

### Import parameters to start with

Users are prompted to choose an xml file from their local storage, from which all information regarding an airport is loaded into the application.

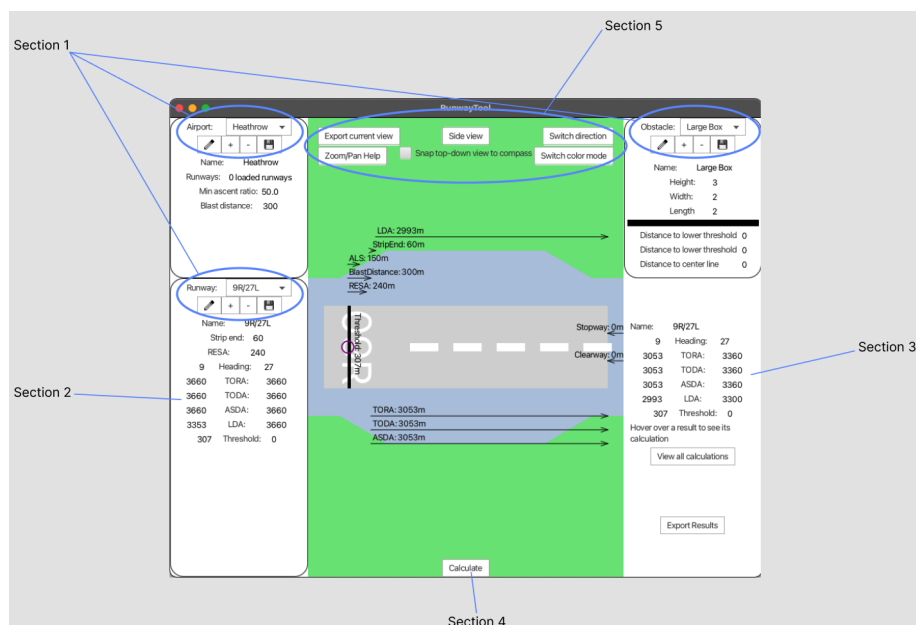
### Start with no parameters loaded

The airport, runway and obstacle are all set to null.



## ➤ 3. Home Screen

*This is the main window of the application. Each section is explained in detail below.*



## Section 1 - Airport, Runway and Obstacle

The '+' button allows a user to define a new airport, runway or obstacle.

The '-' button allows a user to remove an existing airport, runway or obstacle.

The 'Save' button allows for the exporting of .xml files.

The 'Edit' button (pen icon) allows the parameters of an existing Airport, runway or obstacle to be edited.

Error messages will appear for invalid inputs

## Section 2 - Original Parameters

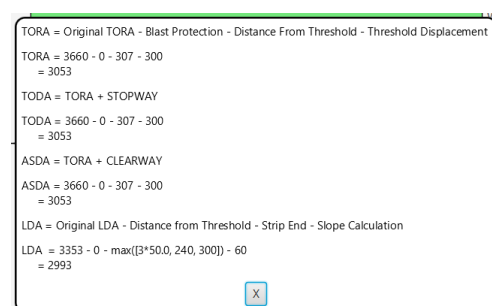
This section of the screen displays the original runway parameters for both logical runways. These values do not change upon recalculation.

## Section 3 - Calculation Breakdown

Here the user can choose to be shown either:

- The revised runway parameters
- The breakdown of calculations

The revised parameters are shown by default. To see the breakdown of calculations the user must hover their mouse over the box and a pop-up box will appear.



## Section 4 - Calculate

In order to perform a calculation, the user must select an airport, runway and obstacle. Please note adding an obstacle to the runway **does not automatically update the parameters**. The 'Calculate' button must be pressed.

## Section 5 - View Modification

Here the user can select whether to show the top-down or side-on view of the runway. The top-down view has more features, including

- Snap to compass position
- Pan - using the W/A/S/D keys
- Zoom - using the Q/C keys

The view is refreshed upon recalculation.

The 'Switch direction' button changes to the other logical runway.

'Zoom/Pan Help' is an in-app guide on how to use the zoom and pan feature.

'Export current view' creates a PNG of the current runway view.

'Switch color mode' is discussed in the next section.

A screenshot of the 'Runway' parameter input form. It includes an 'Import from file' button and an 'X' button. Below is a text area with instructions: 'Populated with default values, values of lower heading on the left, values of higher heading on the right'. The form contains several input fields: 'Strip end:' (60), 'RESA:' (240), 'Lower heading:' (0), and a 'Designator:' dropdown menu (C). There are two columns of inputs: 'Lower' and 'Higher'. The 'Lower' column has inputs for 'TORA:' (1000), 'TODA:' (1000), 'ASDA:' (1000), 'LDA:' (1000), and 'Threshold:' (0). The 'Higher' column has inputs for 'TORA:' (1000), 'TODA:' (1000), 'ASDA:' (1000), 'LDA:' (1000), and 'Threshold:' (0). At the bottom is a 'Create parameter' button.



## ➤ 4. Accessibility

### Colour Blind Settings

The 'Switch color mode' button switches the colour-pallete of the application. This allows the application to be usable for people with the three most common types of colour-blindness.

## ➤ 5. FAQ

1. **Q.** Can a new airport be defined with a name that is already in use? **A.** No, whenever defining a new airport it has to have its own unique name and one that is not already in use.
2. **Q.** Can any numbers be used for the measurements when defining a new runway? **A.** No, firstly, only positive values are allowed and the measurements inputted have to follow the specification. For example, the value of ASDA has to be greater than TORA.
3. **Q.** Why are there two new logical runways when a new runway has been defined? **A.** Each runway has two logical runways, for example, if you were to create 09L its 180-degree counterpart 27R will also be created.
4. **Q.** Can an obstacle with the same name be added more than once? **A.** No, whenever defining a new obstacle it has to have its own unique name and one that is not already in use.
5. **Q.** Can a logical runway be added to an airport with an identical runway that already exists? **A.** Yes, the user can add the same runway to an airport more than once.
6. **Q.** Is there a limit to the dimensions of an obstacle? **A.** No, any new obstacle defined does not have any limit but we recommend the dimensions should be from 1 to 100.
7. **Q.** How should I place an obstacle that occurs before the **lower** threshold? **A.** To place an obstacle that occurs before the lower threshold you should input the distance of the obstacle from the lower threshold as a negative integer e.g. -10 would place an obstacle 10 metres before the lower threshold.
8. **Q.** How should I place an obstacle that occurs after the **upper** threshold? **A.** To place an obstacle after the upper threshold you should input the distance of the obstacle from the upper threshold as a negative integer e.g. -10 would place an obstacle 10 metres after the upper threshold.

## ➤ 6. Known Issues

1. If an obstacle height is too large, the LDA arrow will stay outside the visualisation and can not see, in spite of how much you zoom it.
2. A runway visualisation may be incorrectly represented if the input data passed as the runway redeclaration calculation parameters are "physically impossible". In these cases, it is impossible to see all arrows in visualisation.
3. Upon saving a file successfully, the system shows a popup to notify you. This popup is shown as an error message when it isn't an error.