



# quickGreen

## User Guide

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# 1. Introduction

quickGreen is a graphical tool for measuring and calculating traffic signal phase intergreens. It is designed not only to speed up the measurement process but also to reduce manual errors, improve the ease of checking of intergreens and assist with archiving.

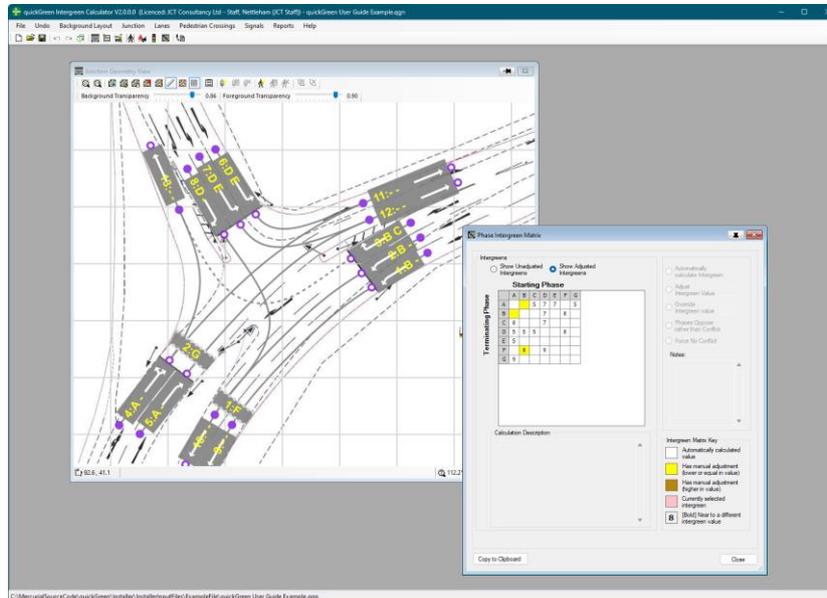


Figure 1-1 – quickGreen Main Window

Phase Intergreens are important safety parameters which ensure sufficient clearance times between traffic starting and stopping at a traffic signal junction. They must be determined as part of a junction's design process usually by considering the junction's geometry and the paths taken by different traffic movements. In the UK phase intergreens are measured and calculated using the method described in Chapter 6 of the Department for Transport's Traffic Signs Manual. This involves determining conflict points between traffic movements and measuring the relative distances traffic movements must travel to reach each conflict point from a scale drawing. The method detailed in Chapter 6 can then be used to convert this information into intergreen values.

quickGreen assists with the calculation of intergreens by carrying out the repetitive conflict distance measuring work which is time consuming and potentially error prone for a person to do but is easy for a computer. It provides the following benefits compared with traditional measurement methods using an intergreen wheel, scale rule, or even a piece of string:

- Reduces the likelihood of measurement or arithmetic errors.
- Speeds up the process of calculating intergreens by automating repetitive tasks.
- Allows the intergreen measurements and calculations to be easily checked.
- Provides a convenient way to easily archive the intergreen measurements and the process by which they were calculated.
- Allows intergreens to be rapidly recalculated if the junction geometry changes during the design process.

Having calculated an intergreen matrix the intergreens can be easily transferred to other software such as LinSig to carry out traffic signal calculations.

## 1.1. Software Support

Software Support is provided with quickGreen free of charge for the first 12 months after purchase.

Software Support includes:

- Free telephone/email advice on the use of quickGreen.
- Minor software updates and bug fixes.

Software support can be accessed by the following means:

- Email at [support@jctconsultancy.co.uk](mailto:support@jctconsultancy.co.uk)
- By Telephone (09:00 to 17:00 UK Time) on (01522) 751010

We will try to reply to software support queries as soon as possible (often by return for simple queries) after we have investigated the issue.

## 1.2. Importing Files from Earlier Versions of quickGreen

Considerations when importing files from earlier versions of quickGreen prior to Version 2.0 are detailed in Appendix A.

## 1.3. Settings and Options

quickGreen has a structured system of options and settings which are used to control how the software works and to make choices on how model results are calculated. The Settings system also allows favourite or company standard settings be set up so that all future quickGreen files use these standard settings. Before creating a lot of quickGreen files it is recommended to review the 'Settings and Options' section below to ensure the settings are set up to correctly for you.

## 2. Model Building Sequence

When building a quickGreen model the following model building sequence is suggested:

1. Start a new File by choosing 'New' from the File menu.
2. Load a Background Layout Image of the junction and calibrate it within quickGreen to allow accurate distances to be measured from the image. The junction's geometry will be overlaid on this background image.
3. Add Lanes to the Junction Geometry positioning them on the Background Layout Image at stop lines on entry Lanes and at exits from the junction.
4. Add Turning Movement Paths from entry Lanes to exit Lanes and adjust their shape using control points to reflect the paths taken by vehicles driving through the junction.
5. Add Pedestrian Crossings overlaid on the Background Layout Image.
6. Add Traffic Signal Phases and specify which Phases control which Lanes.
7. quickGreen will calculate intergreens for the Junction Geometry and display them in the Phase Intergreen Matrix.
8. Examine the calculated phase intergreens and make any manual adjustments required based on knowledge of the junction, local driver behaviour and engineering judgement. Notes can be added explaining any manual adjustments to provide a reasoned audit trail.
9. If required produce a PDF report containing the input information and resulting intergreen calculations.

Remember that although quickGreen automates the repetitive measurements and calculations required when calculating intergreens it is not a substitute for local knowledge of the junction and sound engineering judgement. Calculated intergreens should always be checked to ensure that they are sensible and appropriate for the junction and should be manually adjusted where necessary to take local factors and driver behaviour into account.



## 3. Loading and Calibrating a Background Layout Image

A Background Layout Image must be loaded and calibrated before any junction geometry can be added to the quickGreen Model.

### 3.1.1. Loading a Background Layout Image

A Background Layout Image can be loaded or captured using one of the following methods:

- **Screen Capture.** Capture part of the screen image of other software showing the background layout using quickGreen's screen capture tool.
- **Paste from Clipboard.** Paste a background image from the system clipboard. Place an image on the system clipboard using other software and import into quickGreen.
- **Import from Image File.** Import an image file of format BMP, JPEG, PNG, TIFF, or GIF. PNG or JPEG is recommended.

Whichever method is used to import the background image, better accuracy will be achieved with a higher resolution image that is cropped to focus on just the junction without a wider surrounding area. In particular, when importing from an image file it is advisable to ensure the image file has been created at a good resolution and cropped to contain just the junction. This will help to reduce the loss in detail and accuracy when you magnify the image in quickGreen.

#### 3.1.1.1. Capture Part of the Screen Image

A Background Layout Image based on an image captured from the screen can be imported as follows:

- Display the desired background image of the junction on the screen using other software. Ensure you have appropriate permissions to copy and/or use the image data.
- Choose 'Import Background Image using Screen Capture' on the Background Layout menu.
- Read the provided instructions on how to capture the Background Layout Image.
- If you have multiple screens, choose the screen you wish to capture from in the drop-down list of screens. The screens are ordered in the list from left to right.
- Click 'OK' to begin the screen capture. If you already have a Background Layout Image this will be replaced by the new image and quickGreen will warn you of this.
- quickGreen will hide itself and highlight the screen where the capture is taking place in green. The captured area will be a rectangular area of this screen. To capture click at one corner of the desired capture rectangle, hold down the mouse button and release the mouse at the opposite corner of the capture rectangle.
- The captured area of screen will be imported into quickGreen as a new Background Layout Image.

#### 3.1.1.2. Paste an Image from the Clipboard

A background image can be loaded into quickGreen from the system clipboard as follows:

- Using other image editing software select and place a rectangular section of image onto the system clipboard.

## 6 | Loading and Calibrating a Background Layout Image

- Choose 'Paste a background image from the windows clipboard' from the Background Layout menu. If you already have a Background Layout Image this will be replaced by the new image and quickGreen will warn you of this.
- The image on the clipboard will be imported into quickGreen as a new Background Layout Image.

### 3.1.1.3. Import an Image from an Image File

A background image can be loaded into quickGreen from an image file as follows:

- Using other image editing software prepare a background image and save in BMP, JPEG, PNG, TIFF, or GIF format. JPEG or PNG is recommended.
- Choose 'Import a background image from a file' from the Background Layout menu. If you already have a Background Layout Image this will be replaced by the new image and quickGreen will warn you of this.
- The image file will be imported into quickGreen as a new Background Layout Image.

### 3.1.2. Calibrating the Background Layout Image

After the Background Layout Image has been imported into quickGreen it must be calibrated to allow accurate distances to be measured from the image.

The Background Layout Image can be most easily calibrated using the Automatic Calibration option in quickGreen. This involves positioning a calibration line on the image in a position with a known real-world length. quickGreen can then use this information to calculate appropriate scaling for the image allowing distances to be accurately measured from it.

The Background Image can be calibrated as follows:

- Check that the orange Calibration Line is displayed. If it is not, it can be shown by choosing 'Show Background Layout Image Calibration Line' from the 'Background Layout' menu.
- Drag the Calibration Line onto the Background Layout Image so that is positioned over a feature on the image which has a known distance on the ground.

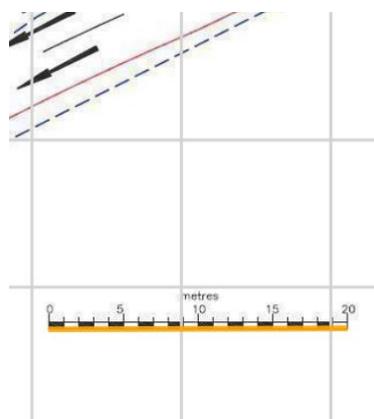


Figure 3-1 – Calibration Line Overlaid on Scale

- Choose 'Calibrate Background Layout Image' from the 'Background Layout' menu. This opens the Calibrate Background Layout View.

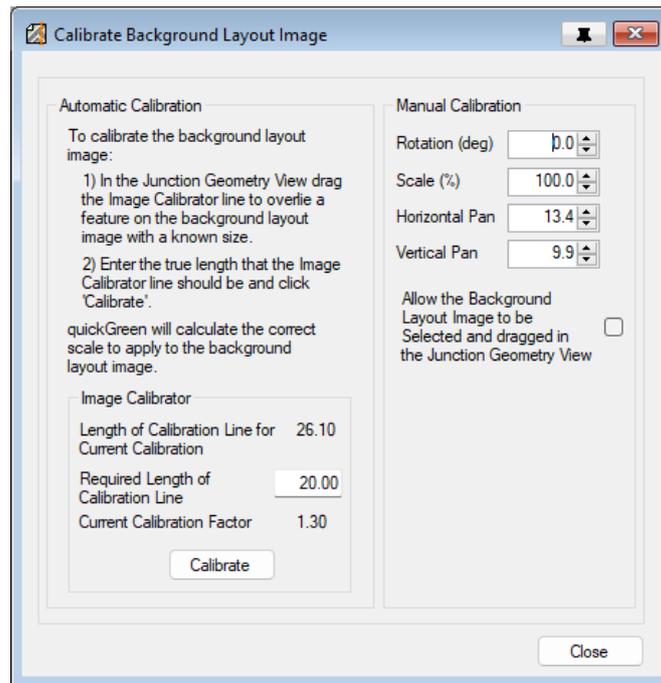


Figure 3-2 – Calibrate background Image Layout View

- In the 'Automatic Calibration' section of the Calibrate Background Layout View quickGreen shows the current as yet uncalibrated length of the Calibration Line.
- Enter the known required true length of the Calibration Line as measured from a drawing or otherwise.
- Click 'Calibrate' to carry out automatic calibration. quickGreen will calculate the scale of the image so that the length of the Calibration Line as measured in quickGreen is equal to its true real-world length. This allows accurate measurements of distances on the Background Layout Image to be carried out in quickGreen.
- When Calibration is complete the Calibration Line can be hidden by unticking 'Show Background Layout Image Calibration Line' on the 'Background Layout' menu.

### 3.1.2.1. Manual Calibration

The scale, position and rotation of the Background Layout Image can be manually adjusted using the 'Manual Calibration' section of the Calibrate Background Layout View. This can be useful if replacing the Background Layout Image with an updated one or one of a different size.

### 3.1.3. Repositioning the Background Layout Image

In some cases, it may be necessary to reposition the Background Layout Image, for example, when importing a new extended or revised Background Layout Image into an existing quickGreen model.

The Background Layout Image can be moved as follows:

- Right click on the Background Layout Image in the Junction Geometry View and choose 'Allow Background Image to be Selected and Moved' from the pop-up menu.

## 8 | Loading and Calibrating a Background Layout Image

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- The Background Layout Image can now be selected and will be shown in red when it is selected.
- When the Background Layout Image is selected it can be moved by dragging with the mouse.
- When the Background Layout Image has been repositioned right click on the Image and choose 'Allow Background Image to be Selected and Moved' again to turn off the ability to drag the Background Layout Image. This prevents it from being inadvertently moved when carrying out normal operations on the Junction Geometry using the mouse.
- The Background Layout Image can also be moved by using Manual Calibration detailed above and changing the Horizontal and Vertical Pan settings.

## 4. Creating the Junction Geometry

quickGreen uses Lanes, Turning Movement Paths, and Pedestrian Crossings to define the geometry of the Junction. This Junction Geometry is then used to carry out intergreen calculations.

The Junction Geometry is overlaid onto the Background Layout Image in the Junction Geometry View so that the position of Lanes etc. reflects their real-world position on the Background Layout Image.

### 4.1. Adding Junction Geometry Items

The Junction Geometry is comprised of:

- **Lanes.** Lanes represent traffic lanes either entering or leaving the Junction.
- **Turning Movement Paths.** Turning Movement Paths represent the centre line of the path vehicles will take driving through the junction from an upstream Lane to a downstream Lane.
- **Pedestrian Crossings.** Pedestrian Crossings represent quadrilateral shaped areas where pedestrians can cross the road within a junction. Only signal controlled crossings are used in quickGreen.

#### 4.1.1. Adding Lanes to the Junction Geometry

- Add a Lane by choosing 'Add New Lane' from the Lanes menu or by choosing 'Add Lane...' from the Junction Geometry View's right-click pop-up menu. The new Lane will be added to the Junction Geometry View.
- Drag the Lane to position it over the lane markings on the Background Layout Image so that the front of the Lane rectangle is lined up with the stop line.
- The Lane can also be rotated by selecting it with the mouse and rotating with the mouse wheel whilst holding Shift down.
- If the Lane has an Advanced Cycle Stop Line (ASL), ensure that the front of the Lane is positioned at the front stop line. More details about working with ASLs is provided in the Advanced Features section.

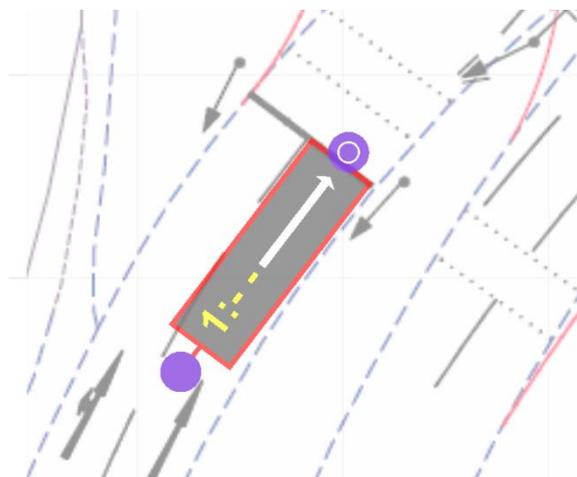


Figure 4-1 – Front of Lane Lined Up with Stop Line

- The Background and Foreground transparency of the Junction Geometry View can be adjusted in the Junction Geometry View's toolbar to make it easier to line up lanes with the Background Layout Image.
- As well as adding Lanes for each entry lane into the Junction an exit Lane is also needed for each exit lane from the Junction.
- A Lane's settings can be edited by double clicking on the Lane. This opens the Edit Lane View for this Lane. The Edit Lane View shows settings for the Lane and its downstream Turning Movements and allows the settings to be changed. This is described in more detail in the 'Edit Lane View' section below.

### 4.1.2. Adding Turning Movements Paths to the Junction Geometry

Turning Movement Paths represent the centre line of the path vehicles will take driving through the junction from an upstream Lane to a downstream Lane. Each turning movement can be shaped using control points to accurately represent the length of the path vehicles will take.

A new Turning Movement Path between an upstream and a downstream Lane can be added as follows:

- Hold the SHIFT key down and then click on the handle at the front of the upstream Lane and drag onto the appropriate downstream exit Lane. When the mouse is over a Lane to which it is valid to add a Turning Movement Path it will be shown in green. Release the mouse button to add an initially straight Turning Movement Path.

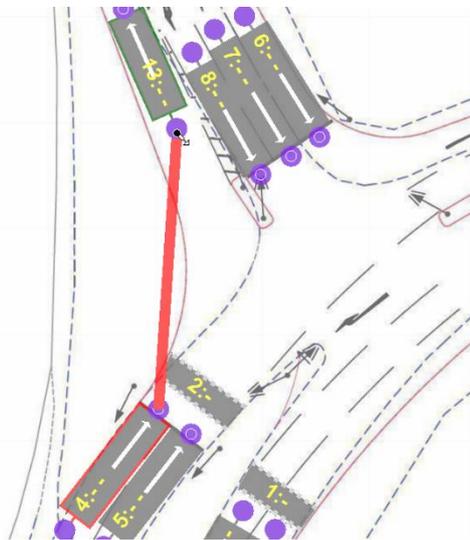


Figure 4-2 – Adding a Turn Path

- The initially straight Turning Movement Path can be refined as a curve so that it correctly represents the curved path of traffic by adding one or more Control Points.
- A Control Point can be added by right-clicking with the mouse on the middle of the straight Turning Movement Path and choosing 'Add Control Point' from the pop-up menu. This will add a new Control Point to the Turning Movement Path at the position of the mouse.
- The Control Point can be dragged with the mouse to shape the Turning Movement Path.

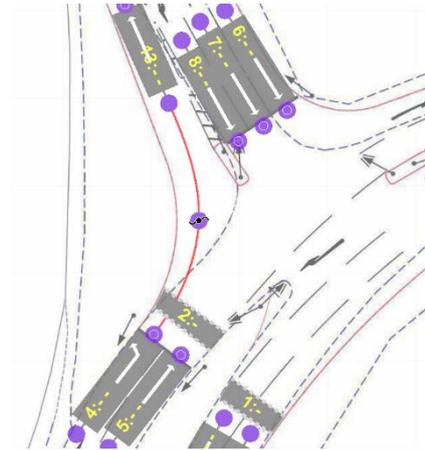


Figure 4-3 - Adding a Control Point to a Turn Path

- Additional Control Points can be added if necessary to refine the Turning Movement Paths shape. Usually only one or two Control Points are required. Excessive Control Points should be avoided as this slows down the intergreen calculations.
- If the Turning Movement Path has the wrong curvature at the point it leaves or enters an upstream or downstream Lane the upstream and downstream curvature can be adjusted using the curvature sliders in the Edit Lane View.

#### 4.1.3. Adding Pedestrian Crossings to the Junction Geometry.

As well as calculating intergreens between traffic movements quickGreen can also calculate intergreens between traffic movements and pedestrian crossings.

Pedestrian Crossing are quadrilateral shaped and are added to the Junction Geometry overlying pedestrian crossings on the Background Layout Image. quickGreen then uses the Pedestrian Crossing geometry in its intergreen calculations.

A Pedestrian Crossing can be added in the Junction Geometry View as follows:

- Add a new Pedestrian Crossing by choosing 'Add Pedestrian Crossing' from the Pedestrian Crossings menu or by right-clicking on the Junction Geometry View and choosing 'Add Pedestrian Crossing' from the pop-up menu.
- Position the Pedestrian Crossing by dragging either the Crossing, its edges or its corners so that it lines up with the crossing on the Background Layout. The Crossing can also be rotated by selecting it with the mouse and rotating with the mouse wheel whilst holding Shift down.

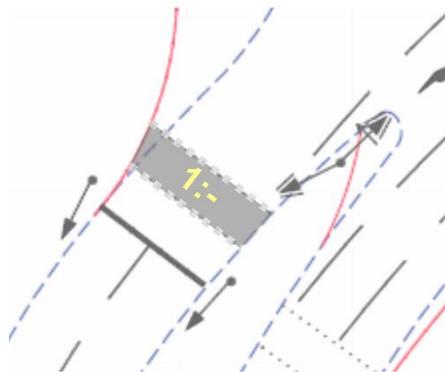


Figure 4-4 - Pedestrian Crossing

- Ensure that the dotted sides of the Pedestrian Crossing correspond with the studded edge of the crossing on the road, not the kerb lines.

Pedestrian Crossings are also shown in the Pedestrian Crossings View which displays a list of Pedestrian Crossings together with calculated results for each crossing. Further information is provided below in the 'Pedestrian Crossings View' section.

Each Pedestrian Crossing has several settings that can be changed to affect how intergreens are calculated. These can be viewed and edited in the 'Edit Pedestrian Crossing' dialog box as described below in the 'Edit Pedestrian Crossing' section.

## 4.2. Adding Traffic Signal Information

### 4.2.1. Adding Traffic Signal Phases

Each Lane is controlled by one, or in some cases two, Traffic Signal Phases. Specifying Phases allows quickGreen to convert conflict distances calculated between Lanes into Phase to Phase intergreens which are the ultimate output from the calculation process.

Phases can be defined using the Traffic Signal Phases View which can be opened by choosing 'Traffic Signal Phases View' from the 'Signals' menu.

Further details of adding Phases are provided in 'Traffic Signal Phases View' section in the View Reference below.

### 4.2.2. Specifying Signal Control for Lanes and Pedestrian Crossings

Now that Lanes, Pedestrian Crossings and Phases have been added each Lane and Pedestrian Crossing must be edited to specify its controlling Traffic Signal Phases. This is carried out in the Edit Lane View and the Edit Pedestrian Crossing View. Further details are provided in the 'Edit Lane View' and 'Edit Pedestrian Crossing View' sections in the View Reference below.

## 4.3. Review Calculated Intergreens in the Phase Intergreen Matrix

When the quickGreen model is complete quickGreen will calculate intergreens for the junction and display them in the Phase Intergreen Matrix. This View can be used to examine the calculated intergreens and how they are calculated. Adjustments to intergreens can also be made in the Phase Intergreen Matrix and notes added to explain the purpose of the adjustment. Further details of how to use the Phase Intergreen Matrix are provided in the View Reference.

### 4.3.1. Intergreen Calculation Method

quickGreen calculates intergreens from the Junction Geometry using the method specified in Chapter 6 of the Department for Transport's Traffic Signs Manual.

#### 4.3.1.1. Traffic-Traffic Intergreens

quickGreen calculates a Phase intergreen for a conflict between a stopping Phase and a starting Phase by calculating stopping and starting conflict distances for all possible conflict points associated with the stopping and starting Phases. For each conflict point quickGreen calculates the difference between the stopping and starting conflict points (known as the 'X' distance in Chapter 6). From the X distance quickGreen then determines the appropriate

intergreen from method provided in Chapter 6. The most critical intergreen will be selected for the stopping and starting Phases.

#### 4.3.1.2. Traffic – Pedestrian Intergreens

quickGreen calculates intergreens between stopping traffic movements and starting Pedestrian Crossings using a similar method to that for Traffic-to-Traffic Intergreens. The conflict X distance for each conflict point is calculated from Junction Geometry as the distance from the stopping Turning Movements upstream Lane's stop line to either the centre line or the furthest stud line of the starting Pedestrian Crossing.

The measurement position of the conflict point on the Pedestrian Crossing can be set separately for each Pedestrian Crossing however it will usually be desirable to use the same setting for all Pedestrian Crossings.

Generally, it is recommended to use the 'furthest stud line' method as this is the recommended method in Chapter 6. The 'centre line' method is however retained for backwards compatibility.

#### 4.3.1.3. Pedestrian – Traffic Intergreens

quickGreen uses a standard calculation (based on section 6.7 of Chapter 6 of the Department for Transport's Traffic Signs Manual) for calculation of the Pedestrian to Traffic intergreen which occurs when a Pedestrian Crossings Controlling Phase terminates. Generally, the terminating intergreen from a Pedestrian Crossing will be the same value for all starting traffic movements.

The intergreen is calculated as:

$$\text{Terminating Intergreen} = \text{Pedestrian Walk Time} + \text{Additional Clearance Time}$$

The Pedestrian Walk Time is calculated using the Pedestrian Crossings walking distance which quickGreen can measure from the Pedestrian Crossing's geometry and a standard Pedestrian Walk Speed. A Pedestrian Walk Speed of 1.2 m/s is commonly used.

In some situations, the design of the junction may require alternative Pedestrian to Traffic intergreens (possibly variable intergreens) to allow for more complex designs involving pedestrian detection. This is currently outside the scope of quickGreen but further guidance on this is available in Chapter 6.



## 5. quickGreen View Reference

quickGreen provides a number of Views that allow settings for the Junction Geometry and other items to be viewed and edited. This section provides a detailed description of each View.

### 5.1. General View Information

#### 5.1.1. Always on Top

Any View can be made to stay on top of other Views by clicking the pin button on the Views title bar. Where two overlapping Views are both pinned the last clicked View will be shown on top of previously used Views.

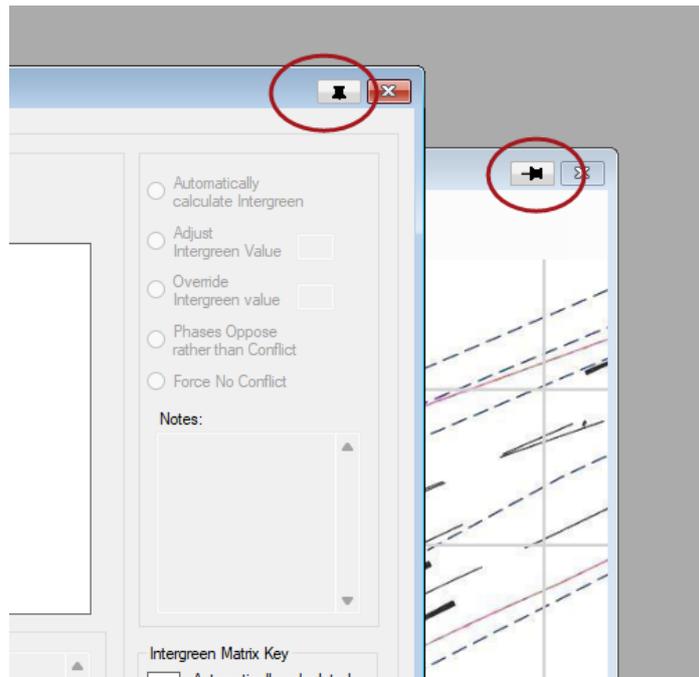


Figure 5-1 – View Always on Top Pins

#### 5.1.2. Undo

As you work on the quickGreen model quickGreen will remember editing actions that have been done to the model and allows them to be undone at any point. Actions that have been undone can also be redone if the model has not been edited after the undo action.

The last action can be undone by choosing 'Undo' from the Undo menu or by clicking on the Undo button on the main quickGreen window tool bar. The last undone action can be redone by choosing 'Redo' from the Undo menu or by clicking on the Redo button again on the main quickGreen window tool bar.

The Undo History View provides more detailed control over undoing previous editing actions and more information is available in the Undo History View section below.

## 5.2. Junction Geometry Input Views

### 5.2.1. Junction Geometry View

The Junction Geometry View is the principal View in quickGreen and shows the Junction Geometry overlaid on the Background Layout Image. The View should normally be kept open but if it is closed it can be reopened by choosing 'Junction Geometry View' from the Junction menu.

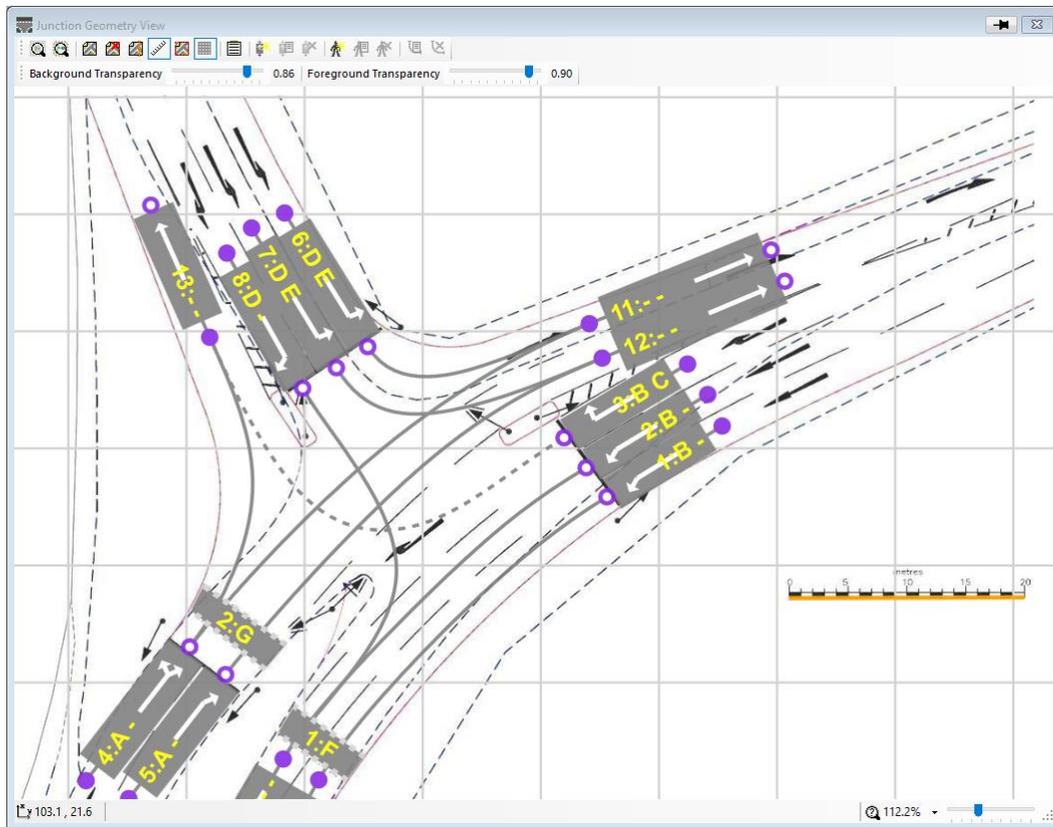


Figure 5-2 – Junction Geometry View

The Junction Geometry View allows Lanes, Turning Movement Paths, and Pedestrian Crossings to be added to create a geometric model of the Junction which is then used by quickGreen to calculate intergreens.

The different items are positioned by dragging them on the calibrated Background Layout Image so that they overlay the corresponding Lane, Pedestrian Crossing etc.

Further details on how to create the Junction Geometry using the Junction Geometry View is provided in the section 'Creating the Junction Geometry' above.

### 5.2.2. Edit Lane View

The Edit Lane View allows a Lane's settings to be viewed and edited. It is opened by:

- Clicking on a Lane to select it and choosing 'Edit Lane' from the Lanes menu.
- Right-clicking on a Lane and choosing 'Edit Lane' from the pop-up menu.
- Double clicking on a Lane.

The Lane displayed in the Edit Lane View can be changed at any time by clicking on a different Lane in the Junction Geometry View.

Turn	To Lane	Turning Movement Adjustment (s)	Only apply adjustment if conflict distance exceeds threshold	Is this turn controlled by the Upstream Lane's Arrow Phase (if configured)
1	11	Not Turning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	13	Not Turning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Figure 5-3 – Edit Lane View

The Edit Lane View can be used to view and change the following settings:

### 5.2.2.1. Lane Settings

- Lane Number.** The Lane number can be changed by selecting a new Lane number from the drop-down list. Other Lanes will be renumbered to accommodate this Lane's new number. The sequence of Lane numbers must be consecutive and cannot contain gaps in the numbering sequence.
- Visual Lane Width(m).** The width of the Lane in metres. This is used only for the visual appearance of the Lane and is not used in the intergreen calculations. If desired all Lanes can be left with a default Lane Width without affecting calculated intergreens.
- Full Green Controlling Phase.** The Traffic Signal Phase which controls this Lane. The Phase must be of type Standard 3 Aspect Phase.
- Arrow Controlling Phase.** The arrow Phase controlling this Lane. The Phase can be either a Filter or Indicative Arrow Phase. Not all Lanes will have an Arrow Phase and it should be left blank if the Lane is controlled by a single Standard 3 Aspect Full Green Phase.
- Advanced Cycle Stop Line (ASL).** A Lane can be set to have an Advanced Cycle Stop Line by ticking the 'Has Advanced Cycle Stop Line' box and specifying the length of the ASL area. The ASL area length is the distance between the front and rear stop lines located at the front and rear of the ASL area. The front of the Lane in the Junction Geometry View should be positioned at the front stop line. More detailed information on Advanced Cycle Stop Lines is provided in the Advanced Features section.

### 5.2.2.2. Turning Movement Settings

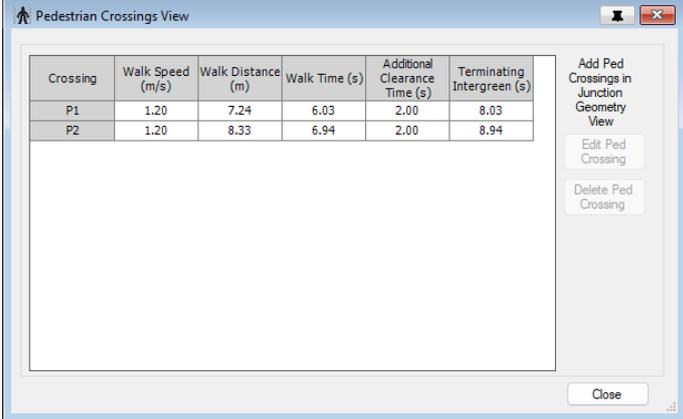
The Edit Lane View shows a list of downstream Turning Movement Paths from the Lane together with settings for the currently selected Turning Movement Path. To select a Turning Movement Path, click on the Turning Movement Path in the Turning Movements list.

The following settings can be viewed and changed for each Turning Movement Path:

- **To Lane.** The downstream Lane that this Turning Movements ends at. This cannot be changed.
- **Turning Movement Adjustment(s).** This specifies the number of seconds to increase the intergreen by for this Turning Movement. This would typically be used where the Lane losing right of way has slow moving traffic due to its radius (or possibly gradient or other factor) and the standard intergreen calculation would not provide a sufficiently high intergreen value. See 'Automatic Turning Movement Intergreen Adjustment' in the Advanced section for further details.
- **Only Apply Adjustment if Conflict Distance Exceeds Threshold.** This setting provides additional control over when any Turning Movement Adjustment is applied. If this setting is ticked for a Turning Movement any Turning Movement Adjustment specified will only be applied for conflicts involving this Turning Movement where the conflict distance is greater than a threshold (defined in the Junction Settings). See 'Automatic Turning Movement Intergreen Adjustment' in the Advanced Features section for further details.
- **Is this Turning Movement Controlled by its Upstream Lanes Arrow Phase?** If this Turning Movement's upstream Lane has an Arrow Phase defined this setting allows each Turning Movement Path to specify whether the upstream Lane's Arrow Phase controls this Turning Movement Path. Normally the Arrow Phase will control all Turning Movement Paths out of a Lane. However, in some cases, for example, a Lane with an ahead and an opposed right turn, the Arrow Phase may only control some of the Turning Movement Paths. In this example the right turn movement would have this setting ticked and the ahead movement would have the setting unticked indicating that the ahead movement is NOT controlled by the right turn indicative arrow Phase.
- **Turn Start/End Curvature.** A Turning Movement's shape is principally controlled by adding Control Points to the Turning Movement Path in the Junction Geometry View. In some cases, however, finer control is required to set the precise shape of the Turning Movement Path at its start or end. The slider controls below the Turning Movements list allow the currently selected Turning Movement's curvature at its start and end to be changed.

### 5.2.3. Pedestrian Crossings View

The Pedestrian Crossings View shows a list of Pedestrian Crossings in the Junction and displays a summary of the Pedestrian Crossings input data and calculation of the Crossings terminating intergreen.



Crossing	Walk Speed (m/s)	Walk Distance (m)	Walk Time (s)	Additional Clearance Time (s)	Terminating Intergreen (s)
P1	1.20	7.24	6.03	2.00	8.03
P2	1.20	8.33	6.94	2.00	8.94

Figure 5-4 – Pedestrian Crossings View

The Pedestrian Crossings View shows the following for each Pedestrian Crossing:

- **Walk Speed (m/s).** The assumed walking speed of a representative pedestrian. In the UK this is usually assumed to be 1.2 m/s however this may be lower where there is a significant proportion of slower walking pedestrians.
- **Walk Distance (m).** The average distance a pedestrian will walk across the crossing. This is either calculated from the Pedestrian Crossings Geometry or can be input to override the calculated value.
- **Walk Time (s).** The time it takes a pedestrian to walk across the crossing at the walk speed.
- **Additional Clearance Time (s).** An additional amount of time to add to the calculated walk time for the crossing to calculate its Pedestrian to Traffic intergreen. This is usually 2 seconds in the UK.
- **Terminating Intergreen (s).** The unrounded terminating Pedestrian to Traffic intergreen for this crossing calculated from the Walk Time and Additional Clearance Time. This value will be displayed rounded in the Phase Intergreen Matrix.

Further details of these settings are given in the 'Edit Pedestrian Crossing View' section.

See 'Intergreen Calculation Method' above for details of how quickGreen calculates the Terminating Intergreen for a Pedestrian Crossing.

### 5.2.4. Edit Pedestrian Crossing View

The Edit Pedestrian Crossing View allows a Pedestrian Crossing's settings to be viewed and edited. It is opened by:

- Clicking on a Pedestrian Crossing to select it and choosing 'Edit Pedestrian Crossing' from the Pedestrian Crossing menu.
- Right-clicking on a Pedestrian Crossing and choosing 'Edit Pedestrian Crossing' from the pop-up menu.
- Double clicking on a Pedestrian Crossing.

The Pedestrian Crossing displayed in the Edit Pedestrian Crossing View can be changed at any time by clicking on a different Pedestrian Crossing in the Junction Geometry View.

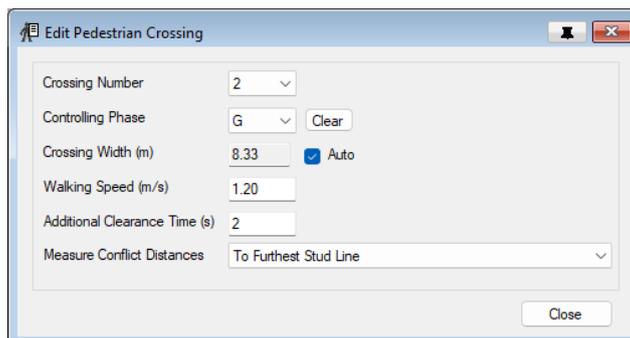


Figure 5-5 – Edit Pedestrian Crossing View

The Edit Pedestrian Crossing View can be used to view and change the following settings:

- **Crossing Number.** The Crossing number can be changed by selecting a new Pedestrian Crossing number from the drop-down list. Other Pedestrian Crossings will be renumbered to accommodate this Crossing's new number. The sequence of Pedestrian Crossing numbers must be consecutive and cannot contain gaps in the numbering sequence.
- **Controlling Phase.** The Traffic Signal Phase that controls this Pedestrian Crossing.
- **Crossing Width (m).** The width of the crossing along its centre line between the two stud lines. This represents the average distance a pedestrian will need to walk to cross on the crossing. If 'Auto' is ticked quickGreen will calculate the crossing width from the Pedestrian Crossing's geometry, otherwise a custom value can be entered to override the calculated value. This distance is used in calculating Pedestrian to Traffic intergreens.
- **Walking Speed (m/s).** The assumed walking speed of a representative pedestrian. In the UK this is usually assumed to be 1.2 m/s however this may be lower where there is a significant proportion of slower walking pedestrians. This value is used in calculating Pedestrian to Traffic intergreens.
- **Additional Clearance Time (s).** An additional amount of time to add to the calculated walk time for the crossing to calculate its Pedestrian to Traffic intergreens. This is often 2 seconds in the UK. This value is used in calculating Pedestrian to Traffic intergreens.
- **Measure Conflict Distances Policy.** Specifies the policy to use for this Crossing when measuring conflict distances used to determine Traffic to Pedestrian intergreens. The policy can be set to either:
  - **To Furthest Stud Line.** This will measure the traffic-pedestrian conflict distance from the terminating traffic Lane's stop line to the Pedestrian Crossing's stud line furthest from the stop line.
  - **To Halfway between Nearest and Furthest Stud Lines.** This will measure the traffic-pedestrian conflict distance from the terminating traffic Lane's stop line to the Pedestrian Crossing's centre line halfway between the nearest and furthest stud lines.

This policy can be set differently for each crossing if required but it is generally recommended to use the same setting for all Crossings.

Although the settings for Walking Speed, Additional Clearance Time and Measure Conflict Distances Policy can be different for each Pedestrian Crossing they will usually be the same

for all Crossings. Default values for these settings can be set in Junction Settings and will then be used when creating all new Pedestrian Crossings.

### 5.2.5. Traffic Signal Phases View

Traffic Signal Phases can be added and changed in the Traffic Signal Phases View.

The Traffic Signal Phases View can be opened by choosing 'Traffic Signal Phases View' from the 'Signals' menu.

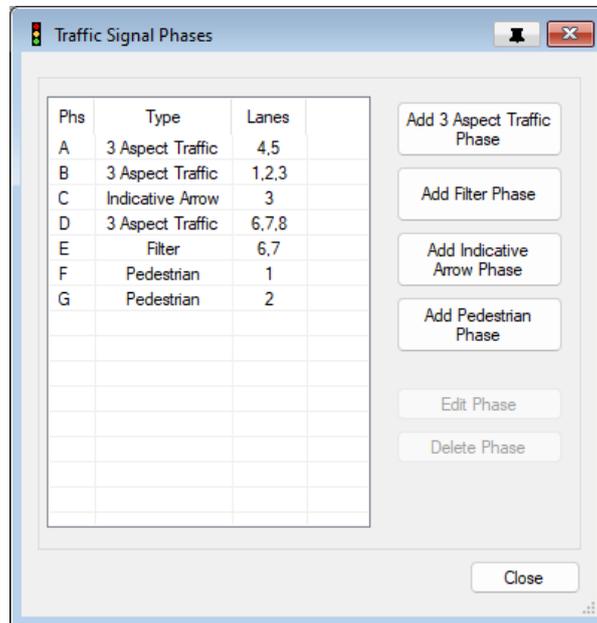


Figure 5-6 – Traffic Signal Phases View

Each Lane is controlled by one, or in some cases two, Traffic Signal Phases. Specifying Phases allows quickGreen to convert conflict distances calculated between Lanes into Phase to Phase intergreens which are the ultimate output from the calculation process.

quickGreen does not require full details of Phases as would be required in more complex modelling software such as LinSig and in most cases only requires the number of Phases and the type of each Phase to be specified.

#### 5.2.5.1. Phase Types

Currently the Phase types supported include:

- **Standard 3 Aspect Phase.** This phase type is used to control standard traffic Lanes by specifying the Lane's Full Green Controlling Phase as a Standard 3 Aspect Phase.
- **Filter Phase.** This phase type can be used as a Lane's Arrow Controlling Phase and follows the normal rules for Filter Arrows on a Lane. Typically, a Filter Phase will control a left turn out of the Lane. The Lane must already have a Full Green Controlling Phase specified before an Arrow Phase can be set for that Lane.
- **Indicative Arrow Phase.** This phase type can be used as a Lane's Arrow Controlling Phase and follows the normal rules for Indicative Arrows on a Lane. Typically, an Indicative Arrow Phase will control an opposed right turn out of the Lane. The Lane must already have a Full Green Controlling Phase specified before an Arrow Phase can be set for that Lane.
- **Pedestrian Phase.** This phase type can be used to control a Pedestrian Crossing.

Where appropriate the Standard 3 Aspect Phase can also be used to represent Phases of types not directly supported such as cycle or bus Phases. Care should be taken however to establish that the standard intergreen calculation method used in quickGreen is appropriate for this Phase type.

### 5.2.5.2. Adding Phases in the Traffic Signal Phases View

Phases can be added by clicking on one of the four 'Add Phase...' buttons which will add a Phase of the appropriate type at the end of the list of Phases.

### 5.2.5.3. Editing Phases in the Traffic Signal Phases View

Phases can be re-lettered, and their type changed by selecting a Phase in the list and clicking 'Edit Phase'.

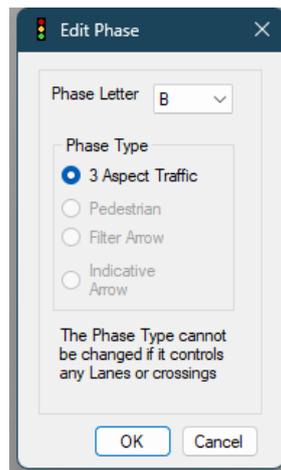


Figure 5-7 – Edit Phase

Phases which have been used to control a Lane or Pedestrian Crossing may be restricted as to which Phase types they can be changed to. If necessary, remove the Phase from controlling a Lane or Pedestrian Crossing, change its type and reconnect it to the new item it controls.

## 5.3. quickGreen Results Views

When the quickGreen model is complete quickGreen will calculate intergreens for the junction. These can be viewed in the Phase Intergreen Matrix with additional detail being available in the Lane Conflict Distances Matrix and the Traffic-Pedestrian Conflict Matrix.

### 5.3.1. Phase Intergreen matrix

The Phase Intergreen Matrix can be opened by choosing 'Phase Intergreen Matrix' from the Signals menu.

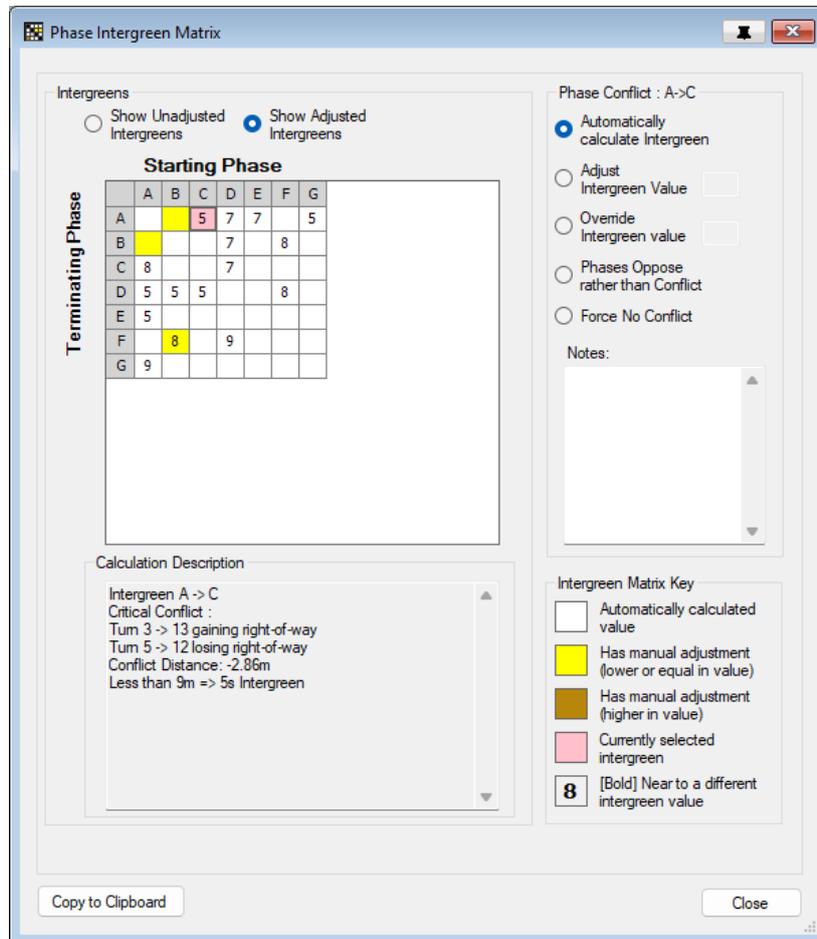


Figure 5-8 – Phase Intergreen Matrix

The Phase Intergreen View shows the following information:

- **The Intergreens Matrix.** The Intergreens Matrix displays the intergreen values calculated by quickGreen for each Phase-to-Phase conflict. Two versions of the matrix are available:
  - Unadjusted Intergreens which shows the calculated intergreens without further adjustments.
  - Adjusted Intergreens which show the intergreens after any user defined adjustments have been included.

A particular Phase conflict can be selected by clicking on a cell in the Intergreen Matrix. This will update the Phase Conflict and Calculation Description sections for this Phase conflict.

The conflicting Lanes, Turning Movement Paths and Pedestrian Crossings for the selected Phase conflict will also be highlighted in the Junction Geometry View with movements losing right of way being highlighted in amber and movements gaining right of way being highlighted in green. The critical conflict point will be highlighted with a blue circle. The example below shows the conflict between Phases D and A.

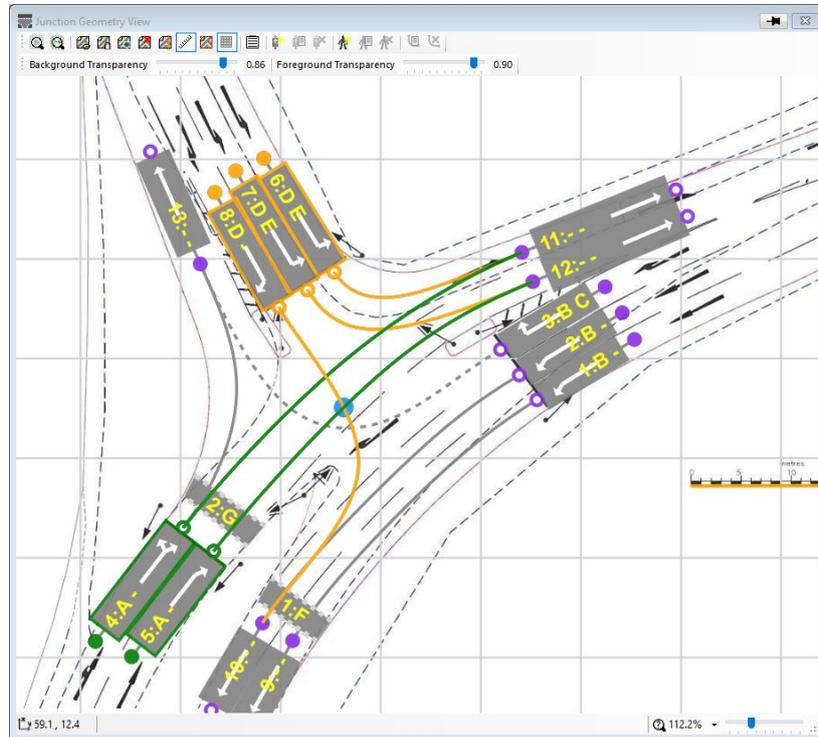


Figure 5-9 – Junction Geometry View showing Highlighted Phase Conflict

- **Intergreen Matrix Key.** Different cells in the Intergreen Matrix may be displayed in different colours indicating they have been adjusted or other status. The Intergreen Matrix key displays the key for different Intergreen Matrix cells.
- **Calculation Description.** A description of the intergreen calculation for the selected Phase conflict is shown detailing how the calculation has been done.
- **Phase Conflict.** Options are shown to adjust the selected Phase conflict. A note can also be added to each Phase conflict to record why any adjustment has been made.

### 5.3.1.1. Phase Intergreen Adjustments

In some cases, it may be necessary to manually adjust intergreens to reflect local knowledge of how the Junction works. This may, for example, be because traffic moves particularly slowly on a stopping movement requiring a longer intergreen than the standard calculation.

In some highway authorities, standard practice has been to increase the intergreen where the stopping movement contains turning traffic. An increase of 2 seconds is commonly used. Although this adjustment could be made as a manual intergreen adjustment, quickGreen has a method of automatically applying Turning Movement Adjustments which should be used in preference to the adjustment method described here. Further details of how to use Turning Movement Adjustments is provided in 'Turning Movement Adjustments' in the Advanced Features section below.

Intergreen adjustments can be made in the Phase Conflicts section of the Phase Intergreen Matrix View and adjusted intergreens can be shown by selecting 'Show Adjusted Intergreens' above the Intergreen Matrix.

The following intergreen adjustments are possible:

- **Automatically Calculate Intergreens.** This is the default option and indicates that no manual adjustments have been made to the intergreen for the selected Phase conflict. Automatic Turning Movement Adjustments may have been made for some Turning Movements and if so, these will be shown in the Calculation Description.
- **Adjust Intergreen Value.** This increases or decrease the calculated intergreen by a specified number of seconds. Use a negative value to decrease the intergreen.
- **Override Intergreen Value.** This allows the calculated intergreen value to be overridden by providing a custom intergreen value.
- **Phases Oppose rather than Conflict.** This indicates that an intergreen should not be defined for a Phase conflict as the movements controlled by the conflicting Phases oppose rather than conflict. This would typically be the case for the Full Green Phase of an opposed right turn and the Full Green Phase controlling its opposing Lanes.
- **Force No Conflict.** This indicates that although quickGreen has detected a geometric conflict for this Phase conflict and calculated an intergreen the intergreen is not required and should be forced to show no conflict in the Intergreen Matrix.

Where an adjustment is made to an Intergreen the intergreen will be shown highlighted in the Intergreen Matrix allowing adjusted intergreens to be easily identified.

Where an intergreen has been adjusted it is recommended that a note is added for the Phase conflict to briefly explain why the adjustment was made.

### 5.3.1.2. Phase Intergreen Boundary Warnings

Where a calculated Phase Intergreen is very close to the next higher or lower integer intergreen value quickGreen can provide a warning. This allows the intergreen calculation to be reviewed to check that the calculated rounded intergreen value is acceptable.

An intergreen value that is near its boundary is shown in bold in the Intergreen Matrix and a note is added to the Calculation Description.

An intergreen value is deemed to be near its boundary when its calculated critical conflict distance is within a specified tolerance distance of a conflict distance at which the intergreen value would change to the next higher or lower integer value. The tolerance distance is set in the Junction Settings and defaults to 0.5m.

### 5.3.1.3. Copying Intergreen Matrix to other Software

The Phase Intergreen Matrix can be copied to the Windows clipboard to allow it to be copied to other software such as LinSig. Click the 'Copy to Clipboard' button to copy the currently displayed adjusted or unadjusted Intergreen Matrix to the clipboard.

### 5.3.2. Lane Conflict Distances Matrix

The Lane Conflict Distances Matrix can be opened by choosing 'Lane Conflict Distances Matrix' from the Lanes menu.

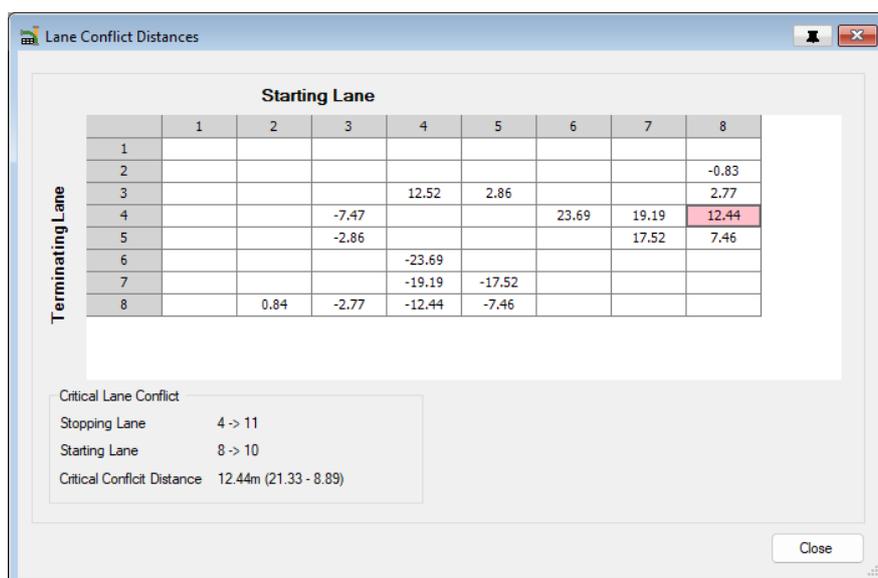


Figure 5-10 – Lane Conflict Distances Matrix

The Lane Conflict Distances Matrix provides additional detail of the conflict distances used to calculate Phase Intergreens. It is not always required however it can be useful when investigating how a particular intergreen has been calculated.

The Lane Conflict Distances Matrix show the following information:

- Lane Conflict Distances Matrix.** The Lane Conflict Distances Matrix shows a grid of each stopping entry Lane against each starting entry Lane. Each cell shows the critical conflict distance for that pair of stopping and starting Lanes. The conflict distance is defined as the distance between the stopping Lane's stop line and the conflict point minus the distance between the starting Lane's stop line and the conflict point. This is equivalent to the 'X Distance' referenced in Chapter 6 of the Traffic Signs Manual.
- Critical Lane Conflict.** If a Lane Conflict is selected in the Lane Conflict Distances Matrix this section shows details of the critical Lane Conflict distance for the selected Lane Conflict. The stopping and starting Turning Movement Paths for the selected Lane Conflict are also highlighted in the Junction Geometry View in a similar way to when a Phase Conflict is selected in the Phase Intergreen Matrix.

If a Phase Conflict is selected in the Phase Intergreen Matrix, the Lane Conflict Distances Matrix will highlight all the Lane Conflicts which contribute to the selected Phase Conflict. The greatest highlighted conflict distance value will be the critical Lane Conflict for this Phase Conflict.

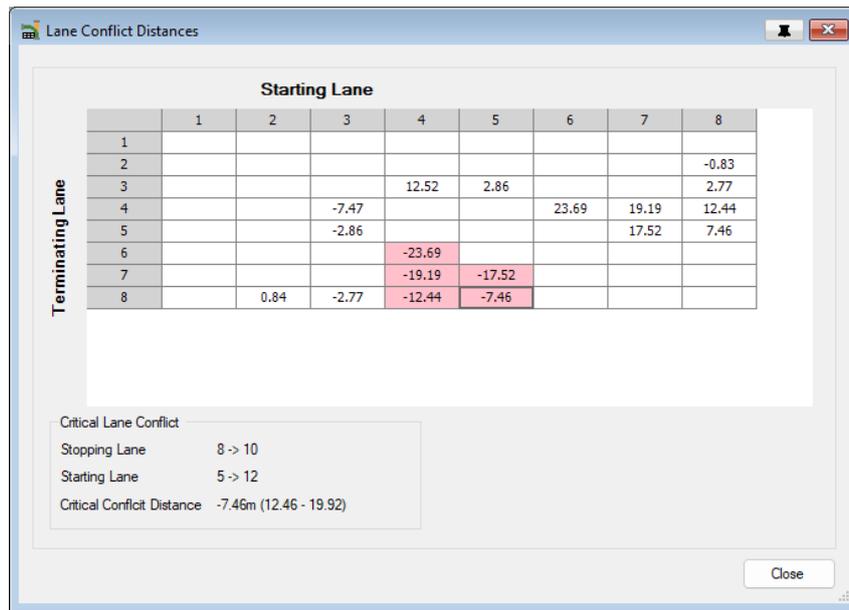


Figure 5-11 – Lane Conflict Distances View with Highlighted Phase Conflict

### 5.3.3. Traffic/Pedestrian Conflict Distances Matrix

The Traffic/Pedestrian Conflict Distances Matrix can be opened by choosing 'Traffic/Pedestrian Conflict Distances Matrix' from the Pedestrian Crossings menu.

		Starting Pedestrian Crossing	
		1	2
Terminating Traffic Lane	1	33.76	
	2	34.92	
	3		
	4		5.44
	5		5.56
	6		
	7		
	8	35.75	

Critical Lane/Pedestrian Crossing Conflict

Stopping Lane 5 -> 12  
Starting Ped Crossing 2  
Critical Conflict Distance 5.56m

Close

Figure 5-12 – Traffic/Pedestrian Conflict Distances Matrix

The Traffic/Pedestrian Conflict Distances Matrix provides additional detail of the conflict distances used to calculate Phase Intergreens for a Traffic to Pedestrian Conflict. It is not always required however it can be useful when investigating how a particular intergreen has been calculated.

The Traffic/Pedestrian Conflict Distances Matrix shows the following information:

- Traffic to Pedestrian Conflict Distances Matrix.** The Traffic to Pedestrian Conflict Distances Matrix displays the conflict distance between a stopping Traffic Turning Movement Path and a starting Pedestrian Crossing. This is the distance from the stopping Turning Movement Path upstream Lane's stop line to either the centre line or the furthest stud line of the starting Pedestrian Crossing depending on the 'Measure Conflict Distances Policy' set on the starting Pedestrian Crossing. See the 'Edit Pedestrian Crossing' section for more details.
- The Critical Lane/Pedestrian Crossing Conflict.** If a Lane/Pedestrian Crossing Conflict is selected in the Traffic to Pedestrian Conflict Distances Matrix this section shows details of the most critical conflict point for the selected conflict including its conflict distance that is used to determine the Traffic-Pedestrian intergreen for this conflict. The stopping Turning Movement and starting Pedestrian Crossing for the selected conflict are also highlighted in the Junction Geometry View in a similar way to when a Phase Conflict is selected in the Phase Intergreen Matrix.

## 5.4. Other Views

### 5.4.1. Audit Log Records View

The Audit Log Records View can be opened by choosing 'Audit Log Records' from the File menu.

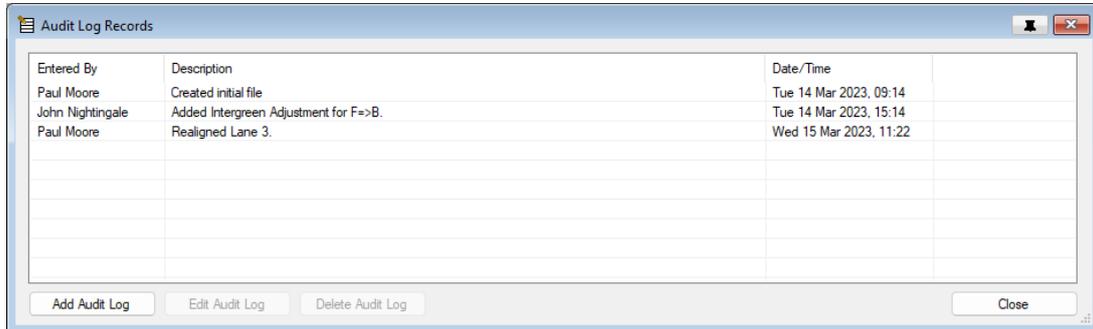


Figure 5-13 – Audit Log Records View

The Audit Log Records View assists with keeping a record of changes made to a quickGreen model. Audit Log Records are saved as part of the quickGreen model allowing a future user to review previous records which may assist with understanding how the model has been developed and changed over time.

Note that quickGreen only facilitates the storage of audit log records and deliberately does not provide any restriction on editing or deleting existing log records.

### 5.4.2. Undo History View

The Undo History View can be opened by choosing 'Undo History View' from the Undo menu.

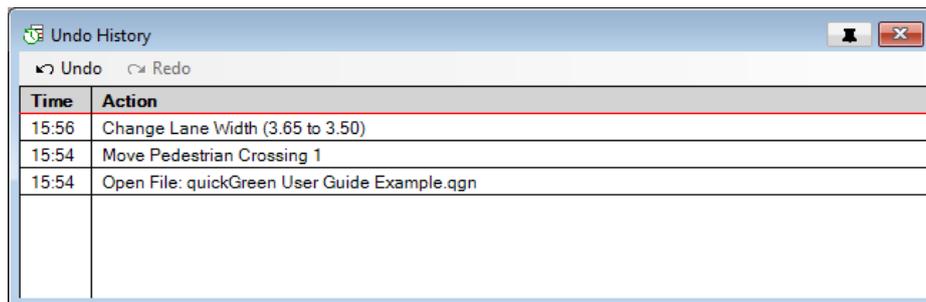


Figure 5-14 – Undo History View

The Undo History View displays a list of previous editing actions made to the quickGreen model during the current run of the software. It allows previous actions to be undone to a point in the past. Where some actions have been undone the Undo History List will show the current position with a red line. Actions above the red line are available for redoing until an edit is made to the quickGreen model which will clear the Redo points.

The following actions can be carried out in the Undo History View:

- **Undo Single Action.** Clicking on the Undo button in the Undo History View's toolbar reverts the last action carried out in the quickGreen model.
- **Redo Single Action.** Clicking on the Redo button in the Undo History View's toolbar redoes the last undone action.

- **Undo Multiple Previous Actions.** Moving the mouse over the Undo History List shows a red line between two Undo points. Clicking on the List with the mouse at that point will Undo all previous actions up to the red line.
- **Redo Multiple Actions.** Clicking on the Undo History List above the current position shown by the red line will redo actions up to the point clicked.

Some more significant actions such as changing the Background Layout Image will clear the Undo List as they cannot be undone.

## 6. Printing and Reporting

quickGreen can provide printed results in two forms:

- **Junction Geometry Drawing.** A drawing showing the Junction Geometry and Background Layout Image scaled within a drawing frame with a title block. This is useful for printing a larger size plan of the Junction Geometry used to calculate intergreens.
- **A PDF report of Junction Input Data and Results.** This provides a comprehensive report detailing the input data for the model and resulting conflict distance and Phase intergreen matrices. This would typically be used for including quickGreen results into a larger report for a client.

### 6.1. Printing a Junction Geometry Plan

The layout of the Junction Geometry Plan is set up using the 'Print Junction Layout' dialog box. This can be opened by choosing 'Print Junction Layout' from the File menu.

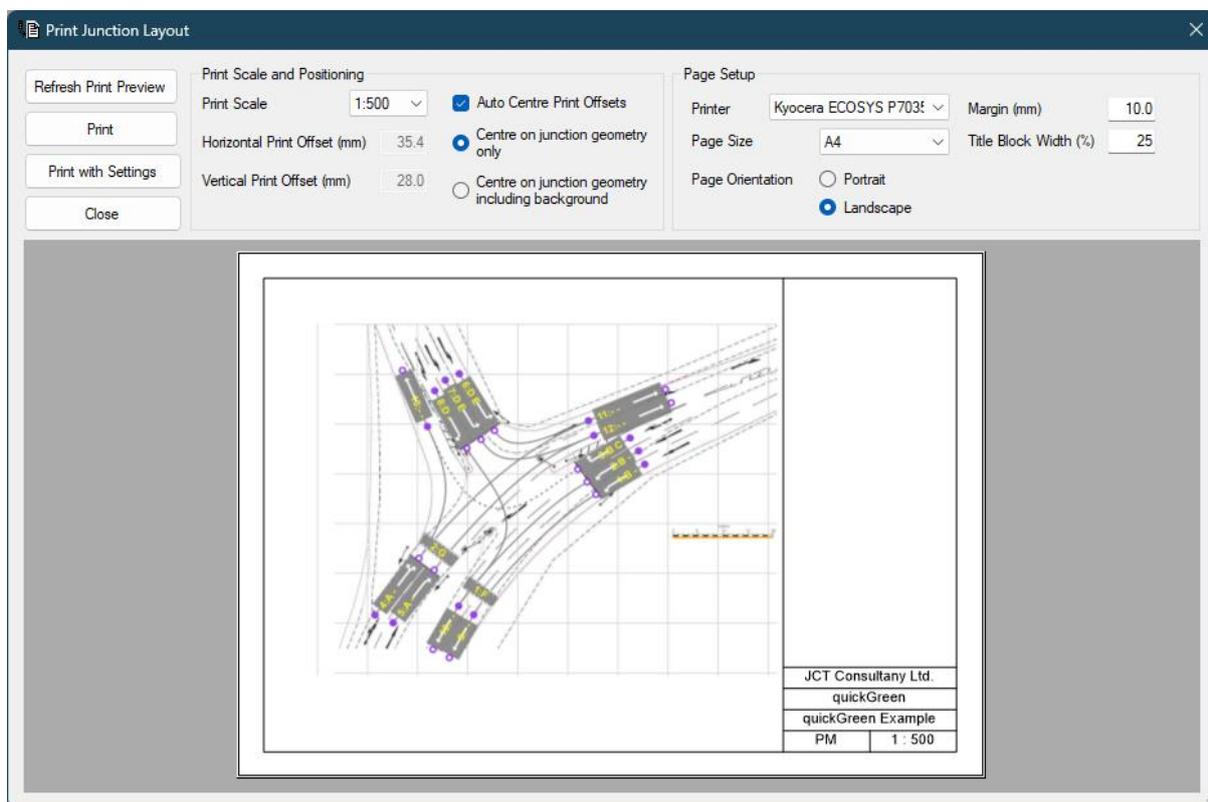


Figure 6-1 – Print Junction Layout

The Print Junction Layout dialog box shows a print preview of the drawing and allows a number of print settings to be changed:

- **Print Scale.** The scale the Junction Geometry will be printed at.
- **Auto-Centre Print Offsets.** If this option is ticked quickGreen will automatically centre the Junction Geometry within the drawing frame.
- **Centre on Junction Geometry Only/Background.** This option controls whether the drawing is centred on only the Junction Geometry or on both the Geometry and Background Layout Image.

- **Print Offsets.** The Print Offsets can be used to manually position the Junction Geometry within the drawing frame if Auto-Centre is switched off.
- **Printer.** The printer on which to print the drawing. This displays a list of printers installed in Windows.
- **Page Size.** The page size to print the drawing on. The available page sizes will depend on the printer selected.
- **Page Orientation.** Whether to print the drawing as portrait or landscape.
- **Margin.** The margin of the drawing frame. This may be constrained by the printer's minimum margin sizes as most printers cannot print close to the edge of the paper.
- **Title Block Width.** The width of the drawing title block as a percentage of the width of the drawing.

When one of the above drawing settings is changed the print preview will usually be automatically updated. It can also be manually refreshed at any time by clicking the 'Refresh Print Preview' button.

When the drawing has been correctly set up it can be printed by clicking the 'Print' button.

If custom settings for a particular printer are required, the 'Print with Settings' button allows the printers custom settings to be set before printing. More uncommon printer settings that cannot be set this way may require changing via the printer's system printing settings.

## 6.2. Reporting

quickGreen reports are generated using the Report Generator. The Report Generator is opened by choosing 'Report Generator' from the Reports menu.

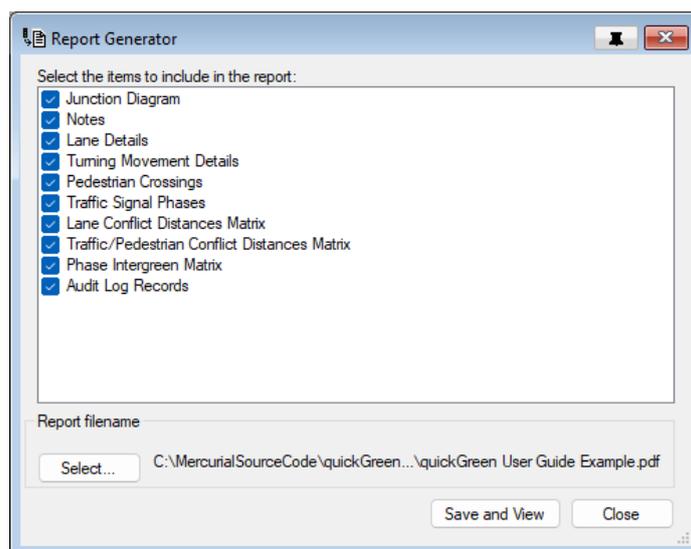


Figure 6-2 – Report Generator

The Report Generator shows a list of available Report Fragments. Each Report Fragment represents a section of a report and each fragment can be chosen to be included or omitted from the report by ticking or unticking each fragment in the Report Generator's list of fragments.

The report will be produced in PDF format and will be saved with the report file name specified in the Report generator.

When the desired set of Report Fragments have been selected the report can be generated by clicking 'Save and View'. The report will be saved at the specified file name and opened in the system PDF viewing application.

If the report already exists quickGreen will prompt to replace the existing report PDF file. However, if the existing report file is open in a PDF viewer it may not be able to overwrite the old report until it is closed in the PDF viewer.

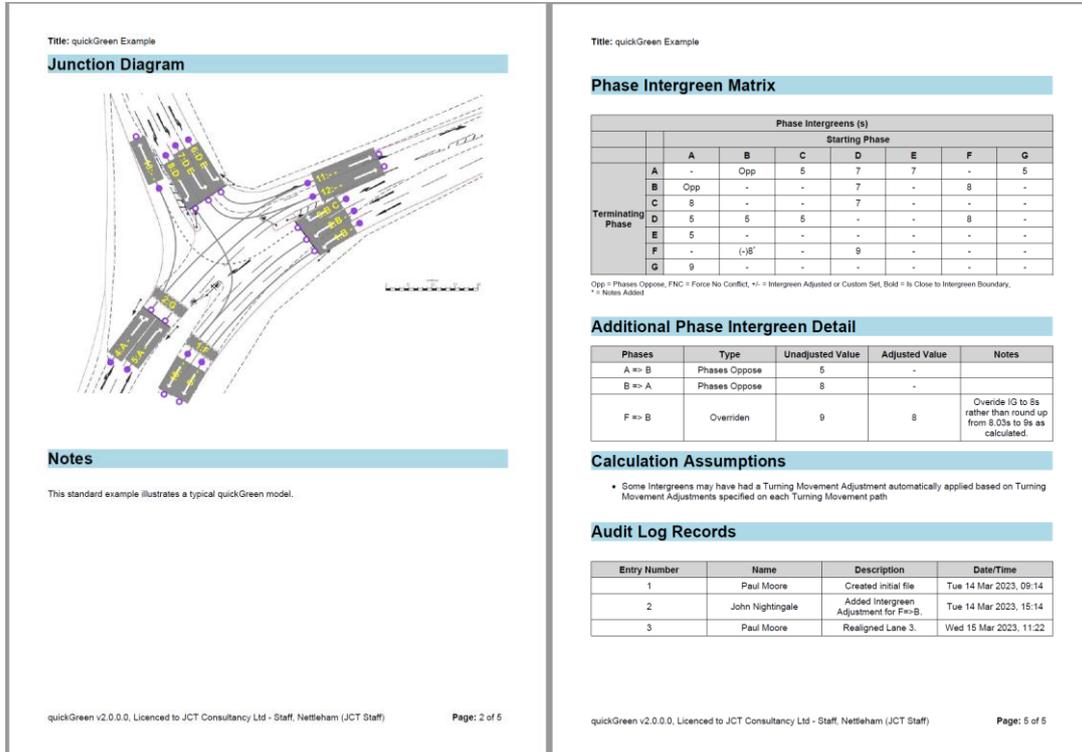


Figure 6-3 – Sample Report Pages



## 7. Settings and Options

quickGreen has a number of settings and options which can be used to control how the software operates, how results are calculated and how information is displayed.

Settings are divided into two sets:

- **Junction Model Settings.** Junction model settings are specific to a particular quickGreen model and are saved in the quickGreen file. As these settings are stored in the file they will always be used for a particular model even if it is opened by a different user. These settings include settings which influence how model results are calculated. Junction Model Settings are grouped into Junction Information and Junction Settings.
- **User Settings.** User settings are specific to a computer quickGreen is being used on (or more accurately are specific to the current logged on user on that computer). They are not specific to a model and will be used for all quickGreen models opened on that computer. Generally, these are settings that affect how information is displayed but do not influence model results. User settings are grouped into Program Settings, Graphical Settings, and Defaults for New Files.

### 7.1. Junction Model Settings

Junction Model Settings apply to the current quickGreen model and are grouped into two categories. These are:

- **Junction Information.** This includes information about the quickGreen files project name, the quickGreen model title, and information on the user creating the quickGreen model.
- **Junction Settings.** This includes settings affecting how model results are calculated and defaults used when creating new Lanes and Pedestrian Crossings in the current quickGreen model.

### 7.1.1. Junction Information

The Junction Information can be viewed and changed by choosing 'Junction Information' from the Junction menu.

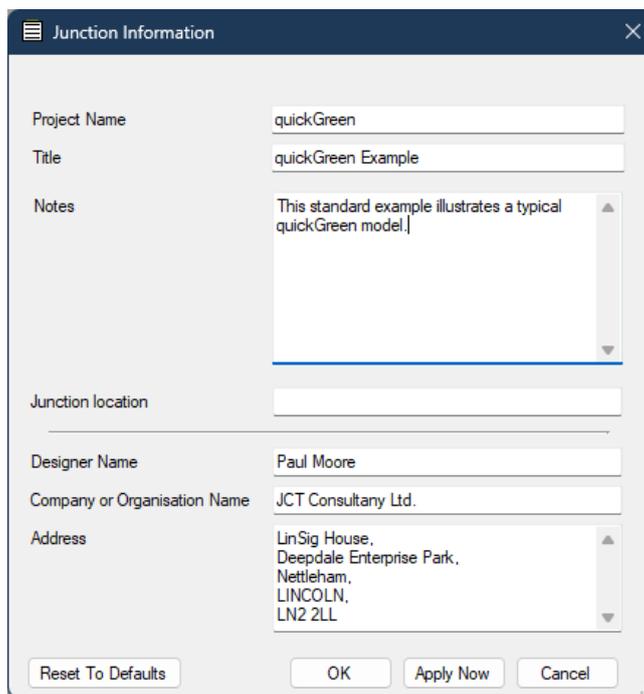


Figure 7-1 – Junction Information

The Junction Information is stored in the quickGreen file and is specific to a quickGreen model.

The Junction Information has the following settings:

- **Project Name.** A name for the project being worked on in quickGreen.
- **Title.** A title for this quickGreen model.
- **Notes.** Any notes about this quickGreen model. The notes can be multi-line.
- **Junction Location.** A reference to where the Junction is located.
- **Designer Name.** The name of the person producing the quickGreen model.
- **Company/Organisation Name.** The name of the company or organisation producing the quickGreen model.
- **Address.** The address of the organisation producing the quickGreen model.

The above settings are generally optional but are useful to document the quickGreen model and will appear on the front page of a quickGreen model report.

Although these settings can be changed for each model the last three settings will tend to be the same for most models. These can have defaults set in 'Defaults for New Files' which will then be used as initial setting values for all future models. See 'Defaults for New Files' below for further details.

## 7.1.2. Junction Settings

Junction Settings are viewed and changed by choosing 'Junction Settings' from the Junction menu.

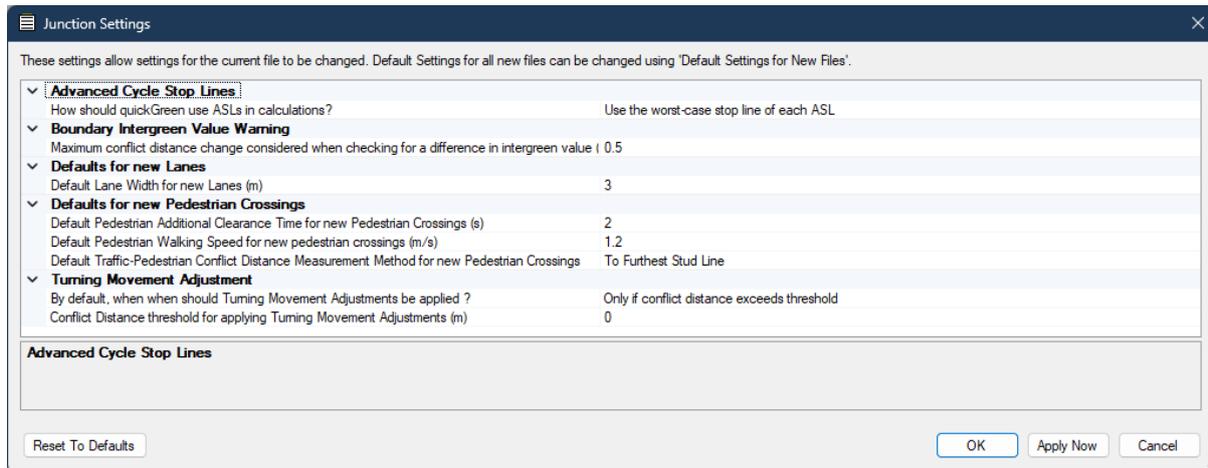


Figure 7-2 – Junction Settings

The Junction Settings are stored in the quickGreen file and are specific to a quickGreen model.

The following settings are available:

- **How should quickGreen use Advance Cycle Stop Lines in Calculations?** This setting governs how quickGreen uses Advanced Cycle Stop Lines (ASLs) in intergreen calculations. The two settings available are:
  - **Use worst case stop line of each ASL.** quickGreen will look at all of the combinations of front and rear stop line when calculating conflict distances and use the worst-case combination of front and rear stop lines for each conflict point.
  - **Ignore ASLs (always use front stop line).** quickGreen will always use the front stop line when calculating conflict distances and assumes all conflict distances are measured only from the front stop-line.

Which setting to use will depend on the standard policy within an organisation or Highway Authority however the first method will generally produce more robust intergreen values.

- **Maximum Conflict Distance Change considered when checking for a difference in Intergreen value (m).** When calculating intergreens quickGreen will also analyse by how much the critical conflict distance would need to change to cause a change in intergreen value either up or down. If the change in conflict distance is less than this setting quickGreen will report a Boundary Intergreen Value Warning for this intergreen in the Phase Intergreen Matrix View indicating that a small change in conflict distance may cause the calculated intergreen value to change.
- **Default Lane Width for new Lanes (m).** This sets the default Lane Width to be used when creating new Lanes in the current quickGreen model. Changing this value will not change the width of previously created Lanes. Note that the Lane Width is used only for visual appearance of the Lane and is not used in Intergreen calculations.
- **Default Pedestrian Additional Clearance Time for new Pedestrian Crossings (s).** This sets the default value for Pedestrian Additional Clearance Time to be used when creating new Pedestrian Crossings in the current quickGreen model. Changing this

value will not change the additional clearance time for previously created Pedestrian Crossings.

- **Default Pedestrian Walking Speed for new Pedestrian Crossings (m/s).** This sets the default value for Pedestrian Walking Speed to be used when creating new Pedestrian Crossings in the current quickGreen model. Changing this value will not change the walking speed for previously created Pedestrian Crossings.
- **Default Traffic-Pedestrian Conflict Distance Measurement Method for new Pedestrian Crossings.** This sets the default Traffic-Pedestrian conflict distance measurement method to use when creating new Pedestrian Crossings in the current quickGreen. Changing this setting will not change the setting for previously created Pedestrian Crossings. See the 'Edit Pedestrian Crossing View' section for further details of this settings.
- **By Default, When Should Turning Movement Adjustments be Applied?** This sets the default Automatic Turning Movement Adjustment policy to set on new Turning Movement Paths. See 'Edit Lane View' above and 'Automatic Turning Movement Adjustments' in the Advanced Features section for further details of this setting. Changing this setting will not change the setting for previously created Turning Movement Paths.
- **Conflict Distance Threshold for Applying Turning Movement Adjustments(m).** This sets the conflict distance threshold to use when quickGreen is deciding whether to apply automatic Turning Movement Adjustments. The threshold set here is used for all Turning Movement Paths in the model that have the 'Only Apply Adjustment if Conflict Distance Exceeds Threshold' policy set. See 'Edit Lane View' above and 'Automatic Turning Movement Adjustments' in the Advanced Features section for further details of this setting.

It is common for Lane Width, Pedestrian Additional Clearance Time, Pedestrian Walking Speed, Traffic-Pedestrian Conflict Distance Measurement Method and 'When Should Turning Movement Adjustments be Applied?' to be the same for all Lanes/Pedestrian Crossings in a model therefore it is recommended to ensure that default values suitable for a new model are set in Junction Settings prior to building the model as this will ensure that all new Lanes/Pedestrian Crossings created in that model are based on the same settings. For unusual cases these values can be changed for individual Lanes/Pedestrian Crossings in a particular model using the Edit Lane View or Edit Pedestrian Crossing View if required.

## 7.2. User Settings

User settings are specific to a user on the computer quickGreen is being used on. They are not specific to a model and will be used for all quickGreen models opened on that computer.

User Settings are grouped into three groups:

- **Program Settings.** These include settings controlling how quickGreen works.
- **Graphical Settings.** These include settings controlling quickGreen's visual appearance.
- **Defaults Settings for new Files.** Where you find you are changing the initial Junction Settings for each new quickGreen model you create, the 'Defaults for New Files' can be used to define default Junction Settings which will be used for all new files created on that computer. This can be useful for setting quickGreen up to always create files initialised with your favourite or company standard settings.

## 7.2.1. Program Settings

Program Settings include settings that control how quickGreen works. The Program Settings can be viewed and changed by choosing 'Program Settings' from the File menu.

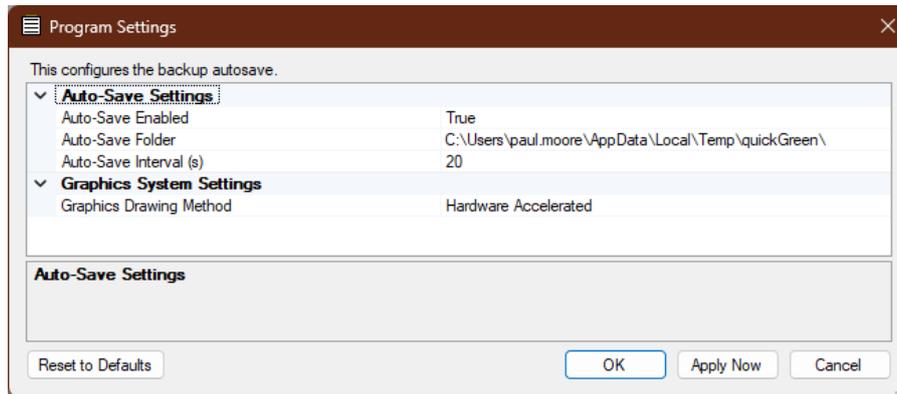


Figure 7-3 – Program Settings

The Program Settings are specific to the computer they are set on and will be used for all quickGreen models being edited on that computer.

The following settings are available:

- **Auto-Save Enabled.** If Auto-Save is enabled quickGreen will periodically save the quickGreen file being worked on, in the background, preserving ongoing work in the event of a crash or other issue. It is recommended that this setting is kept enabled unless you experience problems with using Auto-Save on your computer possibly due to aggressive anti-virus or similar.
- **Auto-Save Folder.** The folder quickGreen will attempt to automatically save the current quickGreen file being worked on to. This should be a different folder to where you keep your completed quickGreen files. quickGreen will default this folder to a folder called 'quickGreen' in the logged-on users Windows 'Temp' folder.
- **Auto-Save Interval (s).** The interval in seconds between Auto-Save attempts.
- **Graphics Drawing Method.** This specifies the graphics system quickGreen uses to draw graphics. This will normally default to Hardware Accelerated and should not be changed unless problems are encountered with hardware accelerated graphics, for example, due to an unsupported graphics card or graphics driver. If it becomes necessary to change this setting, please inform JCT Software Support so we can investigate what may be causing the problem.

## 7.2.2. Graphical Settings

Graphical Settings include settings that control quickGreen's visual appearance. The Graphical Settings can be viewed and changed by choosing 'Graphical Settings' from the File menu.

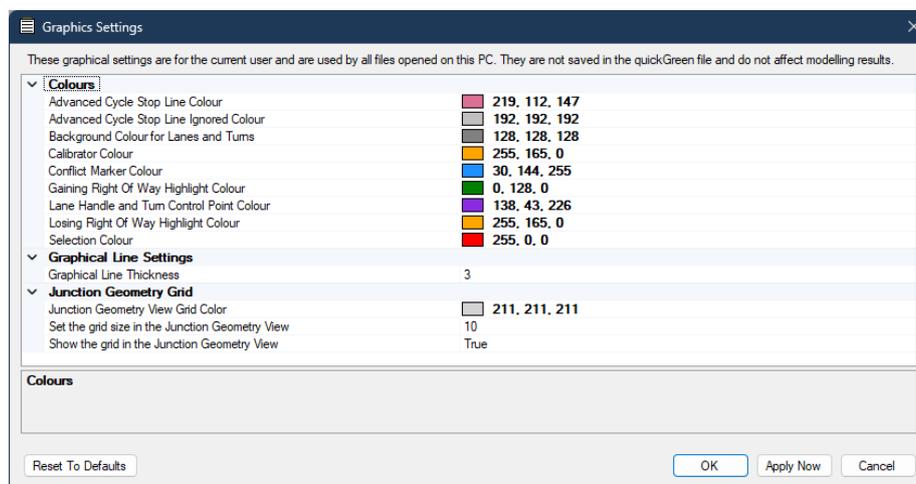


Figure 7-4 – Graphical Settings

The Graphical Settings are specific to the computer they are set on and will be used for all quickGreen models being edited on that computer.

The following settings are available:

- **Colours.** These settings set the display colours for different quickGreen graphical items. It is recommended to use the default colours where they are suitable however where necessary they can be changed to make items more visible.
- **Graphical Line Thickness.** This sets the visual line thickness to use when drawing graphical items in quickGreen.
- **Junction Geometry Grid.** The Junction Geometry Grid superimposes a graphical grid over the Junction Geometry and Background Layout Image in the Junction Geometry View. This can be useful for visually estimating distances and the positioning of items within the quickGreen model. The following settings can be set:
  - **Grid Colour.** The display colour of the grid.
  - **Grid Size.** The spacing of the grid lines.
  - **Show Grid.** Whether to display the grid in the Junction Geometry View.

## 7.2.3. Default Junction Settings and Information for New Files

Where you find you are changing the initial Junction Settings for each new quickGreen model you create, the 'Defaults for New Files' can be used to define default Junction Settings which will be used for all new files created on that computer. This can be useful for setting quickGreen up to always create files initialised with your favourite or company standard settings.

The Defaults for New Files can be opened by choosing 'Defaults for New Files' from the File menu.

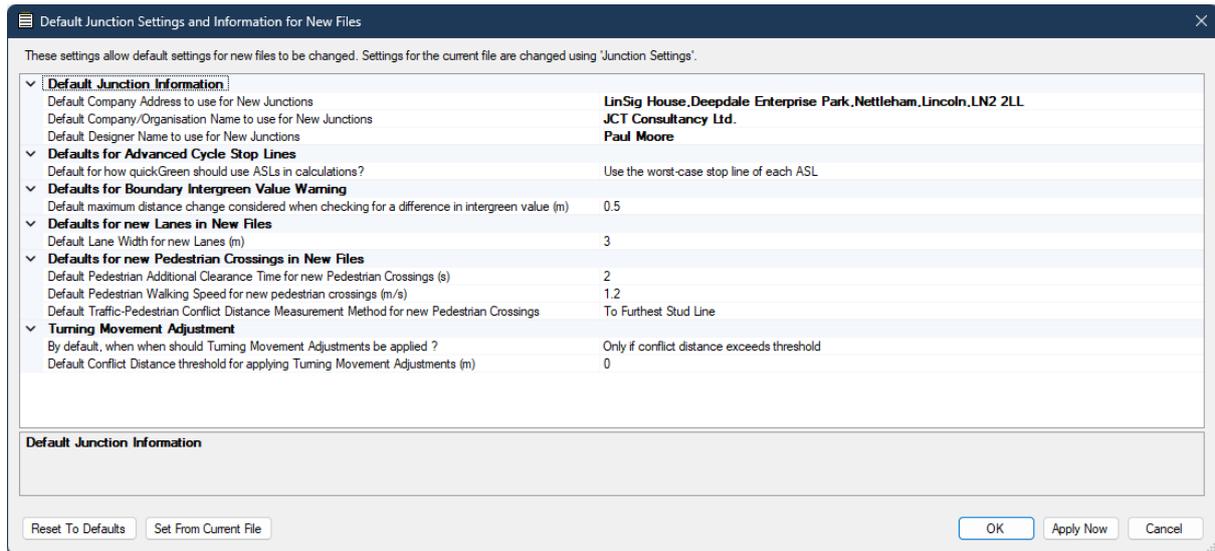


Figure 7-5 – Default Junctions Settings and Information for New Files

The settings available are the same settings as available in Junction Information and Junction Settings as detailed above. The important distinction though is that Junction Information and Junction Settings contain settings for the current quickGreen file. Defaults for New Files contain settings that will be used to initialise Junction Information and Junction Settings in all new files created on this computer. This means that once Defaults for New Files has been set to your favourite or company standard settings all new quickGreen files will have their Junction Information and Junction Settings correctly set when created and only occasional unusual models will require settings changing in Junction Information or Junction Settings.

For explanation of individual setting see Junction Information and Junction Settings above.



## 8. More Advanced Features

### 8.1. Advance Cycle Stop Lines

Advance Cycle Stop Lines (ASL) are used in many areas to assist cyclists at signal stop lines and improve cyclist safety by separating cyclists from motorised traffic. Traffic will stop at the rear stop line. Cyclists will filter past queued traffic on its nearside and wait at the front stop line. Standard practice for measuring intergreens where advance stop lines are used varies between organisations therefore quickGreen allows intergreens to be measured using one of two alternate methods. These are:

- **Use worst case stop line of each ASL.** quickGreen will look at all the combinations of front and rear stop line when calculating conflict distances and use the worst-case combination of front and rear stop lines for each conflict point.
- **Ignore ASLs (always use front stop line).** quickGreen will always use the front stop line when calculating conflict distances and assumes all conflict distances are measured only from the front stop-line.

Which setting to use will depend on the standard policy within an organisation or Highway Authority however the first method will generally produce more robust intergreen values.

The chosen method is specified in Junction Settings. The same method will be used for all Advanced Cycle Stop Lines in the model.

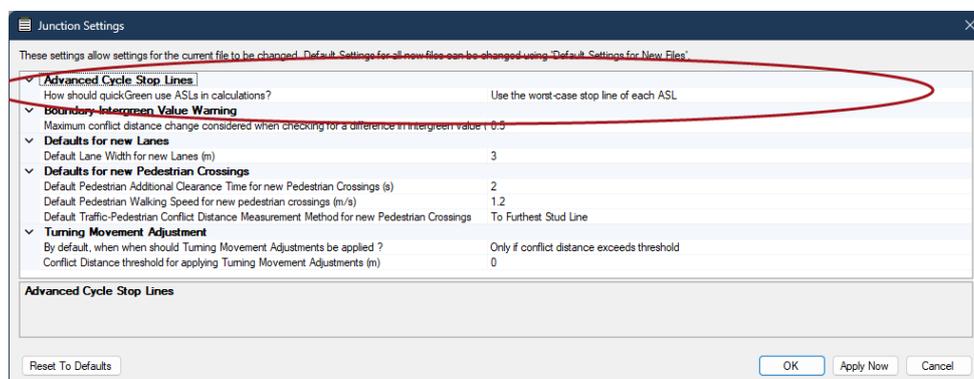


Figure 8-1 – Advanced Cycle Stop Line Measurement Policy

#### 8.1.1.1. Adding an Advanced Cycle Stop Line to a Lane

An Advanced Cycle Stop Line (ASL) can be added to a Lane in two ways:

- Right click on the Lane and choose 'Add Advanced Cycle Stop Line' from the pop-up menu. A default length ASL is created on the Lane.

- Double click the Lane to open the Edit Lane View and tick 'Has Advanced Cycle Stop Line' and specify the length of the ASL.

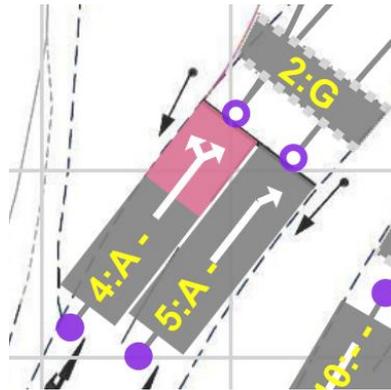


Figure 8-2 – Advanced Cycle Stop Line on a Lane

### 8.1.1.2. Changing the Length of an Advanced Cycle Stop Line

The length of the ASL is defined as the distance between the front and rear stop lines.

The length of an ASL can be changed either by:

- Opening the Edit Lane View for the Lane and changing the length of the ASL.
- Clicking on the rear of the ASL area of the Lane in the Junction Geometry View and dragging it with the mouse to set a new ASL length.

## 8.2. Automatic Intergreen Adjustment for Turning Movements

When calculating an intergreen between two traffic movements it is common practice in some areas to adjust intergreens upwards for turning traffic when the terminating traffic movement contains slow moving turning traffic.

The use of this practice varies between different areas. In early versions of UK Department for Transport Advisory Notes this was recommended practice however in more recent editions of advice on intergreen calculations this recommendation has become more discretionary. In many cases different organisations or Highway Authorities may have their own preferred practice on whether to adjust intergreens upwards for turning traffic.

Although it is possible in quickGreen to manually adjust intergreen values to take into account slow turning movements, quickGreen can also automatically adjust intergreens for turning traffic.

### 8.2.1.1. Defining an Automatic Turning Movement Adjustment for a Turning Movement Path

An Automatic Turning Movement Adjustment is defined on a Turning Movement Path that contains stopping traffic. The Turning Movement Adjustment is set as follows:

- Open the Edit Lane View for the upstream Lane of the Turning Movement Path that contains stopping traffic.

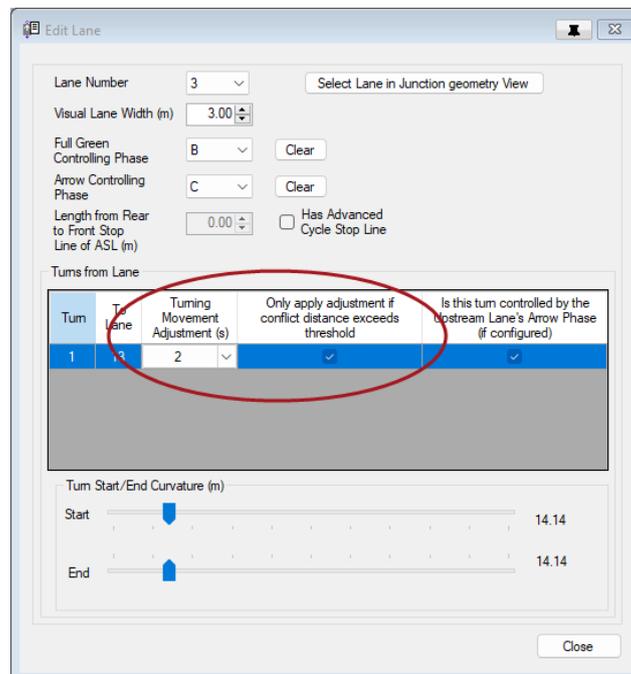


Figure 8-3 – Automatic Turning Movement Adjustment Settings for a Turning Movement Path

- In the list of downstream Turning Movement Paths select the required Turning Movement Path.
- Set the amount of Turning Movement Adjustment to use (in seconds) in the Turning Movement Adjustment column.
- If the Turning Movement Adjustment should only be applied for a conflict that has a conflict distance greater than a specified threshold tick the 'Only apply adjustment if

conflict distance exceeds threshold' column for the Turning Movement Path. If this setting is unticked the Turning Movement adjustment will always be applied regardless of conflict distance.

- quickGreen will show any Turning Movement Path with a Turning Movement Adjustment as dashed.

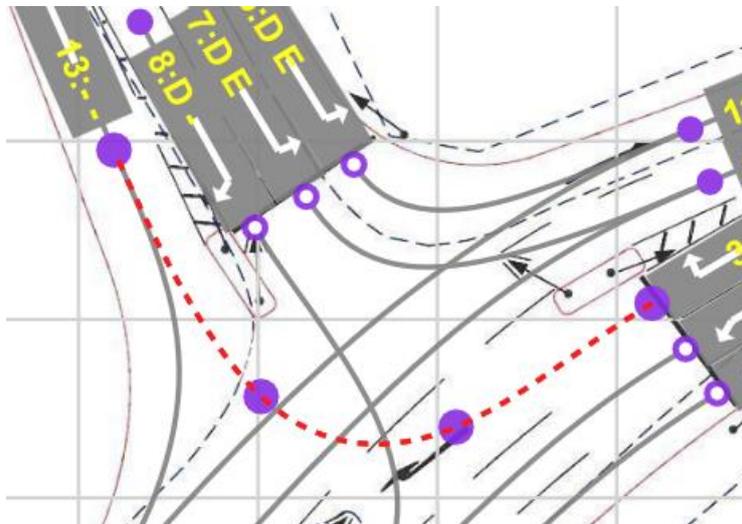


Figure 8-4 – Turning Movement Path with a Turning Movement Adjustment

Note that an Automatic Turning Movement Adjustment is only applied to an intergreen for which the Turning Movement Path with the Turning Movement Adjustment is terminating.

If a Phase controls multiple Turning Movement Paths, only some of which have Turning Movement Adjustments defined, an automatic Turning Movement Adjustment will only be applied to the intergreen if a Turning Movement Path with a Turning Movement Adjustment is the critical conflict.

#### 8.2.1.2. Using a Turning Movement Adjustment Conflict Distance Threshold

For conflicts between a stopping Turning Movement Path and another Turning Movement Path where the conflict distance is very small or negative it may be unnecessary to apply the Turning Movement adjustment as in this case the minimum intergreen may provide a sufficient intergreen without the Turning Movement Adjustment.

quickGreen can automatically allow for the above by using the Turning Movement Conflict Distance Threshold. When using the threshold if the conflict distance for a stopping Turning Movement Path and another starting Turning Movement Path is less than the threshold distance the Turning Movement Adjustment will NOT be applied.

The Turning Movement Adjustment Conflict Distance Threshold is used as follows:

- In Junction Settings set a value for the Turning Movement Adjustment Conflict Distance Threshold. A value of zero is commonly used which cause the Turning Movement Adjustment to NOT be applied for conflict points with negative conflict distances. This threshold is used for all conflicts in the Junction. Also see the Junction Settings section for further details.
- Turning Movement Paths that have a Turning Movement Adjustment set as detailed above can optionally use the threshold to refine when the adjustment is applied.
- To only apply the Turning Movement Adjustment for a Turning Movement Path when the conflict distance exceeds the threshold tick the 'Only apply adjustment if conflict

distance exceeds threshold' setting for the Turning Movement Path in the Edit Lane View. If this setting is unticked the Turning Movement adjustment will always be applied regardless of conflict distance.



## A. Appendix A – Upgrading from an Earlier Version

The current version of quickGreen - Version 2.0 - can import files produced by earlier versions of quickGreen. As Version 2.0 makes significant changes to the quickGreen file format and how settings are structured it is important to be aware of the following when importing a file from an earlier version.

- Generally, files from the previous version of quickGreen will be for V 1.1.15. quickGreen 2.0 can import files for V 1.1.0. and later.
- quickGreen files upgraded to quickGreen 2.0 cannot be opened in earlier versions of quickGreen (1.1.15 and earlier).
- Settings and options have been significantly improved and restructured in quickGreen 2.0. When quickGreen 2.0 is run for the first time it will attempt to migrate settings from any installed earlier version of quickGreen. As the structure of settings has changed quickGreen 2.0 will not always be able to fully import all settings and it is important to check the settings for an imported file in quickGreen 2.0 after import.

This can be done by reviewing the Junction Settings which can be opened by choosing 'Junction Settings' from the Junction menu and by reviewing the settings of each Lane, Pedestrian Crossing and Turning Movement Path in the imported quickGreen model to check the imported settings still reflect how you wish intergreens to be calculated in the new version.

- The Default Traffic-Pedestrian Conflict Measurement Method is not migrated from an earlier version and defaults to 'Worst Case Stud Line' in quickGreen 2.0. This is because Chapter 6 of the Department for Transport's Traffic Signs Manual now advises to use this method when calculating Traffic-Pedestrian intergreens. The alternative method of 'Use Centre Line' is retained for compatibility with older models.
- The numbering system for Lanes and Pedestrian Crossings has changed in quickGreen 2.0 and Lanes and Pedestrian Crossings in the imported file may be renumbered during the import process.

### A.1. Importing a File Created by an Earlier Version into quickGreen Version 2.0

To load a file created by an earlier version of quickGreen into quickGreen 2.0 open the file in the normal way using 'Open...' on the File menu. quickGreen will import the file and inform you of any version migration issues it finds. When the file has been imported, it is recommended to save it with a different file name so that the file created in the earlier version is not overwritten and lost.



## **B. Appendix B – quickGreen Licensing**

quickGreen includes a sophisticated copy-protection mechanism to prevent software theft by unlicensed copying or installation of the software. The system has been designed to place as little burden as possible on legitimate licensed users whilst discouraging casual copying of the software.

### **B.1. Activating the quickGreen Software Licence**

With each quickGreen licence, JCT provides a single Registration Code that can be used to register an installation of quickGreen on a workstation. The same Registration Code can be used on as many workstations as permitted by the licence.

In order to allow quick and simple registration of your quickGreen licence it is recommended to ensure your computer is online so that your licence can be automatically validated with JCT. If your computer is not connected to the internet, or your network or firewall is not compatible with online registration, offline registration can be used as an alternative but is not as convenient as online registration.

#### ***B.1.1. Online Registration***

If your computer is connected to the internet and your network and firewall allows quickGreen to contact the JCT Licence Server online registration can be used to quickly validate your quickGreen licence as follows:

1. When running quickGreen for the first time the software will present a dialog showing information relating to the licence details currently present on your PC. This will show that a valid registration code is not yet present. If the dialog is closed, quickGreen will continue to run in restricted evaluation mode.
2. If quickGreen has been run previously and the Licence Details dialog box is not shown, or if you wish to view or change your Licence registration the Licence Details dialog box can be opened at any time by choosing 'Licence Details...' from the quickGreen 'Help...' menu.

3. Click the 'Enter Registration Code...' button to start the registration process.

Licence Details ( JCT Advanced Licensing System)

**quickGreen**  
Version 2.0.0.0

A valid registration code is not present. (code 25)

Refresh  
Help ...

Hide Licence Details Hide the licence details for this computer.

Computer Reference: PMOFFICE Licence ID:

User Reference: paul.moore Organisation:

Office Location: Nettleham Licenced Site:

Contact Email address: test@jctconsultancy.co.uk Licence size:

Asset Number:

Transfer Available:  Transfer to another computer...

**Enter Registration Code...** Enter a Registration Code provided by JCT to license the software.

Deactivate this computer... Deactivate this machine. quickGreen will no longer be available for use on this machine.

Send Previous Deactivation Code...

Go to www.jctconsultancy.co.uk Open your browser at the quickGreen web page.

Customer Experience Improvement Program (subscribed) ... Help us to improve the quality, reliability and performance of the software by sending us anonymous usage information.

Machine ID for this machine (for JCT technical support diagnostics) 17YLTW...H17-MK1JA9R-KPF6M1...T6E-0GA\*93-GHJ0...-HVXXK2-CQ0SWE-9GD9AF...JFE...0...R...V... PFCY0...KJ1SDQ-P3F5F-89A1W

(2.1.0.0) (4.0.30319.42000)

4. quickGreen will attempt to contact JCT to check whether online registration is possible. If it is successful, it will advise that you can proceed with online registration. Should the check fail for any reason it will advise that online registration is not possible, and you should use the offline registration process as detailed below. Online activation is significantly easier and more flexible than offline activation so it may be worth requesting your IT department to allow access over the internet from quickGreen to the JCT Licence Server using the technical information provided below.
5. To proceed with online registration, enter your details including the following:
  - a. **Computer Reference.** This is any text identifying the computer which quickGreen is being registered on. This could be a computer network name, a company asset ID or any other text identifying the specific PC. It will default to the computers network name.
  - b. **User Reference.** This should be text identifying the user of the registered copy of quickGreen to assist with licence tracking in the future. For example, if a quickGreen user leaves an organisation it allows their licence to be easily identified and deactivated. It will default to the login name of the user currently logged in on the PC.
  - c. **Office Location.** The office location at which the registered copy of quickGreen will be located.
  - d. **Contact Email Address.** An optional email address at which JCT can contact the person or group responsible for managing this licence.

6. Enter the Registration Code that has been provided to you with your licence and click the 'Register online Now' button. quickGreen will now automatically contact JCT to ensure that the Registration Code is valid. This may take a few seconds.

**Product Registration**

**quickGreen**  
Version 2.0.0.0

Enter a Computer Reference: PC-013592

Enter a User Reference: Paul Moore

Enter your Office Location: Lincoln

Enter a contact email address: paul.moore@jctconsultancy.co.uk

Online Registration (recommended)  Offline Email Registration

Please complete the Computer Reference, User Reference and Office Location fields above.

Then enter your Registration Code in the box below, or use the "Paste" button to paste it from the clipboard.

Click the "Register online Now" button to complete your registration.

If you have forgotten, misplaced or have not received your Registration Code, please contact JCT Consultancy - Email: activation@jctconsultancy.co.uk

Enter Registration Code below, then click the Register button:

A348Y-BX682-M8HJF-EY8N5-LP64V-3EW78-N

Open your browser at the quickGreen web page.

7. Once your Registration Code has been validated a dialog will be presented indicating that the registration has been successful.

**Licence Details ( JCT Advanced Licensing System)**

**quickGreen**  
Version 2.0.0.0

Licence Valid for quickGreen v2 (code 0)

View the licence details for this computer.

Open your browser at the quickGreen web page.

Customer Experience Improvement Program (subscribed) ... Help us to improve the quality, reliability and performance of the software by sending us anonymous usage information.

8. If the registration process was unsuccessful (for example if JCT could not be automatically contacted) you will be presented with a dialog box providing additional information advising how best to resolve the problem.

## B.1.2. Offline Registration via Email

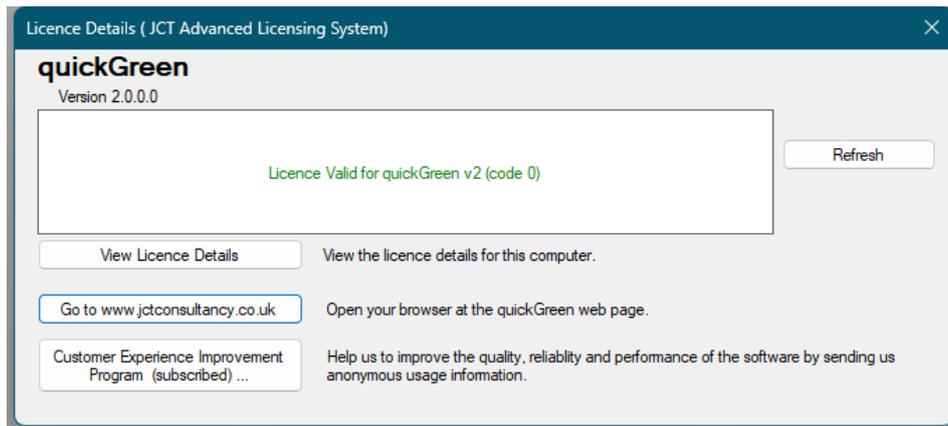
If you are unable to use online registration, you can alternatively register via email by following the process below. Offline registration is less straightforward than online registration and online registration is always the preferred method unless your PC or network is not compatible with online registration.

1. Follow steps 1 to 5 above as for Online Registration.
2. Do not enter the Registration Code that was provided with your Licence. Instead, click the 'Offline Email Registration' tab. You will be presented with a long code consisting of numbers and letters which is unique to that particular workstation.

The screenshot shows the 'Product Registration' window for 'quickGreen Version 2.0.0.0'. It contains several input fields: 'Enter a Computer Reference' (PC-013592), 'Enter a User Reference' (Paul Moore), 'Enter your Office Location' (Lincoln), and 'Enter a contact email address' (paul.moore@jctconsultancy.co.uk). Below these fields are two tabs: 'Online Registration (recommended)' and 'Offline Email Registration', with the latter being selected and circled in red. The 'Offline Email Registration' section includes instructions to complete the fields above, a unique code to be emailed to activation@jctconsultancy.co.uk, and a section for entering the received Email Registration Code. A 'Copy' button is next to the unique code, and an 'Email...' button is below it. At the bottom, there is a 'Paste' button and an 'Apply Email Registration Code' button. A footer contains links to 'Go to www.jctconsultancy.co.uk' and 'Open your browser at the quickGreen web page.'

3. The long code needs to be emailed to activation@jctconsultancy.co.uk also stating your organisation name and Licence ID. Please use the Copy/Email buttons to email the code rather than sending a screenshot as this prevents errors occurring transcribing the long code from a screenshot.
4. If you change the previously entered Computer Reference, User Reference, Office Location or Contact Email Address after sending the long code to JCT you will need to resend the long code as otherwise it will not match the details entered.
5. The long code will be processed by JCT and you will receive a reply via email containing an Email Registration Code. The Email Registration Code is a one-time code which cannot be reused and is valid for that particular workstation only. Enter the Email Registration Code and click the 'Apply Email Registration Code' button to continue the registration process.

6. Once your Email Registration Code has been validated a dialog will be presented indicating that the registration has been successful.



### ***B.1.3. Transferring a Licence to another Workstation***

If you wish to permanently transfer quickGreen to another workstation, you can do so by simply deactivating quickGreen on the existing registered workstation, and then installing and registering quickGreen on the new workstation.

You can deactivate the existing registered workstation by clicking the “Deactivate” button on the Licence Details window. If you are online, deactivation will then occur automatically. If you are offline you will be shown a Deactivation Code that will need to be emailed to [activation@jctconsultancy.co.uk](mailto:activation@jctconsultancy.co.uk) to confirm that deactivation has taken place.

To register quickGreen on the new workstation you will need to follow the same registration process as described above.

Note that your licence may include restrictions on the number of times you can transfer a licence between workstations or on how frequently you can do so.

Generally, your quickGreen licence only allows transfer of licences between computers in the following circumstances:

- An old computer containing a quickGreen licence is to be replaced or upgraded.
- The quickGreen licence on a computer is to be permanently moved to a new computer or to a new user.

In particular quickGreen is not licenced as a floating licence and frequent movement of licences between users or allowing multiple users to access the same copy of quickGreen via remote desktop in order to effectively provide a floating licence is not permitted. quickGreen allows for multiple users by providing heavily discounted licences for additional users within the same organisation.

### ***B.1.4. Online Activation Technical Note***

To allow Online Registration to work correctly the PC on which quickGreen is installed must be able to access the JCT Licence Server on IP 217.46.223.154 ([licensing.jctconsultancy.co.uk](http://licensing.jctconsultancy.co.uk)) on port 80 for HTTP POST requests. The returned HTTP Responses must also be allowed from the licence server back to the quickGreen PC.