

XL-excellence[®] spreadsheet Add-In

Overview

The XL-excellence[®] Add-In provides tools to help develop high-quality spreadsheets. Examples of these tools include reports that highlight cells containing errors, show formulae that are inconsistent or overly complex, or aspects that fail to meet other quality criteria.

Installation

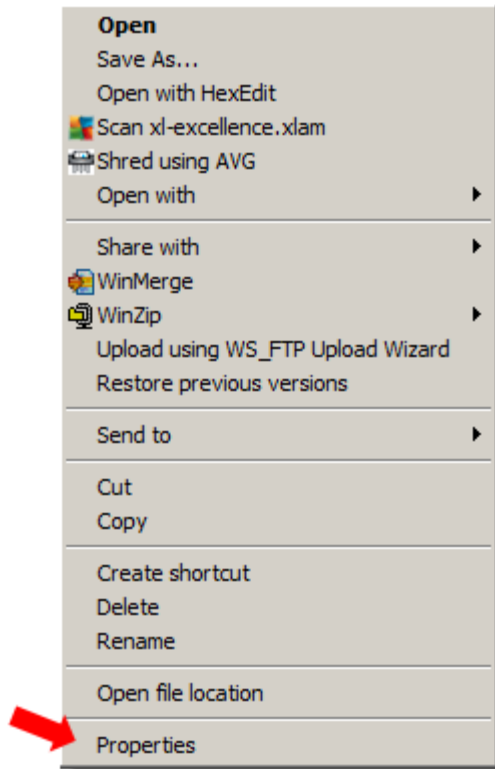
Download the Add-In from the following web address:

<http://www.tykoh.com/downloads/xl-excellence.xlam>

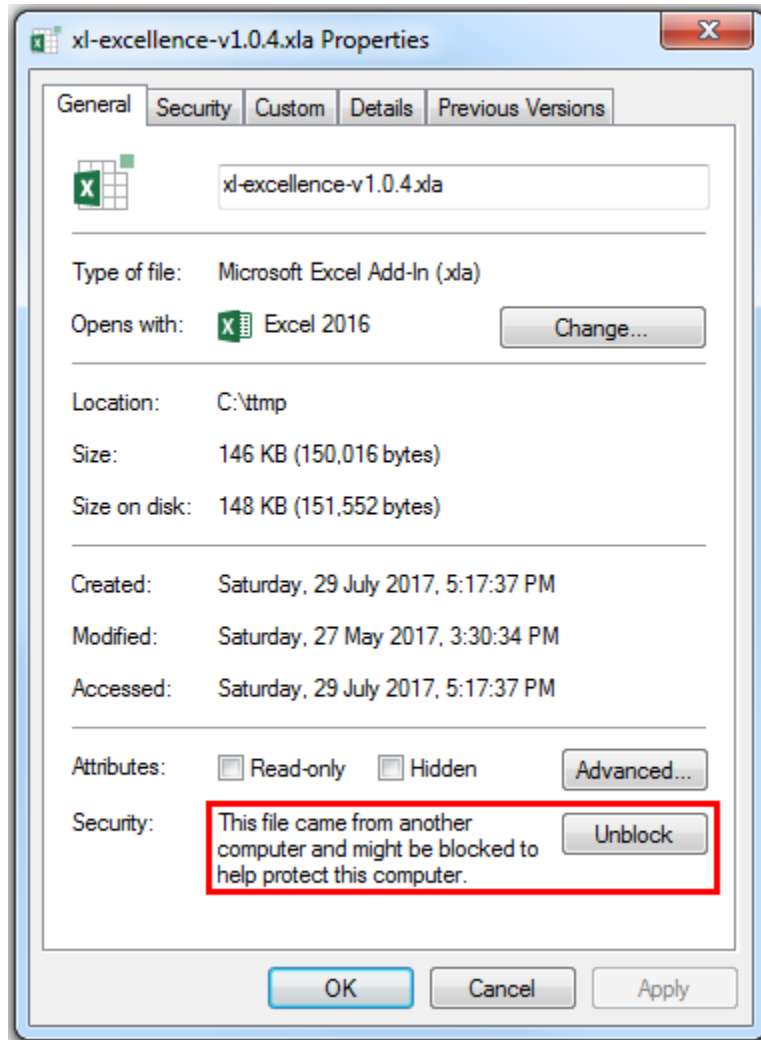
If prompted to Open or Save choose **Save**.

[If you have been emailed the Add-In save the attachment in the email and proceed as below.]

In Explorer (**not Excel**) navigate to the saved file, right-click on the file. A pop-up menu will appear ..



Click on Properties. A Properties panel will appear ..



Click on "Unblock" and then "OK".

Start Excel. Choose File | Options | Add-ins. A form will appear. Press the Go... button on the lower part of the form. Press the Browse... button on the form that appears. Navigate to the Add-In's location, select the Add-In and press Ok and then Ok again.

After the steps described above the main ribbon will show an *XL excellence* menu.

If the menu does not appear then your security settings may be preventing the Add-in from running. In that case there are two options for enabling the Add-in: 1) Put the Add-in into a trusted location, or 2) Change macro security settings.

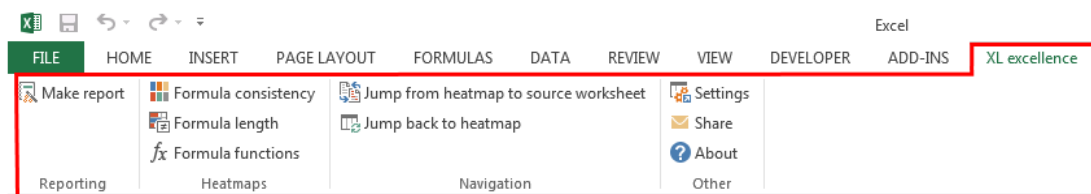
To put the Add-In into a trusted location: In Excel choose File | Options | Trust Center and press the button *Trust Center Settings...* Choose Trusted Locations, click on the button *Add new location* and specify the Add-In's location. If the location is on a network drive (as opposed to a local - e.g. C:) drive then ensure the checkbox is ticked *Allow Trusted Locations on my network*.

To change macro security settings: In Excel choose File | Options | Trust Center and press the button *Trust Center Settings...* Choose Macro Settings and follow the guidance provided there.

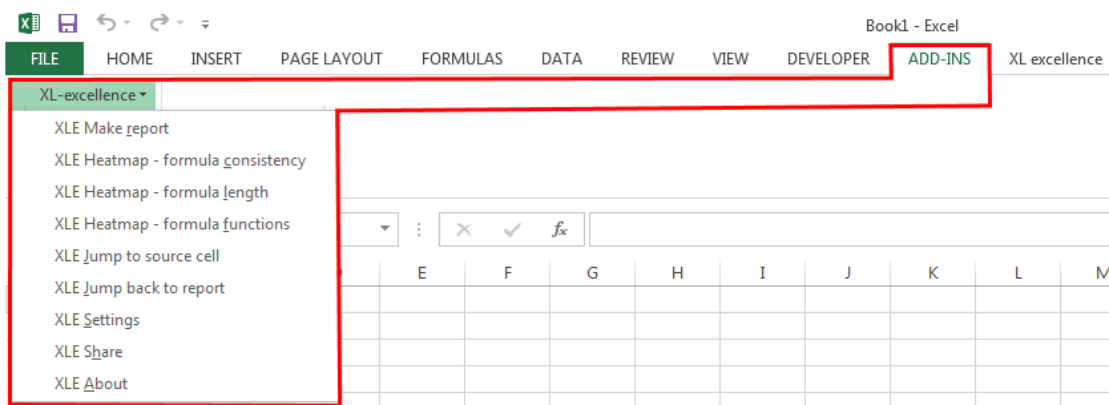
Using the Add-In

Location of menu items

Once installed the Add-In is usable from two alternate and equivalent menus. The first menu is titled "XL excellence" and is in the main Excel ribbon.



The second menu is in the ADD-INS ribbon.



Function of menu items

Make report

The Make report menu item is the main menu item. This generates a report on whichever is the currently active workbook. The workbook being reported on is not altered and the report appears in a new, separate workbook. The report includes the following information.

- A list of cells that contain errors (e.g. #REF, etc).
- A list of named ranges that are in error.

- A list of spreadsheet tabs that are on a nominated "required" list but which are missing.
- A list of references to external workbooks and data connections.
- A list of hyperlinks – one for each tab. Clicking on hyperlinks leads to more detailed sub-reports.

Following is an example report.

| | A | B | C | D | E | F | G | H |
|----|--|---|------------|---|---|---|---|---|
| 1 | Report produced by xl-excellence (version 1.0.3) | | | | | | | |
| 2 | www.tykoh.com/xl-excellence | | | | | | | |
| 3 | Reporting on workbook: | C:\Users\alex\Documents\courses\Financial modelling\xls\Growth_Exercises.xlsx | | | | | | |
| 4 | Report run by: | alex at 18:24:32 on 22/05/2017 | | | | | | |
| 5 | Cells with errors | None | | | | | | |
| 6 | | | | | | | | |
| 7 | Bad names | None | | | | | | |
| 8 | | | | | | | | |
| 9 | Tabs missing that are required | None | | | | | | |
| 10 | | | | | | | | |
| 11 | Links to external workbooks | None | | | | | | |
| 12 | | | | | | | | |
| 13 | Data connections | None | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | Structure | [Constants] | [Formulae] | | | | | |
| 17 | | Introduction | | | | | | |
| 18 | | Sheet1 | | | | | | |
| 19 | | Charts | | | | | | |
| 20 | | test_data | | | | | | |
| 21 | | LastStep | | | | | | |
| -- | | | | | | | | |

Formula length

Before selecting this menu item click on a hyperlink in the main report.

| | A | B | C | D | E |
|----|--|---|------------|---|---|
| 1 | Report produced by xl-excellence (version 1.0.4) | | | | |
| 2 | www.tykoh.com/xl-excellence | | | | |
| 3 | Reporting on workbook: | C:\Users\alex\Documents\courses\Financial modelling\xls\Cost_Benefit_Answ | | | |
| 4 | Report run by: | alex at 17:36:47 on 24/05/2017 | | | |
| 5 | Cells with errors | None | | | |
| 6 | | | | | |
| 7 | Bad names | None | | | |
| 8 | | | | | |
| 9 | Tabs missing that are required | None | | | |
| 10 | | | | | |
| 11 | Links to external workbooks | None | | | |
| 12 | | | | | |
| 13 | Data connections | None | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | Structure | [Constants] | [Formulae] | | |
| 17 | | Introduction | | | |
| 18 | | CostBenefit | | | |

That will bring up a "sub-report".

| | A | B | C | D | E | F | G | H | I | J |
|----|------|---|---|---|---|---|---|---|---|---|
| 1 | back | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |

In the sub-report cells shown in a tan colour represent formulas. Cells with a blue-grey colour represent constants. In a well-designed spreadsheets formulas and constants should be in separate areas. A more detailed sub-report can now be obtained by choosing the menu item *Formula length*. A heatmap will be shown.

| | A | B | C | D | E | F | G | H | I | J | K |
|----|------|---|---|---|---|---|---|---|---|---|---|
| 1 | back | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |

Colours will be green, orange or red depending on the complexity of the corresponding formulae in the spreadsheet tab being reported on. Formulas less than a defined length are shown in green, greater than another defined length in red and in-between in orange. [The *Settings* menu item - see later – is used to define the length thresholds.] “Red” and “orange” formulae are potentially over-complex. Consideration should be given to breaking large complex formulas into smaller, simpler ones.

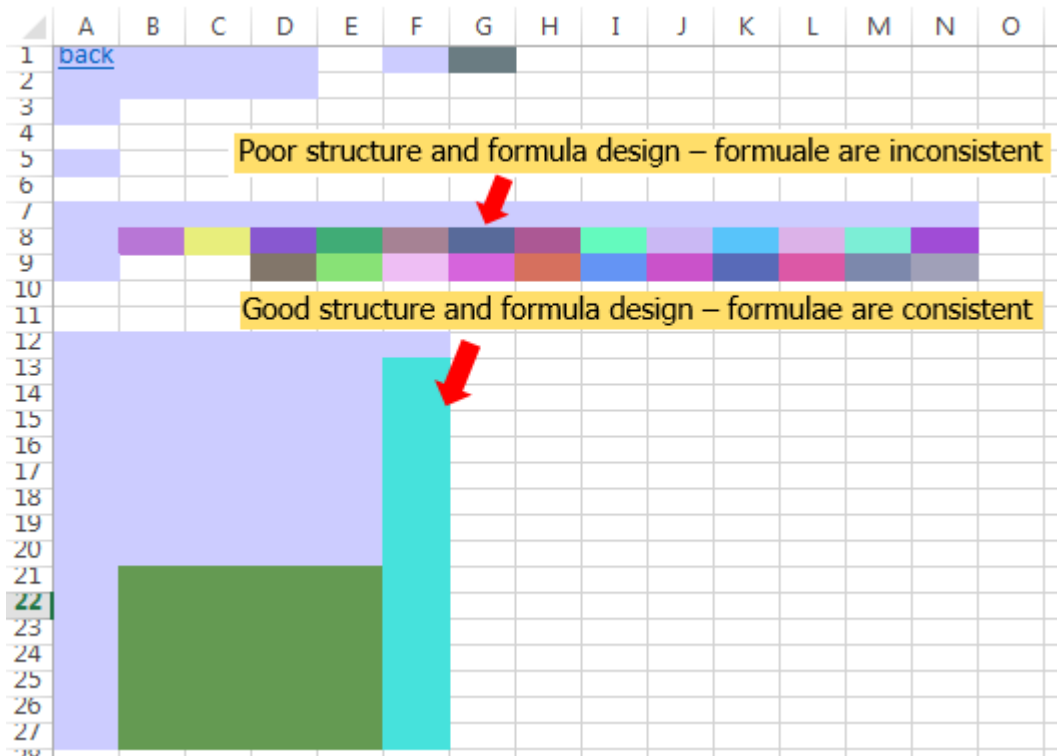
Formula functions

A small number of Excel functions are "volatile". Using those functions requires Excel to recalculate the whole workbook even when a single cell changes. This menu item checks whether volatile functions are used in the spreadsheet being reported on. Cells containing formulae that use volatile functions are shown in red. Other functions are shown in green. The volatile functions that can be checked for are: NOW(), TODAY(), OFFSET() and INDIRECT().

The Settings menu item can be used to specify which volatile functions are allowed and which disallowed.

Formula consistency

Another measure of the quality of spreadsheets is the degree of consistency between formulae. Use the menu item *Formula consistency* to report on that. Large areas with the same colour indicate formulas are consistent. Large numbers of small areas with different colours indicate formulas have little consistency. Consider the following example.



Jump to from heatmap to source worksheet

Use this menu item to jump from a cell in a heatmap to the corresponding cell in the original workbook. This lets you inspect the underlying formulae in a heatmap. Take cell G8 in the preceding example. G8's colouration indicates that formulae in row 8 are inconsistent with their neighbouring cells on the same row. To find out why the formulae are inconsistent cell G8 can be selected and then *Jump to source* chosen. Selection will transfer to cell G8 in the original workbook ...

| G8 | | | | | | =F37/F36-1 | | |
|----|--|---------|---------|---------|---------|------------|---------|---------|
| | A | B | C | D | E | F | G | H |
| 4 | | | | | | | | |
| 5 | Inflation Forecast Assumption (CPI % increase) | | | 3.00% | | | | |
| 6 | | | | | | | | |
| 7 | Regulatory Year | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 |
| 8 | Actual CPI | 2.86% | 3.09% | 2.35% | 2.44% | 3.20% | 2.92% | 2.71% |
| 9 | Price Cap CPI (lagged) | | | 3.00% | 2.77% | 2.34% | 2.67% | 3.54% |

The formula in G8 is "=F37/F36-1". Inspecting the cell to the left – F8 – shows ..

| | | | | | | | | |
|----|--|----------|---------|------------|---------|---------|---------|---------|
| F8 | | : X ✓ fx | | =F36/F35-1 | | | | |
| | A | B | C | D | E | F | G | H |
| 4 | | | | | | | | |
| 5 | Inflation Forecast Assumption (CPI % increase) | | | 3.00% | | | | |
| 6 | | | | | | | | |
| 7 | Regulatory Year | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 |
| 8 | Actual CPI | 2.86% | 3.09% | 2.35% | 2.44% | 3.20% | 2.92% | 2.71% |
| 9 | Price Cap CPI (lagged) | | | 3.00% | 2.77% | 2.34% | 2.67% | 3.54% |

The formula in F8 is “=F36/F35-1”. That formula is inconsistent with the one in G8 because copying and pasting from F8 to G8 would give a different result (=G36/G35-1) to that actually there (=F37/F36-1).

The underlying problem that leads to this inconsistency is that in one part of the spreadsheet dates are in column order and in another they are in row order. To resolve the problem dates should have the same orientation in both sections, or if that cannot be achieved, use the INDEX function in the formulae in row 8 to achieve consistency.

Breaks in colours may indicate inadvertent inconsistencies. Following is an example.

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| X55 | | : X ✓ fx | | | | | | | | | | | | | | | | | | | | | | |
| | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE |
| 52 | | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | | | | | | | | | | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | | | | | | | | | | | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | |

There is a break in colour between cells X55 and Y55. A jump to the source cell of X55 reveals ..

| | | | | | | | | | | | |
|-----|-----------------------|----------|---------|-----------------------------------|--------|--------|--------|--------|---------|---------|---------|
| X55 | | : X ✓ fx | | =IF(X\$1,MIN(0,SUM(\$F54:X54)),0) | | | | | | | |
| | B | C | D | E | S | T | U | V | W | X | Y |
| 1 | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | | | | | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 3 | | | | | | | | | | | |
| 4 | | | | Levelized 2009 NPV | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| 5 | | | | | | | | | | | |
| 54 | Computed State Taxes | \$/kW-Yr | \$11.07 | \$91 | \$2.95 | \$2.14 | \$1.32 | \$0.51 | -\$0.31 | -\$1.12 | -\$1.94 |
| 55 | Tax Loss Carryforward | | | | | | | | | | |
| 56 | State Taxes | \$/kW-Yr | \$11.07 | \$91 | \$2.95 | \$2.14 | \$1.32 | \$0.51 | -\$0.31 | -\$1.12 | -\$1.94 |

..and the cell to the right - Y55 - reveals ..

| | | B | C | D | E | S | T | U | V | W | X | Y |
|----|-----------------------|----------|---------|-------------------|---|--------|--------|--------|--------|---------|---------|---------|
| 1 | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | | | | | | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 3 | | | | | | | | | | | | |
| 4 | | | | Levelized J09 NPV | | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| 5 | | | | | | | | | | | | |
| 54 | Computed State Taxes | \$/kW-Yr | \$11.07 | \$91 | | \$2.95 | \$2.14 | \$1.32 | \$0.51 | -\$0.31 | -\$1.12 | -\$1.94 |
| 55 | Tax Loss Carryforward | | | | | | | | | | | |
| 56 | State Taxes | \$/kW-Yr | \$11.07 | \$91 | | \$2.95 | \$2.14 | \$1.32 | \$0.51 | -\$0.31 | -\$1.12 | -\$1.94 |

The X55 formula is “=IF(X\$1,MIN(0,SUM(\$F54:X54)),0)” and the Y55 formula is “=IF(Y\$1,MIN(0,SUM(F54:Y54)),0)”. The second formula is subtly different – the reference to F54 should actually be to \$F54 and is probably an inadvertant formula error.

Jump back to heatmap

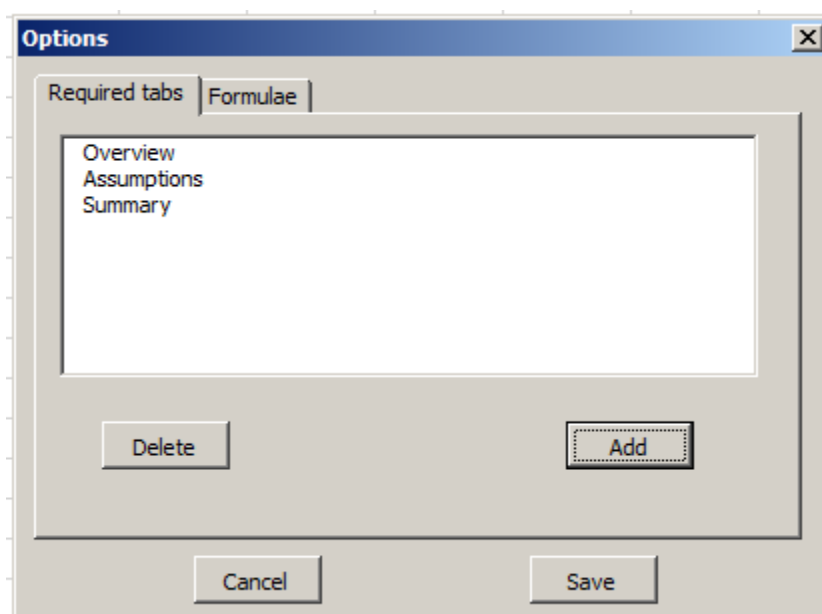
This menu item reverses the jump caused by the menu item *Jump from heatmap to source worksheet*.

In other words: *Jump from heatmap to source worksheet* takes you from a heatmap to the underlying worksheet. And *Jump back to heatmap* takes you back to the heatmap from the underlying worksheet.

Settings

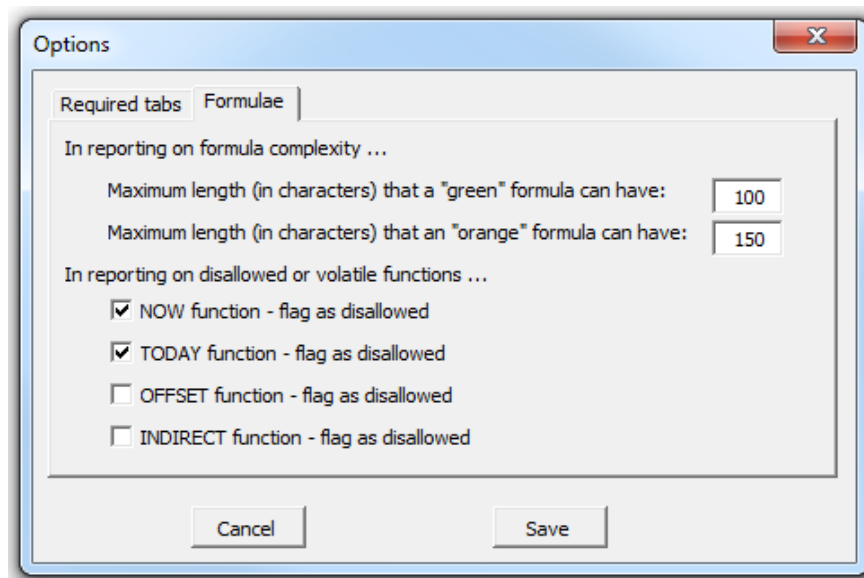
Use this menu item to set options.

Required tabs



When a report is run a check is made to see whether "required" tabs are found in the workbook being reported on. Missing tabs are listed on the report. The *Required tabs* page lets you set the names of tabs that should appear in all workbooks that will be reported on.

Formulae



The Formulae tab lets you set thresholds for colors that are reported by the heatmap *Formula length* menu choice.

Additionally, you can define which formulae are disallowed by the *Formula functions* menu choice. In the preceding example, formulae containing NOW() or TODAY() will be shown in red. Other functions will be shown in green.

Share

If you wish to share the Add-In with others then press this button. A draft mail will be composed and the Add-In attached to the mail. You can then review the draft, add a list of desired recipients to the "to" and/or "cc" field(s) and then send the mail. (Note – this Sharing feature will work only if you have Outlook mail installed.)

About

Use this menu item to shows the Add-In's version number and installation location. Click on the link in the form for online help.