How to review a spreadsheet

REDUCE THE RISK THAT YOUR SPREADSHEET GIVES YOU THE WRONG ANSWER

You can have all the facts and figures, all the supporting evidence, all the endorsement that you want, but if you don't command trust, you won't get anywhere.

Neil Fitzgerald, former Chairman, Unilever

The publication was originated in response to the challenge we all face in making business decisions that reply upon calculations from spreadsheets. **How confident are we that the vital numbers are correct?**

www.icaew.com/spreadsheetreview

HOW TO REVIEW A SPREADSHEET

Reduce the risk that your spreadsheet gives you the wrong answer

ICAEW

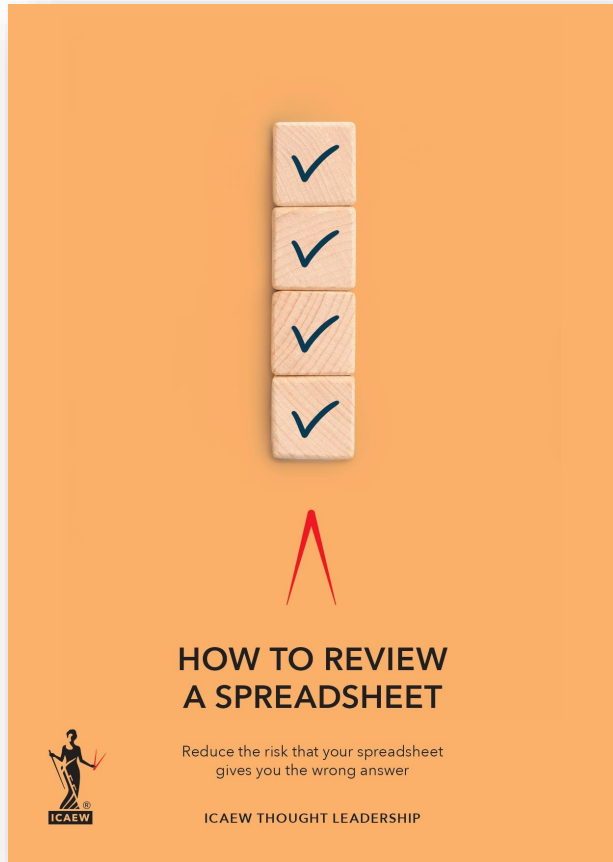**ICAEW THOUGHT LEADERSHIP**

Research

- Ray Panko (from the University of Hawaii) researched error rates in spreadsheets and determined that as many as 90% contain a mistake.

- Once built, a spreadsheet review should be carried out by a third party. Ray Panko found self-review only identifies 34% to 69% of errors.

Error avoidance starts by building it correctly, by following best practice and by engaging people with appropriate skills

We can only reduce the risk of error, never eliminate it completely

Webinar – Will focus upon Excel aspects

HOW TO REVIEW
A SPREADSHEET

Reduce the risk that your spreadsheet
gives you the wrong answer

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Initial Review — This is a big picture review covering the spreadsheet purpose, risk, author competence, controls etc.

Structural Review — There are 11 areas to review in gauging confidence in the structure and logic. Areas such as logic flow, separation of data (inputs), calculations and outputs etc.

Data Review ✓ — This is the process of ensuring the validity of the inputs to the spreadsheet. There are five areas of consideration

Analytical Review ✓ — A sense check that the numbers 'look right'. A process of using charts (including sparklines) and ratios

Detailed Review ✓ — Excel tools and functions covering Design principles, The Formula Auditing Group, Watch Window, Hidden spreadsheet attributes, Inspecting the workbook etc.

Post Review — Once a review has been completed the findings need to be documented and any changes implemented
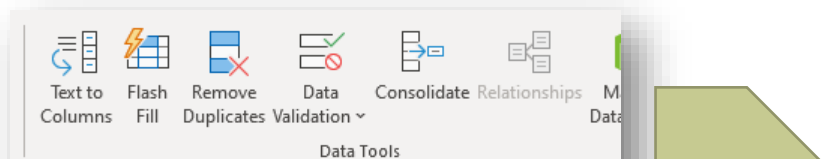
Data Review

- Sign
- Currency
- Scale (absolute, thousands, millions)

- Data Validation
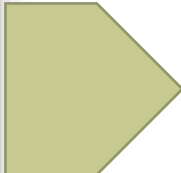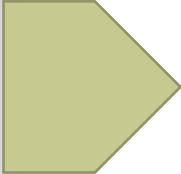
- Test Data
- Zero Inputs
- Stress Testing
- Delta Testing
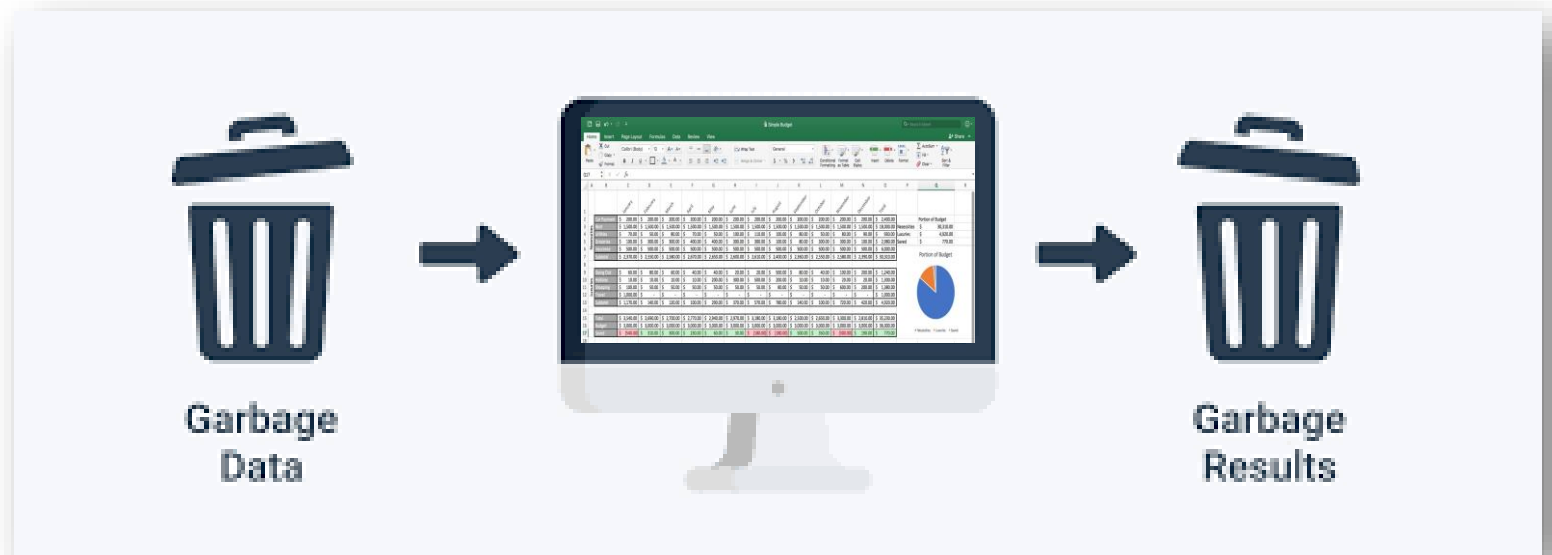
		Unit
Revenue		
Customers per day	350	No.
Average consumption of drink per person	2.0	No. per person
Average drink price	3.0	£
Average consumption of food per person	50%	%
Average food price	8.0	£
Costs		
Average drink margin	30%	%
Average food margin	50%	%
Staff - Customers per employee	25.0	No.
Minimum staff	10.0	No.
Average employment cost	15,000	£ per year
Rent	55,000	£ per year
Rent review period	5	Years
Utilities	18,000	£ per year
Other	25,000	£ per year

Data Review

Analytical Review - Charts

Sparklines : A visual audit of time series – **Insert → Line Sparkline**

Sparkline	0	1	2	3	4	5
╱╲╱	1,300,000	1,315,825	1,355,300	1,395,959	1,995,864	1,480,973

- Flags – An If statement to test validity

Balance Sheet balances	All balance	0	─────	0	0	0	0	0	0
Balance Sheet balances	**Error in sheet**	7	╱‾	0	0	0	0	1	1

– In each cell of the balance sheet : **=IF(K47=K58,0,1)**

– At end of row **: =IF(SUM(H65:R65)=0,"All balance","Error in sheet")**

– Conditional format the answer to highlight any errors

Analytical Review - Ratios

Ratios : Expected ranges

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
11					**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
15																
16		Margin			17%	18%	18%	19%	18%	17%	19%	24%	18%	18%	16%	18%
17		Flag in range 16% - 20%			Valid	Valid	Valid	Valid	Valid	Valid	Valid	Invalid	Valid	Valid	Valid	Valid
18																

– In each cell : **=IF(AND(L16>=16%,L16<=20%),"Valid","Invalid")**

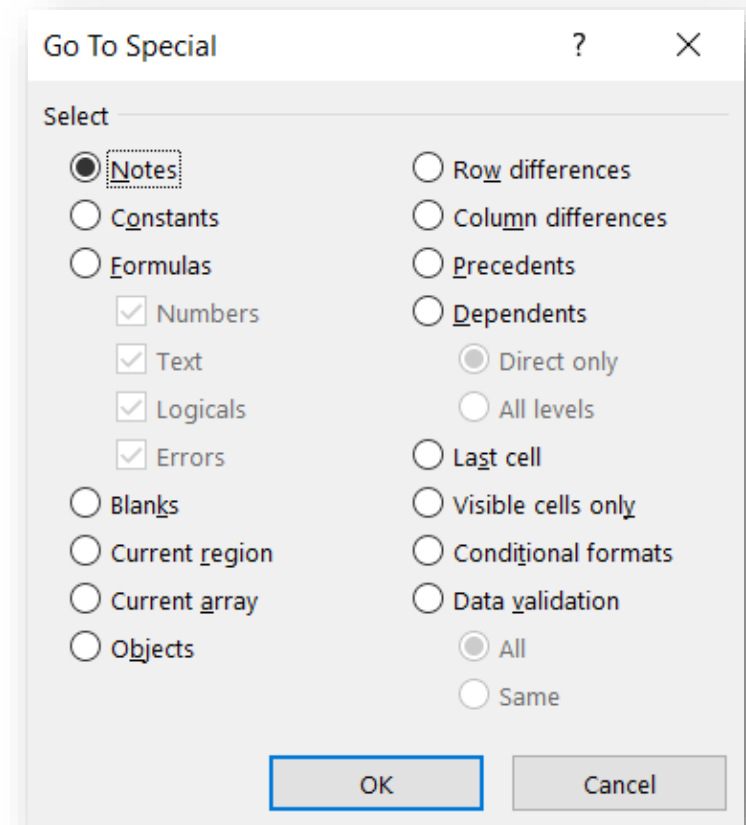 NB the 16% and 20% would be linked to input cells, they are typed here for clarity

– Conditional format the answer to highlight any potential errors
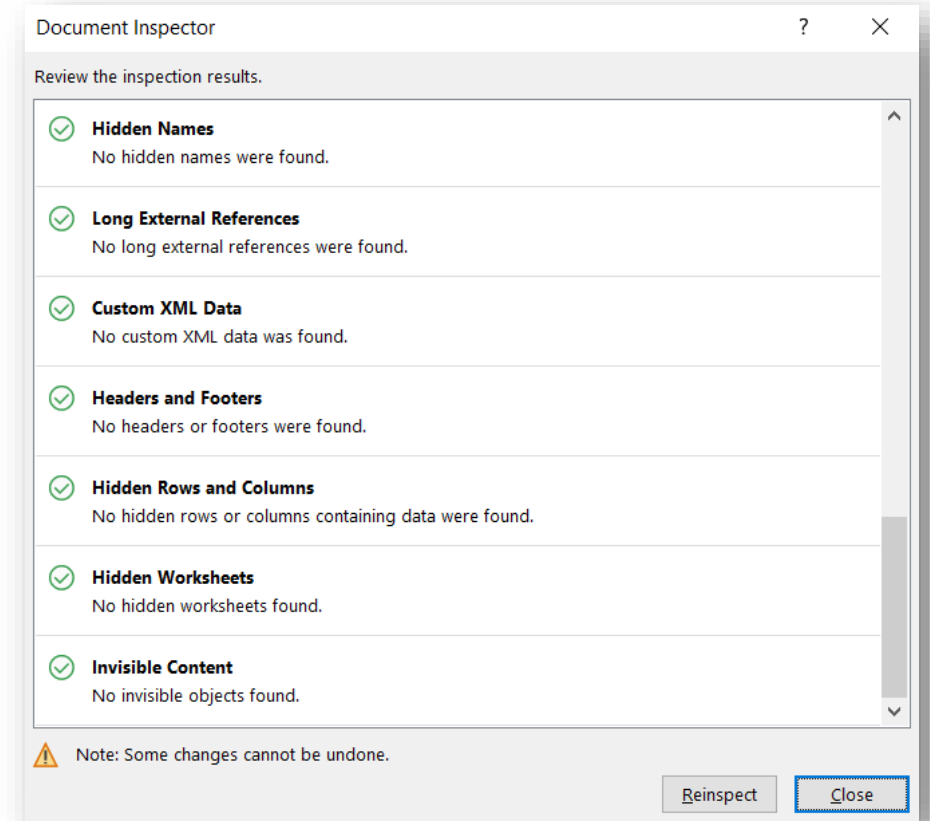
Detailed Review - Hunting for Errors

Inspecting the formulas – **Formulas** → **Show Formulas** or **CTRL`**

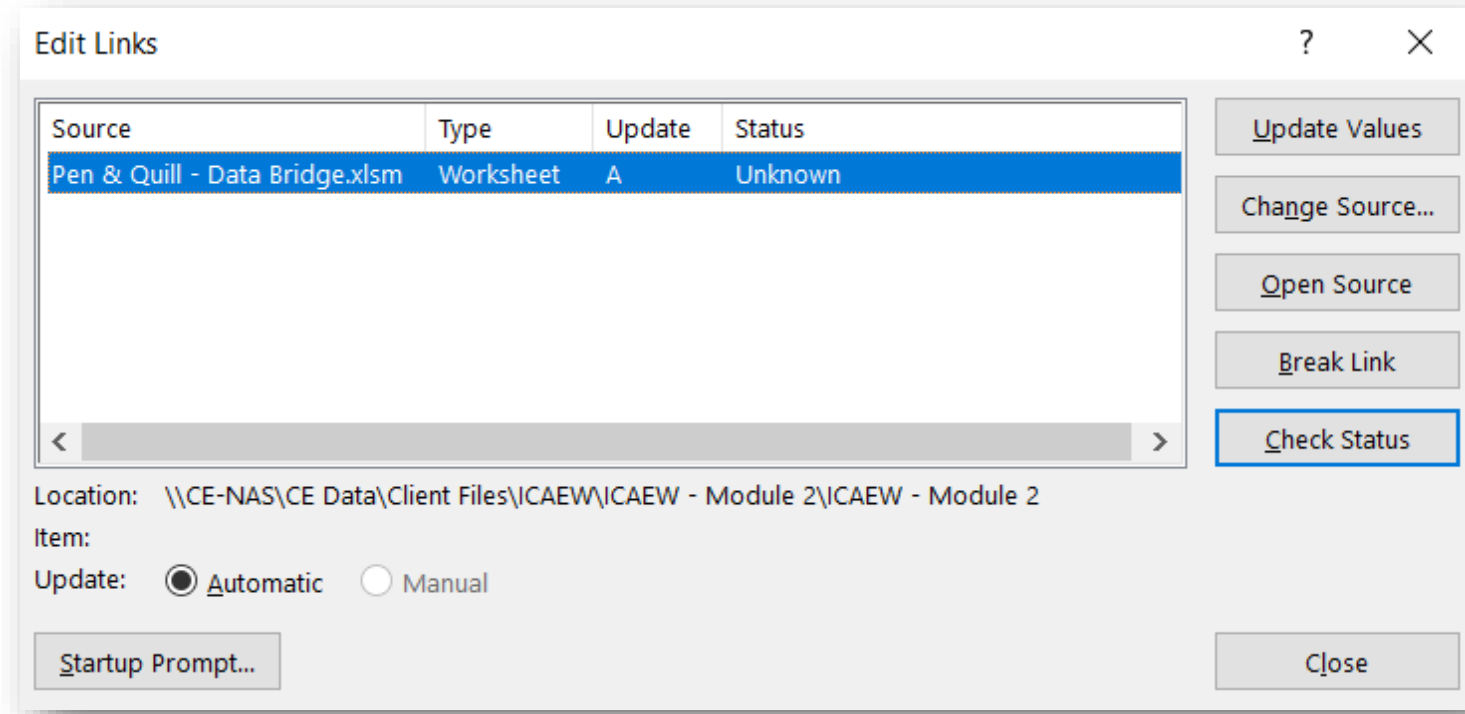Highlighting attributes – **F5** (Go To) → **Special**

Detailed Review – Inspecting the workbook

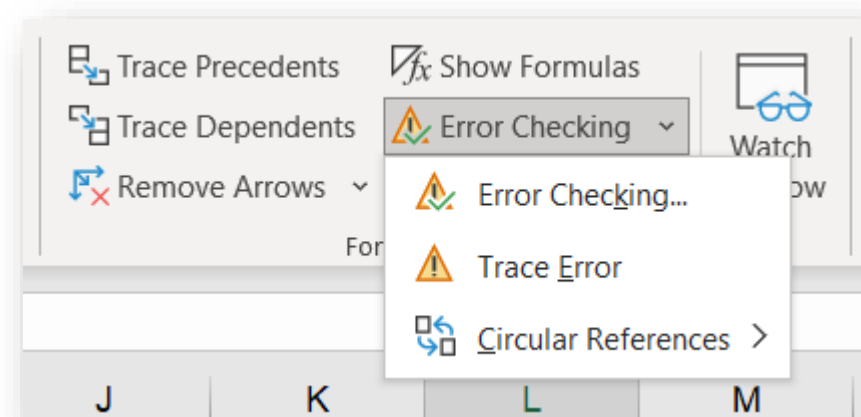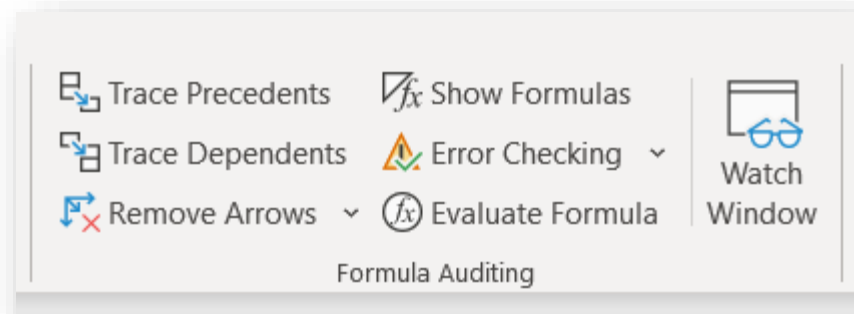Inspecting the Workbook – File → Info → Inspect Workbook

Detailed Review – Source Data Updated

Make sure the links to source data are to up date – **Data** → **Edit Links**

Detailed Review – Formula Auditing

Formula Audit Group – **Formulas Ribbon**

Detailed Review – Watch Window

Watch Window – **Formulas Ribbon**

Allows you to see the results of selected cells as the spreadsheet changes. Especially useful to monitor outputs as inputs are flexed.

Detailed Review – What's Hidden?

Sheets	=INFO("NUMFILE")
Rows /Columns	Ctrl A – Select all and unhide
White on white	Ctrl A – Paint backcolor a dark colour
Formatting numbers to be invisible	Ctrl A – Format as General

Number	**12345.67**			
Format type	,	;;;	#,,;-#,	#,,,;-#,,
Result	12,345.67		12	

Detailed Review – Other Areas

- Unused Inputs

- Macros/VBA – cell alignment

- Indirect addresses (INDIRECT and OFFSET)

- Nested =IFs

- =IFERROR disguising all errors

- Recalculation status

Questions

ICAEW