1. Workbook Structure

1.1 Workbook Overview Sheet
Every workbook that contains multiple sheets should contain a separate overview sheet as the first sheet in the workbook.

1.2 Workbook Sections
Every workbook that contains multiple sheets containing similar or related types of information should be separated into sections. A separate section should be created in a workbook for each sheet or group of sheets containing similar types of information.

1.3 Section Cover Sheets
A section cover sheet should be used at the start of each section in a workbook to indicate the start of the section.

1.4 Table of Contents
Every workbook that contains multiple sheets should contain a hyperlink-based table of contents outlining the structure and composition of the underlying workbook.

1.5 Workbook Navigation
Every workbook that contains multiple sheets should contain: 1. A table of contents outlining the sections and sheets in the workbook; 2. Hyperlinks from the table of contents to every sheet in the workbook; and 3. A hyperlink to the table of contents, always in view on every sheet in the workbook.

2. Sheet Structure

2.1 Sheet Types
Every sheet in a workbook should be visually identifiable as being one of the following sheet types: 1. Overview; 2. Section cover sheet; 3. Schematics sheet; 4. Time series sheet; 5. Blank sheet; or 6. Lookups sheet. These categories are exhaustive and should be the only sheet types required to develop any form of workbook.

2.2 Sheet Titles
Every sheet in a workbook should contain a clearly highlighted sheet title that is: 1. Consistently formatted on every sheet; 2. Consistently located on every sheet type; and 3. Always in view on the screen when that sheet is active.

2.3 Model Name Display
Every sheet in a workbook should display the model name in a cell that is: 1. Consistently formatted on every sheet; 2. Consistently located on every sheet type; and 3. Always in view on the screen when that sheet is active.

2.4 Sheet Type Consistency

2.5 Hidden Rows & Columns
When hiding worksheet rows or columns, grouping should be used if the hidden rows or columns contain content that model users may want to access when using the model.

2.6 Grouping Levels
Grouping of worksheet rows and columns should be used consistently throughout a workbook to create the following three views: 1. Summary view (compacted); 2. Print view (semi-compacted, if required); and 3. Expanded view (un-compacted).

2.7 Worksheet Hyperlinks
Every worksheet, where relevant, should contain hyperlinks to the workbook table of contents and checks summaries, and these hyperlinks should always be visible irrespective of the worksheet window scroll position.

2.8 No Chart Sheets
Charts should be placed within worksheets rather than using chart sheets.

2.9 Freezing Panes
Frozen panes should be used on worksheets to ensure that the sheet title, table of contents and checks summaries hyperlinks, check indicator flags and time series period titles are always in view.

2.10 Overview Sheet Content
The workbook overview sheet should clearly display the model name and the model developer’s name.

3. Formats & Styles

3.1 Use Styles
Styles should be used to achieve consistency of formatting in worksheets rather than independently applying formats.

3.2 Style Types
Every style in a workbook should be classified as being one of the following style types: 1. Assumption; 2. Output; or 3. Presentation.

3.3 Formats and Styles Key
Every workbook should contain a key or legend that explains the purpose of each format and style that has been applied to the cells in the workbook.

3.4 Styles Protection
Assumption styles should have their protection property set to unlocked. All other styles should have their protection property set to locked.

3.5 Cell Content Identification
Consistent font coloring should be used to identify non-presentation cells as containing one of the following content types: 1. Constant; 2. Formula; or 3. Mixed (combination of constant and formula).

3.6 Cell Content Identification Exceptions

3.7 Mixed Cell Exceptions
It is recommended that the following constants be disregarded for the purposes of classifying a cell as having mixed content: 1. Binary (0 or 1); and 2. Boolean (TRUE or FALSE).

3.8 Assumptions Identification
Consistent fill coloring should be used to identify all assumption cells.

3.9 Assumption Cell Content
Assumption cells should contain constant cell content.

3.10 Worksheet Data Alignment
All data of the same type on a worksheet should be consistently aligned down rows or across columns.

3.11 Primary Denomination
There should be a primary denomination that is used consistently throughout the workbook.

3.12 Secondary Denominations
The denomination of ranges based on denominations other than the primary denomination of the workbook should be clearly labelled to avoid confusion.

3.13 Hyperlink Consistency
All hyperlinks within a workbook should use a consistent, dedicated style or format so that they are visually identifiable as being hyperlinks.

3.14 Work in Progress
A unique and recognizable fill color should be used to identify worksheet ranges that are subject to further work or not finalized.

4. Assumptions

4.1 Prevent Invalid Assumption Entries
Controls, data validation, conditional formatting, checks and sheet protection should be used to limit the scope for model users to enter invalid assumptions.

4.2 No Assumption Repetition
Any single assumption should never be entered more than once into a workbook.

4.3 Inactive Assumptions
Wherever possible, data validation should be used to indicate which assumption cells are inactive at any point in time.

4.4 Control Cell Link Placement
Where practical, control cell links should be located in the top left cell of the range over which their control is placed.

4.5 Control Lookup Data
Where practical, the input range of controls should be located on a lookup sheet.

4.6 In-Cell Drop Down Lists
Where data validation is used to create in cell drop down lists should be styled as an assumption cell.

4.7 Data Validation
Wherever possible, data validation should be used to control the type of data being entered into assumption cells and/or set the minimum and maximum bounds of the assumptions that can be entered.

4.8 No Heading, Title or Label Repetition
Where practical, any headings, titles or labels that are inserted into a workbook should not be entered more than once. All identical headings, titles and labels that are contained in a workbook should be linked to the base heading, title or label that was entered.

5. Sensitivities & Scenarios

5.1 Sensitivity Assumptions Identification
Sensitivity assumptions should be clearly labelled to distinguish them from non-sensitivity assumptions.

5.2 Active Sensitivities Communication
Every worksheet in a workbook should contain a message or indicator that clearly communicates when sensitivity assumptions are impacting output calculations.

5.3 Active Scenario Communication
Every worksheet in a workbook containing scenario analysis should contain a message or indicator that clearly communicates when a scenario other than the base case scenario is active and communicate the name of this scenario.

6. Outputs & Presentations

6.1 Segregation of Outputs
Output and presentation sheets, which may take the form of tables, graphs, diagrams or pictures, amongst other forms, should always be located in separate, clearly labelled sections of a workbook.

6.2 Outputs Section Structure
Where practical, the output sections within a workbook should be structured consistently with their corresponding assumption sections.
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6-3 Presentation Sheets
A workbook may contain sheets which do not comply with these guidelines, these sheets must be classified as presentation sheets. A presentation sheet is a sheet that is included in a workbook, in order to present outputs which are necessarily exempt from these guidelines, in order to meet corporate or aesthetic requirements.

6-4 Presentation Sheet Usage
Presentation sheets should only be included in a workbook where it is not possible to use non-presentation sheets to achieve the same objective.

7. Calculation Formulas
7-1 Consistent Formulas
Wherever possible, formulas in adjacent cells containing similar types of output should be consistent.

7-2 No Assumptions in Formulas
Assumptions should not be embedded in cells containing formulas.

7-3 Avoid Circular References
Wherever possible, circular references should be avoided using formulas and/or VBA macros.

7-4 Avoid Complex Formulas
Where practical, complex formulas should not be used in a workbook.

7-5 No Repeated Calculations
Where practical, a calculation should be performed only once, with dependent calculations referring to this single instance.

7-6 Automatic Calculation Setting
A workbook should, where practical, be set to calculate automatically.

8. Naming Principles
8-1 Workbook Naming
Each workbook should be named such that the name: 1. Allows for different versions of the workbook; 2. Remains consistent between versions of the workbook; and 3. Differentiates the workbook from other workbooks.

8-2 Sheet Naming Consistency
A sheet naming syntax should be adopted and implemented consistently when naming all sheets in a workbook.

8-3 Range Naming Consistency
A range naming syntax should be adopted and implemented consistently when naming worksheet ranges.

8-4 File Name Visibility
It is recommended that the file name for every workbook is contained within the header or footer of each sheet in the workbook.

9. Time Series Analysis
9-1 Time Series Assumptions
Every workbook that undertakes time series analysis should clearly state, for each distinct time series: 1. The time series start date; and 2. The primary time series periodicity.

9-2 Time Series Constants
Every workbook that undertakes time series analysis should contain named range time constants (e.g. months in year, days in week, weeks in year, etc.) rather than embedding these constants in multiple formulas.

9-3 Time Series Period Titles
Time series sheet period titles should always include the following data in each time series period: 1. Period start date; 2. Period end date; and 3. Period number (counter).

9-4 Time Series Period End Dates
The period end date label for each period in a time series sheet should always be in view on the screen.

9-5 Time Series Periodicity Identification
The periodicity of each time series sheet should be clearly identified and always in view on each time series sheet.

9-6 Time Series Number of Periods
A workbook that undertakes time series analysis should always include a cell or cell range that indicates the number of periods in each distinct time series.

9-7 Time Series Sheet Consistency
Time series sheets for each distinct time series within a workbook should always: 1. Contain the same number of periods; and 2. Have the first period starting in the same column (or more rarely, row).

9-8 Time Series Data Direction
Where practical, time series period titles should be positioned across rows, not down columns.

10. Checks
10-1 Include Checks
Checks should be used wherever possible to detect and report errors, active sensitivity analysis and any other relevant information to model users.

10-2 Checks Classification
All checks in a workbook should be classified as being one of the following check types: 1. Error check; 2. Sensitivity check; or 3. Alert check.

10-3 Dedicated Checks Summaries
A workbook should contain a dedicated and separate checks summary for each type of check included in the workbook.

10-4 Error Checks
Every workbook should contain appropriate error checks to assist in identifying errors in the workbook.

10-5 Sensitivity Checks
Every workbook that contains one or more sensitivity assumption or scenario analysis should contain sensitivity checks to identify when there is an active sensitivity assumption.

10-6 Alert Checks
Every workbook that requires checks that are not classified as error checks or sensitivity checks should contain alert checks to identify when such a check has been triggered.

10-7 Check Indicator Flags
A message or indicator that clearly communicates that a check has been triggered in a workbook should always be in view on every worksheet within the workbook.

10-8 Check Cell Conditional Formatting
Each check cell in a workbook should be conditionally formatted in such a way that it will visually indicate when an error, sensitivity or alert check has been triggered.

10-9 Check Calculation Location
Calculations for checks should be located on the sheet to which the check is relevant and not on the associated checks summary sheet.

11. Printing & Viewing
11-1 Table of Contents Page Numbers
Before printing a workbook containing multiple sheets, its table of contents should display the corresponding printed page numbers for each sheet. As such, a workbook should always print with a table of contents that is consistent with any page numbers printed on the individual sheet pages.

11-2 Sheet Page Numbers
Before printing an entire workbook containing multiple sheets, all its sheets should contain page numbers that correspond with the printed page numbers stated in the workbook table of contents.

11-3 Print View Consistency
The print scaling setting and hence the size of the content on each printed page in a workbook should, where practical, be consistent for each sheet of the same type.

11-4 Page View Consistency
The view type should be the same for each sheet in a workbook.

11-5 Worksheet View Consistency
Prior to finalizing a workbook, the view of every worksheet in the workbook should be set such that the top-left corner of the worksheet is in view, cell A1 is selected, and its window is scrolled to the top-left position.

12. Multiple Workbooks
12-1 Import & Export Sheets
All formula links between workbooks should be made via import and export sheets.

12-2 Import Sheet Formulas
Formulas within cells on import sheets should be direct references to their corresponding cells on their source export sheets.

12-3 Import & Export Sheet Consistency
Import sheets should be structured in the same way as their source export sheets.

13. Security & Protection
13-1 Use Protection
Security and protection tools should be used to ensure that only assumption content within a workbook is capable of being manipulated when workbook and sheet protection is used.

13-2 Protection of Non-Assumptions
Every cell in a workbook that is not an assumption cell should be protected (locked) to ensure that worksheet protection can be used to protect the workbook if required.

14. Visual Basic Programming
14-1 Recorded Macros
Recorded macros should be used for guidance purposes only and not relied upon in workbooks.

14-2 Require Variable Declaration
Variable declaration should be required in all objects containing VBA code.

14-3 Reference Range Names
VBA code which references worksheet ranges should reference them using range names rather than sheet names and range addresses.