

**1. General Concepts****BPMS 1-1 Workbook Purpose**

The purpose of a workbook should be the primary consideration of a model developer during every stage of a workbook's development. The purpose of a workbook can be universally segregated into three levels as follows: a) the purpose of the workbook; b) the purpose of each sheet; and c) the purpose of each component within each sheet.

**BPMS 1-2 Sheet Classification**

The sheet content and sheet purpose of every sheet in a workbook should be visually identifiable at all times.

**BPMS 1-3 Sheet Content**

Every sheet in a workbook should be visually identifiable as being one of the following sheet types: a) cover sheet; b) contents sheet; c) section cover sheet; d) schematics sheet; e) time series sheet; f) blank sheet; g) lookups sheet; or h) chart sheet.

**BPMS 1-4 Sheet Purpose**

Every sheet in a workbook should have the purpose of either collecting assumptions or not collecting assumptions. Hence, every sheet in a workbook should be visually identifiable as having one of the following sheet purposes: a) Assumptions sheet; or b) Outputs sheet.

**BPMS 1-5 Cell Classification**

The cell content and cell purpose of every cell in every worksheet should be visually identifiable at all times.

**BPMS 1-6 Cell Content**

Every cell in every worksheet should be visually identifiable as containing one of the following content types: a) Constant; b) Formula; or c) Mixed (combination of constant and formula).

**BPMS 1-7 Cell Purpose**

Every cell in every worksheet should have the purpose of either collecting assumptions or not collecting assumptions. Hence, every cell in every worksheet should be visually identifiable as having one of the following cell purposes: a) Assumption cell; or b) Output cell.

**BPMS 1-8 Assumption Classification**

An assumption is defined as anything within a workbook that is intended to be manipulated by model users to affect outputs. Every assumption in a workbook must be classified as one of the following types: a) Base assumption; or b) Sensitivity assumption.

**BPMS 1-9 Assumption Cell Content**

Every assumption cell in every worksheet should contain constant cell content.

**2. Workbook Structure****BPMS 2-1 Workbook Cover Sheet**

Every workbook that contains more than one sheet should contain a separate cover sheet as the first sheet in the workbook.

**BPMS 2-2 Workbook Sections**

Every workbook that contains multiple categories or similar 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.

**BPMS 2-3 Section Cover Sheets**

A section cover sheet should be used at the start of each section in a workbook to indicate the commencement of each new section.

**BPMS 2-4 Table of Contents**

Every workbook with more than one sheet should contain a table of contents outlining the structure and composition of the underlying workbook.

**BPMS 2-5 Table of Contents Information**

A Table of Contents should: a) show the sections of the workbook (if any sections have been created); b) reference the sheet title of each sheet in the model; c) clearly number each section and sheet; and d) be located near the front of the workbook (generally the second sheet in the workbook).

**BPMS 2-6 Workbook Navigation**

Every workbook with more than one sheet should contain: a) a table of contents sheet outlining the sections and sheets in the workbook; b) hyperlinks from the table of contents to every sheet in the workbook; and c) a hyperlink to the table of contents always in view on every sheet in the workbook.

**3. Sheet Structure****BPMS 3-1 Sheet Titles**

Every sheet in a workbook should contain a clearly highlighted sheet title that is: a) consistently formatted on every sheet; b) consistently located on every sheet type; and c) always in view on the screen when that sheet is active.

**BPMS 3-2 Sheet Type Consistency**

Sheets of the same sheet type within a workbook should be consistently structured and formatted. This standard applies to: a) sheet title, styles and positioning; b) heading styles and spacing; c) column and row dimensions; d) data entry points; e) hyperlink positioning; f) visibility of gridlines; g) grouping levels; h) zoom and viewing properties; i) window panes and splits; and j) formats and colors.

**BPMS 3-3 Grouping Rows or Columns**

When hiding rows or columns in a worksheet, the rows or columns should always be grouped, not hidden.

**4. Formats & Styles****BPMS 4-1 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.

**BPMS 4-2 Worksheet Data Alignment**

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

**BPMS 4-3 Denomination Identification**

Every number in a workbook should clearly indicate what type of denomination it is by either: a) stating the denomination of a number in an appropriate corresponding heading, title column, row or label; or b) formatting the number such that it is displayed as its denominator (e.g. \$20, 20 tonnes, 20% or 20.0x).

**BPMS 4-4 Workbook Denomination**

There should be a primary denomination that is used consistently throughout the workbook. Where denominations differ from the primary denomination, they should be clearly labelled to inform other model developers and model users.

**BPMS 4-5 Hyperlink Consistency**

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

**BPMS 4-6 Work in Progress**

Any cell within a workbook that is subject to further work or not finalized should be visually identifiable as being work in progress.

**5. Assumptions Entry Interfaces****BPMS 5-1 Assumptions Location**

All assumptions contained in a workbook should be located on dedicated and visually identifiable assumptions sheets. Assumptions should never be located on outputs sheets.

**BPMS 5-2 No Assumption Repetition**

Any single assumption should never be entered more than once into a workbook.

**BPMS 5-3 Control Cell Link Placement**

Every cell link that is attached to a control in a workbook should be located in the top left cell of the range over which its control is placed.

**BPMS 5-4 Control Lookup Data**

When using a control in a workbook that requires an input range (lookup data), the lookup data should always be located on a separate lookups sheet.

**BPMS 5-5 In-Cell Drop Down Lists**

A cell in which data validation is used to create in cell drop down lists should always be formatted as an assumption cell.

**6. Sensitivity Analysis****BPMS 6-1 Separate Sensitivity Assumptions Section**

Every workbook that contains sensitivity analysis functionality should contain a dedicated sensitivity assumptions section (which is separate to the base assumptions section).

**BPMS 6-2 Sheet Type for Sensitivity Assumptions Entry Interfaces**

All sensitivity assumptions in a workbook should be located on assumptions sheets.

**BPMS 6-3 Separate Sensitivity Assumptions Entry Interfaces**

Sensitivity assumptions should always be located on a dedicated sensitivity assumptions sheet which is separate to its corresponding base assumptions sheet.

**7. Outputs & Presentations****BPMS 7-1 Segregation of Outputs**

Outputs sheets and presentations, which may take the form of tables, graphs, diagrams or pictures, amongst other forms, should always be located in either: a) a separate, clearly labelled section of a workbook; or b) a separate dedicated outputs workbook.

**BPMS 7-2 Presentation Sheets**

A workbook may contain sheets which do not comply with the standards and conventions, but these sheets must be presentation sheets. A presentation sheet is a sheet that is included in a workbook in order to present outputs which are necessarily exempt from the standards and conventions in order to meet aesthetic or corporate requirements.

**BPMS 7-3 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.

**8. Calculation Formulas****BPMS 8-1 Consistent Formulas**

When more than one adjacent cell contains a similar type of output the structure and components of the formulas within the cells should always be consistent, so that the cell can be copied across / down the relevant range without needing to make changes.

**BPMS 8-2 No Assumptions in Mixed Content**

Assumptions should not be embedded in cells containing mixed content – i.e. cells containing content with a combination of constant and formula.

**BPMS 8-3 Circular References**

A workbook or group of linked workbooks should never contain a circular reference.

**9. Naming Principles****BPMS 9-1 Workbook Naming**

Each workbook should be named such that the name: a) allows for different versions of the workbook; b) remains consistent between versions of the workbook; and c) differentiates the workbook from other workbooks.

**BPMS 9-2 Sheet Naming**

Every sheet name in a workbook should indicate the sheet type.

**BPMS 9-3 Range Naming**

Every range name in a workbook should describe the content or use of the range being named.

**BPMS 9-4 Standardized Naming Prefixes**

Every range name in a workbook should have a standardized prefix to identify what type of range the name refers to or the purpose of that range.

**10. Time Series Analysis****BPMS 10-1 Time Series Assumptions**

Every workbook that undertakes time series analysis should clearly state, for each distinct time series: a) the time series start date; and b) the time series periodicity.

**BPMS 10-2 Time Series Period Labels**

A time series should always contain a consistent set of periodicity labels and counters that are located in the same position on every relevant worksheet in the workbook. The periodicity labels and counters that should appear in every time series sheet are: a) period start date; b) period end date; and c) period number (counter).

**BPMS 10-3 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.

**BPMS 10-4 Time Series Periodicity Identification**

The periodicity of each time series sheet should be clearly identified and always in view on each time series sheet.

**BPMS 10-5 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.

**BPMS 10-6 Time Series Sheet Consistency**

Time series sheets for each distinct time series within a workbook should always: a) contain the same number of periods; and b) have the first period starting in the same column (or more rarely, row).

**11. Checks****BPMS 11-1 Checks Classification**

All checks in a workbook should be classified as being one of the following check types: a) error check; b) sensitivity check; or c) alert check.

**BPMS 11-2 Error Checks**

Every workbook should contain appropriate error checks to assist in identifying errors in the workbook.

**BPMS 11-3 Sensitivity Checks**

Every workbook that contains one or more sensitivity assumptions should contain sensitivity checks to identify when there is an operative sensitivity assumption.

**BPMS 11-4 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.

**BPMS 11-5 Error Checks Summary**

The outcome of every error check in a workbook should be displayed in a dedicated and separate error checks summary.

**BPMS 11-6 Sensitivity Checks Summary**

The outcome of every sensitivity check in a workbook should be displayed in a dedicated and separate sensitivity checks summary.

**BPMS 11-7 Alert Checks Summary**

The outcome of every alert check in a workbook should be displayed in a dedicated and separate alert checks summary.

**BPMS 11-8 Check Indicator Flag**

A message or indicator that clearly notifies the model developer or user that a check has been triggered in a workbook should always be in view on every worksheet in a workbook.

**BPMS 11-9 Check Cell Formatting**

Each check cell in a workbook should be formatted in such a way that it will visually indicate when an error, sensitivity or alert check has been triggered.

**BPMS 11-10 Dedicated Checks Summaries**

A workbook should not contain more than one of each of the following types of check summaries: a) error checks summary; b) sensitivity checks summary; and/or c) alert checks summary.

**12. Printing & Viewing****BPMS 12-1 Table of Contents Page Numbers**

Every workbook with more than one sheet should contain a table of contents that displays 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.

**BPMS 12-2 Sheet Page Numbers**

Every sheet within a workbook should contain page numbers that correspond with the printed page numbers stated in the workbook table of contents, when printing the entire workbook.

**BPMS 12-3 Page Margin Consistency**

The page margins on every sheet in a workbook should be consistent.

**BPMS 12-4 Print View Consistency**

The print scaling setting and hence the size of the content on each printed page in a workbook should, where feasible, be consistent for each sheet.

**BPMS 12-5 Page View Consistency**

The view type should be the same for each sheet in a workbook.

**BPMS 12-6 Worksheet View Consistency**

Prior to providing a workbook to a model user, the view of every worksheet in the workbook should be set such that the top-left corner of the worksheet is in view (i.e. cell A1 is selected).

**13. Multiple Workbooks****BPMS 13-1 External Workbook Imports**

All links from an external workbook into a workbook should be made via dedicated and separate import sheets.

**BPMS 13-2 External Workbook Exports**

All links to an external workbook from a workbook should be made via dedicated and separate export sheets.

**BPMS 13-3 Workbook Outputs Links**

All formulas on an export worksheet should always be linked directly to the workbook calculations. Content on an export worksheet should never be moved from one workbook to another workbook in a manner (e.g. copied and pasted as values) which creates static data that will not change when changes are made to the workbook from which the data originated.

**14. Security & Protection**

(No Standards)

**15. Visual Basic Programming**

(No Standards)

**16. Miscellaneous****BPMS 16-1 Automatic Calculation Setting**

A workbook should, where feasible, be set to calculate automatically.

## 1. General Concepts

### BPMC 1-1 Sheet Types

It is recommended that the eight basic sheet types stated in BPMS 1-3 Sheet Content, be further sub-divided into 10 different sheet types as follows: a) cover sheet; b) contents sheet; c) section cover sheet; d) schematics sheet; e) time series assumptions sheet; f) time series outputs sheet; g) blank assumptions sheet; h) blank outputs sheet; i) lookups sheet; and j) chart sheet. These categories are exhaustive, and should be the only sheet types required to develop any form of workbook.

### BPMC 1-2 Sheet Purpose Identification

It is recommended that the purpose of every sheet in a workbook be identified using its fill color property as follows: a) light grey fill color for assumptions sheets; and b) white / no fill color for outputs sheets.

### BPMC 1-3 Cell Content Identification

It is recommended that the content of every cell in a worksheet be identified using its font color property as follows: a) blue font color for constants; b) black font color for formula; and c) green font color for mixed (combination of constant and formula).

### BPMC 1-4 Cell Purpose Identification

It is recommended that the purpose of every cell in a worksheet be identified using its fill color property as follows: a) white / no fill color for assumption cells on (grey fill color) assumptions sheets; and b) fill color the same as the fill color of the applicable worksheet for output cells.

### BPMC 1-5 Mixed Cell Exceptions

It is recommended that the following constants be disregarded for the purposes of classifying a cell as having mixed content: a) '1'; b) '0'; c) 'TRUE'; and d) 'FALSE'.

## 2. Workbook Structure

### BPMC 2-1 Workbook Section Structure

It is recommended that every workbook be structured consistently to at least include the following sections: a) cover and contents; b) model documentation and diagrams (where relevant); c) assumptions; d) outputs; e) presentations (where relevant); and f) appendices (where relevant).

## 3. Sheet Structure

### BPMC 3-1 Sheet Content Consistency

It is recommended that every sheet of the same sheet type in a workbook consistently apply the following properties: a) sheet title style and position; b) heading styles and spacing; c) purpose-based formats and styles; d) hyperlink positions and styles; e) zoom / scaling percentage of the visible and printed sheets; f) visibility of gridlines; g) grouping levels; and h) window panes/splits.

### BPMC 3-2 Hyperlinks in Worksheets

It is recommended that every worksheet, where relevant, contain the following hyperlinks: a) sheet left hyperlink (to move to the worksheet to the left); b) sheet right hyperlink (to move to the worksheet to the right); c) sheet top hyperlink (to move to the top of the worksheet); d) error check hyperlink (to move to the workbook error checks summary); e) sensitivity check hyperlink (to move to the workbook sensitivity checks summary); and f) alert check hyperlink (to move to the workbook alert checks summary). It is recommended that all of these hyperlinks be in view on the screen at all times.

### BPMC 3-3 No Chart Sheets

To ensure hyperlink access to all the sheets within a workbook, it is recommended that charts be placed within worksheets rather than using chart sheets. This convention does not apply to spreadsheet applications which allow chart sheets to contain hyperlinks and to be specified as the target of hyperlinks.

### BPMC 3-4 Workbook Cover Sheet Content

It is recommended that the cover sheet of a workbook contain the following information: a) the model name; b) the model developer's name and contact details (if appropriate); and c) workbook cover sheet notes.

### BPMC 3-5 Workbook Cover Sheet Notes

It is recommended that the cover sheet of a workbook include provision for notes that are in view and in a consistent location. Cover sheet notes should include: a) a description of the contents of the underlying workbook; b) instructions for model users or developers; and/or c) warnings for model users or developers.

### BPMC 3-6 Section Cover Sheet Content

It is recommended that every section cover sheet in a workbook contain the following information: a) a title for the following section; b) the section number for the following section; c) section cover sheet notes; and d) the model name. This information should be consistently formatted and positioned on all section cover sheets in the workbook.

### BPMC 3-7 Section Cover Sheet Notes

It is recommended that section cover sheets within a workbook include provision for notes that are in view and in a consistent location. Section cover sheet notes should include: a) a description of the contents of the underlying section; b) instructions for model users or developers; and/or c) warnings for model users or developers.

### BPMC 3-8 Limiting Worksheet Depth

It is recommended that the number of rows utilized on any worksheet be limited, where feasible, to what can be seen on the screen without vertical scrolling. It is recommended that the number of rows utilized on any one worksheet be limited to the minimum possible. To reduce the depth of a worksheet where there is an unavoidably large amount of information it is recommended that: a) rows are grouped and collapsed; or b) different types of information be moved to new worksheets (splitting the worksheet information).

### BPMC 3-9 Freezing Panes

It is recommended that frozen panes be used on every worksheet in a workbook (excluding cover sheets) to ensure that the sheet title, any hyperlinks, check indicator flags or periodicity and time titles are always in view.

### BPMC 3-10 Grouping Levels

It is recommended that rows and columns within the worksheets in a workbook be grouped consistently across all worksheets to create the following three views: a) summary view (compact); b) print view (semi-compact, if required); and c) expanded view (un-compact).

### BPMC 3-11 Heading Indentation

It is recommended that headings within a workbook be consistently indented using different columns that visually communicate the appropriate level of emphasis or importance that should be attached to each heading.

## 4. Formats & Styles

### BPMC 4-1 Use of Purpose-Based Styles

It is recommended that standardized, purpose-based styles be applied in order to adopt the most efficient method of applying different combinations of formats and consistently identify and differentiate cell purpose and cell content.

### BPMC 4-2 Cell Data Alignment

It is recommended that all data within cells or ranges of cells be aligned such that different number formats, including any relevant symbols are perfectly aligned to the right of the cell or cell range (different number formats might include positive numbers, negative numbers, currency, percentages and multiples).

### BPMC 4-3 Work in Progress Identification

It is recommended that any cells in a workbook which have not been finalized be colored in light yellow fill color to visually identify these cells as being work in progress.

### BPMC 4-4 Hyperlink Formats

It is recommended that all hyperlinks in a workbook be consistently formatted as follows: a) bold and underlined font; and b) plum font color.

## 5. Assumptions Entry Interfaces

### BPMC 5-1 Preventing Invalid Assumption Entries

It is recommended that controls, data validation and sheet protection be used to limit the scope for model users to enter invalid assumptions into assumptions sheets.

### BPMC 5-2 Assumptions Entry Interfaces

It is recommended that every assumption in a workbook that has a finite number of entry possibilities should use an assumptions entry interface that limits the model user to only those finite entry possibilities.

### BPMC 5-3 Controlling Assumptions Entry Interfaces

It is recommended that combinations of the following tools be used to limit assumptions entry interfaces to finite possibilities: a) controls; b) data validation; c) error checking; d) conditional formatting; and e) sheet protection.

### BPMC 5-4 No Heading, Title or Label Repetition

It is recommended that, where feasible, no heading, title or label that is inserted into a workbook 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.

### BPMC 5-5 Control Cell Link Range Names

It is recommended that control cell link ranges be named to indicate the type of control to which the cell link relates.

### BPMC 5-6 Use of Check Box Controls

It is recommended that a check box be used in a workbook when the assumption entry is binary (or boolean).

### BPMC 5-7 Use of Button Controls

It is recommended that a button be used in a workbook only when a macro needs to be assigned to a control.

### BPMC 5-8 Use of Drop Down Box or List Box Controls

It is recommended that a drop down box or list box be used in a workbook when there are a definite and limited number of possible assumption entries.

### BPMC 5-9 Use of Spin Button or Scroll Bar Controls

It is recommended that a spin button or scroll bar be used in a workbook when an assumption entry is in the form of a numbered sequence that has upper and lower bounds.

### BPMC 5-10 Data Validation

It is recommended that data validation be used to: a) inform model users about the assumption entries required; b) control the type of data being entered into assumption cells; and/or c) set the minimum and maximum bounds of the assumptions that are entered. Data validation should be used when the type of assumption entry is known, but the use of controls is not suitable.

### BPMC 5-11 Conditional Formatting of Assumption Cells

It is recommended that conditional formatting be used to indicate to model users which assumption cells are inactive at any point in time – i.e. not relevant to outputs calculations.

### BPMC 5-12 Visual Identification of Inactive Assumptions

It is recommended that an assumption cell that is currently irrelevant for outputs as a consequence of a prevailing assumption in another assumptions entry interface be visually identifiable as being an inactive assumption cell using grey fill color and white font color.

## 6. Sensitivity Analysis

### BPMC 6-1 Sensitivity Assumptions Entry Interface Structure

It is recommended that, to the extent that it is practical, any sensitivity assumptions entry interface in a workbook be structured consistently with its corresponding base assumptions entry interface.

## 7. Outputs & Presentations

### BPMC 7-1 Separate Outputs Workbooks

It is recommended that separate, dedicated outputs workbooks be created for medium to large workbooks or where the model developer does not want to divulge certain workbook content to certain model users.

**BPMC 7-2 Outputs Section Structure**

It is recommended that, where feasible, the outputs sections within a workbook be structured consistently with their corresponding assumptions sections.

**BPMC 7-3 Outputs Worksheet Summaries**

It is recommended that, where feasible, a summary of the primary outputs on each outputs worksheet be provided at the top of the outputs worksheet. It is recommended that an outputs worksheet is structured in the following order, going down or across the worksheet: a) outputs summary (primary outputs only); then b) outputs calculations (including details).

**8. Calculation Formulas****BPMC 8-1 Avoid Complex Formulas**

It is recommended, where feasible, that complex formulas not be used within a workbook.

**BPMC 8-2 Complex Formula Schematics**

It is recommended, where feasible, that complex formulas within a workbook be explained through the creation of formula schematics (diagrams representing formula logic) that are placed in a separate model schematics section of the workbook.

**BPMC 8-3 Multiple Function Formulas**

It is recommended that formulas within a workbook that contain more than one function be separated within the formula such that each new function is displayed on a separate line of the formula bar.

**BPMC 8-4 No Repeated Calculations**

It is recommended that, where feasible, a calculation should be performed only once, with dependent calculations referring back to this single instance.

**9. Naming Principles****BPMC 9-1 Workbook Name Display**

It is recommended that every workbook has a name and that the name corresponds with the file name. It is recommended that every worksheet in the workbook displays the model name (in addition to the sheet title) and that the model name is consistently formatted and located.

**BPMC 9-2 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.

**BPMC 9-3 Sheet Type Naming Suffixes**

It is recommended that the following suffixes be appended to sheet tab names to indicate the type of sheet that is being named: a) cover sheet – Cover; b) contents sheet – Contents; c) section cover sheet – SC; d) schematics sheet – MS; e) time series assumptions sheet – TA; f) time series outputs sheet – TO; g) blank assumptions sheet – BA; h) blank outputs sheet – BO; i) lookups sheet – LU; and j) chart sheet – CHT. These suffixes are exhaustive and, other than secondary sheet naming suffixes, should be the only sheet naming suffixes required when naming sheets.

**BPMC 9-4 Secondary Sheet Naming Suffixes**

In addition sheet type naming suffixes, it is recommended that the following suffixes be appended to any sheet tab names to indicate any of the following sub-classifications of the sheet: a) import – IM; b) export – ME; c) presentation – P. These secondary sheet naming suffixes should be appended prior to appending the applicable sheet type naming suffix.

**BPMC 9-5 Sheet Naming Key**

Where the sheet naming prefixes or suffixes are used in a workbook, it is recommended that a key or legend that explains the sheet naming prefixes or suffixes also be included in the workbook.

**BPMC 9-6 Range Naming Prefixes**

It is recommended that prefixes be used when naming ranges to indicate the type of range that is being named or the purpose of that range. See page 53 of the Standards – Commentary & Examples booklet. The list of range naming prefixes is exhaustive, and should be the only range naming prefixes required when naming cells, cell ranges or control cell links.

**BPMC 9-7 Range Naming Key**

Where range naming prefixes are used in a workbook, it is recommended that a key or legend that explains the range naming prefixes also be included in the workbook.

**BPMC 9-8 Range Naming Conflicts**

Where a worksheet range qualifies for more than one range naming prefix under BPMC 9-6, the prefix derived from the purpose of the range should be used when naming the range, not the prefix derived from its type.

**10. Time Series Analysis****BPMC 10-1 Time Series Constants**

It is recommended that every workbook that undertakes time series analysis contains time constants (e.g. months in year, days in week, weeks in year, etc.).

**BPMC 10-2 No Mixing of Periodicities**

It is recommended that where feasible, a time series sheet never contains assumptions or outputs for more than one periodicity.

**BPMC 10-3 Multiple Periodicities in One Workbook**

It is recommended that no section in a time series workbook contains more than one periodicity.

**BPMC 10-4 Time Series Data Direction**

It is recommended, that where feasible, periodicity labels be positioned across rows, not down columns.

**11. Checks****BPMC 11-1 Linking Checks to Model Name Entry Cell**

It is recommended, that where relevant, the outcome of the check type summary cell referred to in BPMC 11-4 be linked to the model name entry cell on the workbook cover sheet.

**BPMC 11-2 Check Cell Conditional Formatting**

It is recommended that every check cell in a workbook be consistently formatted such that, when triggered, they appear formatted as follows: a) bold font; and b) red font color.

**BPMC 11-3 Check Calculation Location**

It is recommended that the calculations for checks be located on the sheet to which the check is relevant and not on the associated check sheet.

**BPMC 11-4 Check Type Summary Cell**

It is recommended that the outcome of all checks of each check type be summarized into a single check cell for each check type contained within a workbook.

**12. Printing & Viewing****BPMC 12-1 Workbook Print Scaling**

It is recommended that, where feasible, the print scaling for every sheet in a workbook should be set to 100%, where possible, to ensure clarity and consistency when printing and viewing a printed copy of the workbook.

**BPMC 12-2 Printed Information**

It is recommended that every printed page include the following information: a) the date and time that the page was printed; b) the name of the workbook; c) the name of the sheet; and d) the page number.

**13. Multiple Workbooks****BPMC 13-1 Workbook-Specific Import and Export Sheets**

It is recommended that, where feasible, a separate import and export sheet be created for each external workbook that a workbook links from and to.

**BPMC 13-2 Import and Export Sheet Consistency**

It is recommended that the import sheet in one workbook be structured in exactly the same way as the corresponding export sheet in the relevant linked workbook.

**BPMC 13-3 No Complex Formulas on Import Sheets**

It is recommended that, where feasible, functions not be included within formulas that contain links to external workbooks.

**BPMC 13-4 Import and Export Sections**

It is recommended that import and export sheets be placed in separate, dedicated sections of a workbook.

**BPMC 13-5 Linked Workbooks Diagrams**

It is recommended that whenever there are more than two workbooks linked to each other in a workbook group, that a diagram be created within each workbook showing the links between the group of linked workbooks.

**14. Security & Protection****BPMC 14-1 Workbook Protection**

It is recommended that workbook protection be used whenever a model developer is required to: a) control access to a workbook; b) control access to designated sheets within a workbook; and/or c) prevent structural changes being made to a workbook.

**BPMC 14-2 Protection of Non-Assumptions**

Security and protection tools should be used to ensure that only the assumptions components of a workbook are capable of manipulation by model users.

**BPMC 14-3 Sheet and Cell Protection**

It is recommended that every cell in a workbook that is not an assumption cell be protected (locked) prior to distribution of the workbook to model users. For this cell protection to operate effectively, every sheet in the workbook must be protected.

**BPMC 14-4 No Unnecessary Passwords**

It is recommended that unless the model developer does not want model users to access certain areas of a workbook when protecting a worksheet or workbook, that no password be applied.

**BPMC 14-5 Storing Passwords**

It is recommended that when applying workbook or worksheet protection using passwords, that a password list be printed and stored in a safe location for future reference.

**15. Visual Basic Programming****BPMC 15-1 Recording Macros**

It is recommended that only extremely simple macros be created using the macro recorder. Macros created using the macro recorder should not be relied upon by model developers who are not familiar with the resulting source code. Macros should only be written by experienced VBE programmers.

**16. Miscellaneous****BPMC 16-1 Model Developer Identification**

It is recommended that the name of the model developer is entered into the workbook (normally on the cover sheet, if applicable).

**BPMC 16-2 Emphasizing Information**

It is recommended that you create and consistently apply various levels of headings in a workbook that visually communicate the appropriate level of emphasis or importance that should be attached to each cell or range of cells.

**BPMC 16-3 Help Files and Instructions**

It is recommended that every workbook be accompanied by instructions that explain the following for both model users and future model developers: a) what the primary outputs are; b) what the primary assumptions are; c) how to use the workbook or group of workbooks; and d) any other relevant notes or commentary.