



## **The Cash Flow Waterfall Reporting Template for Repo-Eligible Asset Backed Securities**

Last updated: July 2015

### **1. Purpose**

This document specifies the *cash flow waterfall reporting template* for asset-backed securities (ABS) that are repo-eligible with the Reserve Bank of Australia. The template requires the Information Provider of a repo-eligible ABS to report transparent, clear and comprehensive models of the cash flow waterfall of the ABS in a uniform computer language format that is made publicly available. The Information Provider is required only to report models of the ABS's liability structure. Reporting of projections of future collateral pool cash flows is not required; similarly, projections of exogenous factors, such as counterparty downgrades, that could affect the distribution of cash flows are also not required.

### **2. The cash flow waterfall**

The cash flow waterfall is the mechanism that distributes to the ABS notes and counterparties the income generated in each collection period by the collateral pool – for example receipts of interest and principal on the mortgages or other assets, recoveries on defaults, reimbursements from mortgage insurers or other credit support, receipts from swap providers etc. The waterfall also contains the mechanism for distributing the enforcement proceeds in an event of default. Furthermore, the waterfall describes the mechanism that allocates to the ABS notes the losses suffered by the collateral pool. The income, principal, enforcement proceeds and loss distribution mechanisms are set at the issuance of the ABS, and are contained in the ABS Information Memorandum and other relevant documents. However, this information can be difficult to interpret for investors and difficult to describe in a format that is useful for the analysis of ABS.

### **3. Frequency of reporting, reporter and public availability**

The cash flow waterfall template should be reported monthly, and should be submitted to the Reserve Bank following the procedures for submitting data on repo-eligible ABS.

The waterfall should be reported by the ABS issuer or another entity in the securitisation structure that is best placed to provide the reports. The reporting entity is referred to as the 'Information Provider' in the rest of this document. Information Providers are required to meet the reporting requirements to permitted public users by making the cash flow waterfall available to permitted public users within 7 days of the deal's distribution date or the monthly anniversary of the distribution date.

### **4. Waterfall reporting**

Repo-eligible ABS are required to have their cash flow waterfall reported in a computer program (the *waterfall program*) written in Visual Basic for Applications code included in a Microsoft Excel file. All of the program's code should be made available in the reported Microsoft Excel file. The Microsoft Excel file should be updated on each reporting date and should contain:

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- a) **Waterfall program** in the form of a Visual Basic for Applications function called 'Waterfall\_1', contained in a module called 'WaterfallModel\_1'. The program should map the cash flows from the collateral pool in any given period to the cash flows distributed to the ABS notes and counterparties in that period, according to the full set of rules specified in an ABS Information Memorandum and other relevant transaction documents.

Each period, this program should take as input all relevant information – principally the cash flows from the collateral pool for that period, outstanding balances on the ABS notes, benchmark interest rates and margins paid on each note etc. – and should produce as an output the distribution of these cash flows to the ABS notes and service providers.

The specifics of the waterfall program will vary across ABS, but, in its essence, the program should be a sequence of logical statements that examine the sufficiency of the cash flows from the collateral pool to meet due payments to the ABS notes in accordance with the Information Memorandum and other relevant transaction documents. The full program code should be made completely visible in the reported cash flow waterfall template (see below for the detailed requirements for the waterfall program).

- b) **Waterfall worksheet** (called Waterfall) organised so that the inputs and outputs of the cash flow waterfall on each reporting date are contained in a single row, each variable is contained in a single column, and reporting dates are organized in ascending order. The data required in this section should be reported starting from cell B30 which should contain the text '<DATA>'. The report date should be reported in column B starting from row 37. The worksheet should, from left to right include:

- i. **Inputs.** The history of all inputs into the cash flow waterfall program up to and including the current reporting date starting from the latest of: (1) 12 months before the date of the initial submission to the Reserve Bank of Australia, (2) the ABS inception date, and (3) the latest ABS deal documentation amendment date. The reporting of longer history is at the discretion of the Information Provider.

For each reporting date, all of the model's inputs should be contained in a single row in a continuous sequence of cells. These inputs are expected to include, but are not limited to, distribution date, number of accrual days, opening balances on the ABS notes, cumulative chargeoffs on ABS notes, available interest and principal income from the collateral pool, recoveries on defaulted mortgages or other assets, relevant market variables such as interest rates, benchmark interest rate spread and margin on each note and facility, and exogenous decisions by the trust manager to trigger a change in the waterfall etc.

All inputs that represent stock variables (such as ABS notes balances and cumulative chargeoffs on ABS notes) and triggers should be reported in their states just before the most recent determination date that precedes the reporting date (i.e. they should be reported as the opening balances in determining the cash flow distributions for the reporting period). Each input variable should be reported in a separate column and that column should be clearly labelled with the variable's name. Variables whose values are redacted in accordance with section 8 of this document because they are commercially sensitive should have values reported with the number 0 (zero).

When a note in the ABS is issued in a currency other than the Australian dollar, all cash flows pertaining to that note should be reported using their equivalent Australian dollar value, or the actual currency of the cash flows if the cash flows and their hedges (where applicable) are modelled in the reported cash flow waterfall. In the latter case, the cash

flow waterfall model should include information such as the relevant interest rates and hedge costs, and relevant computer code for the hedge calculation, and the relevant currency should be clearly identified in the currency (if applicable) row. Similarly, if a note in the ABS pays a fixed coupon and this payment is hedged with a fixed-for-floating interest rate swap, then the swapped cash flow should be reported or the swap transaction should be modelled within the waterfall.

- ii. **Version.** A column in which each row indicates the version of the waterfall program in effect for that reporting date. The waterfall program is allowed to change throughout the life of the ABS but changes are expected to be very rare and should be explained by the Information Provider in a new description sheet (see below).
- iii. **Outputs.** Apply the waterfall program to the inputs in 4(b)(i) separately for every single reporting date to produce the distributions to the ABS notes and counterparties according to the reported waterfall program for that reporting date. The waterfall program outputs for a single reporting date should be produced only by a single call to the reported waterfall program, and should be returned as an array and stored in a single row in a continuous sequence of cells. Inputs should be passed to the waterfall program as a single range (using the 'Range' construct in VBA).

The outputs are expected to include, but are not limited to, payments of senior fees, interest and principal payments on each ABS note, allocation of chargeoffs on each ABS note, cumulative chargeoffs on the notes, closing balances of the notes, indicators of whether relevant trigger events have occurred, etc.

All outputs that represent stock variables (such as ABS notes balances and cumulative chargeoffs on ABS notes) and triggers should be reported in their states just after distributions to the ABS notes and counterparties are made for the reporting date (i.e. they should be reported as the closing balances after distributions of the collateral cash flows for that period). Each output variable should be reported in its own column that is clearly labelled with the variable's name.

- iv. **Trust distributions.** The history of all actual distributions to the ABS notes and counterparties, both principal and interest, note chargeoffs, closing balances and trigger events up to and including the current reporting date. The length of history for the actual trust distributions should match the length of history for the outputs specified in 4(b)(iii). For each reporting date these should be reported in a single row in a continuous sequence of cells. The reported actual distributions and losses should exhaust all available income and losses from the ABS collateral pool during the reporting period, and should have corresponding outputs produced by the waterfall program. These correspondences should be clear and easy to identify in the waterfall template; to this end, the ordering of the variables in 4(b)(iii) and 4(b)(iv) should match. Each distribution should be reported in its own column that is clearly labelled with the variable's name.

In the publicly reported template only, some ABS distributions are not required to be reported (see section 8 for details). Instead, the values of these variables should be reported as 'NR' in the publicly reported template. In the template reported to the Reserve Bank of Australia all distributions should be reported using their actual values.

- v. **Discrepancies.** The differences – for each distribution date up to and including the current reporting date – measured as the actual distributions to the ABS notes and counterparties and the actual balances on the ABS notes and facilities in 4(b)(iv) less the corresponding

outputs produced by the waterfall program in 4(b)(iii). Ordering of the variables should be the same as in 4(b)(iii) and 4(b)(iv). Each difference should be reported in its own column that is clearly labelled with the variable's name.

For variables that are not required to be reported in the publicly reported template for commercial sensitivity reasons (see section 8 for details), and whose values are therefore reported as 'NR', the values of the differences for these variables should also be reported as 'NR'. In the template reported to the Reserve Bank of Australia all differences should be reported using the actual values.

For non-numeric variables, such as true/false variables indicating whether a trigger condition has been satisfied, no discrepancy value is to be reported and instead these should be reported as 'ND5'.

- vi. **Self-validation.** The simple average – calculated over the reported history of the cash flow waterfall model – of the differences described in 4(b)(v) measured as a per cent of the corresponding actual distributions to the ABS notes and counterparties, ABS note chargeoffs, and closing balances in 4(b)(iv). For each variable, include the simple average of the absolute values of these deviations over the range of reported data.
- vii. **Metadata.** Each variable described in 4(b)(i) - 4(b)(v) should be reported in a single column. Each column of data should start from row 31 in the Waterfall sheet and should be headed by the variable's name. The following 4 rows (rows 32 to 35) in each column should be reserved for metadata pertaining to the corresponding variable, with each column corresponding to a single variable. The first row should contain the data type (which is one of Date, Numeric, Alphanumeric or Boolean); the second, the reported value type for the variable; the third, the currency denomination of the variable, using ISO 4217 code if applicable and 'ND5' if currency is not applicable for that variable; and, the fourth, a textual description of the variable.

Dates should be reported in the Microsoft Excel date data type and formatted as "dd-mm-yyyy". Numeric variables should be reported to a precision of at least two decimal places, apart from exchange rates, interest rates and coupon rates which should be reported with a precision of four decimal places. It is preferred that interest rates and coupon rates are reported as decimal values (i.e. an interest rate of 5.00 per cent is reported as 0.0500 or a coupon rate of 100 basis points is reported as 0.0100); however, waterfall model reporting these data as percentages will be accepted. Boolean variables should be reported as True or False.

The variable's reported value type should be one of: 'AV', where actual value is reported; 'RV', where the value of an input variable is redacted in the publicly reported waterfall in accordance with section 8 of this document; or, 'NR', where the value of an actual ABS trust distribution or payment is not reported in the publicly reported template in accordance with section 8 of this document. When the value type is 'RV' or 'NR', the variable's description field should contain, in addition to the variable's usual description, the following text: *'This variable's value is redacted/not reported for reasons of commercial sensitivity, and the investor/user of the waterfall template is responsible for replacing it with his or her estimate'*. All values reported in the waterfall submitted to the Reserve Bank of Australia should be actual values.

In the fifth row immediately below the variable's name in each column, the cell should contain text 'INPUT' if the data in that column is a model input (as in 4(b)(i)), 'MODEL

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VERSION' if the data indicates a waterfall model version (as in 4(b)(ii)), 'OUTPUT' if the data in that column is a model output (as in 4(b)(iii)), 'DISTRIBUTION' if the data in that column is an actual trust distribution (as in 4(c)(iv)), 'DISCREPANCY' if the data in that column is measured discrepancy between a model output and an actual trust distribution (as in 4(c)(iv)), 'DISCREPANCY NR' if the data in that column would refer to a discrepancy for a variable for which the discrepancy is not required to be reported, i.e. a variable that does not represent a trust distribution or a balance on a note or a facility (as in 4(c)(v)), or 'REPORT DATE' for column B which contains the reporting date corresponding to each row of data.

- c) **Description worksheet** (called Description\_1) that contains a description of the waterfall in plain English describing the waterfall according to the ABS Information Memorandum and other relevant transaction documents. A schematic diagram describing the waterfall should be reported separately to the Reserve Bank and publicly with the initial submission and updates should be reported following any subsequent changes. An example of schematic diagram is presented in Appendix A.

The Microsoft Excel file containing the waterfall template should be in a Microsoft Office 2010 version or a version backward compatible with Microsoft Office version 2010. The file should be reported in XLSM (Excel macro-enabled workbook file) format, however the cash flow waterfall file will be submitted to the Reserve Bank via XML. The Reserve Bank has made available a tool for converting the XLSM file to XML for submission, and Information Providers will have the ability to submit the cash flow waterfall model directly via XML. The Reserve Bank will reconstruct the submitted models back from the XML. For public release, the waterfall model should be made available in XLSM (Excel macro-enabled workbook file) format, with all of its contents (worksheets, cells, Visual Basic for Applications modules etc.) completely visible and transparent. A shell cash flow waterfall template, which should be adapted to include all the necessary features of each reported deal according to the guidelines specified in this document, can be accessed at: <http://www.rba.gov.au/mkt-operations/xls/shell-excel-file-for-the-cash-flow-waterfall-template-for-repo-eligible-abs.xlsm>.

A guide to the minimum expected inputs and outputs for the waterfall program is provided in Appendix B. This is not an exhaustive list and is provided only as a guide. Each ABS is unique, and the reported waterfall should accurately and completely reflect its features.

## 5. The waterfall program

The waterfall program is to be written in Visual Basic for Applications (VBA) in a Microsoft Office 2010 version or a version backward compatible with Microsoft Office version 2010. An outline of the waterfall program is provided in Appendix C. The program:

- a) Should be an accurate representation of the waterfall according to the ABS Information Memorandum and other relevant transaction documents.
- b) Should have its code stored in a VBA module called *WaterfallModel\_i* that contains a public function (defined using the 'Public Function' construct) called *Waterfall\_i*, where *i* is a positive integer 1, 2, 3, ... etc. indicating the version of the waterfall program. The program is expected to have only one version.
- c) Should be written predominantly as a single function using only standard VBA commands. If nonstandard commands are necessary, for example to perform repetitive calculations, then these should be written as private functions (defined using the 'Private Function' construct) that are

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included in the same module as the main program. All of these functions should be completely visible and transparent.

- d) Should have code that handles all triggers and changes in payment priority as specified in the transaction documents. For example, in deals with sequential and pro-rata principal distribution priorities, both distribution priorities should be modelled in the waterfall; the two distribution priorities must not be reported in separate models.
- e) Should have its versions, if any, labelled in a sequence. Information Providers may submit an updated program if this is necessary, however, any changes are expected to be extremely rare. Each new version, including all of its supporting functions, should be stored in a new module and should be defined as per the specification in section 5. A new *Description sheet* (see above) called *Description<sub>i</sub>*, where *i* is a number 1, 2, 3, ... etc. indicating the version of the waterfall program, should be created for each new version of the waterfall program and should explain the changes to the waterfall program and the reasons for making these changes. This explanation should be in plain English. Following revisions to the waterfall program, all previous versions of the waterfall program and their corresponding description sheets should be kept in the waterfall template.
- f) Should take as input all relevant information required to determine the accurate distribution of the collateral cash flows to the ABS notes and counterparties for any given distribution date. These inputs should be passed to the *Waterfall<sub>i</sub>* function as a worksheet cell reference to a set of cells contained in a single row in the Waterfall worksheet. All inputs for a single reporting date should be contained in a single row; the waterfall program should not reference inputs elsewhere in the workbook and no inputs should be coded directly into the program, however it is acceptable to include general constants such as day count conventions (i.e. 360 or 365 days) and factor based clean up call conditions (e.g. 10 per cent of initial pool balance) inside the VBA code.
- g) Should have a single input variable called *WaterfallInputRange* of type 'Range'. At the start of the *Waterfall<sub>i</sub>* function, the values from the cell range referenced by *WaterfallInputRange* (i.e. its Value2 property) should be assigned to a local variable *WaterfallInputValues* of type 'Variant' (defined by Dim WaterfallInputValues as Variant) which will as a result hold a two-dimensional array. The *WaterfallInputValues* array should be unpacked into well-defined and appropriately named local variables. Only these local variables should be used in the rest of the function.
- h) Should determine whether any trigger conditions that can change the distribution priority of payments in the deal or could lead to a wind-up of the deal have been satisfied. The model should indicate whether each of these trigger conditions have been satisfied with a Boolean output variable (one variable for each condition). For trigger conditions that also depend on some form of trust manager discretion, such as some pro-rata payment trigger or clean-up calls, the program should include a Boolean input variable that indicates to the model whether these triggers have been implemented by the ABS trust.
- i) Should have a Boolean 'default' input variable which when set to True should direct the program to run the default/enforcement waterfall.
- j) Should have a Boolean 'missed payment' output variable which when set to True should indicate a situation where a required income or principal payment has been missed.

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- k) Should return as output an array that contains the distribution of the collateral pool cash flows to the ABS note holders and counterparties, the balances of the ABS notes after the distributions, chargeoffs to the ABS notes, cumulative chargeoffs to the ABS notes, flows in and out of structural facilities and balances of structural facilities. The local variables representing these quantities should be collected in a one-dimensional array called *WaterfallOutput* of variables of type 'Variant' (defined by Dim WaterfallOutput() as Variant) and only this array should be returned by the *Waterfall\_i* function. The function output should be for a single distribution date.
- l) Should be a sequence of logical statements that examine the sufficiency of the cash flows from the collateral pool to meet payments to the ABS notes and counterparties in accordance with the ABS Information Memorandum and other relevant transaction documents.
- m) Should have all of its variables and their types declared. In the current version of VBA (version 7.0) this is achieved by including the statement *Option Explicit* at the start of the VBA module that contains the waterfall program. The program should include this statement or other statements achieving the same effect in future versions of VBA.
- n) Should index arrays starting with 0 and should include the *Option Base 0* statement at the start of the VBA module that contains the waterfall. The only exception to this is the *WaterfallInputValues* array which is indexed starting with 1 by construction.
- o) Should use only the VBA programming language as it is defined in the VBA built-in library, but should not use the members of class FileSystem, Global or Interaction. The only exception to this is the use of the Excel library in the definition of the *Waterfall\_i* function input and in assigning the values of the input range to *WaterfallInputValues* as described in 5(g).
- p) Should contain comments indicating the program's version and the date that it has been created as well as the date from which it is effective. It should also contain comments identifying the ABS transaction to which the waterfall applies (i.e. trust name etc.).
- q) Should follow good programming practice and have extensive comments in plain English that would allow users to thoroughly understand the program. Each part of the program code should include a comment referencing the section(s) of the ABS Information Memorandum (page numbers, and where available section and paragraph numbers) that are being modelled in that part of the program.
- r) Should have all of its variables named so that their purpose is easy to understand. The variables' names should be written in full and properly capitalised. Where a variable's name consists of more than one word, each word should start with a capital letter.
- s) Should explain in a comment the purpose of each variable when it is declared. Abbreviations (including acronyms) should be used in the variable names only when the meaning of the abbreviation is easily understandable; the meaning of any abbreviations used should be explained in comments.

## 6. Template validation

The ABS Information Provider is responsible for the accuracy and validity of the waterfall program. The template will be validated by the Reserve Bank, in part, by comparing the cash flows generated by the waterfall program, particularly the distributions to the ABS note holders and counterparties, against the actual distribution to the ABS notes and counterparties. Material or persistent deviations

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between modelled and actual cash flows to the note and counterparties will result in the waterfall template being deemed invalid.

The Reserve Bank of Australia reserves the right to review the reported waterfall and deem the template invalid, with the subsequent implications for repo-eligibility, if in the Bank's sole judgement the reported waterfall template is not an accurate representation of the ABS waterfall.

### **7. Items not required to be reported**

The waterfall template does not require ABS Information Providers to report projections of future cash flows from the collateral pool and how these projections are distributed by the cash flow waterfall to the ABS liabilities. Information Providers are not required to report projections of exogenous events, such as a counterparty downgrade, that may have an impact on a waterfall's cash flow distribution.

Users of the template could use it to examine the future behaviour of the ABS, but it will be their responsibility to model the collateral pool cash flows (particularly, prepayment rates, defaults and losses-given-default) and to make the necessary projections of future events and collateral behaviour.

### **8. Redacting commercially sensitive information**

All information, including the information that is redacted in the publicly reported template, should be reported to the Reserve Bank of Australia.

The ABS trust fees and expenses that rank senior to the ABS most senior notes should be aggregated into a single item and the waterfall program should treat all of these senior fees as a single item. This applies to both the waterfall template reported to the Reserve Bank and to the one reported publicly. Other expenses that are junior or rank equally with the most senior notes should be aggregated in separate single items, and should be treated as a single item in the waterfall program.

Information Providers should redact the commercially sensitive information described below from the publicly reported waterfall template. Only the information described below should be redacted from the publicly reported template, and should only be redacted following the prescribed rules.

In the publicly reported template only:

- For non-marketed ABS that are self-securitised (or that are issued entirely through private placement) the senior fees should be redacted, and should be reported as 0 (zero). The redaction should be made clear in the Metadata section, where the reported value type should be reported as 'RV' (redacted value) and the description field should include the following text: *'This variable's value is redacted/not reported for reasons of commercial sensitivity. The investor/user of the waterfall template is responsible for replacing it with his or her estimate'*.
- Information Providers should redact from the publicly reported template the margin on privately placed notes that are junior to the most junior publicly placed note in the ABS transaction. For self-securitisations, Information Providers should redact from the publicly reported template the margin on all notes. The benchmark rate to which the margin is added should be reported. The redacted margin's value should be reported as 0 (zero) in the Waterfall worksheet. The redaction should be made clear in the Metadata section, where the



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variable type should be reported as 'RV' (redacted value) and the description field should include the following text: *'This variable's value is redacted/not reported for reasons of commercial sensitivity. The investor/user of the waterfall template is responsible for replacing it with his or her estimate'*.

- For non-marketed ABS that are self-securitised (or that are issued entirely through private placement) the following items may be redacted from the publicly reported template, and replaced with 0 (zero):
  - Basis and interest rate swap amounts
  - Principal charge offs
  - Arrears trigger (%)
  - Performing loan balance
  - 60 day arrears, last 4 quarters
  - Finance charge collections
  - Accrued interest adjustments or other interest income

The redaction should be made clear in the Metadata section, where the reported value type should be reported as 'RV' (redacted value) and the description field should include the following text: *'This variable's value is redacted/not reported for reasons of commercial sensitivity. The investor/user of the waterfall template is responsible for replacing it with his or her estimate'*.

- Information Providers are not required to report in the publicly reported template the actual interest distributions (along with unpaid coupon balances) made on privately placed notes that are junior to the most junior publicly placed note in the ABS transaction. For self-securitisations, Information Providers are not required to report the interest distributions on any of the notes in the publicly reported template. For distributions whose actual values are not reported, the values should be reported as 'NR' in the Waterfall worksheet. When a variable's value is not reported, this should be made clear in the Metadata section, where the reported value type should be reported as 'NR' (not reported) and the description field should include the following text: *'This variable's value is redacted/not reported for reasons of commercial sensitivity. The investor/user of the waterfall template is responsible for replacing it with his or her estimate'*.

In the waterfall template reported to the Reserve Bank, all information, including the information on senior fees, note margins, and actual distributions to the notes, which is redacted in the publicly reported template, should be reported to the Reserve Bank of Australia using the actual values for these items. Trust fees and expenses that rank senior to senior notes should be aggregated into a single item.

The waterfall template reported to the Reserve Bank and the publicly reported waterfall template should only differ in the values reported for the redacted variables (and the corresponding items in the Metadata section describing the redaction).

## 9. Liability

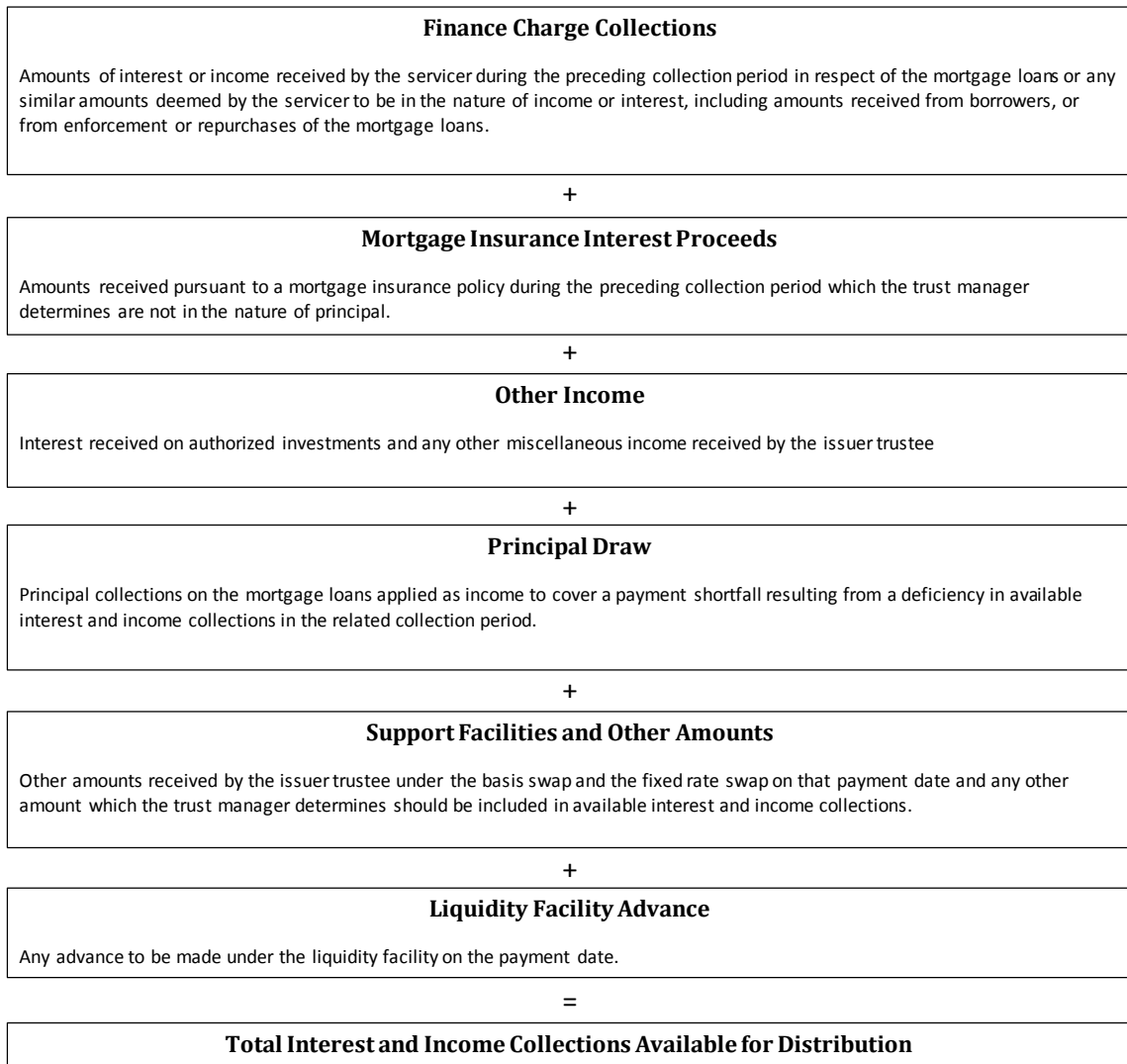
Despite the best endeavours of Information Providers to provide accurate information, it is possible that the reported waterfall models may contain some minor errors that are not made with the intention to mislead investors. Reflecting this, Information Providers may include appropriate disclaimers regarding model accuracy and data in the publicly reported template and require users

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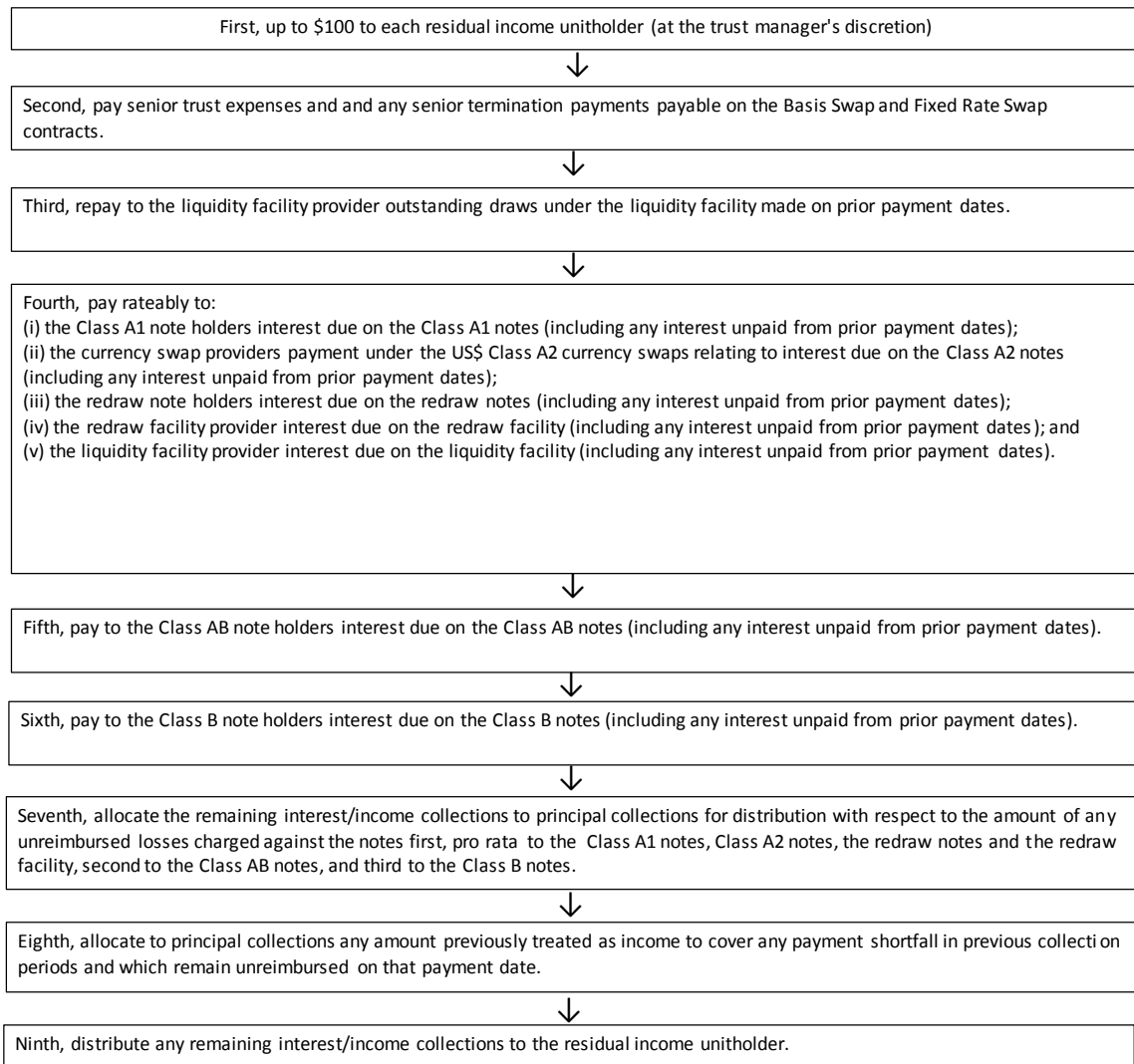
to acknowledge any terms and conditions attached to use of the model. The disclaimers, where used, should not be couched in a way that limits substantially the value of the information being provided and should not reduce, or purport to reduce, the representations and warranties that investors are entitled to rely on under the relevant transaction documents or the ability of investors to rely (to the extent contemplated in the transaction documents) on the same or similar information delivered under the relevant transaction documents.

**Appendix A: Example of the Diagrammatic Representation of Cash Flow Waterfall**

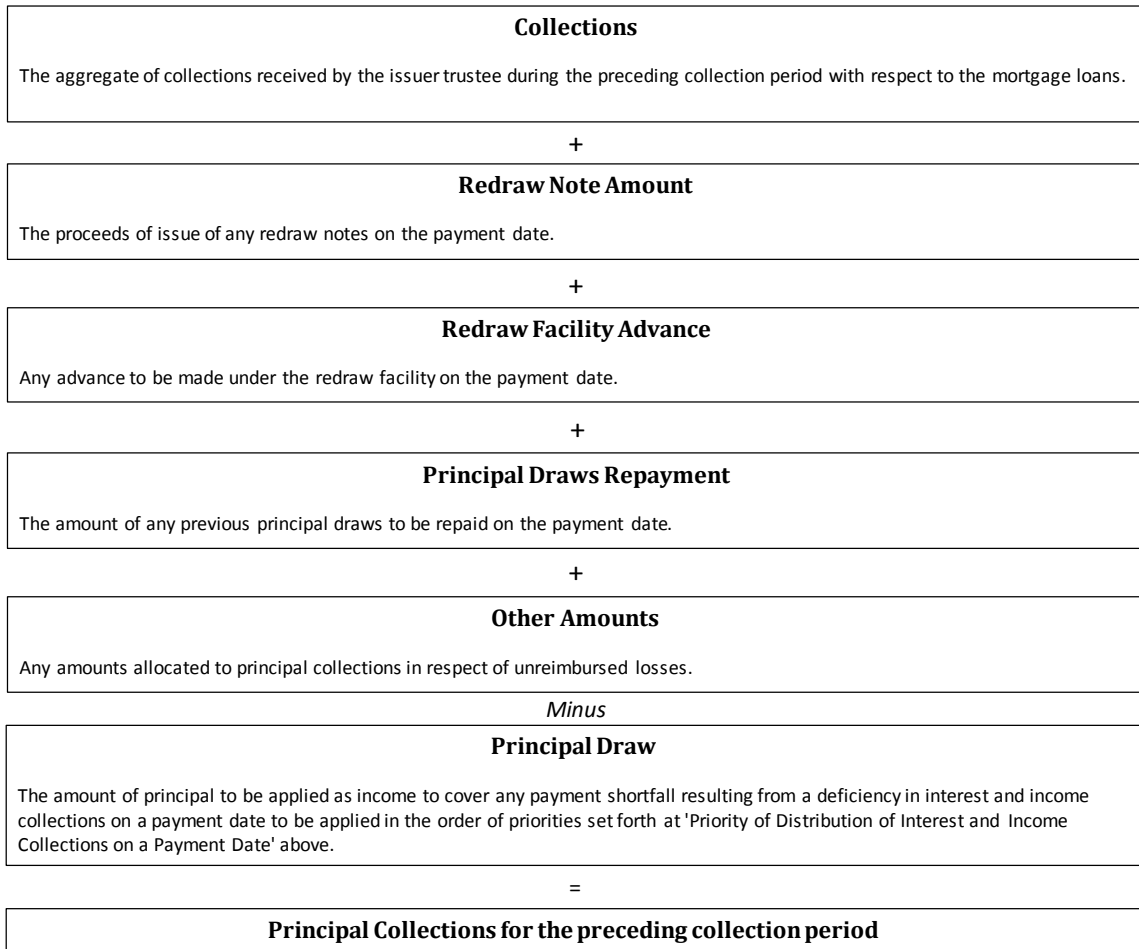
**DETERMINATION OF INTEREST AND INCOME COLLECTIONS AVAILABLE FOR DISTRIBUTION ON A PAYMENT DATE**



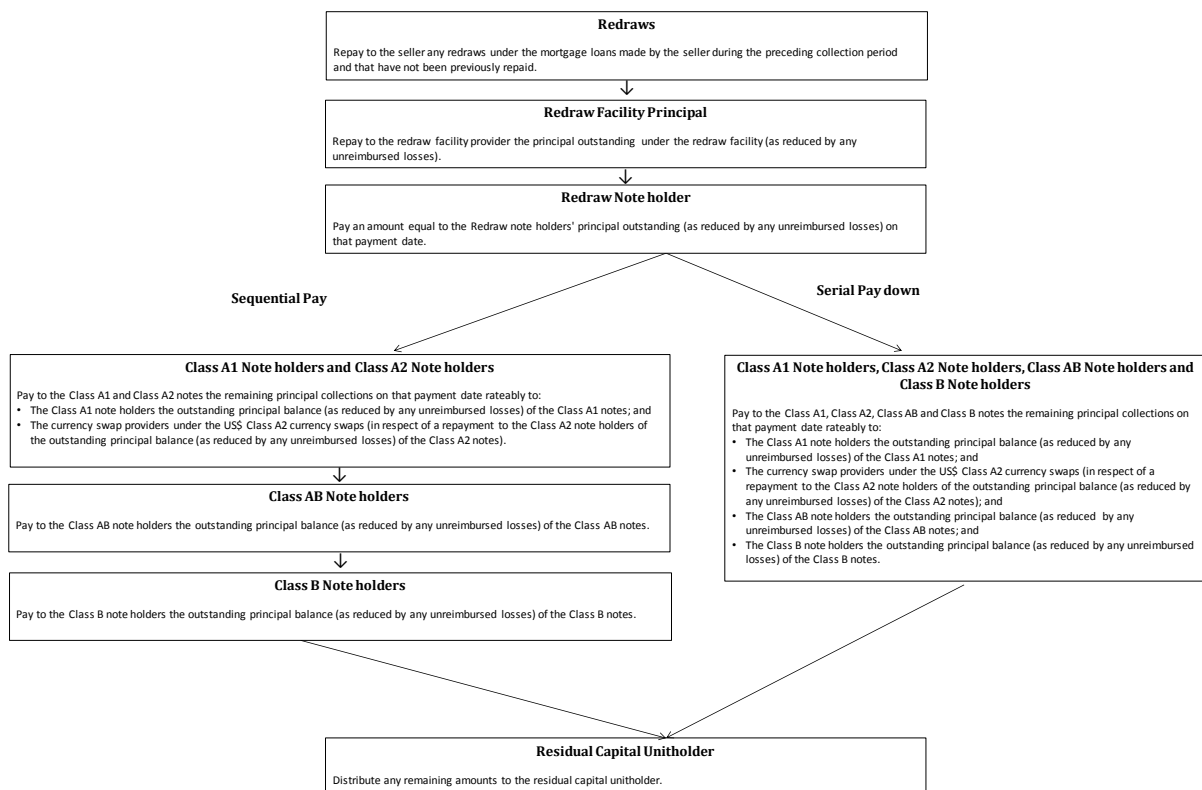
**PRIORITY OF DISTRIBUTION OF INTEREST AND INCOME COLLECTIONS ON A PAYMENT DATE**



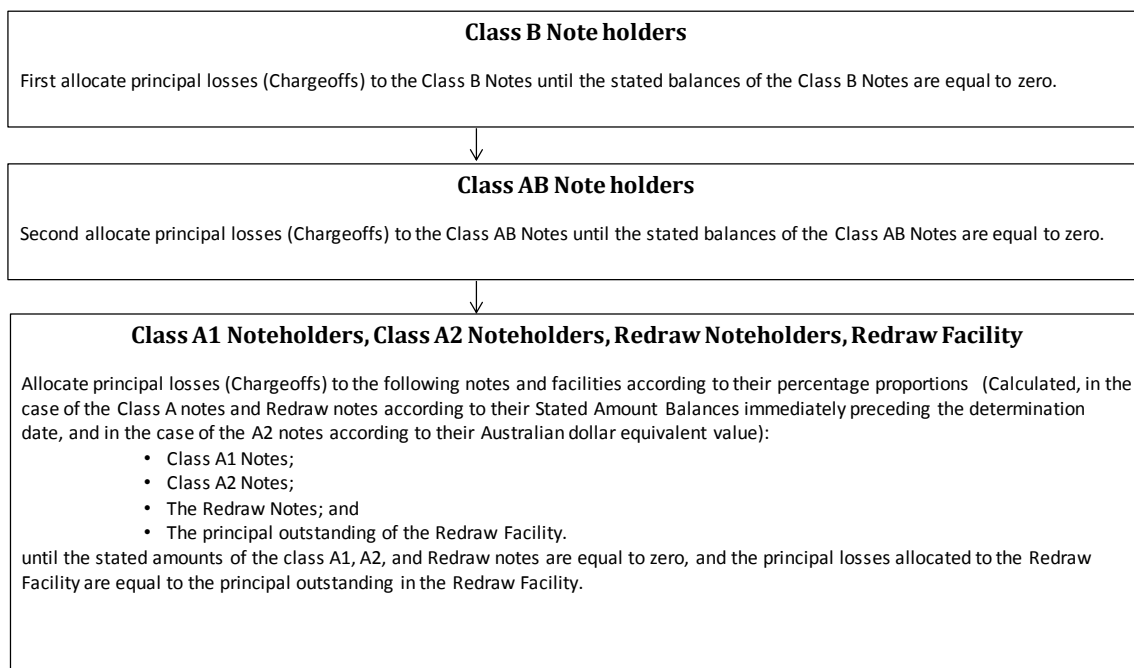
**DETERMINATION OF PRINCIPAL COLLECTIONS AVAILABLE FOR DISTRIBUTION ON A PAYMENT DATE**



**PRIORITY OF DISTRIBUTION OF PRINCIPAL COLLECTIONS ON A PAYMENT DATE**



**PRIORITY OF DISTRIBUTION OF CHARGE OFFS ON A PAYMENT DATE**



**Appendix B: Guide to Minimum Expected Inputs and Outputs of the Waterfall Program**

Each ABS is unique and the reported waterfall program should reflect accurately its features. Therefore, this list of minimum inputs and outputs is not an exhaustive list and is provided only as a guide.

**Waterfall Inputs**

- Dates – report, collection start and end, distribution and determination date
- Accrual factor – number of days in accrual period as fraction of days-in-year as per relevant market conventions
- Collateral pool balances – initial, current performing, non-performing, charged off balances up to and including the determination date
- Collections – available income and available principal collected during the relevant collection

**Waterfall Outputs**

- Senior fee payments
- Coupon Payments – coupon payment on each note according to the income waterfall
- Unpaid coupon balances
- Payment to excess spread account
- Residual income unit payment
- Chargeoffs reimbursements – reimbursements to previous chargeoffs made
- Chargeoffs – new principal charge offs on each note according to the losses waterfall
- Principal payments – principal payment on each

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- period
- note according to the principal waterfall
- Benchmark interest rates and margins on notes and structural facilities
- Closing balances – ABS notes, redraw bonds, liquidity facility, principal draw
- Benchmark interest rate applicable for the current period
- Cumulative chargeoffs
- Currency exchange rate
- Closing excess spread account balance
- Opening balances on ABS notes, liquidity facility, principal draws, redraw bonds for the current period
- Total ABS liabilities
- Opening balance on excess spread account and other support accounts for the current period
- Triggers/conditions – reported in their state after distributions are made
- Scheduled principal repayments
- Arrears rate
- Triggers/conditions – sequential/pro-rata payment trigger/condition, clean-up trigger/condition, coupon step-up trigger, counterparty downgrades

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## Appendix C: Outline of the Waterfall Program

The Visual Basic for Applications program outline below is provided as a guide only to the layout and contents of the waterfall program. Each ABS is unique and the reported waterfall should accurately reflect its features, however, the reported waterfall function should fit into the broad structure provided in the outline below.

The shell Microsoft Excel file that houses the high level outline of the waterfall program can be accessed at: <http://www.rba.gov.au/mkt-operations/xls/shell-excel-file-for-the-cash-flow-waterfall-template-for-repo-eligible-abs.xlsm>.

The shell Excel file should be adapted to include all the necessary features of the reported deal according to the guidelines specified in this document.

A working example has been provided by the Reserve Bank to assist Information Providers with meeting the requirements of the Cash Flow Waterfall Reporting Template for Repo-Eligible ABS. The example can be accessed at <http://www.rba.gov.au/securitisations/data-to-be-reported/example-implementation-cash-flow-waterfall-template.html>.

```
'=====
' Author:          Example Reporter
' Contact Information: <Email address> <Telephone number>
' Date:           <Date when template is effective from>
' Transaction ID:  <Enter transaction ID>
' Master Trust Name: <Enter Master Trust Name>
' Series Trust Name: <Enter Series Trust Name>
' Purpose:        To model the allocation of ABS collateral pool cash flows to ABS counterparties
                  ' at each distribution date over the life of the deal. The sample is provided
                  ' only as a guide for the Reserve Bank of Australia Waterfall Reporting
                  ' Template for Repo-Eligible ABS. The detailed requirements for the template are
                  ' available at http://www.rba.gov.au/mkt-operations/pdf/cash-flow-waterfall-template
                  ' -for-repo-eligible-abs.pdf.
                  ' The waterfall program should comply with the requirements described in the
                  ' waterfall template.
'=====
' Model Preamble: Initialize the VBA environment, ensuring that all variables are declared and that
' arrays are indexed starting with 0.

' Required: This command or its equivalent implementation should be used to guarantee that all
' variables used in the waterfall program are declared in advance

Option Explicit

' Required: This command or its equivalent should be used to guarantee that array indexing starts from 0

Option Base 0

' Required: Waterfall_1 function should take a single input called WaterfallInputRange of type Range

Public Function Waterfall_1(ByVal WaterfallInputRange As Range) As Variant

    ' The purpose of this function is to implement the waterfall according to the Information Memorandum
    ' for ABS ISSUER PROGRAM 20XX-X
    ' The function should take as input all the variables specified as input variables in the Waterfall sheet.
    ' The function should return as output a single array containing the distributions to the ABS notes and
    ' service providers, closing balance on the ABS notes, cumulative ABS note chargeoffs and triggers
    ' following the distributions etc.
    ' Function version: 1
    ' Valid: 15 August 2014

    ' FUNCTION PREAMBLE
    '=====
    ' Required: Declare all variables used in the waterfall program

    ' Required: Declare variant/array to hold all input values and to be read from WaterfallInputRange

    Dim WaterfallInputValues As Variant
```



## FINAL

' Required: Declare variables to hold individual input values which are to be read from WaterfallInputValues  
' <Enter commands>

' Required: Declare intermediate variables such as RemainingAvailableIncome, RemainingAvailablePrincipal,  
' CouponPmtA, ..., PrincipalPmtA, ..., ChargeoffA, ..., ClosingChargeoffA, ..., ClosingBalanceA, ... etc.  
' <Enter commands>

' Required: Declare variables to hold individual output values  
' <Enter commands>

' Required: declare array of variants to hold all output values

Dim WaterfallOutput() As Variant

' INITIALISATION

' Required: extract values from input Range to an WaterfallInputValues variant/array

WaterfallInputValues = WaterfallInputRange.Value2

' Required: Initialise local input variables by setting them equal to corresponding values of the input array  
' e.g. SomeLocalVariable = WaterfallInputValues(1, i) where i is index in array of input values  
' <Enter commands>

' Required: Initialize the remaining input variables that are calculated with reference to values of  
' the input array  
' <Enter commands>

' INTEREST WATERFALL

' Distribute available income from the collateral pool to the payment of senior fees, coupons on the ABS  
' notes, and reinstating chargeoffs by applying the rules in the ABS Information Memorandum to the  
' inputs in the waterfall program for the current period. Follow sequential pay rules until the trigger for  
' pro-rata is reached etc.  
' <Enter commands>

' PRINCIPAL WATERFALL

' Distribute available income from the collateral pool to the payment of principal on the ABS notes by  
' applying the rules in the ABS Information Memorandum to the inputs in the waterfall program for the  
' current period. Follow sequential pay rules until trigger for pro-rata is reached etc.  
' <Enter commands>

' CHARGEOFFS WATERFALL

' Distribute chargeoffs to the outstanding ABS note balances according to the ABS Information  
' Memorandum  
' <Enter commands>

' PREPARE OUTPUT ARRAY

' The output array should be the same size as the waterfall outputs in the Waterfall sheet  
' In this sample of the waterfall template there are 38 output variables  
' Required: Set the dimensions of the output array

ReDim WaterfallOutput(38)

' Required: Populate the output array WaterfallOutput with the outputs of the waterfall  
' e.g. WaterfallOutput(i) = SomeLocalVariable where i is the index in the array of output values  
' <Enter commands>

' FUNCTION OUTPUT

' Required: Return the output array (output)

Waterfall\_1 = WaterfallOutput()

End Function