

Model Development Documentation Template [Standardized]

Model Name: Enter Model Name

Model Version: Enter Model Version Number

Model ID: Autopopulated from LL URL

Date (DD/MM/YYYY): Enter Document Date

Model Development Document

[Enter Business Line]

Document Revision History

Version	Date	Description	Contributor
1.0	Month XX, YYYY	Initial version of document	Model Developer

Document Approvals

Version	Date	Approved by	Role
1.0	Month XX, YYYY	Initial version of document	Model User/ Owner/ Development

Key Stakeholders:

Delete those that don't apply, and/or add any other relevant, then fill in the names:

Enter Model Developer Executive Name , *MD Executive*

Enter Primary MO Executive Name , *Primary Model Owner Executive*

Enter Secondary MO Executive Name , *Secondary Model Owner Executive*

Enter Key Model User Executive Name , *Key Model User*

Standardized Model Documentation– General Instructions:

-
- This template was created to assist in the documentation of all minimum required elements under the BMO Model Risk Guidelines. In each section below, there are generic instructions outlining the information which should be included in each section. When completing this template, the following general instructions should be adhered to:
- Not all sections in this template will be applicable to each model that is being developed. Sections have been flagged as follows:
- **“Required”**: For these sections, developers should not delete. If the section is not relevant to the particular model, include a brief description as to why.
- **“Recommended”**: These sections should be completed and avoid being deleted unless necessary. Developers are encouraged to complete these sections for “High” and “Medium” materiality models with a brief description if they are not relevant to the model. “Low” or “Non-Material” models do not need to complete these sections.
- **“As needed”**: If these sections are an element of the model development process, they should be completed.
- For models which have been procured from a vendor, not all the requested development information may be available, even for required sections of the document. In such cases, complete the required sections with rationale as to why specific information is not available.
- This template is designed so that the model document is a living document for the model. In the event of model changes being made, the document should be updated in the relevant sections with appropriate version control.

Macro Tool usage instructions:

- Enter the Main Input and main MV checklist URLs from Livelink (Using the Model Lookup)
- The **“Summarize”** button will function as a means to capture the content that has been entered throughout the above report and display it concisely in the tables below.
- At any point press, **“Summarize”** button (Grey indicates fields disabled on livelink, non-mandatory MRM data or not applicable to or extracted from this document)
- The **“Generate Final Report”** button will remove the **“MRIS Summary Matrix”**, cleanup the document and produce an EDR ready file to be uploaded to Livelink in .docx format in the same folder as the original file.
 - As part of the cleanup table rows where there is no primary input text will be removed from the final (.docx) version of the file (Observations, Uncertainties, Assumptions and Triggers tables)
 - In the Business Context table if the Secondary Model Owner contact name does not exist, the associated rows will be removed from the final (.docx) version of the file
 - If Performance Status is “NA”, the date of assessment and Frequency of PM will be removed from the final (.docx) version of the file
- The **“Upload to xyz page of LL”** button will open and upload the respective page’s data to the livelink, please note that at this point the new data you see on Livelink is not “saved” (display only). Any attributes that may be highlighted in red on the below tables indicate a difference in the document data and the actual livelink data. If the change is per your expectation, then it is important to press “save” or “save and continue” on livelink.

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1. Executive Summary *(Required)*

State the purpose of the document and include the Model purpose control below within your text.

1.1. Objective and scope *(Required)*

Summarize the requirements being addressed in the model. Include, as applicable, user requirements, changes in business strategy and economic environment and regulatory issues.

Discuss the portfolio within which the model will be used: e.g. size (exposure level, RC, #entities, etc.), asset class and underwriting standards.

Model Input:	Enter Model Input Details
Model Output:	Enter Model Input Details

1.2. Summary of Model Methodology *(Required)*

Describe the data used in the development. Provide only key points.

Describe your modelling approach. Provide only key points.

1.3. Summary of Model Performance *(Required)*

Provide a summary of how the model performance testing shows that the model meets its stated purpose. I.e. summarize results of Section 5. In addition, outline how the model performance will be monitored going forward, including both triggers and KPI performance monitoring.

1.4. Model Impact *(Required)*

Summarize the impact of the model on existing business practices. If the model is used for regulatory capital calculations or in other financial projections, outline the impact the model will have the potential for change to capital requirements, losses, revenues, or any other relevant metric

1.5. Model's Key Weaknesses and Limitations and Uncertainties *(Required)*

Discuss the New or revised model's key weaknesses and limitation (the impact (qualitatively and quantitatively) of such implications is low or nonmaterial.)

ID	MD Observation Text
1.	Enter Observation Text Summary
2.	Enter Observation Text Summary
3.	Enter Observation Text Summary
4.	Enter Observation Text Summary
5.	Enter Observation Text Summary
6.	Enter Observation Text Summary
7.	Enter Observation Text Summary
8.	Enter Observation Text Summary

9.	Enter Observation Text Summary
10.	Enter Observation Text Summary

List and describe the model risk Uncertainty(ies) and on a best effort basis, quantify the model risk uncertainty for each key risk driver, estimate the impact of the uncertainty at the model output level.

ID	MD Uncertainties	MD Quantifications	MD Impact
1.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
2.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
3.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
4.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
5.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
6.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
7.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
8.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
9.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary
10.	Enter Uncertainties Text Summary	Enter Quantification Text Summary	Enter Impact Text Summary

1.6. Key User Feedback about the Model *(Required)*

Document the key points raised by model users about the model. Summarize the feedback from model users and how it was incorporated into the final model.

2. Introduction

2.1. Model Purpose *(Required)*

Outline the stated purpose of the model and the business problem that the model is being developed to solve. The purpose should include a clear objective for the model and a description of whether or not the model is required to assist the business or to meet regulatory requirements. This section should indicate if the model is being developed to replace an existing model. If the model is new, verify that no existing model on the inventory could have been reasonably used/ augmented for the purpose being stated here.

Enter Model Purpose

2.2. Business Context *(Required)*

Describe or state:

- The purpose and objective of the model; the business requirements, including what the model should do.*
- The model owner/developer/key user(s), the system and version where the model will reside, and how the business will use the model output to make decisions.*

If the model was developed in house or purchased from a vendor.

List the Primary Model Owner, Secondary Model Owner (if exists) and MD information in the following table, note that the Contact Names are populated automatically based on information entered in the distribution list, once the “summarize” button has been pressed.

Region	Pillar	LOB	BU	Contact Name	Tier 1 RCA
Primary Model Owner:					
Select Primary MO - Region	Select Primary MO Pillar	Select Primary MO LOB	Select Primary MO BU	Enter Primary Owner's Contact Name	Select Primary MO-Tier 1 RCA
Secondary Model Owner (Leave blank if not applicable)					
Select Model Developer - Region	Select Secondary MO Pillar	Select Secondary MO LOB	Select Secondary MO BU	Enter Secondary Owner's Contact Name	Select Secondary MO-Tier 1 RCA
Model Developer:					
Is model developer same as Model owner: <input type="checkbox"/> (If checked, leave MD fields below blank)					
Select Model Developer - Region	Select MD Model Pillar	Select MD LOB	Select MD BU	Enter MD's Contact Name	Select MD-Tier 1 RCA

2.3. Portfolio/ Product Overview *(Required)*

Describe the portfolio (s) that the model will be applied to including:

- *The key business segments being included in the model development*
- *The history of the portfolio*

Where available, support the description of the portfolio with relevant recent data.

2.4. Model Materiality *(Required)*

Model materiality is required based on the MRM Guidelines and should be selected as part of the drop down menu in the table above. Refer to the Model Risk Corporate Standard, Appendix 2 for guidance on how to assess the model materiality.

There for the materiality of this model is assessed to be *Select Model Materiality*

2.5. Regulatory Requirements *(Required)*

If the model is being developed to satisfy specific regulatory requirements, outline the requirements in this section and define which specific requirements are being addressed by the model.

3. Data Quality

3.1. Summary of Data Sources *(Required)*

Model Input Source:						
<input type="checkbox"/> LTS <input type="checkbox"/> MRA <input type="checkbox"/> FACT <input type="checkbox"/> LoanIQ <input type="checkbox"/> CCBasel <input type="checkbox"/> MECH <input type="checkbox"/> CCDM <input type="checkbox"/> DCU <input type="checkbox"/> XCL <input type="checkbox"/> XAM <input type="checkbox"/> CWL <input type="checkbox"/> NNRS <input type="checkbox"/> HBC <input type="checkbox"/> IBS <input type="checkbox"/> MiDeal <input type="checkbox"/> BCL <input type="checkbox"/> BIC <input type="checkbox"/> APMS <input type="checkbox"/> MRP <input type="checkbox"/> NCCS <input type="checkbox"/> MBA <input type="checkbox"/> TSYS ½ <input type="checkbox"/> DSA <input type="checkbox"/> HAVER <input type="checkbox"/> MIS <input type="checkbox"/> HBR <input type="checkbox"/> CCAPS <input type="checkbox"/> MDIF <input type="checkbox"/> MCAP <input type="checkbox"/> BBR <input type="checkbox"/> MECH LOAN <input type="checkbox"/> MECH OD <input type="checkbox"/> Equifax <input checked="" type="checkbox"/> Other internal Source(s) <input checked="" type="checkbox"/> Other external source(s)						
<u>To capture interdependency ensure “Other Internal Sources” and “Other External Sources” have been selected above.</u> <i>The interdependency details (based on selection of feeder/dependent models) will be automatically concatenated to “Other Internal Sources” and “Other External Sources” in the final MRIS Summary Matrix upon pressing “Summarize”.</i>						
Model Input -Other Internal Sources:			Enter All Other Internal Sources Only (except interconnected models)			
Model Input - Other External Sources:			Enter All Other Internal Sources Only (except interconnected models)			
Other Int. Sources		Model ID1	Model ID2	Model ID3	Model ID 4	Model ID5
Feeder?	No					
Dependent?	No					
Other Ext. Sources		Model ID1	Model ID2	Model ID3	Model ID 4	Model ID5
Feeder?	No					
Dependent?	No					

3.1.1. Internal Data Sources *(Required)*

Provide an overview of the internal data used for the model development, providing a detailed description of how data was sourced.

3.1.2. External Data Sources *(Required)*

Provide an overview of the external data used for the model development, providing a detailed description of how data was sourced – for example, any macro-economic data or other raw data used as independent variables in the modeling process.

3.1.3. Data Proxies

If internal data is not available or incomplete, and external data is used as a proxy, outline the data source and how the data was procured. Provide detailed rationale and analysis why the proxy data is

appropriate for use, and that it is representative of internal experience (in the case where no internal data is available, this rationale can be qualitative).

3.2. Data Manipulation and Cleaning *(Recommended)*

Outline the process that was used to clean or manipulate the raw data that was described in Section 3.1. This should include:

- *Removing of any null or counter intuitive historical data*
- *Assumptions made to make data inferences in the case of missing data*
- *Representativeness of the data sample (where appropriate)*
- *Suitability of the data for the model's intended purpose and its consistency with the theory chosen*

3.3. Data Assessment Conclusions & Recommendations *(Required)*

Provide a conclusion on the data assessment and any recommendations. Clarify how the data is appropriate for the modeling project and that it is representative of the portfolio or product for which it is being used

4. Model Framework Description and Assessment *(Required)*

4.1. Model Design *(Required)*

Provide a high level overview of the model methodology. Describe the chosen approach including a description of the technical aspects of the model and why it was chosen as an appropriate methodology to address the purpose of the model

4.1.1. Alternative Methodologies *(Recommended)*

Describe any alternative approaches which were considered during the development of the model. Provide rationale (and quantitative support where possible) to outline why the chosen approach was selected.

4.2. Sample Selection for Model Development *(As needed)*

If the model is being developed based on a sample of historical data, outline how the development, hold-out, and out of time samples were created (e.g. random or stratified sampling. Provide key statistics on each sample and a description of the data included in each sample

If more advanced sampling will be used such as cross-validation, outline the rationale for performing those samples

If sampling will not be used for model development, provide rationale as to why samples will not be used

4.2.1. Comparison of Development, Hold-Out, and Out of Time Samples *(As needed)*

Across the different samples used for development and testing, provide some key comparative statistics to show whether the samples are stable.

4.3. Model Segmentation *(As needed)*

Describe the segmentation that is being used to develop the model. Outline how the segments of the model were decided, and the qualitative and quantitative support behind the segments which were chosen.

4.4. Variable Selection *(Required)*

Summarize the variable selection process detailed in the sections below.

4.4.1. Candidate Variables (Required)

Outline the full list of candidate independent variables which were considered in developing the model. A comprehensive list can be provided as part of the Appendix, but this section should outline what the universe of variables considered for the modeling project was. Specify if raw variables were used, or transformations (for example, lags or changes) of the raw data outlined in Section 3 were done to arrive at a full candidate variable list.

Outline whether candidate variables were categorical, numerical, or any additional dummy variables which were added.

4.4.2. Variable Reduction Process (Required)

Document in detail the variable reduction process which was followed in excluding the variables considered in Section 4.3.1. This includes variables which were removed or discarded for qualitative reasons, or based on quantitative analysis.

4.4.3. Final Variable List (Recommended)

Outline the final independent variable list which will be used to fit the model. Specify whether variables are continuous, categorical, or dummy variables.

4.5. Qualitative Adjustments (Required)

Provide a list, summary description, and impact of any qualitative decisions which were used as part of the model development – such as removal of any specific variables or other qualitative overlays to the model development process

4.6. Final Model Specification

Outline the final model specification – i.e. the function form of the model. Provide a list of the fitted independent variables and associated key statistics (for example, coefficient estimates, p-values)

4.7. Key Model Assumptions (Required)

This section should capture the primary assumptions used as part of the model development process. Each assumption should be listed with appropriate supporting rationale as to why the assumption is reasonable. Where possible, assumptions should be supported with data and quantitative measures. A summarized list should be entered in the table below.

[Usage note]:

- *As part of the cleanup process, any rows where the assumption text is left blank will be removed upon pressing the “Generate Final Report” button.*

- *The first 500 characters of the text would be able to be uploaded to Livelink. Additional information can be entered; however a reminder will appear to indicate that upon pressing summarize, the data to be uploaded to Livelink will be truncated and have this text added to it: “[Text truncated - see body of the report]”*

ID	MD Assumption	MD Rationale
1.	Enter Assumption Summary Text	Enter Rationale Summary Text
2.	Enter Assumption Summary Text	Enter Rationale Summary Text
3.	Enter Assumption Summary Text	Enter Rationale Summary Text
4.	Enter Assumption Summary Text	Enter Rationale Summary Text
5.	Enter Assumption Summary Text	Enter Rationale Summary Text
6.	Enter Assumption Summary Text	Enter Rationale Summary Text
7.	Enter Assumption Summary Text	Enter Rationale Summary Text
8.	Enter Assumption Summary Text	Enter Rationale Summary Text
9.	Enter Assumption Summary Text	Enter Rationale Summary Text
10.	Enter Assumption Summary Text	Enter Rationale Summary Text

4.8. Model Development Testing *(Required)*

Summarize the results of the testing performed to show that the final model meets its stated purpose. The intent of this section is to show that the statistical characteristics of the model are sound, that the model is stable across the different samples used in development, and that the final variables used in the model are intuitive.

The outcomes of testing should always include results as well as an interpretation and conclusion from the model developer as to whether testing results are in line with expectations or what potential limitations or weaknesses may be highlighted by testing.

4.8.1. Goodness-of-Fit *(Required)*

R^2 , in-sample fit, p-values and the appropriateness of the variables and the intuition of the signs of the variables

4.8.2. Model Stability *(Recommended)*

Outline the tests that were conducted to show that the final model outlined in Section 13.5 is stable across different sub-samples or relevant sub-populations of the portfolio.

4.9. Model Effective Range of Use *(Required)*

The effective range of use outlines where the model is intended to be used and should include the range of data, legal entity, geography, portfolio, and other factors pertinent to how the model is used. Refer to the Model Risk Guidelines for a definition of the effective range of Use.

[Usage note]: The first 500 characters of this description would be able to be uploaded to Livelink. Additional information can be entered; however a reminder will appear to indicate that upon pressing summarize, the data to be uploaded to Livelink will be truncated and have this text added to it: "[Text truncated - see body of the report]"

Model Developer Effective Range:	Enter MD - Model Effective Range
Primary Model Owner Effective Range:	Enter Primary MO Effective Range
Secondary Model Owner Effective Range:	Enter Secondary MO Effective Range (Leave Blank if Not Applicable)

5. Outcomes Analysis *(Required)*

Summarize the results of the testing conducted in the individual sections below. The outcomes of testing should always include results as well as an interpretation and conclusion from the model developer as to whether testing results are in line with expectations or what potential limitations or weaknesses may be highlighted by testing.

5.1. Backtesting *(Required)*

This section should capture the comparison of forecasted values from the model to actuals. If, for any reason, it is not possible to perform backtesting for the model, rationale should be outlined in this section (for example, if the output of the model is theoretical and there are not observable actuals to compare the model output against).

Backtesting should be conducted with the appropriate level of granularity consistent with the development of the model. For example, if the model was developed using a certain segmentation scheme, backtesting should be available for the individual segments in addition to the aggregate results.

5.2. Sensitivity Analysis *(Required)*

This section should be completed.

5.3. Benchmarking *(Recommended)*

Where relevant the model output should be benchmarked against internal or external sources to ensure that the model is producing reasonable outcomes

5.4. Stress Testing *(As needed)*

This section should capture the performance of the final model in adverse scenarios not captured in the development of the model, or in situations where the model may be less reliable in order to understand the potential limitations. This is a more detailed test building on the sensitivity analysis done in Section 14.2

5.5. Fit for Use Assessment *(Required)*

Provide a final assessment documenting whether or not the model is deemed fit to meet the intended purpose stated in Section 2.1. This should summarize the results of the different tests performed on the model in this section and in Section 4, culminating in a final conclusion on the appropriateness of the model for use.

This section should also record the discussion or use tests which were had with the Model Owner/ Model User to verify that the results met their expectations and are in line with the original intent of the model.

(As needed) Where a Tollgate process was used in the development of the model, the relevant materials recorded for the tollgate can suffice in lieu of this section with appropriate references provided

6. Model Implementation *(Required)*

Provide an overview of where the final approved model will be implemented and whether it will be part of a live production system, or run in a BMA environment such as Excel or SAS

System Implementation:	Enter System Implementation
System Version:	Enter System Version

6.1. Implementation Plan *(Required)*

Outline the plan for putting the model into production and the system and software that will support the implementation and ongoing execution of the model.

6.2. User Acceptance Testing *(As needed)*

Provide a description of the UAT process that will be performed to ensure the model is implemented as required and is consistent with the model outlined in Section 4.6. If a testing plan supporting the UAT including test cases is available, include the details in this section. This section should be completed for all models which are going into production on an automated platform supported by T&O.

6.3. Internal Controls *(As needed)*

Outline the controls which will be in place on a BMA tool where the model will be executed on a regular basis. This should include a discussion of user access and assurance that the model code or specification cannot be altered without the appropriate approvals or controls. This section should be completed for any models which will be housed in a BMA application such as Excel or SAS and will not be supported by T&O.

6.4. Model User Support Material *(Required)*

Provide a description of the materials that will be provided to the users of the model to ensure that the output of the model is interpreted in the right way and consistently. Describe the training that will be provided to the users, and any additional written materials or User Guides which will be made available – these should include the known limitations and weaknesses of the model and the model's effective range of use.

7. Ongoing Monitoring *(Required)*

7.1. Model Triggers *(Required)*

Outline the triggers which will be monitored for the model. Triggers should represent potential concerns that would cause a review if the model if the specific event is tripped. Outline each trigger and the appropriate rationale for why that trigger is chosen. Insert a summary of the trigger in the summary table at the beginning of the section.

[Usage note]:

- As part of the cleanup process, any rows where the assumption text is left blank will be removed upon pressing the "Generate Final Report" button.
- The first 500 characters of the text would be able to be uploaded to Livelink. Additional information can be entered; however a reminder will appear to indicate that upon pressing summarize, the data to be uploaded to Livelink will be truncated and have this text added to it: "[Text truncated - see body of the report]"
- A date can be cleared by selecting the date field text and using the 'delete' or 'backspace' key on the keyboard.

I D	Trigger Text	Trigger Tripped Date	Set By	Status	Trigger sensitivity
1.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
2.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
3.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
4.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
5.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
6.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
7.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
8.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
9.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity
10.	Enter Summary Trigger Text.	Enter Trigger Tripped Date	Enter Set By	Enter Trigger Status	Select Trig. Sensitivity

The overall model trigger sensitivity is assessed as Select Model Trigger Sensitivity.

7.2. Performance Monitoring *(Required)*

Define a performance monitoring plan for the model.

[Usage Note:]

- *If the Model Performance Status is NA, leave the Performance Assessed date and the frequency information blank. As part of the cleanup process, these two fields will be removed upon pressing the “Generate Final Report” button.*
- *A date can be cleared by selecting the date field text and using the ‘delete’ or ‘backspace’ key on the keyboard.*

In conclusion:

Model Performance Status: Select model performance Status.

Model Performance Assessed date: Select performance assessed date

Frequency of Performance Monitoring: Select Freq. of PM

7.2.1. Data for Performance Monitoring (Required)

Describe the data sources that will be used for ongoing monitoring of the model. In particular, if the data sources differ from those sources which were used for the development of the model (and outlined in Section 3), provide rationale for why the different data sources are consistent. If possible, provide a comparison of both data sources to demonstrate that there will be no expected impact to the model.

7.2.2. Monitoring Frequency (Required)

The frequency of performance monitoring should be Quarterly, Semi-Annual or Annual and should tie to the underlying risk rating of the model. As the risk rating will be determined after the initial validation, this section should capture the proposed frequency that performance monitoring will be executed for the model.

7.2.3. Definition of Key Performance Metrics (Required)

For the purposes of monitoring the model, key performance metrics should be defined. These can include a combination of different metrics and tests (similar to the types of tests that are included in Section 14).

7.2.4. Traffic Light Definition (Required – except Low Risk models)

As outlined in the current Model Risk Guidelines, a traffic light definition is required to track the performance of the model. This section should outline how the model developer will define how the model performance will be assessed as either “Green”, “Yellow”, or “Red”. The traffic light definition should be a roll up of the performance metrics defined in Section 16.1.3 and be an aggregated assessment of the overall performance of the model.

8. Model Limitations and Weaknesses *(Required)*

This section should outline the known limitations and weaknesses with the model which were found during the development process. Weaknesses are those issues with the model that are observed through the various aspects of model testing conducted during the development. Weaknesses can be tracked over time and typically be quantified – for example, if the level of error in backtesting of a particular segment is outside the expected range. Weaknesses introduce potential deficiencies in model performance that can be addressed and improved over time within the stated model construct.

Limitations are those issues with the model that as a result of the choices made in the modeling process limit the effectiveness of the model in certain circumstances. Limitations can be a result of the choice of technical modeling approach, or as a result of the data availability at the time of development. Limitations are extremely difficult to quantify and can help define the effective range of use of the model. Limitations can be monitored, but are difficult to address within the current model construct.

9. Summary of Model User Feedback *(Required)*

This section should record:

- *The user requirements for the model and how those requirements were met through the development of the model.*
- *A documented agreement or approval from the Model User to verify that they are satisfied the model meets the intended purpose, and that the Model User is satisfied with the final model.*
- *Any additional feedback or summary of the adjustments or changes made during the model development to incorporate user feedback*

10. Confirmation of Model Inventory Entries *(Required)*

Model Category	Choose Model Category					
Product Covered	Enter Product Covered					
Model In Production	Select Model In Production Indicator					
Model User(s):						
	Region	OG (Pillar)	LOB	BU	MU Contact Name	Tier 1 RCA
	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Key Model User Name	Select MU-Tier 1 RCA
2.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
3.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
4.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
5.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
6.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
7.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
8.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
9.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
10.	Select MU Region	Select MU Pillar	Select MU Pillar	Select MU Pillar	Enter Model User Name	Select MU-Tier 1 RCA
EC Model? Select item RC Model? Select item ICAAP Mode? Select item CCAR/DFAST Select item Basel or Not: Select item Basel Pillar: Select item						
Geographic Region where model is to be applied: <input type="checkbox"/> Canada <input type="checkbox"/> US <input type="checkbox"/> Europe <input type="checkbox"/> Asia <input type="checkbox"/> Other						
Legal Entity: <input type="checkbox"/> BFC <input type="checkbox"/> BFG <input type="checkbox"/> BHB <input type="checkbox"/> BMO China <input type="checkbox"/> BMO Nesbitt Burns <input type="checkbox"/> BMO UK <input type="checkbox"/> Other						

11. References

12. Appendices

Add additional testing results or materials in support of the development, as appropriate.

Appendix A – Name of Document

Internal Use

13. MRIS Summary Matrix – For Internal Use Only

- Enter the Main Input and main MV checklist URLs from Livelink (Using the Model Lookup)
- The “Summarize” button will function as a means to capture the content that has been entered throughout the above report and display it concisely in the tables below.
- At any point press, “Summarize” button (Grey indicates fields disabled on livelink, non-mandatory MRM data or not applicable to or extracted from this document)
- The “Generate Final Report” button will remove the “MRIS Summary Matrix”, cleanup the document and produce an EDR ready file to be uploaded to Livelink in .docx format in the same folder as the original file.
 - As part of the cleanup table rows where there is no primary input text will be removed from the final (.docx) version of the file (Observations, Uncertainties, Assumptions and Triggers tables)
 - In the Business Context table if the Secondary Model Owner contact name does not exist, the associated rows will be removed from the final (.docx) version of the file
 - If Performance Status is “NA”, the date of assessment and Frequency of PM will be removed from the final (.docx) version of the file
- The “Upload to xyz page of LL” button will open and upload the respective page’s data to the livelink, please note that at this point the new data you see on Livelink is not “saved” (display only). Any attributes that may be highlighted in red on the below tables indicate a difference in the document data and the actual livelink data. **If the change is per your expectation, then it is important to press “save” or “save and continue” on livelink.**

Summarize

Generate Final Report

Main Input webpage URL:

Enter LiveLink URL for the request’s Main Input tab

Upload to Main Input page of LL

Model			
Model ID	-1	Model Name	
Model Purpose		Product Covered	
Model Category		Model Version Number	
Model Pillar		Model LOB	
ICAAP		Basel or not	
EC Model		Basel Pillar	
RC Model		Priority	
Requested Completion Date		System Implementation	
System Version		Legal Entity Identifier	
Geographic Application - Region	<input type="checkbox"/> Canada <input type="checkbox"/> US <input type="checkbox"/> Europe <input type="checkbox"/> Asia <input type="checkbox"/> Other	Model Input	
Model Output	Enter Model Input Details	Comments	

Model Input Source	Other internal source(s) Other external source(s)	Other Internal Source(s)	//FNone;DNone;
Model Description		Other External Source(s)	//FNone;DNone;
Is the model used in CCAR?		MAF Name	
Model In Production Indicator		Will this model replace an existing vetting exception or model?	
		Exception ID	
		Replacing Model ID	
Model Risk			
Model Materiality		Portfolio Size/Size of Coverage/Other (\$MM)	
Balance Sheet - Asset (\$MM)		Balance Sheet - Liability (\$MM)	
Trading Portfolio - Long Notional (\$MM)		Trading Portfolio - Short Notional (\$MM)	
Loan Portfolio - Authorization Amount (\$MM)		Loan Portfolio - Outstanding Balance (\$MM)	
EAD (\$MM)		RWA (\$MM)	
Economic Capital (\$MM)		MTM (\$MM)	
Model Overrides		Margin of Conservatism	
Complexity		Model Trigger Sensitivity	
Frequency of Performance monitoring		Model Performance Status	
Model Performance Assessed Date			
Primary Model Owner			
Model Owner - Region		Model Owner - Pillar	
Model Owner -		Model Owner - LOB	

Contact Name			
Model Owner - Exec Name		Model Owner - Business Unit	
Model Owner - Effective Range		Model Owner - Tier 1 RCA	
Secondary Model Owner			
Model Owner - Region		Model Owner - Pillar	
Model Owner - Contact Name		Model Owner - LOB	
Model Owner - Exec Name		Model Owner - Business Unit	
Model Owner - Effective Range		Model Owner - Tier 1 RCA	
Is model developer same as Model owner: <input type="checkbox"/>			
Model Developer			
Model Developer - Region		Model Developer - Pillar	
Model Developer - Contact Name		Model Developer - LOB	
Model Developer - Exec Name		Model Developer - Business Unit	
Model Developer - Effective Range		Model Developer - Tier 1 RCA	

Model User webpage URL:

URL is automatically populated upon pressing "Summarize"

Model Users					
Region	Pillar	LOB	Business Unit	Contact	Tier1 RCA

MO Triggers webpage URL:

URL is automatically populated upon pressing "Summarize"

Upload Triggers to LL

MO Trigger			
Trigger Text	Trigger Tripped Date	Set By	Status

MO Assumptions webpage URL:

URL is automatically populated upon pressing "Summarize"

Upload MD Assumptions to LL

MO Assumption	
Assumption	Rationale

MO Uncertainties webpage URL:

URL is automatically populated upon pressing "Summarize"

Upload MD Uncertainties to LL

Uncertainties	Quantifications	Impact

MO Observations webpage URL:

URL is automatically populated upon pressing "Summarize"

Upload MD Observations to LL

MO Self-identified Observations

End MRIS Section. This section will be deleted upon finalizing the document