

# SOLVENCY II SCORING - MODEL VALIDATION: PROBABILITY DISTRIBUTION FORECAST & RISK RANKING (SQS)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011   | Q3 2011  | By Q4 2011  |
|----------|---|---|---|--|---|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)  | 8-9 (testing/sign off)   | 10 (fully in use/BAU)   |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul>   | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul>  | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul>   | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> </ul> |
|          |   | <p><b>Number of points modelled</b></p> <ul style="list-style-type: none"> <li>Identification and description of component distributions underlying the PDF of Basic Own Funds ("BOF") which are not based on all available information or which generate only key points</li> <li>Criteria for ensuring that the number of simulations will generate a PDF of BOF with sufficient points for precise estimation of the 99.5th percentile</li> </ul> <p><b>Reasons for selections</b></p> <ul style="list-style-type: none"> <li>If the PDF generates only key points, demonstrate that the methodology                             <ul style="list-style-type: none"> <li>❖ Reflects current knowledge, or can be justified on the basis of proportionality</li> <li>❖ Is more appropriate than alternative methods that would generate more points</li> </ul> </li> </ul> | <p><b>Number of points modelled</b></p> <ul style="list-style-type: none"> <li>Description of any assumptions or methodologies used to enrich the PDF or underlying distributions.</li> </ul> <p><b>Reasons for selections</b></p> <ul style="list-style-type: none"> <li>If the PDF generates only key points, establish a process to ensure that the methodology continues to                             <ul style="list-style-type: none"> <li>❖ Meet or exceed generally accepted market practice</li> <li>❖ Compensate with additional measures for any resulting shortcomings in IM</li> </ul> </li> </ul> | <p><b>Number of points modelled</b></p> <ul style="list-style-type: none"> <li>PDF methodology testing and validation complete and documented</li> <li>Sign off by actuarial/risk management on the methodology and the process for ensuring that it continues to meet the criteria of (5.54)</li> </ul> | <p><b>Number of points modelled</b></p> <ul style="list-style-type: none"> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul>   |
|          |   | <p><b>Risk ranking</b></p> <ul style="list-style-type: none"> <li>Description of the metrics used to rank risk and how they will be produced from the IM</li> </ul>   | <p><b>Risk ranking</b></p> <ul style="list-style-type: none"> <li>Evidence that the ability of the IM to rank risk meets the criteria in (5.221) of coverage, resolution, congruence, consistency</li> </ul>  | <p><b>Risk ranking</b></p> <ul style="list-style-type: none"> <li>Sign off on process for using IM to rank risk</li> </ul>   | <p><b>Risk ranking</b></p> <ul style="list-style-type: none"> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul>  |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: METHODOLOGICAL ADEQUACY (SQS)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011   | Q3 2011   | By Q4 2011   |
|----------|---|---|---|---|--|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)  | 8-9 (testing/sign off)  | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Process to determine distributions and select parameters</b></p> <p><b>Selected distributions</b></p> <p><b>Reasons for selections</b></p> <p>For all of the above:</p> <ul style="list-style-type: none"> <li>Develop criteria for actuarially and statistically adequate methods, which may refer to definitions of Applicable, Relevant, Appropriate, Transparent, Up to Date, Detailed and Parsimonious, and Robust and Sensitive.</li> <li>Draft evidence for how the criteria for adequacy would be used in the processes/selections listed above.</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Process to determine distributions and select parameters</b></p> <p><b>Selected distributions</b></p> <p><b>Reasons for selections</b></p> <p><b>Shortcomings in methodology and how dealt with</b></p> <p>For all of the above:</p> <ul style="list-style-type: none"> <li>Full evidence for how the criteria for adequacy would be used in the processes/selections listed above.</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> <li>Sign off by the relevant committees on the criteria and their application</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: METHODOLOGICAL CONSISTENCY & CREDIBILITY (SQS)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011   | Q3 2011  | By Q4 2011   |
|----------|---|---|---|--|--|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)  | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Process for ensuring methodological consistency</b></p> <ul style="list-style-type: none"> <li>Develop criteria for consistency between methods used to calculate PDF and TP</li> </ul> <p><b>Consistency with TP and BP</b></p> <ul style="list-style-type: none"> <li>Develop process to identify and document any differences in the actuarial techniques and key assumptions used for PDF vs. TP and BP</li> </ul> <p><b>Justification for any inconsistencies</b></p> <ul style="list-style-type: none"> <li>Develop process to explain, justify and document all deviations concerning methodology and assumptions</li> </ul> <p><b>Process for reviewing methodology</b></p> <ul style="list-style-type: none"> <li>Develop criteria for the credibility of information used for the basis of the methods. The criteria may refer to <i>Consistency, Objectivity, Competence, and Transparency.</i></li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Consistency with TP and BP</b></p> <ul style="list-style-type: none"> <li>Develop qualitative and (where possible) quantitative techniques to assess the materiality of any deviations between methods used for the PDF and TP</li> </ul> <p><b>Justification for any inconsistencies</b></p> <ul style="list-style-type: none"> <li>Complete process to explain, justify and document all deviations concerning methodology and assumptions</li> </ul> <p><b>Process for reviewing methodology</b></p> <ul style="list-style-type: none"> <li>Process for regular methodological reviews taking into account the relevant data, information on assumptions and alternative methods</li> <li>Process to demonstrate that recent progress in the development of methods is being tracked</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul> <ul style="list-style-type: none"> <li>Completed testing and sign off by actuarial/risk management on the processes developed for methodological consistency &amp; credibility</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: ASSUMPTIONS (SQS)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011  | Q3 2011  | By Q4 2011   |
|----------|---|---|--|--|--|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)   | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Process for identifying and justifying assumptions</b></p> <ul style="list-style-type: none"> <li>Draft process to identify and explain the assumptions underlying the IM with reference to their                             <ul style="list-style-type: none"> <li>❖ significance</li> <li>❖ limitations</li> <li>❖ model risk involved</li> <li>❖ possible alternatives</li> </ul> </li> </ul> <p><b>Identification of assumptions</b></p> <ul style="list-style-type: none"> <li>Draft process to document all IM assumptions, their justification and the corresponding procedure</li> </ul> <p><b>Justification of assumptions vs. alternatives</b></p> <ul style="list-style-type: none"> <li>Draft process to assess the materiality of the assumptions chosen and possible alternative assumptions, including where possible both qualitative and quantitative assessment</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Process for identifying and justifying assumptions</b></p> <ul style="list-style-type: none"> <li>Complete process of identification and explanation of assumptions in IM</li> </ul> <p><b>Identification of assumptions</b></p> <ul style="list-style-type: none"> <li>Complete documentation of all IM assumptions, their justification and the corresponding procedure</li> </ul> <p><b>Justification of assumptions vs. alternatives</b></p> <ul style="list-style-type: none"> <li>Complete assessment of the materiality of the assumptions chosen and possible alternative assumptions, including where possible both qualitative and quantitative assessment</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> <li>Completed testing and sign off by actuarial/risk management on the processes developed for assumptions</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: DATA DIRECTORY & DATA POLICY (SQS)

LLOYD'S

| Timing   |   | Q3 2010  | Q1 2011  | Q3 2011  | By Q1 2012   |
|----------|---|--|--|--|--|
| Score    | 1   | 2-4 (design/evidence)  | 5-7 (evidence/build)   | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Source, characteristics, use of data</b></p> <ul style="list-style-type: none"> <li>Draft directory of any data used, specifying its source, characteristics and usage</li> </ul> <p><b>Data quality criteria and thresholds</b></p> <ul style="list-style-type: none"> <li>Specify own definition for data quality based on the criteria of <i>accuracy, completeness, and appropriateness</i></li> </ul> <p><b>Data quality review process</b></p> <ul style="list-style-type: none"> <li>Draft process for regular data quality checks to ensure criteria of (5.181) are met</li> </ul> <p><b>Process for validation of expert judgement with data</b></p> <ul style="list-style-type: none"> <li>Draft process for using expert judgement with data, including documentation, justification, explanation and validation</li> </ul> <p><b>Data policy</b></p> <ul style="list-style-type: none"> <li>Draft data policy covering at a minimum the items in (5.186). The policy must specify actions to be taken in the event that data does not continue to meet the criteria for data quality.</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Source, characteristics, use of data</b></p> <ul style="list-style-type: none"> <li>Complete data directory</li> </ul> <p><b>Data quality criteria and thresholds</b></p> <ul style="list-style-type: none"> <li>Develop qualitative and/or quantitative criteria for the different data sets</li> </ul> <p><b>Data quality review process</b></p> <ul style="list-style-type: none"> <li>Complete data quality review process</li> </ul> <p><b>Process for validation of expert judgement with data</b></p> <ul style="list-style-type: none"> <li>Complete process for using expert judgement with data</li> <li>Develop process to demonstrate that expert judgement used in addition to or as a substitute to data meets the standards of (5.185)</li> </ul> <p><b>Process and standards for data updates</b></p> <ul style="list-style-type: none"> <li>Define minimum update frequency</li> <li>Identify events which trigger more frequent updates</li> </ul> <p><b>Data policy</b></p> <ul style="list-style-type: none"> <li>Complete data policy</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> <li>Completed testing and sign off by actuarial/risk management on the processes developed for data directory and data policy</li> <li>Completed data quality assessment</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: DEPENDENCIES (SQS)

LLOYD'S

| Timing   |   | Q3 2010  | Q1 2011   | Q3 2011  | By Q4 2011   |
|----------|---|--|---|--|--|
| Score    | 1   | 2-4 (design/evidence)  | 5-7 (evidence/build)  | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Process for identifying, quantifying, challenging and reviewing dependencies</b></p> <ul style="list-style-type: none"> <li>Draft process to cover at a minimum                             <ul style="list-style-type: none"> <li>❖ Key variables driving dependencies</li> <li>❖ Extreme scenarios and tail dependence</li> <li>❖ Tests the robustness of the system on a regular basis</li> </ul> </li> </ul> <p><b>Selected dependencies</b></p> <ul style="list-style-type: none"> <li>Support for existence of diversification benefits</li> </ul> <p><b>Reasons for selections</b></p> <ul style="list-style-type: none"> <li>Draft description of additional measures in cases where only key points of the distributions are known</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Process for identifying, quantifying, challenging and reviewing dependencies</b></p> <ul style="list-style-type: none"> <li>Draft process completed</li> </ul> <p><b>Selected dependencies</b></p> <ul style="list-style-type: none"> <li>Completed support for existence of diversification benefits</li> </ul> <p><b>Reasons for selections</b></p> <ul style="list-style-type: none"> <li>Completed description of additional measures for cases where only key points of the distributions are known</li> <li>Justification of the underlying assumptions</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul> <p>Completed testing and sign off by actuarial/risk management dependencies</p> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: RISK MITIGATION TECHNIQUES (SQS)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011  | Q3 2011  | By Q4 2011   |
|----------|---|---|--|--|--|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)   | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Risk mitigation techniques included in the model</b></p> <ul style="list-style-type: none"> <li>Draft evidence that the use of risk mitigation actually causes a reduction in net risk</li> <li>Consideration of the impact of restrictions or limitations that exist for intra-group risk transfer</li> </ul> <p><b>Validation against criteria for inclusion</b></p> <ul style="list-style-type: none"> <li>Draft evidence that risk mitigation techniques covered in the IM meet the following criteria:                             <ul style="list-style-type: none"> <li>❖ Risk transfer takes place from an economic perspective</li> <li>❖ Legal certainty, effectiveness and enforceability with documentation</li> <li>❖ Liquidity and ascertainability of value</li> <li>❖ Identification and assessment of secondary risks</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Risk mitigation techniques included in the model</b></p> <ul style="list-style-type: none"> <li>Completed evidence that the use of risk mitigation actually causes a reduction in net risk</li> </ul> <p><b>Validation against criteria for inclusion</b></p> <ul style="list-style-type: none"> <li>Completed evidence that risk mitigation techniques covered in the IM meet the criteria.</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul> <ul style="list-style-type: none"> <li>Completed testing and sign off by actuarial/risk management on risk mitigation techniques</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: FINANCIAL GUARANTEES AND OPTIONS AND FUTURE MANAGEMENT ACTIONS (SQS)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011  | Q3 2011  | By Q4 2011   |
|----------|---|---|--|--|--|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)   | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Identification of guarantees and options</b></p> <ul style="list-style-type: none"> <li>Identify all relevant financial guarantees and contractual options;</li> <li>Draft specification of how they will be modelled</li> </ul> <p><b>Modelling methodology for each</b></p> <ul style="list-style-type: none"> <li>Evidence that modelling methodology will be consistent with TPs</li> </ul> <p><b>Identification of expected non-contractual payments</b></p> <ul style="list-style-type: none"> <li>Identify all expected payments, whether or not contractually guaranteed</li> </ul> <p><b>Modelling methodology for each</b></p> <ul style="list-style-type: none"> <li>Draft evidence that the IM will account for payments not contractually guaranteed in a manner consistent with TP</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Identification of guarantees and options</b></p> <ul style="list-style-type: none"> <li>Complete specification of how guarantees and options will be modelled</li> </ul> <p><b>Modelling methodology for each</b></p> <ul style="list-style-type: none"> <li>Complete evidence that the IM will account for payments not contractually guaranteed in a manner consistent with TP</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul> <ul style="list-style-type: none"> <li>Completed testing and sign off by actuarial/risk management on methodologies and governance on financial guarantees, contractual options and non-contractual payments</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started</li> </ul> |

# SOLVENCY II SCORING - MODEL VALIDATION: FINANCIAL GUARANTEES AND OPTIONS AND FUTURE MANAGEMENT ACTIONS (SQS)

LLOYD'S

| Timing |   | Q3 2010  | Q1 2011   | Q3 2011                | By Q4 2011            |
|--------|---|--|---|------------------------|-----------------------|
| Score  | 1 | 2-4 (design/evidence)  | 5-7 (evidence/build)  | 8-9 (testing/sign off) | 10 (fully in use/BAU) |
|        |   | <p><b>Identification of future management actions</b></p> <ul style="list-style-type: none"> <li>• Identification of future management actions</li> </ul> <p><b>Governance arrangements for each</b></p> <ul style="list-style-type: none"> <li>• Establish governance framework for future management actions</li> </ul> <p><b>Modelling methodology for each</b></p> <ul style="list-style-type: none"> <li>• Identify IM assumptions for future management actions and demonstrate conditions beyond agent's control are accounted for</li> </ul> | <p><b>Governance arrangements for each</b></p> <ul style="list-style-type: none"> <li>• Establish a governance framework around management actions</li> <li>• Develop process to report significant deviations from planned management actions</li> </ul> <p><b>Modelling methodology for each</b></p> <ul style="list-style-type: none"> <li>• Evidence that future management actions are:                             <ol style="list-style-type: none"> <li>a. accounted for in a manner consistent to that used for TP</li> <li>b. based on assumptions that are <i>objective, realistic</i> and <i>verifiable</i>.</li> </ol> </li> <li>• Assessment of the materiality of future management actions</li> </ul> |                        |                       |

*Difference between scores in each band should reflect the number of key areas addressed and quality*



# SOLVENCY II SCORING - MODEL VALIDATION: CALIBRATION (CVP)

LLOYD'S

| Timing   |   | Q3 2010  | Q1 2011  | Q3 2011   | By Q4 2011  |
|----------|---|--|--|---|---|
| Score    | 1   | 2-4 (design/evidence)  | 5-7 (evidence/build)   | 8-9 (testing/sign off)  | 10 (fully in use/BAU)   |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Process for ensuring appropriate calibration</b></p> <ul style="list-style-type: none"> <li>If the IM is not calibrated to the standard VaR 99.5% / 1 year calibration of the SCR then agents shall provide qualitative support for their alternative risk measure / time period.                             <ul style="list-style-type: none"> <li>❖ Justify the time horizon in context of the average duration of liabilities and the business model</li> <li>❖ Ensure that the data used for shorter time periods (less than 1 year) is appropriate</li> </ul> </li> <li>If the IM does not explicitly produce the SCR at the standard calibration then the agent must develop a draft process to demonstrate equivalent policyholder protection according to the criteria of (6.55).</li> <li>Determine a schedule to demonstrate policyholder equivalence on at least an annual basis.</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Process for ensuring appropriate calibration</b></p> <ul style="list-style-type: none"> <li>Demonstrate that all significant risks over a one year period are properly managed.</li> <li>Complete methodology for demonstrating equivalent level of protection. The methodology must include a sufficient level of validation.</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul> <ul style="list-style-type: none"> <li>Completed testing and sign off for methodology for showing equivalent policyholder protection.</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started.</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: VALIDATION (CVP)

LLOYD'S

| Timing   |   | Q3 2010  | Q1 2011   | Q4 2011  | By Q1 2012   |
|----------|---|--|---|--|--|
| Score    | 1   | 2-4 (design/evidence)  | 5-7 (evidence/build)  | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Purpose and scope of validation</b></p> <ul style="list-style-type: none"> <li>Define a policy scope to include as minimum the points in (8.127).</li> <li>Identification of any parts of IM framework not covered by the policy and why</li> <li>Draft process for both quantitative and qualitative assessment of the validation test results and how they will be used to gain comfort that the IM is appropriate.</li> </ul> <p><b>Validation tools used</b></p> <ul style="list-style-type: none"> <li>Summarize the validation tools to be used, which must include at a minimum those in (8.54).</li> </ul> <p><b>Frequency of validation process</b></p> <ul style="list-style-type: none"> <li>Draft schedule for the validation process.</li> </ul> <p><b>Governance of validation results</b></p> <ul style="list-style-type: none"> <li>Draft policy for governance of the validation results covering:                             <ul style="list-style-type: none"> <li>Responsibilities for validation tasks</li> <li>Reporting of results of validation tests</li> <li>Criteria and path for escalation of results</li> <li>Senior management involvement in the validation process</li> </ul> </li> </ul> <p><b>Independent review</b></p> <ul style="list-style-type: none"> <li>Set out how the independent review is used within the validation process.</li> </ul> <p><b>Documentation</b></p> <ul style="list-style-type: none"> <li>Draft documentation of the policy addressing how the policy will be carried out and the responsibilities.</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Purpose and scope of validation</b></p> <ul style="list-style-type: none"> <li>Explicit consideration of any expert judgement.</li> <li>Statement of the goals and measures of backtesting.</li> </ul> <p><b>Validation tools used</b></p> <ul style="list-style-type: none"> <li>Provide reasons for why the selected validation tools are appropriate.</li> </ul> <p><b>Frequency of validation process</b></p> <ul style="list-style-type: none"> <li>Criteria requiring additional validation checks beyond those regularly scheduled.</li> </ul> <p><b>Limitations and future developments</b></p> <ul style="list-style-type: none"> <li>Description of the limitations of the current policy.</li> <li>Planned developments to meet identified limitations.</li> </ul> <p><b>Independent review</b></p> <ul style="list-style-type: none"> <li>Detail how the review is independent and how independence will be maintained.</li> </ul> <p><b>Documentation</b></p> <ul style="list-style-type: none"> <li>Completed validation policy document.</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul> <ul style="list-style-type: none"> <li>Completed testing and sign off by actuarial/risk management on validation policy.</li> <li>Signed report of validation tests by actuarial/risk management.</li> <li>Draft (end of August) and final (end of October) validation reports submitted to Lloyd's.</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Validation report updated as appropriate to reflect progress against any gaps and Lloyd's review feedback</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started.</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: PROFIT & LOSS ATTRIBUTION AND BACKTESTING (CVP)

LLOYD'S

| Timing   |   | Q3 2010  | Q1 2011  | Q3 2011   | By Q4 2011  |
|----------|---|--|--|---|---|
| Score    | 1   | 2-4 (design/evidence)  | 5-7 (evidence/build)   | 8-9 (testing/sign off)  | 10 (fully in use/BAU)   |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Profit and loss attribution methodology</b></p> <ul style="list-style-type: none"> <li>Draft P&amp;L attribution methodology capable of explaining a large part of annual P&amp;L.</li> <li>Definition of P&amp;L consistent with PDF.</li> </ul> <p><b>Application of P&amp;L attribution</b></p> <ul style="list-style-type: none"> <li>Draft process for application of results of P&amp;L attribution to                             <ul style="list-style-type: none"> <li>❖ Validation</li> <li>❖ Management of business/ Use test.</li> </ul> </li> </ul> <p><b>Governance process over P&amp;L attribution</b></p> <ul style="list-style-type: none"> <li>Demonstrate that classification of risks for P&amp;L attribution reflects the risk profile of the agent.</li> </ul> <p><b>Backtesting process</b></p> <ul style="list-style-type: none"> <li>Draft specification of a backtesting process that covers                             <ul style="list-style-type: none"> <li>❖ The steps in (8.150)</li> <li>❖ Analysis of backtesting results not above trigger event.</li> <li>❖ Definition of significant deviations between model results and reality</li> <li>❖ Identification of the reasons for divergence.</li> </ul> </li> </ul> <p><b>Trigger events</b></p> <ul style="list-style-type: none"> <li>Draft definition of trigger events.</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Profit and loss attribution methodology</b></p> <ul style="list-style-type: none"> <li>Detail and explain the differences of the profits and losses between P&amp;L attribution and those reported in accounting systems.</li> <li>Complete P&amp;L attribution methodology</li> </ul> <p><b>Governance process over P&amp;L attribution output</b></p> <ul style="list-style-type: none"> <li>Process for escalating to management body if the results from the P&amp;L attribution do not reflect the risk profile of the agent.</li> <li>Procedure for improving the model if P&amp;L attribution indicates that the model does not reflect the risk profile adequately.</li> </ul> <p><b>Backtesting process</b></p> <ul style="list-style-type: none"> <li>Completed specification of backtesting process including                             <ul style="list-style-type: none"> <li>❖ A defined escalation path for significant deviations</li> <li>❖ Evidence that it will be applied at various levels of business</li> <li>❖ A process for commonsense comparison between prediction and realization where expert judgement has been used</li> <li>❖ Schedule for backtesting.</li> </ul> </li> </ul> <p><b>Trigger events</b></p> <ul style="list-style-type: none"> <li>Completed definition of trigger events.</li> </ul> | <ul style="list-style-type: none"> <li>All S2 implementation requirements met and regular reviews and maintenance started</li> <li>Completed testing and sign off by actuarial/risk management on P&amp;L attribution and backtesting.</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started.</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: MODEL ROBUSTNESS AND STRESS & SCENARIO TESTING (CVP)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011   | Q3 2011  | By Q4 2011  |
|----------|---|---|---|--|---|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)  | 8-9 (testing/sign off)   | 10 (fully in use/BAU)   |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least some of key areas addressed and evidenced</li> </ul> <p><b>Process to establish robustness</b></p> <ul style="list-style-type: none"> <li>Identify and document the key assumptions in the IM.</li> <li>Description of any other sensitivity tests on the model.</li> </ul> <p><b>Governance process over robustness testing output</b></p> <ul style="list-style-type: none"> <li>Process in place to escalate results of sensitivity tests to senior management.</li> <li>Process for reviewing and applying results of sensitivity tests, in particular to parts of IM relying on expert judgement</li> </ul> <p><b>Stress and scenario testing process</b></p> <ul style="list-style-type: none"> <li>Draft description the stress and scenario methodology.</li> </ul> <p><b>Governance process over stress and scenario testing output</b></p> <ul style="list-style-type: none"> <li>Draft process for monitoring, assessing and updating S&amp;S testing.</li> <li>Detail the responsibilities of the senior management involved in overseeing the S&amp;S testing programme.</li> <li>Process for comparing S&amp;S results to risk tolerance limits</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements.</li> <li>All of the key areas addressed and most evidenced.</li> </ul> <p><b>Process to establish robustness</b></p> <ul style="list-style-type: none"> <li>Process to assess and evaluate significant changes in output resulting from small changes in parameters.</li> <li>Completed sensitivity testing process</li> </ul> <p><b>Governance process over robustness testing output</b></p> <ul style="list-style-type: none"> <li>Process for regular review of sensitivity testing of results.</li> <li>Completed governance process for sensitivity testing.</li> </ul> <p><b>Stress and scenario testing process</b></p> <ul style="list-style-type: none"> <li>Explain why the selected S&amp;S tests are adequate.</li> <li>Completion of any S&amp;S tests specified by Lloyd's</li> <li>Process for reverse stress testing.</li> </ul> <p><b>Governance process over stress and scenario testing output</b></p> <ul style="list-style-type: none"> <li>Detail process for senior management involvement in S&amp;S programme.</li> </ul> | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul> <p>Completed testing and sign off by actuarial/risk management on model robustness and stress &amp; scenario testing.</p> <ul style="list-style-type: none"> <li>Reverse stress tests signed off by the board.</li> </ul> | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started.</li> </ul> |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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# SOLVENCY II SCORING - MODEL VALIDATION: EXTERNAL MODELS & DATA (EMD)

LLOYD'S

| Timing   |   | Q3 2010   | Q1 2011   | Q3 2011  | By Q4 2011   |
|----------|---|---|---|--|--|
| Score    | 1   | 2-4 (design/evidence)   | 5-7 (evidence/build)  | 8-9 (testing/sign off)   | 10 (fully in use/BAU)  |
| Progress | <ul style="list-style-type: none"> <li>Agent demonstrates little understanding of requirements</li> <li>Little or no progress made in design</li> <li>Evidence available is insufficient to address any of key areas</li> </ul> | <ul style="list-style-type: none"> <li>Agent demonstrates a reasonable understanding of requirements</li> <li>At least key and some of additional areas addressed and evidenced</li> </ul>  | <ul style="list-style-type: none"> <li>Agent demonstrates clear and detailed understanding of requirements</li> </ul>   | <ul style="list-style-type: none"> <li>Agents are close to finalising their requirements subject to testing / sign off approvals.</li> </ul>   | <ul style="list-style-type: none"> <li>Agents have completed the design, build and test of the element above.</li> <li>Nothing further required to be done except follow process established for regular reviews (unless requirements change).</li> <li>All Solvency II implementation requirements met and regular reviews and maintenance started.</li> <li>Model change system fully operational and in use as part of BAU</li> <li>Assurance process shown system to fully work</li> </ul> |
|          |   | <p><b>Two key areas identified:</b></p> <ol style="list-style-type: none"> <li>1. Identification of all material external models as appropriate to the syndicate, including cat models, ESGs, and reserving models – and data provided by third parties (eg broker analyses)</li> <li>2. Identification of all material external data sets as appropriate to the syndicate, including RI credit factors and sources</li> </ol> <p><b>Four additional areas identified:</b></p> <ol style="list-style-type: none"> <li>1. Outline role of the external models and data within the scope of the internal model, including evidence of the potential materiality of the EMD</li> <li>2. Draft documentation around the justification of using EMD vs. internal models and data</li> <li>3. Draft methodology to demonstrate understanding and limitations to EMD</li> <li>4. Draft outline of review and validation process</li> </ol> | <ul style="list-style-type: none"> <li>Comprehensive and structured identification of all external models and data sets is evidenced</li> <li>Draft documentation to explain how used of EMD complied with Articles 120-126</li> <li>Demonstrate how alternative models and data have, and will, be considered</li> <li>Review EMD to understand if there is any introduction of material risk that should be considered within the SCR</li> <li>Process fully drafted which creates a link between the use of EMD and – <ul style="list-style-type: none"> <li>The design and operational details of the model</li> <li>The model change process</li> <li>Internal model governance</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>EMD processes tested and signed-off</li> <li>For the review and validation process the use of expert judgement in relation to EMD must be fully documented and rationale explained</li> </ul> |  |

*Difference between scores in each band should reflect the number of key areas addressed and quality*

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